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# Analysis on Quality of Life of Elderly in Xiamen and Its Influencing Factors\*

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Abstract-Objective: To understand the current situation of the quality of life of the elderly in Xiamen City and its influencing factors, and to provide a basis for product design practice for elderly users, so as to promote healthy aging. Methods: Through multi-stage stratified random sampling, 197 seniors over 60 years old in Xiamen City were surveyed by the WHO brief life quality measurement scale (WHOQOL-BREF), and a database was established. SPSS software was used for statistical analysis. Results: The grand average score of life quality of the elderly in Xiamen is 86.1. The scopes of scores of physical health, mental health, social relationship and surrounding environment were respectively 48.1-78.5, 51.2-78.2, 52.7-79.9, and 49.8-80.8. Multivariate analysis showed that the factors influencing the total score of life quality of the elderly in Xiamen were whether they are sick or not, and occupation. Conclusion: The quality of life of the elderly in Xiamen is better overall, but there are some problems, comprehensive measures can be taken to further improve their quality of life.

Keywords—Xiamen; quality of life of elderly; WHOQOL-BREF; influencing factors

#### I. INTRODUCTION

In China, the quality of life of the elderly is defined as "the degree of physical, mental, family and social satisfaction of the elderly aged 60 and above and the comprehensive evaluation of their life", including economic security, health status, spiritual and cultural life and living environment [1]. It can be seen that the needs of the elderly for the improvement of the quality of life are not only limited to the monitoring of "physical health", but also need to pay attention to psychological, social adaptability, overall Liang Liao New Silk Road School of Fashion Xiamen University of Technology Xiamen, China 361024

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feelings. In the context of "the aging of the population brings many challenges, 'healthy aging' has become an important social proposition", the research on the quality of life of the elderly has naturally become a hot spot. At present, researches on the quality of life of the elderly in China mainly focus on "evaluation" and "influencing factors". The former includes different types of evaluation objects, including different regions, urban and rural areas, different pension modes, different diseases and empty-nesters. The evaluation methods are mostly scales, including scales for general health evaluation, scales for special diseases and scales for special conditions. The latter, the factors affecting the quality of life of the elderly, different scales, research conclusions are not the same, mainly involving demographic sociology, health-related behavior, chronic disease, medical care, social support, the surrounding environment and other aspects.

Xiamen is one of the first four special economic zones in China to implement the reform and opening-up policy. According to 2015 Fujian province 1% population sampling survey data, in 2015, the proportion of the elderly population over 60 years old in Xiamen was 8.96% [2]. And the United Nations international population institute stipulates that the criteria for a country or region to enter the aging age are: the proportion of the population aged 65 and above exceeds 7% or the proportion of the population aged 60 and above exceeds 10%. Thus, as of 2015, Xiamen had not entered the aging society. Timely understanding of the quality of life of the elderly and its influencing factors in Xiamen City can provide a basis for the follow-up design practice of intelligent clothing and apparel products for the elderly, which can effectively delay the process of urban aging, prevent premature aging and realize healthy aging.

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#### II. OBJECT AND METHODS

#### A. Object

According to the administrative divisions of Xiamen City, 198 elderly people were randomly selected from 6 districts (Siming District, Haicang District, Huli District, Jimei District, Tong'an District and Xiang'an District). Inclusion criteria: (1) age 60 years; (2) continuous residence time in the study area  $\geq 6$  months; (3) volunteer to participate in the questionnaire survey; (4) conscious. Exclusion criteria: (1) language communication disorders; (2) chronic disease acute hair author; (3) mental patient.

#### B. Methods

#### 1) Research tool

*a)* General information questionnaire for the elderly: The self-designed questionnaire was used, including gender, age, education level, marital status, occupation, health status, disease type, etc.

b) WHOOOL-BREF: WHOOOL-BREF is a crosscultural universal scale developed by WHO based on the concept of quality of life for the measurement of quality of life [3]. The scale was developed under the collaborative efforts of nearly 15 different cultural backgrounds for several years, and has been evaluated in 37 regional centers for its reliability, validity and other psychological indicators, and found that the table has good discriminative validity, good internal consistency and structural validity [4], and has good applicability. The scale was composed of 24 items and 2 independent items in 4 fields: physiology (PHYS), psychology (PSYCH), social relations (SOCIL) and environment (ENVIR). Scores in each field were recorded in a positive manner. The higher the score, the better the quality of life. Its mark standard cent is divided two kinds: raw score system and hundred-mark system. The scoring method is as follows:

• raw score system(4-20 point system)

PHYS=4\*[(6-Q3)+(6-Q4)+Q10+Q15+Q16+Q17+Q18]/7 PSYCH=4\*[Q5+Q6+Q7+Q11+Q19+(6-Q26)]/6 SOCIL=4\*(Q20+Q21+Q22)/3 ENVIR=4\*(Q8+Q9+Q12+Q13+Q14+Q23+Q24+Q2 5)/8

hundred-mark system

Score of hundred-mark system = (raw score of 4-20 point system -4)\*(100/16)

2) Data collection method: From January to December of 2017, the research team went to each sample survey area for several times to conduct a questionnaire survey on the respondents. The investigators are senior undergraduate from the department of fashion and costume design of Xiamen University of Technology, who had been trained in the field investigation, and are from Fujian, are required to speak Hokkien. The survey covers community streets, homes with elderly people, nursing homes, activity centers for the elderly, parks, squares, vegetable markets, supermarkets, etc. The investigators adopt the method of inquiry and explain the items that the respondents do not understand. The questionnaire was filled out by the investigators.

