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**RESEARCH ON QUALITY OF LIFE OF THE AGED**  
**POPULATION IN HOME-CARE CENTRES**

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***Abstract***

In order to discuss the quality of life (QOL) of the elderly in urban communities, an anonymous survey of the aged population in urban community home-care centres managed by cooperative enterprises was carried out by reference to the World Health Organization Quality of Life: Brief Version (WHOQOL-BREF), the WHOQOL-BREF is a widely used questionnaire for measuring quality of life. A total of 324 participants were included in this study (53.7% male, 46.3% female). The super-aged population (>80 years old) was the largest in terms of age, accounting for 61.4%. Among all respondents, 248 had education through middle school or lower, accounting for 76.5%. The QOL of the aged population in urban community homecare centres was evaluated according to the survey results. Financial resources and residential satisfaction significantly affected the QOL of the aged population. Physical health conditions, living environment, dwelling conditions, family disputes, and economic conditions were significantly correlated with the QOL of the aged population. Among them, standardization of living environment was the most important influencing factor, followed by physical health conditions.

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## 1. Introduction

With the development in the global economy and medical treatment, aging has become a global issue. Due to its large population, continuous improvements in life expectancy, and fertility-limiting policies, the Chinese population has the largest elderly population and is one of the most rapidly aging demographics. Aging will become China's main demographic issue in the 21st century. At the core of this issue is the quality of life (QOL) with the aged.

The World Health Organization (WHO) defines health-related QOL as experiences of individuals in different cultural and value systems or living conditions regarding their goals, expectations, standards, and related affairs. It covers physical health, psychological states, independence, social relations, and beliefs of individuals, as well as their relationships with the surrounding environment (Group, 1994) A consensus among the public is that healthy individuals enjoy a content level of QOL. Recently, the concept of QOL has raised widespread concern among public health researchers. Scholars have shown increasing ability to evaluate QOL, which has been regarded as an important indicator of health-related research worldwide (Lodhi et al., 2019; Ohaeri et al., 2009).

## 2. Problem Statement

Before the 1960s, the content of the QOL indicators was almost objective; after the 1960s, the subjective level began to receive attention in the QOL indicators system. Some researches have mentioned that objective indicators of QOL can only explain the QOL of 15% of residents, while subjective indicators such as self-evaluation of health status, interpersonal relationship and life satisfaction can explain 70% to 80% (Bukonya et al., 2003). Therefore, subjective QOL is vital for evaluating residents' QOL, and the analysis results are more realistic. Life satisfaction is an individual's subjective evaluation of the QOL on the basis of the standards set by himself and is an essential indicator to measure the subjective QOL.

Andrews et al. (1991) studied the level and structure of subjective satisfaction with life of American residents from 1971 to 1988. The evaluation indicators included self-evaluation, entertainment, health, income and living standards, working conditions, marriage and children, leisure time and social activities, neighbourhood and community relations, local and national governments, etc. Fu et al. (2006) made a comparative study of the life satisfaction of middle-aged population in Australia and Taiwan Province of China. The main satisfaction measurement areas of the study included health status, sleep and rest, daily activities, work ability, self-evaluation, interpersonal relationship, friends support, living environment, medical and social security, negative emotions, positive emotions, whether respected by others, social security, etc.

Later, more and more Chinese scholars have studied QOL and extended different views on the concept of QOL. Some people think it includes physical health, pre-retirement working conditions, family life and social environment; others think it involves self-determination, independent self-care, a certain degree of economic capacity and interests and hobbies. Moreover, most commonly, QOL has several dimensions: physical health, family harmony, living environment security, the number of chronic diseases (Chang et al., 2012).

In this study, several dimensions were selected: physical health, mental health, living environment, economic conditions and social support. The physiological function of the elderly gradually degenerates and decreases, and their economic ability weakens with age. The psychological state and social adaptability also change, which affect the QOL of the elderly to a certain extent.

### 3. Research Questions

What other variables influence the QOL of the elderly, and what is the influencing mechanism and mediation or adjustment effect of these variables? These problems have rarely been studied. An anonymous investigation of the aged population was conducted in community home-care centers in some cities of one province, aiming to analyse influencing factors and action mechanisms of QOL of the elderly.

### 4. Purpose of the Study

It is proposed to conduct a survey on the characteristics and QOL of the elderly in the old-age care service centres of the relevant cooperative communities, in order to explore the following issues: What are the characteristics of the elderly people in community old-age care service centres? How is their QOL? What factors affect their QOL? Improving the physical health and living condition of the elderly is the key to improving their QOL. As reported by past researchers, physical health is a significant reflection of QOL, and the living condition has an important impact on the QOL of the elderly. On the other hand, despite the growing research on quality of life, researchers are still calling for research to improve knowledge about factors that affect QOL.

### 5. Research Methods

The WHOQOL-BREF supplied the major questionnaire items for this paper. An anonymous investigation of the aged in urban community home-care centres was carried out to evaluate QOL of the relevant aged population. Twenty items affecting the QOL situations of respondents in the last two weeks were discussed, including physical condition, psychological condition, economic conditions, employment conditions, family relationships, and social relationships. These items were scored by five-level frequency, and scores mainly ranged between 36 and 86. A respondent's total score was the sum of all items. Higher scores imply better living quality.

