

Analysis on Long-Term Care and Influencing Factors of Empty-Nest Differently Abled Elderly People in China

—Based on the Data from the Chinese Longitudinal Healthy Longevity Survey

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How to cite this paper: Qiu, Z.H., Liu, Y.L., Wang, Z.Z., Peng, S.S., Wan, D. and Jiang, Y. (2020) Analysis on Long-Term Care and Influencing Factors of Empty-Nest Differently Abled Elderly People in China. *Open Journal of Preventive Medicine*, **10**, 299-311. <https://doi.org/10.4236/ojpm.2020.1012022>

Received: December 3, 2020

Accepted: December 28, 2020

Published: December 31, 2020

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Abstract

Purpose: This study aimed to understand the actual needs of empty-nest differently abled elderly people and analyze their long-term care status including the factors affecting choice of care mode so adequate resources can be allocated to meet their healthcare needs. **Methods:** An empty-nest group was compared with a non-empty-nest group based on data from the 2014 Chinese Longitudinal Healthy Longevity Survey. Individual characteristics, family characteristics, and sociological factors were considered as independent variables, and long-term care model was the dependent variable in the three binary logistic regression method. **Results:** Age, gender, marriage, and disability were the most important factors influencing the choice of long-term care mode, including the willingness of the differently abled elderly. Family care can no longer meet the needs of the severely disabled elderly. Long-term care for such elderly people should be undertaken by professional and specialized social institutions. **Conclusion:** Multi-level services should be provided according to the elderly peoples' needs, and the skill and expertise of professional personnel of care institutions should be strengthened. The government should deploy fund-raising initiatives, actively use the power of non-governmental organizations, and strive to resolve the financial issues faced by the empty-nested elderly people with disability.

Keywords

Abled Elders, Empty-Nest Elders, Long-Term Care, Influencing Factors

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1. Introduction

Currently, we are witnessing unprecedented changes in global aging. This has led to a series of problems raising a worldwide concern related to the healthcare of the aging population. Since China entered an aging society at the end of the 20th century, the number and proportion of the elderly have grown rapidly; thus, old-age care problems have become the focus of society.

An empty-nest refers to families where grown-up children move out of their homes for study, work, marriage or other reasons, leaving the elderly by themselves. Urbanization in China has caused frequent mobility and migration of the young and middle-aged labor force. The concept of family has also changed; the nuclear family structure and the trend of one-child families have brought about a substantial increase in empty nests. According to data released by the State Council, the number of empty nesters was expected to increase to about 118 million by 2020 [1].

The aging of the population and the growing problems of empty nests might also lead to the expansion of long-term differently abled elderly groups, which comprises elderly who have lost the ability to take care of themselves. The results of the Fourth Sample Survey on the Living Conditions of the Elderly in Urban and Rural China published by the National Office for Ageing in 2016 showed there were about 4063 million people with disability and semi-disability in China, accounting for 18.3% of the population over 60 years old. A large number of differently abled elderly and their prolonged survival time after disability will increase the demand for long-term care (LTC) services [2].

This study used the 2014 Chinese Longitudinal Healthy Longevity Survey (CLHLS) data to analyze the basic situation and LTC demands of empty-nest differently abled elderly to analyze the status and factors influencing LTC in China. The research on LTC issues has important value in formulating scientific, reasonable and harmonious old-age security policies; integrating resources from families, communities, and institutions, and building an LTC service system for differently abled elderly in empty nests, so that China can constructively cope with its complex aging population.