3) Quality control method: Before the questionnaire survey, all the investigators were trained to have a scientific understanding of the content and connotation of the survey scale, as well as the survey methods and skills of the elderly population.

In the implementation of the survey, the questionnaire survey was conducted in the form of face-to-face consultation. The investigators asked and explained the survey questions one by one to the tested subjects and made appropriate explanations. All questionnaires were filled out by the investigators.

After the questionnaire survey, in the stage of data screening and input, incomplete questionnaires and questionnaires with logic errors were eliminated, and the double-input method was adopted to ensure correct data entry.

4) Statistical approach: EXCEL was used to complete data entry, screening, proofreading and simple classification. Descriptive statistics, single-factor analysis and multivariate analysis were carried out for each item of the study by using SPSS statistical software: for the counting data, the composition ratio (n (%)) and frequency distribution were used to describe. Mean and standard deviation ( $x\pm S$ ) were used to describe the measurement data. In one-way ANOVA and multiple linear regression analysis, P<0.05 was considered statistically significant.

#### III. RESULTS

#### A. General Information

Average number of physical illness for one respondent is  $1.7 \pm 1.5$ . (See "Table I" for details)

	Item	Frequency (number)	Percentage (%)
Gender	Male	108	54.8
	Female	89	45.2
Age	60-69	125	63.5
(years)	70-79	60	30.5
	80-89	11	5.6
	90 and above	1	0.5
Education	None	11	5.6
(degree)	Primary school	67	34.0
	Junior middle school	54	27.4
	Technical secondary school	30	15.2
	or above		
	College	21	10.7
	Bachelor	14	7.1
	Graduate	0	0
Marriage	Unmarried	2	1.0
	Married	157	79.7
	Cohabitation	14	7.1
	Separation	8	4.1
	Divorced	3	1.5
	Widowed	13	6.6
Being sick?	Yes	60	30.5
	No	137	69.5
Illness	0	116	58.9
(number of species)	1	73	37.1
	2	6	3.0
	3 and above	2	1.0
Occupation	Worker	55	27.9
	Farmer	72	36.5
	Administration	23	11.7
	Service industry	26	13.2
	Intellectual	21	10.7

TABLE L	GENERAL.	INFORMATION (	N=197)
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#### B. Overall Performance of Quality of Life

the overall quality of life of 197 elderly people in this study was obtained, as shown in "Table II".

By standard measuring of WHOQOL-BREF and converting of raw score system and hundred-mark system,

Fields	4-20 point system	100-mark system	Score range: 1-5	Score range: 0-100
PHYS	14.1349±2.43475	63.3430±15.21716		
PSYCH	14.3519±2.16292	64.6997±13.51825		
SOCIL	14.6058±2.17716	66.2860±13.60726		
ENVIR	14.4518±2.48597	65.3236±15.53733		
Overall QOL			3.7513±0.78510	
Overall health status			3.4822±0.86658	
Total score of self-				81 6345 +11 00781
evaluation				61.0545±11.00761

TABLE II.OVERALL QUALITY OF LIFE OF THE ELDERLY (N=197)

As can be seen from "Table II", for the elderly, in the four fields of quality of life, the highest score is in the social field and the lowest in the physiological field, respectively  $66.2860 \pm 13.60726$  and  $63.3430 \pm 15.21716$  (100-mark system). The overall quality of life, overall health status and the total score of self-assessment are separate items, which respectively reflect the content of the three aspects. Therefore, they are counted as original scores, without the need for conversion of the score systems. The average score of overall quality of life was 3.75 points (full score is 5 points), slightly above the average. The average score of overall health status is 3.48 points (full score is 5 points),

which is medium level. The total score of self-assessment is the overall quality of life of the respondents themselves, with an average score of 81.63 out of 100, indicating that the elderly have a good overall evaluation of their current quality of life.

#### C. Analysis of Influencing Factors of Quality of Life of the Elderly in Xiamen City

1) Single factor analysis: Single factor analysis was conducted on the life quality of the elderly in Xiamen from the aspects of demographic and sociological characteristics and disease status. The results are shown in "Table III".