To assure statistical quality, reliability was tested by the Cronbach coefficient, Cronbach's  $\alpha$ . Named for Lee Cronbach, an American educator, in 1951, Cronbach's  $\alpha$  refers to the mean of the split-half reliability coefficient of all possible item-classification methods of the scale. It is defined as:

$$\alpha = \frac{K}{K-1} \left( 1 - \frac{\sum_{i=1}^K \sigma_{Y_i}^2}{\sigma_X^2} \right),$$

where K represents the sample size,  $\sigma_X^2$  represents the variance of total samples,  $\sigma_{Y_i}^2$  represents the variance of observation samples.

The range of Cronbach's  $\alpha$  is 0 to 1. If  $\alpha$  is lower than 0.6, then the reliability of internal consistency is poor. A value of  $\alpha$  between 0.7 and 0.8 connotes considerable reliability, and a score between 0.8 and

0.9 indicates very high reliability. According to measurement results, the Cronbach’s  $\alpha$  is 0.804, indicating high reliability.

## 6. Findings

### 6.1. Investigation of QOL of the aged population in urban community home-care centres

In this investigation, 324 valid samples were acquired. Males accounted for 53.7% of the respondents. The super-aged population (>80 years old) was the largest in terms of age, accounting for 61.4%. Proportions aged 70–80 and 60–70 were 22.2% and 16.4%, respectively. Among all respondents, 248 had education through middle school or lower, accounting for 76.5%. Results are listed in Table 1.

**Table 01.** Basic demographic characteristics of the elderly

General conditions	Groups	N	Proportion (%)
Gender	Male	174	53.7
	Female	150	46.3
Age	60–70	53	16.4
	70–80	72	22.2
	>80	199	61.4
Education background	Middle school or lower	248	76.5
	High school or technical secondary school	49	15.1
	Junior college or higher	27	8.4
Marriage	Not married	127	39.2
	Married or cohabiting	197	60.8
Vocational status	Government	14	4.3
	Public institutions	38	11.7
	State-owned enterprises	46	14.2
	Private enterprises	44	13.6
	Farmers	63	19.4
	Part-time jobs	49	15.1
	Others	70	21.6
Health conditions	Very poor	12	3.7
	Poor	58	17.9
	Ordinary	166	51.2
	Good	74	22.8
	Very good	14	4.3

### 6.2. One-way ANOVA

One-way ANOVA is applied to test significant difference on mean of one dependent variable of multi-group samples which are influenced by single factor. Suppose the single factor **A** contains r levels, denoted as  $A_1, A_2, \dots, A_r$ . Given  $A_i (i = 1, 2, \dots, r)$ , the investigated indexes are the r totalities. Suppose:

- (1) Each totality conforms to the normal distribution, i.e.  $X_i \sim N(\mu_i, \sigma^2), i = 1, 2, \dots, r$ .
- (2) The totalities have equal variances ( $\sigma^2$ ).
- (3) Samples  $(X_{i1}, X_{i2}, \dots, X_{ir})$  extracted from each totality are independent,  $i = 1, 2, \dots, r$ .

In this study, QOL scores of the elderly with different sociodemographic characteristics were compared by ANOVA. Results are shown in Table 2.

**Table 02.** QOL scores of different sociodemographic characteristics

Items	Group	N	QOL scores ( $\bar{x} \pm s$ )	F value	P value
Gender	Male	174	76 ± 13	2.039	0.154
	Female	150	74 ± 13		
Age/year	60–70	53	74 ± 12	0.960	0.384
	70–80	72	73 ± 12		
	>80	199	76 ± 13		
Education Background	Middle school or lower	248	76 ± 13	1.978	0.140
	High school or technical secondary school	49	72 ± 14		
	Junior college or higher	27	77 ± 12		
Marriage	Not married	197	75 ± 13	0.007	0.932
	Married or cohabiting	127	75 ± 14		
Financial Resources	Absolutely insufficient	40	66 ± 12	12.361	< 0.001
	Rarely sufficient	44	70 ± 13		
	Sufficient	198	77 ± 12		
	Sufficient in most cases	32	79 ± 10		
	Completely sufficient	10	89 ± 7		
Residential Satisfaction	Very unsatisfying	4	56 ± 18	31.845	< 0.001
	Unsatisfying	23	66 ± 14		
	Acceptable	102	68 ± 10		
	Satisfying	159	78 ± 11		
	Very satisfying	36	89 ± 11		

To sum up, financial resources and residential satisfaction can significantly influence the QOL of the aged population. The elderly with insufficient financial resources has low QOL scores, while those with substantial financial resources gain high scores. Residential satisfaction is positively related to QOL scores. Other indices, such as gender, age, education background, and marriage, show no statistically significant differences of QOL.