2. Materials and Methods

2.1. Data Sources

This study used the CLHLS (2014) cross-sectional data jointly implemented and completed by the Peking University Center for Healthy Ageing and Development and the Chinese Center for Disease Control and Prevention, which covered 23 provinces and municipalities across the country. The probability proportional to size (PPS) sampling method was used to focus on the elderly aged 65 and above. The 2014 data included 7192 respondents over the age of 65; Katz scale and the “criteria for judging disabled elderly” from the China Aging Science Research Center was used to screen the differently abled. Six indicators of daily activity scale were classified as “bathing, dressing, toilet, indoor walking,

eating and defecation control,” and three grades were assigned for each activity: “no need for any help,” “partial need for help,” and “complete dependence on others.” If the answer for all the activities was “no need for any help,” they were considered completely able to take care of themselves. The elderly who could not take care of 1 - 2 items of activities of daily living (ADL) were graded as mildly disabled, those who could not take care of 3 - 4 items were graded as moderately disabled, and those unable to take care of 5 - 6 items were graded severely disabled [3].

2.2. Study Sample

According to the screening criteria, at least one of the ADL indicators was conducted for the elderly people with disability (PWD) who needed partial help or depended entirely on others; missing values were eliminated to obtain a total of 1702 samples. Among 1702 samples, we obtained a sample of 497 empty-nest elderly PWD, which included both couples and single persons, and 1205 elderly PWD in the non-empty-nest group. There were 259 males (52.1%) in the empty-nest group. Their ages ranged from 66 years to 116 years, with an average of 87.44 years.

2.3. Measures

In this study, personal characteristics, family characteristics, and sociological factors of elderly PWD were determined as independent variables combined with CLHLS data. Demographic characteristics included age, sex, marriage, disability, and self-rated health status. Family characteristics included the number of surviving children, self-assessment of economic status, and main sources of livelihood, among others. Sociological factors included current medical insurance and the willingness of the elderly to live. For categorized covariates, variable coding with a small assignment was used as the reference group.

The dependent variable was the LTC model. According to the responses of the CLHLS questionnaire to “who is the primary caregiver when you need help in six daily activities” and “who will take care of you when you are sick,” care modes were divided into three types: first, family pension provided by direct relatives such as spouses and children; second, home-based care provided by nannies and communities; third, care provided by old-age institutions. The latter two were paid services. Furthermore, according to Su Qun’s (2015) classification of the LTC model, the second and third types are collectively referred to as socialized care. Family care was assigned a value of 0 and social care was assigned a value of 1.

2.4. Data Analysis

SPSS 22.0 software was used to describe and analyze the basic situation and LTC status of empty-nest elderly PWD, and the influencing factors of LTC model were analyzed by the binary logistic regression method.

3. Results

3.1. Degree of Disability in the Elderly with Different Socioeconomic Characteristics

Table 1 shows the degree of disability in the elderly with different socio-economic characteristics. The proportion of male elderly PWD in the empty-nest group was significantly higher ($P < 0.001$) than that in the non-empty-nest group. In terms of marital status, the proportion of elderly PWD without spouses in the empty-nest group was significantly higher ($P < 0.001$) than the second. In the empty-nest group, the proportion with mild disability was 56.7%, followed by severe disability at 24.3%, and that of the elderly with moderate disability was 18.9%. The proportion of elderly PWD who received pension or government relief in the empty-nest group was higher than the other; in contrast, the proportion of family support in the empty-nest group was significantly lower ($P < 0.001$).

Table 1. Basic situation of disabled elderly [N(%)].

Features	Variable description	Total	Empty-nest group (n = 497)	Non-empty-nest group (n = 1205)	χ^2	P Value
sex	Male	623	259 (52.1)	364 (30.2)	72.759	0.001*
	Female	1079	238 (47.9)	841 (69.8)		
Marriage	Married	397	221 (44.5)	176 (14.6)	177.234	0.001*
	Unmarried, divorce and widowed	1305	276 (55.5)	1029 (85.4)		
Disability level	Mild disability	870	282 (56.7)	588 (48.8)	0.577	0.008
	Moderate disability	343	94 (18.9)	249 (20.7)		
	Severe disability	489	121 (24.3)	368 (30.5)		
Self-assessment of health status	Very good, good, moderate	981	303 (61.0)	678 (56.3)	3.389	0.184
	Bad, very bad, unanswerable	721	194 (39.0)	527 (43.7)		
Self-assessment of Economic Situation	Rich	277	71 (14.3)	206 (17.1)	3.383	0.186
	Moderate	1178	344 (69.3)	834 (69.2)		
	Poverty	247	82 (16.4)	165 (13.7)		
Social security and commercial insurance	Yes	1557	465 (93.6)	1092 (90.6)	3.900	0.048
	No	145	32 (6.4)	113 (9.4)		
Source of life	Pension	330	136 (27.4)	194 (16.1)	42.626	0.001*
	Family	1128	272 (54.8)	856 (71.0)		
	Government relief and others	244	89 (17.8)	155 (12.9)		
Living willingness	Live alone (or with spouse only)	458	295 (59.4)	163 (13.5)	456.556	0.001*
	Live with children	946	85 (17.1)	861 (71.5)		
	Nursing home	298	117 (23.5)	181 (15.0)		
Community support	Yes	1009	303 (61.0)	706 (58.6)	0.823	0.364
	No	693	194 (39.0)	499 (41.4)		

