

Analysis of the Status Quo of the Elder care Industry in Qingdao City and Its Influencing Factors

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Abstract

The gradually accelerated aging process in China has become a large obstacle for the sustainability of socioeconomic development. Thus it is urgent to develop elder care industry to meet the increasing needs of caring for the aged. This research is to analyse the current situation of the elder care industry in Qingdao city, Shandong Province, and to identify the corresponding influencing factors to provide a reference for developing governmental elder care policies to improve industrial development of elder care. Method: 1,008 research subjects aged 60 and over, from two randomly selected administrative regions of Qingdao City, were surveyed by a stratified random sampling in June and July of 2019. A questionnaire investigation was conducted to determine the respondents' preferences for the kinds of care services and to analyze the corresponding influencing factors. There were 1,002 completed questionnaires, of which 559 (55.8%) people selected home-based care, 98 (21.1%) selected community-based care, and 443 (44.2%) chose institution-based care. The multi-factor analysis showed that the risk factors affecting options of elder care were: living alone, low income, low pension, and poor mental health ($OR > 1$ and $P < 0.05$). By contrast, living alone was a protective factor for the elderly to choose institutional nursing care ($OR < 1$ and $P < 0.05$). Currently, in Qingdao city, home-based care remains the primary option of the aged, but the proportion of both community and institution elderly service has increased. Diversified home-based care should be promoted to satisfy the requirement for elder care in the aging society.

Keywords: elder care industry; option of elderly care; home-based care; institution-based care; influencing factors

I. Introduction

With rapid socioeconomic changes, drastically reduced birth rate and significantly increased life expectancy, China has entered an aging society in the past 30 years. According to *the Predictive Study of the Trend of Population Aging Development* by the Population Office of the Aged, the aging population in China will reach 400 million by 2050, accounting for more than 30% of the total population [1, 2]. The official data of the Qingdao Municipal Bureau of Statistics reports that there were more than 2 million people over the age of 60 in Qingdao in 2018, accounting for 20% of the total population. Accompanied with the gradually accelerated aging process in China, the challenge in caring for the aged is becoming a severe issue for policymakers. Prompted by the increasingly aging population, the government in Qingdao has been realizing the urgent demand for implementing a new productive model of elder care service and improving the pension security system. In Qingdao city, the main option for elder care includes community-based care, institution-based care, home-based care and care by adult children [3-5]. The aged are considering different service options based on various factors including societal factors, the economic status of their adult children and the elderly themselves, all of which could lead to different results. The demand for elder care has become an important benchmark for the government to build an elder care system, as well as a scientific basis for the government to reform the pension policy. In this study, a questionnaire was used to investigate the option of elder care and its influence factors in Qingdao city. The resulting data will be helpful for the government to develop scientific policies to establish institutional social services and elder care facilities.

II. Research Objects and Methods

2.1 Respondents

From June to July in 2019, 1,008 elderly people over 60 years old in Qingdao city were surveyed by uniformly trained investigators with the following criteria: (1) The registered residence of the respondent is in Qingdao and they had lived in Qingdao for at least 5 years; (2) Respondent's age at the time of the survey was equal to or over 60 years old; (3) All respondents accepted the survey voluntarily; Excluding criteria: (1) not registered in the sample area; (2) who couldn't accurately express themselves or who had problems in communicating; (3) who rejected the survey.

2.2 Methods

2.2.1 Sampling method

To ensure the reliability of the questionnaire, the total sample Qty was 1,000 based on the suggestion from the local health administration department, and 1,008 questionnaires were distributed. Finally, 1,002 valid questionnaires were collected with an efficiency of 99.4%.

2.2.2 Research method

Literature review. Electronic literature databases including CNKI, CQVIP and PubMed were queried to get a comprehensive understanding of the selection of the aged care at home and abroad and the relative influencing factors.