Factors	PHYS		PSYCH		SOCIL		ENVIR		Overall	
	F	Р	F	Р	F	Р	F	Р	F	Р
Gender	0.307	0.580	0.048	0.827	0.796	0.375	0.152	0.697	0.005	0.942
Age	2.377	0.071	1.948	0.123	0.512	0.602	0.388	0.762	1.100	0.351
Education	0.984	0.429	2.794	0.018	1.368	0.255	1.240	0.292	1.691	0.139
Marriage	1.080	0.373	0.465	0.802	0.900	0.411	1.207	0.307	1.233	0.295
Being sick?	38.914	0.000	23.202	0.000	0.001	0.980	14.480	0.000	38.012	0.000
Illness	8.106	0.000	3.682	0.013	0.928	0.432	2.546	0.057	3.788	0.011
Occupation	1.546	0.191	4.845	0.001	2.111	0.089	1.944	0.105	3.100	0.017

 TABLE III.
 SINGLE FACTOR ANALYSIS ON QUALITY OF LIFE OF THE ELDERLY IN XIAMEN

As can be seen from "Table III", whether or not patients are getting sick, the number of types of diseases, are related to the quality of life in the physiological field; education background, whether or not patients are getting sick, the number of types of diseases, occupation, are related to the quality of life in the psychological field; whether or not patients are getting sick, are related to the quality of life in the field of the surrounding environment. All of the differences are statistically significant (P < 0.05). 2) Multiple-factor analysis: The factors mentioned in "Table III" were taken as independent variables and the quality of life score as dependent variables. After screening by multiple linear stepwise regression models, the indexes with statistical significance were finally entered into the model. According to ANOVA, the stepwise regression equation of influencing factors of quality of life in Xiamen was statistically significant (P < 0.05).

 TABLE IV.
 MULTIPLE-FACTOR ANALYSIS ON QUALITY OF LIFE OF THE ELDERLY IN XIAMEN (ENTER)

Mod	lel	В	Standard error	standardized regression coefficient	t	Р
DHVS	constant	10.585	1.327		7.973	0.000
гпіз	sick	2.110	0.411	0.400	5.130	0.000
	constant	9.257	1.197		7.731	0.000
PSYCH	sick	1.894	0.371	0.404	5.106	0.000
	occupation	0.258	0.122	0.156	2.114	0.036
SOCIL	constant	16.820	2.383		7.057	.000
	constant	8.016	1.411		5.683	0.000
	education	0.316	0.148	0.169	2.134	0.034
ENVID	sick	2.137	0.437	0.397	4.890	0.000
ENVIK	Illness (number of species)	1.041	0.337	0.256	3.090	0.002
Total quality of life	constant	2.475	0.457		5.416	0.000
	sick	0.490	0.142	0.288	3.458	0.001
	occupation	0.104	0.047	0.173	2.222	0.027
General health	constant	2.237	0.454		4.922	0.000
status	sick	0.811	0.141	0.432	5.761	0.000

The results showed that the factors affecting the physical quality of life of the elderly in Xiamen included whether they were sick or not; the factors influencing the quality of life in the psychological field include whether they are sick or not, and occupation; factors influencing the quality of life in the surrounding environment include education background, whether they are sick, and illness (number of species); the factors affecting the overall quality of life include whether they are sick or not, and occupation; factors affecting the overall health status include whether they are currently ill. See "Table IV" for details.

#### IV. DISCUSSION

### A. The Present Situation of the Quality of Life of the Elderly in Xiamen

The average score of the self-assessment of QOL of the elderly in Xiamen is 81.6, and the total score and the score of the 4 fields, which in the moderate and above, are above

88%, indicating that most of the elderly feel good about the quality of life and have a high quality of life. This may be because: In terms of disease status, 69.5% of the elderly were not in the state of being sick when receiving the survey, and 58.9% of the elderly were 0 in the number of diseases, and the life quality evaluation of the elderly without diseases or with fewer diseases was higher.

## B. Factors Influencing the Quality of Life of the Elderly in Xiamen

1) Whether be sick or not: According to the analysis of this study, whether the elderly are getting sick or not is the most important factor affecting the quality of life in Xiamen, which affects the overall score of quality of life and scores in physical, psychological and environment fields. It can be seen that family care, adjuvant treatment, chronic disease remission and self-emotional adjustment, especially in the case of chronic diseases, will be the direction to improve the



quality of life of the elderly. The research team's next practice of designing on smart clothes for the elderly will be carried out in this direction.

2) Occupation: The investigation and analysis show that occupation has a great influence on the quality of life, mainly affecting the psychological field and the overall quality of life score. Different occupations have different cognitive abilities, lifestyles and social functions. Among the investigation objects, farmers accounted for 36.5%, workers 27.9%, service industry accounted for 13.2%, most of them are relatively hard labor, economic ability to pay is low, the quality of life is not high also, and administrative workers, intellectuals, who have better economic conditions and relatively superior living conditions, their living environment is relatively convenient, so their quality of life was significantly higher than that of farmers, workers and service industries.

*3) Illness:* The number of illness affected scores for quality of life in surrounding environment. The number of diseases is large, resulting in the decline of the elderly action, activity, and the surrounding environment requirements are higher.

#### V. CONCLUSION

In view of the many factors affecting the quality of life of the elderly in Xiamen, it is necessary to take comprehensive measures to improve their quality of life. For example, improve the social security and medical insurance systems; government, society, institutions for the aged and families are involved; accelerate the research and development of intelligent products for the elderly aimed at improving their life quality, etc., so as to truly realize the "healthy aging" in all dimensions and fields.

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