3.2. Distribution of Items Needing Help in Daily Activities of Disabled Elderly

Table 2 shows that among the six basic activities, the elderly PWD had the worst self-care ability in bathing; more than 90% of the elderly PWD needed help. The elderly in the empty-nest group also had the highest degree of disability in bathing and had the most urgent need for bathing care. The proportion of elderly PWD in empty-nest who needed help with dressing, toilet, indoor walking and eating was lower than that of the non-empty nest, and the difference was statistically significant ($P < 0.05$).

3.3. LTC Status of Empty-Nest Disabled Elderly

Upon comparing the disabled elderly's demand for LTC services between the two groups, it could be seen that the elderly PWD in the empty-nest group had a higher demand for various services than those in the non-empty-nest group, except for doctor visits and delivery of medicine. The demand for daily living care service was 1.90 times more among the elderly PWD in the empty-nest group than those in the other. In terms of spiritual consolation services, the elderly's need to engage in conversation and legal assistance services was significantly higher ($P < 0.05$) in the empty-nest group than in the non-empty-nest group (**Table 3**).

One-third of the long-term caregivers of the elderly PWD in the empty-nest group were spouses. Besides, social service volunteers/groups (6.1%) were also the main caregivers for the elderly PWD in this group. Incapacitated husbands were mainly cared for by their wives, while LTC for females was mainly obtained from children and social support. The difference between the two groups was statistically significant ($P < 0.001$). In comparison, the elderly PWD in the non-empty-nest group had lower demand for social services or nursing care, because their adult children were around and their caregivers were their sons, daughters-in-law, or daughters (**Table 4**).

Three quarters of the elderly in the empty-nest group chose the family care model with spouse as the main caregiver, but 30% chose the social care model with home-based nursing service or nursing home as the long-term caregiver. Only 1.6% of non-empty-nest families chose socialized care, and the rest constituted

Table 2. Distribution of items needing help in daily activities of disabled elderly [N(%)].

Projects	Total (n = 1702)	Empty-nest group (n = 497)	Non-empty-nest group (n = 1205)	χ^2	P Value
Bathing	1544 (90.8)	442 (88.9)	1102 (91.5)	2.937	0.087
Dressing	847 (49.7)	223 (44.8)	624 (51.8)	6.958	0.008*
Going to the toilet	856 (50.3)	219 (44.1)	631 (52.4)	10.180	0.001*
Indoor walking	770 (45.2)	201 (40.4)	569 (47.2)	6.665	0.010*
Eating	509 (29.9)	129 (26.0)	380 (31.5)	5.104	0.024
Controlling defecation	448 (26.3)	125 (25.2)	323 (26.8)	0.520	0.471

Table 3. Comparison of care demands of disabled elderly between two groups [N(%)].