Questionnaire survey. The questionnaire for preference service options of the elderly was designed through literature review, panel discussion and expert evaluation. The questionnaire was composed of general demographics (age, gender, school grade, occupation before retirement, marital status, children's status, BMI, economic status), holistic health status, medical endowment insurance and accessible medical care of respondents. The state of health mainly includes chronic diseases, activities for daily living, mental health, quality of life and social support. Before the formal survey, the questionnaire has been revised according to the results of a small sample of pre-survey. Activity of Daily Living Scale (ADL), Kessler Mental Health Scale, Five-dimensional European Quality of Health Scale (EQ-5D) and Social Function Scales were used for measurement.

Data analysis. The Statistical description was performed by using Spss17.0 (SPSS Inc, Chicago, IL) to reveal significant influencing factors for the aged to choose the type of elder care service. The data stated parameters are rate and composition ratio. The χ^2 test and non-parameter test were used in single-factor analysis, based on which multi-factor logistic regression analysis was given. Values at $P < 0.05$ probability level were considered statistically significant.

2.3 Quality control

2.3.1 Questionnaire design

To ensure the reliability and validity of the questionnaire, panel discussion and literature review was carried out before the questionnaire was designed. In addition, pre-investigation of a random sample of 186 senior citizen was conducted and the final questionnaire was generated after being modified according to the findings of the pre-investigation.

2.3.2 Data collection

Household investigations were carried out face to face by experienced investigators, and all questionnaires were fulfilled by investigators according to the replies from one-to-one live investigations. After collecting the questionnaires, on-site reviews were taken by a specially-assigned person who was responsible for removing invalid questionnaires to avoid any omissions or mistakes [6]. The data were numbered by the data entry personnel

who trained in a unified manner. The data entry was carried out one by one as strictly requested.

Table 1 Basic conditions of the respondents

Factors	Groups	Number of people	Percentage (%)
Gender	Male	408	40.7
	Female	594	59.3
Age	60-80	898	89.6
	>80	104	10.4
BMI	<18.5	37	3.7
	18.5-24	425	42.4
	>24	540	53.9
Marital status	Unmarried	17	1.7
	Married	795	79.3
	Widowed	184	18.4
	Divorced	6	0.6
Educational level	Untaught	256	25.5
	Primary school	503	50.2
	Junior high school	188	18.8
	Senior high school	40	4.0
	Specialized Secondary Schools	9	0.9
	Junior college	5	0.5
	Bachelor or above	1	0.1
Children's income	0-20,000 yuan	133	13.3
	20,000-40,000 yuan	366	36.5
	40,000-60,000 yuan	391	39.0
	Above 60,000 yuan	112	11.2
Medical insurance	Urban workers	173	17.3
	Urban and rural residents	707	70.6
	Commercial insurance	9	0.9
	Other insurance	3	0.3
Endowment insurance	No	110	11.0
	Urban and rural residents	230	23.0
	Urban workers	124	12.4
	Commercial insurance	4	0.4
	No	644	64.3
Pension	<1000	911	90.9
	1000-3000	74	7.4
	>3000	17	1.7
Living alone	Yes	207	20.7
	No	795	79.3
Mental health	Good	730	72.9
	General	122	12.2
	Poor	85	8.5
VAS score	Bad	65	6.5
	0-20	3	0.3
	21-40	9	0.9
	41-60	102	10.2
	61-80	566	56.5
Social function	81-100	322	32.1
	Good	713	71.2
	Medium	288	28.7
	Poor	1	0.1

III. Research Results

3.1 Description of the basic conditions of the respondents

The sociological characteristics of the elderly include gender, age, BMI (height and weight), marital status, education level, children's income, medical insurance, endowment insurance and pension. Among the respondents, the number of males and females were 408 and 594, accounting for 40.7% and 59.3% respectively; the elderly aged between 60 and 80 years old were 898, accounting for 89.6%; aged over 80 years old were 104, accounting for 10.4%; there were 425 people (42.4%) in a normal range of BMI, 795(79.3%) were in marriage and 503(50.2%) received the elementary education. There were 391(39%) children of the elderly who had an annual income of between 40,000 and 60,000 yuan. The number of senior citizens who live alone had a proportion of 20.7%. See Table 1 for details.