### 6.3. Multiple linear regression analysis

Generally, ANOVA can only judge whether the control variables significantly influence the observation variables. A correlation analysis is needed as a supplement. A predictive model is constructed

for prediction. When there are more than one predictors, a simple linear regression model is extended by giving each predictor a separate slope coefficient, which is known as multiple linear regression analysis.

If  $y$  is defined as the response variable,  $x_1, x_2, \dots, x_k$  are predictor variables, and there is a linear relationship between the response and predictors, then the multiple linear regression model takes the form:

$$y = b_0 + b_1x_1 + b_2x_2 + \dots + b_kx_k + \varepsilon,$$

where  $b_0$  is a constant and  $b_j, j \in [1, k]$ , is the slope coefficient of  $j$ th predictor.  $b_1$  is interpreted as the effect on  $y$  of one unit increase in  $x_1$  when holding  $x_2, x_3, \dots, x_k$  fixed, that is, the partial regression coefficient of  $x_1$  to  $y$ . Similarly,  $b_2$  is the effect of one unit increase of  $x_2$  on  $y$  when  $x_1, x_3, \dots, x_k$  are fixed, that is, the partial regression coefficient of  $x_2$  to  $y$ , and so on.

In this study, the total QOL score was used as the response variable ( $y$ ). Entertainment activities ( $x_1$ ), living environment ( $x_2$ ), physical health conditions ( $x_3$ ), psychological conditions ( $x_4$ ), economic conditions ( $x_5$ ), dwelling conditions ( $x_6$ ), and family disputes ( $x_7$ ) were used as predictors in ANOVA. In accordance with the standards  $\alpha = 0.05$  and  $\alpha_{out} = 0.10$ , the multiple linear regression analysis was performed by the gradual regression method.

Results showed that the F-statistic and p-value of the fitting model were  $F = 65.983$ , and  $P < 0.001$ . Five independent variables,  $x_2, x_3, x_5, x_6$ , and  $x_7$ , were entered into the model and  $R^2$  was adjusted to 0.501. This reflected that all five independent variables could explain 50% of the total changes. The multiple linear regression equation was as follows (Table 3):

$$y = 30.180 + 4.827x_2 + 4.598x_3 + 1.509x_5 + 4.248x_6 - 1.604x_7.$$

**Table 03.** Multiple linear regression on relevant factors of QOL of the elderly (324)

Variables	B	$S_b$	$\beta t$	P value	
Living environment $x_2$	4.827	0.703	0.319	6.865	< 0.001
Physical health conditions $x_3$	4.598	0.676	0.293	6.803	< 0.001
Dwelling conditions $x_6$	4.248	0.770	0.262	5.514	< 0.001
Economic conditions $x_5$	1.509	0.648	0.101	2.330	0.020
Family disputes $x_7$	-1.604	0.746	-0.086	-2.150	0.032

Correlations of  $x_3, x_2, x_6, x_7$ , and  $x_5$  with QOL of the aged population are significant after controlling other sociodemographic factors. Among them, the  $\beta$  value of the standardization of living environment is the highest. This reflects that the living environment is the most important influencing factor, followed by physical health conditions.

## 7. Conclusion

In August 2016, General Secretary Xi Jinping highlighted at the National Health and Fitness Conference that “health is the essential requirement to facilitate comprehensive development of human beings, the fundamental condition of economic and social development, an important sign of national prosperity, and the common pursuit of the masses. The public health shall be put in the prior strategic position. Aging of population and health problems of the aged population have become a worldwide social problem. It is expected that the aged population ( $\geq 65$ ) in China will reach 0.3 billion by 2025 and China will be a country of ultra-aging population (Wu et al., 2020). In this study, current situations of QOL were discussed, and attention was paid to the analysis of influences of sociodemographic factors, physical health, environment, and social relationships on QOL of the aged population, thus evaluating it to a certain extent. Controllable factors that influence QOL of the aged population could be screened, laying foundations for further interventions and thereby facilitating the health of the aged population and accelerating progress toward a “healthy China”.

According to the ANOVA results of influences of sociodemographic factors on the subjective wellbeing of the aged population in communities, financial sources and residential satisfaction significantly affect the QOL of the aged population. The elderly with insufficient financial sources has low QOL scores, and those with sufficient financial resources have high scores. Residential satisfaction is also positively correlated with QOL scores. Dwelling conditions and income level are predictive factors of QOL of the aged population ( $P < 0.01$ , Table 2). Among all respondents, 74.07% of the elderly have sufficient or very sufficient financial sources, and 59.26% of the elderly are satisfied or very satisfied with their dwelling conditions. This reflects that most of the aged population in the study area have good living conditions and basically sufficient financial sources.

The multiple linear regression analysis reveals that physical health conditions, living environment, and family disputes are major influencing factors of QOL of the aged population. Due to degradation of physiological function and deterioration of disease resistance, the elderly often has poor physical health, resulting in poor endurance and adaptation to the external world. The elderly who enjoy a harmonious family atmosphere, good filial piety, and a harmonious neighbourhood have dignity and full lives. They will not feel the loss of social values by aging and can better perceive support from the surrounding environment.

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