Projects	Empty-nest group (n = 497)	Non-empty-nest group (n = 1205)	χ^2	P Value	OR
Daily life care	320 (64.4)	709 (58.8)	4.483	0.034*	1.268
Visiting doctors or delivering medicine	400 (80.5)	978 (81.2)	0.000	0.993	0.999
Spiritual consolation	341 (68.6)	766 (63.6)	5.168	0.023*	1.304
Daily shopping	291 (58.6)	639 (53.0)	5.059	0.025*	1.280
Recreational activities	317 (63.8)	695 (57.7)	6.175	0.013*	1.322
legal aid services	314 (63.2)	670 (55.6)	9.543	0.002*	1.414
Health education	365 (73.4)	871 (72.3)	0.615	0.433	1.103
Family dispute settlement	301 (60.6)	686 (56.9)	2.71	0.100	1.201
Others	128 (25.8)	312 (25.9)	0.014	0.907	1.015

Table 4. Comparison of caregivers of disabled elderly between two groups [N(%)].

Care providers	Empty-nest group (%)			Non-empty-nest group (%)		
	Total	Male	Female	Total	Male	Female
Spouse	182 (38.3)	132 (51.1)	50 (21.1)	96 (8.0)	61 (18.0)	25 (3.0)
Son	88 (17.9)	49 (19.1)	39 (16.5)	478 (39.7)	164 (45.1)	314 (37.3)
Daughter-in-law	38 (7.7)	11 (4.5)	28 (12.0)	271 (22.5)	41 (11.3)	230 (27.3)
Daughter	66 (13.2)	23 (9.0)	44 (18.8)	184 (15.3)	41 (11.3)	143 (17.0)
Son-in-law	0 (0.0)	0 (0.0)	0 (0.0)	7 (0.6)	4 (1.1)	3 (0.4)
Sons and daughters	35 (7.1)	8 (3.4)	28 (12.0)	78 (6.5)	27 (7.4)	51 (6.1)
Grandchildren	5 (1.0)	3 (1.1)	2 (0.8)	73 (6.1)	14 (3.9)	59 (7.0)
Other relatives	6 (1.3)	1 (0.6)	5 (2.3)	11 (0.9)	3 (0.7)	8 (0.9)
Friends neighborhood	2 (0.3)	2 (0.6)	0 (0.0)	13 (1.1)	5 (1.4)	8 (0.9)
Social services	30 (6.1)	13 (5.1)	17 (7.5)	0 (0.0)	0 (0.0)	0 (0.0)
Nanny	32 (6.4)	11 (4.5)	21 (9.0)	0 (0.0)	0 (0.0)	0 (0.0)
No help	3 (0.6)	3 (1.1)	0 (0.0)	2 (0.09)	0 (0.0)	2 (0.2)

[†]Note: Empty nest group $\chi^2 = 581.189$, $df = 12$, $P = 0.000$; Non-empty nest group $\chi^2 = 2015.429$, $df = 11$, $P = 0.000$.

the family model of spouse and children providing care $P < 0.05$). The probability of choosing social care in the empty-nest group was 14.77 times higher than that in the non-empty-nest group.

3.4. Influencing Factors of LTC Model Choice for Empty-Nest Disabled Elderly

This study used the binary logistic regression model to analyze the influencing factors of the LTC model for empty-nest elderly PWD. In the regression analysis, demographic characteristic variables, family characteristics, and sociological

factor variables were included in the stepwise screening method. From the regression results, model 1 could not effectively explain the changes of dependent variables, but model 2 was improved to some extent by adding family characteristics, and the fitting effect of the model improved (pseudo $R^2 = 0.195$). Model 3 was much improved after adding sociological factors (pseudo $R^2 = 0.316$). The explanatory power of the three models gradually increased (Table 5).

Table 5. Logistic regression results of influencing factors of long-term care model for empty-nest disabled elderly.