Table 2 Option of the elderly care

Factor	Groups	Number of people	Percentage (%)
Option of Elderly Care	Institution-based care	443	44.2
	Home-based care	559	55.8

3.2 The options of elderly service in Qingdao city

The survey showed that 443(44.2%) participants of the elderly in Qingdao city preferred institution-based care while 559(55.8%) participants chose home-based care. See Table 2 for details.

3.3 Analysis of the influencing factors for the option of elder care

3.3.1 Single-factor analysis

According to the test level of $\alpha=0.05$, single-factor analysis was carried out on the factors affecting the selection of aging care. The results showed that 7 factors including marital status, educational level, children's income, endowment insurance, pension, living alone and mental health status had a significant impact on the choice of elderly service options, the P values were all less than 0.05. See Table 3 for details.

Table 3 Results of single-factor analysis

Factors	Groups	Number of people selecting institution-based care	χ^2 value	P value
Gender	Male	173	0.914	0.365
	Female	270		
Age	60-80	391	1.576	0.209
	>80	52		
BMI	<18.5	19	3.358	0.187
	18.5-24	199		
	>24	225		
Marital status	Unmarried	7	91.246	0.000
	Married	295		
	Widowed	139		
	Divorced	2		
	Untaught	97		
Educational level	Primary school	219	14.108	0.017
	Junior high school	94		
	Senior high school	22		
	Specialized Secondary Schools	6		
	Junior college	4		
	Bachelor or above	1		

Children's income	0-20,000 yuan	8	93.921	0.000
	20,000-40,000 yuan	181		
	40,000-60,000 yuan	191		
	Above 60,000 yuan	63		
Medical insurance	Urban workers	88	8.079	0.088
	Urban and rural residents	302		
	Commercial insurance	1		
	Other insurance	1		
Endowment insurance	No	1	15.623	0.001
	Urban and rural residents	100		
	Urban workers	75		
	Commercial insurance	2		
Pension	No	266	33.055	0.000
	<1000	377		
	1000-3000	55		
	>3000	11		
Living alone	Yes	148	78.754	0.000
	No	295		
	Good	325		
	General	58		
Mental health	Poor	23	14.959	0.002
	Bad	37		
	0-20	2		
	21-40	6		
VAS score	41-60	53	5.449	0.244
	61-80	243		
	81-100	139		
	Good	301		
Social function	Medium	141	5.039	0.081
	Poor	1		

3.3.2 Multiple-factor analysis

To effectively control the influence of confounding factors, the multiple-factor analysis was applied and the types of elderly care (institutional-based care=1; home-based care=2) were taken as dependent variables, 7 factors proved statistically significant in the univariate analysis as independent variables, and the disordered multi-categorical variables as dummy variables. The forward stepwise regression method was used to screen the independent variables (admission standard $\alpha_{in}=0.05$, elimination standard, $\alpha_{out}=0.10$) for multivariate logistic regression analysis. The results of the analysis showed that the risk factors for the elderly to choose institutional-based care included living alone, children's low income, low pension, and poor mental health ($OR>1$ and $P<0.05$) whereas living alone is a protective factor for the elderly to choose institution-based care ($OR < 1$ and $P<0.05$). See Table 4 for details.

Table 4 Results of multiple-factor analysis

Factors	Variables	β	Standard Error	Wald χ^2 value	P -value	OR value	95% CI of OR value
Constant	—	-1.411	0.663	4.533	0.033	0.244	—
Living alone	Yes	-1.945	0.212	83.964	0.000	0.143	0.094-0.217
	No ^a						
Children's income	0-20,000 yuan	3.127	0.970	56.758	0.000	20.264	9.475-31.078
	20,000-40,000 yuan	2.986	0.440	46.112	0.000	19.799	8.364-46.871
	40,000-60,000 yuan	-0.034	0.240	0.021	0.886	0.966	0.604-1.547
	Over 60,000 yuan ^a						

	< 1000	1.266	0.610	4.041	0.044	3.407	1.031-11.255
Pension	1000-3000	-0.539	0.667	0.652	0.419	0.583	0.158-2.157
	> 3000 ^a						
	Poor	0.593	0.280	4.478	0.034	1.810	1.045-3.136
Mental health	General	0.714	0.338	4.456	0.035	2.042	1.052-3.961
	Good	1.572	0.385	15.761	0.000	4.604	2.166-9.780
	Better ^a						