Model	Model 1		Model 2		Model 3		
	OR (S.E.)	R	OR (S.E.)	R	OR (S.E.)	R	
Demographic characteristics							
	Age	0.935 (0.012)	0.000***	0.938 (0.012)	0.000***	0.949 (0.013)	0.000***
Sex	Male = 0						
	Female	0.487 (0.224)	0.001***	0.704 (0.243)	0.149	0.755 (0.264)	0.287
Marriage	Married = 0						
	Unmarried, divorce and widowed	5.164 (0.329)	0.000***	5.647 (0.341)	0.000***	6.328 (0.363)	0.000***
Disability level	Mild disability = 0						
	Moderate disability	2.166 (0.273)	0.005**	2.330 (0.284)	0.003**	2.232 (0.306)	0.009**
	Severe disability	2.157 (0.268)	0.004**	2.150 (0.279)	0.006**	1.929 (0.304)	0.031*
Self-assessment of health status	Good = 0						
	Bad	0.561 (0.246)	0.019*	0.627 (0.255)	0.067	0.696 (0.435)	0.006**
Family characteristics							
Source of life	Pension = 0						
	Family			0.250 (0.264)	0.000***	0.198 (0.295)	0.000***
	Government relief and others			0.424 (0.359)	0.017*	0.28 (0.394)	0.001**
	Number of surviving children			0.798 (0.062)	0.000***	0.827 (0.064)	0.003**
Self-assessment of Economic Situation	Rich = 0						
	Moderate			0.869 (0.279)	0.614	0.812 (0.306)	0.496
	Poverty			0.516 (0.462)	0.152	0.521 (0.498)	0.190
Sociological factors							
Living willingness	Live alone (or with spouse only) = 0						
	Live with children					0.218 (0.327)	0.000***
	Nursing home					2.637 (0.312)	0.002**
Social security and commercial insurance	No = 0						
	Yes					0.630 (0.425)	0.277
Community support	No = 0						
	Yes					1.550 (0.257)	0.088
	Nagelkerke R^2	0.114		0.195		0.316	

†Note: $P < 0.05^*$, $P < 0.01^{**}$, $P < 0.001^{***}$.

- In model 1, only individual characteristics were included in the independent variables. The results showed that age, gender, marital status, disability level, and self-rated health status all affected the choice of the LTC model. The probability of women choosing socialized care was lower than that of men, and the occurrence ratio was 0.487. Unmarried, divorced, or widowed elderly PWD were 5.16 times more likely to choose social care than married elderly people, and the elderly with a spouse was more likely to choose family care. The probability of the elderly with moderate/severe disability choosing social care was significantly higher than that of those with mild disability, and the incidence ratio was 2.16 times higher than that of the elderly with mild disability. Moreover, the empty-nest elderly PWD who thought they were in poor health were more willing to choose family care.
- In model 2, based on personal characteristics, the family factors were included in the model analysis. The results showed that gender and self-assessed health status variables were significantly different. After adding the second model, a great influence on the care model of the elderly was noticed. It could be found from model 2 that the source of income of elderly PWD had a significant impact on the choice of LTC model. The main income sources were family members and government relief or other sources like business are more inclined to choose family care. The number of surviving children had a significant impact on the choice of LTC pattern of the empty-nest elderly PWD: if they had more children around, they were less likely to choose social care.
- In model 3, several indexes of sociological factors were introduced based on individual characteristics and family characteristics, and these had a significant influence on the choice care model. On one hand, the willingness to live had a significant impact. The elderly who wished to live with their children had a lower probability of choosing social care than those who wished to live alone or in nursing homes. However, the incidence of the elderly who wished to live in nursing homes was 2.64 times that of the elderly who wished to live alone. On the other hand, the influence of medical insurance and social support on the reference model was not significant.

The choice of the LTC model for empty-nest elderly PWD was affected by many factors, especially health status, disability degree, and economic condition. Therefore, these factors should be fully and reasonably considered when providing care services for them.

4. Discussion

Family conditions are the main factors affecting the choice of LTC model for empty-nest elderly PWD. The elderly with a spouse, less disability, and more children tended to choose family caregivers, while the elderly with fewer children tended to choose social caregivers. Due to changes in the family planning policy in China, the number of only-child families has increased, and empty-nest

elderly have become more common in society. Moreover, previous data show that the informal care provided by family caregivers to elderly PWD is limited to basic care and cannot accommodate services for higher needs such as rehabilitation and door-to-door medical treatment. Therefore, to alleviate the LTC burden on the only child and meet the care needs based on different degrees of disability, appropriate care services need to be designed according to the specific requirements of the elderly PWD.