Note: a indicates the reference group

IV. Discussions

Compared with other developed countries, China has a unique aging characteristic of getting old before getting rich. Furthermore, the one-child policy impacted the greatly increased proportion of elderly in China and produced many social and economic problems. Considering the large population of China and the insufficient endowment resources and facilities for aged services including medical health care, the demographic shifts and socioeconomic changes have put dramatic pressure on institutional care for elders. Elderly care concerns various demands such as psychological care, medical support, material supply and overall health and social-care services rather than only basic daily care, which has become a major social concern and proposed an urgent requirement for developing multi-integrated effective measures [7]. Therefore, the appropriate policy should be carried out to satisfy the needs of aging challenges and to improve the overall life quality of the aged. Because of the unbalanced and inadequate development of services for the aged, most cities in China including Qingdao are not ready for the upcoming peak of elder care. This study serves as a basis for the municipal government to determine better policies and construct a well-developed elderly care system.

Our study indicates that the majority of the elderly in Qingdao prefer home-based care due to living with families, children's low income, low pension and poor mental health. Our finding in Qingdao city is consistent with the previous report which indicated that the family care for the aged, usually the care was provided by family members living together, was the most popular elderly care arrangement in China [8]. Most of the home-based care is informal care by close relatives, neighbors and friends of the elderly. Although this option is consistent with the Chinese traditional culture of filial piety, the high cost of professional services is one of the main causes of choosing home-based care. Considering that most of the elderly like to live with their families as much as possible and lack of capacity in the formal care sector, the Qingdao government has enthusiastically facilitated home-based care as the principal support of elderly services [9].

Also, living alone is a protective factor for the elderly to choose institution-based care [3]. People over the age of 60 often have difficulty in daily activities and they often need assistance from others [10]. However, the traditional family elder care has been eroded by demographic shifts and socioeconomic changes. As the consequence of the "one-child family policy" in China, there are fewer middle-aged children who have enough time to take care of their parents, thus the elderly living alone who cannot take care of themselves will prefer institution-based care [11]. Meanwhile, more and more elderly people have realized the need for independent space and autonomy, so, for those who can afford it, care institutions become their best choice [12]. Institution-based care can provide the elderly with formal and professional help including tutelage and assistance for daily living activities, monitoring the state of health and providing medical care as well as group recreation and social entertainment activities. In addition, the emotional insecurity and loneliness of elderly people can be relieved by living in a clean and safe care institution [4]. Moreover, institutional elder care can save families money because that the cost of private service at home is much higher than that of living in the nursing home [5]. In brief, institution-based care is chosen for its professionalization as well as its humanization and these advantages are helpful to the physical and mental health of the aged [13]. Although social elder care institutions is expanding rapidly for the past few years, it is still

insufficient to meet the needs of society, and the policymakers in China have applied preferential policies to develop a viable community care system [14].

Another major factor affecting the elderly's choice of their care options is the financial situation for their family. The pension and their children's income have a direct influence on whether they can afford the cost of institution-based care [4]. Although there is a traditional concept of "bringing up children for one's old age" in China, many elderly people are now unwilling to impose the heavy burden on their children for aged care [13, 15]. Besides, educational level and mental health status are also critical influencing factors for the choice. Senior citizens with a high educational background in China always have a high pension, and they have more advanced views of elderly care and are more inclined to accept new lifestyles for aging. On the contrary, the elderly with low education levels and poor mental health status prefer to live with families and have a strong psychological dependence on their children [16, 17].

The study shows that in Qingdao city, although home-based care is the mainstream of elderly care, institution-based care has increasingly been accepted by the aged. Elder care has received unprecedented attention, however, deficiencies in China's elderly care security, such as the unsound aged service system cannot comply with the rapid increasement of the aged population. As a result, Qingdao government is now struggling to find strategies to ensure an effective elder care policy and to construct a comprehensive, convenient and low-cost elder care system through combined efforts from family, local community, and society as a whole [18]. Qingdao is a relatively advanced seaside city in eastern China which represents the regions with a comparatively prosperous economy in China. Hence, this research on elder care in Qingdao City can only give a evidence for parts of the economically developed regions in China. For those economically undeveloped districts, more investigation is still necessary. Each municipal government should implement the policy according to their unique cultural, economic and social conditions.

Acknowledgments

This research was funded by the Chinese National Scientific Foundation, Grant: Study on Vulnerability Analysis and Management Strategy of Chronic Disease Management System in Elderly Community from the Perspective of Holistic Health Management (No. 7177031977).

References

- [1]. Report of the Predictive Study of Population Aging Development Trend. Chinese Women's Movement, 2007(02): 15-18.
- [2] Custer, Charles. The Aging Population in China. Thought Co, Aug. 27, 2020, thoughtco.com/elderly-in-china-4077065.
- [3] Zhang N, Gui Y, Zhang Y, et al. Analysis of Influencing Factors of the quasi-elderly's willingness for institution-based care. China Market, 2020(17): 123-125.
- [4] Zhang X. Difficulties and Countermeasures of Rural Endowment Care from the Perspective of the Aging with Declining Birthrate. Rural Economy and Science Technology, 2020, 31(17): 252-255+262.
- [5] Tang Q, Cheng J, Li S, et al. Selection of Endowment Care for Senior Citizens in Tangshan and Its Influencing Factors. Chinese Journal of Gerontology, 2020, 40 (18): 3997-4000.
- [6] Wang J, Wang Y, Cai H, et al. Analysis of the status quo of the Elderly's demands of medical and elderly care combination in the underdeveloped regions of Western China and its influencing factors: a case study of Lanzhou. BMC Geriatrics, 2020(20): 338.
- [7] Integrated care for older people: guidelines on community-level interventions to manage declines in intrinsic capacity. Geneva: World Health Organization; 2017. Licence: CC BY-NC-SA 3.0 IGO.
- [8] Silverstein M, Cong Z, and Li S. Intergenerational transfers and living arrangements of older people in rural

China: consequences for psychological well-being. *J Gerontol B Psychol Sci Soc Sci*, 2006, 61(5), S256-66.

- [9] Chu LW, Chi I. Nursing homes in China. *J Am Med Dir Assoc*, 2008, 9(4): 237-243.
- [10] Zhang K. Beijing: China National Committee on Aging. Press release, The National Study of Disability and Functional Limitations of the Elderly. 2011 Mar 1.
- [11] Zhan H, Liu G, Guan X, et al. Recent developments in institutional elder care in China: changing concepts and attitudes. *J Aging Soc Policy*. 2006, 18(2):85-108.
- [12] Fan C, Shi Y, Liu F. Analysis on the willingness and influencing factors of elderly care options for second-generation residents in Shanghai suburbs. *Health Vocational Education*, 2020, 38(19):124-126.
- [13] Liang H. Changes in Willingness of the aged Endowment Choice in Big Cities (1998-2017): a case study of Guangzhou. *South China Population*, 2020, 35(05): 1-14.
- [14] Wu B, Mao Z, Xu Q. Institutional care for elders in rural China. *J Aging Soc Policy*, 2008, 20(2):218-39.
- [15] Zhang H. Who will care for our parents? Changing boundaries of family and public roles in providing care for the aged in urban China. *Care Manag J*, 2007, 8(1): 39-46.
- [16] Lu S, Du B. A Study on Preference and Influencing Factors of Elderly Care Options for Urban Senior Citizens in Liaoning Province Based on Revised Andersen Model. *Chinese Health Service Management*, 2020, 37(11): 853-858.
- [17] Wu K, Wang D, Wang X, et al. Analysis on the Selection of Options of Elderly Care for the Elderly in Haikou and Its Influencing Factors. *Jiangsu Health Care Management*, 2020, 31(12): 1664-1667.
- [18] Peng X, Wang X. Choice of Family Structure, Individual Endowment and Endowment Method: based on the Analysis from Queue Perspective. *Population Journal*, 2021, 43(01): 64-77.