The degree of inability to take care of oneself had a significant impact on the type of care chosen by the elderly; the higher the degree of inability, the higher the inclination toward socialized care. Though there was a substantial proportion (75.9%) of empty-nest elderly PWD who chose the family care model with spouse as the main caregiver, there were also elderly with LTC needs in old-age institutions that could take care of themselves. This shows the possibility of providing institutional care as supplementary LTC.

Economic conditions also affected the choice of LTC models. The empty-nested elderly PWD who had independent sources of income were more inclined toward socialized care, and the ones with financial difficulties were more likely to choose family care. This also reflected the current contradictions in the process of providing for the aged in China. Because most disabled elderly people with lower economic levels could not afford higher-cost social care, they chose family care [4]. An important reason for this phenomenon is that the pension of the elderly in China is generally low. In 2015, the average pension for retirees of enterprises in China was only 2200 yuan. In Shanghai and Tianjin, it was found that most care institutions charged more than this pension. It can be seen that it is difficult for most low-income elderly PWD to bear the expenses of elderly care institutions and have long-term access to formal care resources, hence, their needs for higher care services are currently not being effectively met [5] [6].

5. Recommendations

5.1. Strengths and Limitations

The data in this study uses the CLHLS cross-sectional data (2014), which was jointly implemented and completed by the Peking University Center for Healthy Ageing and Development and the Chinese Center for Disease Control and Prevention. The survey covers 23 provinces and municipalities across the country and is conducted every three or four years. The CLHLS data (1998-2018) set was released in 2020, so it was not yet available at the beginning of this research. Therefore, this study selects CLHLS data (2014) set as the analysis object. Since the survey results are a long time ago, the credibility and reference value of this study, and whether there are significant differences with the latest survey results should be considered.

This study analyzes the quality of health care and health outcomes for empty nest differently abled elderly people in China to understand their long-term care status, and the factors affecting the choice of care mode so that adequate re-

sources can be allocated to ensure their health care needs are taken care of. This study makes a new perspective for models of geriatric nurse, quality improvement, for improving the life conditions of the lesser-privileged section of the society, through sustainable solutions including evaluation of the situation, upskilling the institution care personnel, and robust government initiatives.

5.2. Interpretation within the Context of the Wider Literature

Family care provided by spouse and children cannot meet the needs of the elderly with severe disability. LTC for such elderly needs to be more targeted and professional. The empty-nest elderly PWD should be assessed, and multi-level services should be provided according to their needs. The LTC service model and content of elderly PWD in developed countries are formulated according to the actual needs of disabled elderly people and supervised and implemented by the national or local government. Therefore, the diversity of service items and contents play an important role in improving the life condition of elderly PWD. In Japan, LTC assessment was carried out for the elderly and infirm over 65 years old using a care identification questionnaire. The questionnaire used as the national unified standard is objective, rational, and scientific in nature. When evaluating the elderly's abilities, it can be used not only for assessing daily activities and cognitive abilities, but also for medical evaluation. This can be helpful in providing daily life care and medical care at the same time [7].

Research shows that case-based management and care service greatly improves the life condition of the elderly and reduces the number of the elderly living in nursing homes [8]. In China the need for socialized care has increased with the growing prevalence of disability in the elderly. Because the daily activities of the severely disabled elderly basically depend on the care of others, and the task of care is heavy, simple basic living care services are inadequate. According to CLHLS data, about 29% of the elderly PWD are empty nesters, which is estimated to be around 12 million in China. Therefore, with limited government financial expenditure on old-age security, professional evaluators should give priority to comprehensive health assessment of empty-nest elderly PWD, assess their degree of disability, and then determine the content of hierarchical care services most suitable. Through the model of hierarchical care of family, community, and institution, the rational allocation of endowment and medical resources can be realized to meet the multi-level care demands of elderly PWD [9].

5.3. Implications for Policy, Practice and Research

Excellent care institutions and high-quality nursing staff can provide high-quality care services for the empty-nest elderly PWD. To ensure that the elderly can access a higher quality of service, developed countries have formed a relatively mature mechanism in the training and assessment of service personnel. For example, German and Japanese caregivers have to pass the professional skills ex-

amination organized by the state to qualify for employment in care institutions. Other countries also have strict control measures on the quality of reference services. After taking up their posts, employees need to receive regular training and assessment. Only after passing the assessment can they continue to work in their posts. However, China currently has very few qualified LTC institutions and there is a shortage of skilled caregivers to meet the needs of a large number of severely disabled empty nesters [10]. By providing professional nursing personnel training, LTC institutions can encourage existing staff to participate in the relevant professional training courses and improve the skill level and work ability of existing staff. Additionally, they can conduct skill assessments and regular inspections. When recruiting service personnel, recruitment standards can be set to actively introduce professional talents in geriatrics, rehabilitation, nursing, psychology, and social work, giving priority to those who have obtained professional qualifications as nursing care workers. Further, cooperative relations with universities offering professional courses can be established to form a complete system of personnel training and appointment. As far as LTC is concerned, care institutions should not be limited to the most basic living and care for the elderly. Qualified institutions can expand their care scope and combine medical care with old-age care so that the empty-nest elderly PWD can get better medical and old-age care services [11].

This study has shown that economic capacity largely limits the need for professional LTC for empty-nest elderly. Besides, fund guarantee is also the key to effectively implementing various systems [12]. The Organization for Economic Co-operation and Development (OECD) estimates that spending on LTC for the elderly will increase rapidly, from 1.2% of GDP in 2005 to 2.3% by 2050. The out-of-pocket cost of LTC for elderly PWD in the US comes from medical insurance, medical assistance, and pricing per person. LTC financing in the UK consists of national and/or local taxes and user self-payment. China's support for LTC is mainly realized indirectly through pension, old-age insurance, or low insurance expenditure, but most of the cost of care is borne by the state, which results in heavy financial burden [13]. Therefore, the government should learn from international experience, broaden the channels of raising funds for LTC services, and allow full play to the advantages of non-governmental organizations [14].

- The government should establish a sustained and stable financial input mechanism to incorporate the LTC service fund projects into the government public budget and ensure that the financial input and expenditure on LTC services form a fixed proportion [15]. Under the guarantee of sufficient funds, the existing basic service facilities will be further improved to ensure the sustainability of the LTC service and welfare institutions.
- It is necessary to build a policy-oriented LTC insurance system and incorporate it into the social insurance system, to establish a system paid jointly by the elderly individual, the unit where they belong, the family, and the gov-

ernment. This will help in forming a subsidy system for LTC services, in addition to the government finances, ensuring that the elderly PWD and families with financial difficulties obtain prompt LTC services and benefit from the welfare scheme [16].

- The government can enrich the service content of LTC for empty-nest elderly PWD by purchasing services, helped by a variety of social service sectors, mapped to the needs of the empty-nest elderly PWD, thus providing diverse and specialized services. Finally, by implementing preferential policies such as tax relief and low-interest loans, the government can relax the market access mechanism, encourage social organizations to invest in LTC services for the disabled elderly, and continuously expand the field of services for the elderly. Industrialization, standardization, and institutionalization of the empty-nest elderly PWD LTC services can prove to be beneficial. Further, active trials of LTC insurance and establishment of a nationwide LTC insurance system can be carried out as soon as possible to reduce the financial burden on the elderly PWD.

Acknowledgements

We would like to thank each and every participant who contributed to this study. At the same time, we are grateful for the Center for Healthy Aging and Development of Peking University for its data support. We would like to thank Editage (www.editage.cn/) for English language editing.

Funding

This work was supported by the China Chongqing Yuzhong district's Science and Technology Committee Decision Consultation and Management Innovation Project [grant number 20170420].

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- [1] Xie, X.P., Chen, L.M., Peng, Y.S., Zhao, S.F. and Fan, S.Y. (2015) Desires for Old-Age Support of the Empty-Nest Elderly in Chengdu and its Influencing Factors. *Modern Preventive Medicine*, **42**, 1660-1663. <https://kns.cnki.net/kcms/detail/detail.aspx?FileName=XDYF201509040&DbName=CJFQ2015>
- [2] World Health Organization (2016) National Assessment Report on Ageing and Health in China. <http://www.who.int/zh/>
- [3] The Research Group of China Research Center on Aging (2011) Research on Situation of Urban and Rural Disabled Elderly. *Disability Research*, **2**, 11-16. (In Chinese)
- [4] Su, Q., Peng, B.X. and Chen, J. (2015) An Analysis on Long-term Care and Influ-

- cing Factors of the Disabled Elders: Based on Rural-Urban Difference. *Population & Economics*, **36**, 69-76.
- [5] Zhu, H.Y. (2015) Unmet Needs in Long-Term Care and Their Associated Factors among the Oldest Old in China. *BMC Geriatrics*, **15**, Article No. 46.
<https://doi.org/10.1186/s12877-015-0045-9>
<https://bmcgeriatr.biomedcentral.com/articles/10.1186/s12877-015-0045-9>
- [6] Allen, S.M., Piette, E.R. and Mor V. (2014) The Adverse Consequences of Unmet Need among Older Persons Living in the Community: Dual-Eligible versus Medicare-Only Beneficiaries. *Journals of Gerontology, Series B*, **69**, S51-S58.
<https://doi.org/10.1093/geronb/gbu124>
- [7] Feng, H. (2016) Evaluation Criteria and Application Practice of Foreign Elderly Service Demand. *China Society Periodical*, No. 14, 44-45.
- [8] Chen, Y.L. (2011) Exploration and Consideration of Community Home-Based Old-Age Care Model: A Case Study of Guangzhou City. *Social Sciences Review*, **6**, 51-54.
- [9] Cheng, Q. (2014) Empty-Nest Disabled Elderly Long-Term Care Service Issues Research. Hunan Normal University, Changsha.
- [10] Jiang, X.Q. and Liu, N.N. (2014) Study on the Influencing Factors of the Choice of Long-Term Care Model for the Elderly. *Population Journal*, **36**, 16-23.
<https://kns.cnki.net/kcms/detail/detail.aspx?FileName=RKXK201401002&DbName=CJFQ2014>
- [11] Qin, CR. (2018) Discussion on Care Path for Disabled Elderly from the Perspective of Medical and Nursing Combination. *China Population Daily*, 2018-2-26 (No. 003).
- [12] Yin, S.J. (2011) Comparison of Long-Term Care Service Systems in Developed Countries. *China Medical Herald*, **29**, 156-157.
- [13] Tang, Y. (2012) Elderly People with Disabilities Should Take Care of Their Mental Health and Long-Term Health Care System. *Academic Forum*, **9**, 168-173.
- [14] Lu, P.P. (2015) Study on the Differences of the Caring Demands and Abilities of the Elderly in Different Caring Modes. *Chinese General Practice*, **18**, 1780-1785.
- [15] Hao, X., Ning, B.T., Liu, J.C., Cui, N., Bu, L.H., Zhang, Z.Z., et al. (2015) Research on Factors Affecting the Current Status of Care and Demand of Disabled Elderly in Beijing. *Chinese Health Economics*, **34**, 59-62.
<https://kns.cnki.net/kcms/detail/detail.aspx?FileName=WEIJ201508022&DbName=CJFQ2015>
- [16] Wen, F.H. and Bi, H.X. (2016) Empirical Study on the Choice of Old-Age Care Mode for the Rural Empty-Nest Elderly: A Case Study of Shandong Province. *The World of Survey and Research*, No. 8, 26-33.
<https://kns.cnki.net/kcms/detail/detail.aspx?FileName=DYSJ201608005&DbName=CJFQ2016>