Original Article

Current status on the ability of the elderly in rural China: implications for future nursing and policy

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Background: Aging is a global problem, and the ability assessment of the elderly plays an important role in the formulation of pension policies. It's necessary to evaluate the ability of the elderly in rural China to provide insights into future nursing care and policy making.

Methods: The elderly in 20 rural villages were selected by convenience sampling. We used "Elderly Ability Evaluation Form" issued by the Ministry of Civil Affairs of China as survey tool. The characteristics and score differences of the elderly of different ability level were compared and analyzed. And logistic regression analyses were conducted to identify the potential risk factors for disability in the elderly.

Results: A total of 2,878 elders were included, of which there were 1,916 elders with intact ability, 866 elders with mild disability, 42 elders with moderate disability, 54 elders with severe disability. The incidence of disability among respondents was 33.43%. There were significantly statistical differences in the dimensions of activities of daily living, mental state, perception and communication, and social participation among elders with intact ability, mild, moderate and severe disability (all $P<0.05$). The age, education level, marital status and living situations were all corrected to the scores on the activities of daily living, mental state, perception and communication, and social participation among elders (all $P<0.05$), and the elderly with age ≥75 years, illiteracy, unmarried and live alone had higher risk for disability (all $P<0.05$).

Conclusions: The current situation of the ability level of the elderly in rural China seems to be worrying, and it's necessary to establish a long-term nursing care system and aging policy to meet the needs of the elderly with regards to those potential influencing factors.

Keywords: Elderly; rural; aging; nursing; care; China

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Introduction

It's been reported that the number of the elderly aged ≥60 years in China has reached 212 million, accounting for 15.5% of the total population (1). It's been well-acknowledged that with the increase of age, the elderly has more chances of suffering from various chronic diseases (2). Based on previous report, the prevalence of chronic diseases among the elderly aged over 60 in China is as high as 75% (3). Chronic diseases have the characteristics of long course, slow recovery, and many related complications, which can lead to physical dysfunction (4). In the end of 2019, the number of elderly people with disabilities in China has exceeded 46 million, and it is growing at a rate

of 3% per year (5). Therefore, understanding the current physical and mental status of the elderly in China is essential to the policy making and nursing care for this population.

Disability refers to the impaired physical and mental function or limited cognitive ability to engage in daily activities and requires the assistance of others. A large group of disabled elderly people needs huge long-term care services (6). With the intensification of the aging population and the continuous improvement of the socio-economic level, the long-term care needs of disabled elders around the world are increasing and showing diverse characteristics (7). At the same time, the government in China has begun to pay attention to the long-term care of disabled elders. The Chinese government clearly proposes to build an old-age service system based on home, community-support, and a combination of medical care and elderly care service system to better meet the needs of the elderly (8).

At present, there are many studies on the care of the elderly with disability in China, but most of them focus on the research on the models of care for the elderly. However, there are very few researches on the evaluation of current status and related factors of the elderly in China. Previous scholar (9) has pointed out that the evaluation of body function and disability in the care of the elderly is a very critical. To elucidate the care needs of the elderly, we must first understand how to assess the functional status of the elderly and how to define and measure disability. And as the American Academy of Medicine (10) pointed out, the goal of health care is to improve human health and body function and the purpose of geriatrics is to pay attention to the maintenance and recovery of elderly functions. Furthermore, most study subjects in previous studies (11,12) have been focused on the urban residents but not rural residents, the current status of the elderly in rural China remains unclear. Therefore, accurate assessment of physical and mental function and disability is not only critical for achieving health care for the elderly, but also important in evaluating the effects of interventions that may delay and prevent the progression of disability in the elder population (13). In this present study, we aimed to conduct a large-scale survey to evaluate the current status on the ability of the population of elderly in the rural of China, to provide insights into future nursing care for the elderly. In this present study, the study PICO design was as following. Participants: the elderly in 20 rural villages; Intervention: questionnaire surveys; Comparison: not applicable; Outcomes: the ability scores of the elderly. We present the following article in accordance with the SURGE-reporting checklist (available at http://dx.doi.org/10.21037/cdt-20-555).

Methods

Ethical considerations

The study was conducted in accordance with the Declaration of Helsinki (as revised in 2013). This present survey had been certified and approved by the ethical committee of Jinggangshan University (No. 2020032), and written informed consents had been obtained from all the included participants.

Participants

Convenience sampling method was used to identify the potential participants. The elderly in 20 rural villages of Ji'an City, Jiangxi Province were selected as the survey subjects. The inclusion criteria were as following: (I) age ≥60 years old; (II) well informed and voluntary to participate in this survey; (III) were literate self with good listening and speaking skills, or had family members or community staff who were familiar with the current situation of the elderly, and could provide relevant information. The exclusion criteria were: (I) those with illiteracy or who could not cooperate with accomplishment of survey; (II) unwilling to participant in this survey.

Ability assessment

This study used the "Elderly Ability Evaluation Form" issued by the Ministry of Civil Affairs of the People's Republic of China as the survey tool (14,15). The tool includes two parts: the basic information for the elderly and the elderly ability evaluation. The assessment of the ability of the elderly included following four parts: activities of daily living, mental state, perception and communication, and social participation. The scores varied 0 to 100 points, 0 to 6 points, 0 to 14 points, and 0 to 20 points for each part. Each dimension is divided into intact ability, mild disability, moderate disability and severe disability accordingly.

Survey process

A total of 10 teachers, students and nurses from our school

formed a research team. After standardized training, they entered various villages in June 2019 to conduct relevant research. During the survey, every two researchers formed a group to complement and check each other. Each item of the questionnaire in the survey is queried and filled out by the respondents. It took 15 to 20 min to fill out each questionnaire.

Data analysis

After two authors double checked the collected data, all the data were input into SPSS 23.0 statistical software for data analysis. We preformed descriptive analyses on the characteristics and scores of respondents. Analysis of variance and t test were used to analyze the characteristics and score differences of the elderly, Spearman rank correlation and Pearson correlation analysis were performed to evaluate the characteristics of elders and related scores. Logistic regression analyses were conducted to identify the potential risk factors for disability in the elderly (16). P<0.05 was considered statistically significant in this study, all of the tests were two-sided.

Results

The characteristics of respondents

We initially identified 3,000 potential elders for this survey and received 2,878 qualified answers, with an overall response rate of 95.93%. As *Table 1* presented, among the included 2,878 elders, there were 1,916 elders with intact ability, 866 elders with mild disability, 42 elders with moderate disability, 54 elders with severe disability. The incidence of disability among the respondents was 33.43%. There were significantly statistical differences on the age, education level, marital status and living situations among respondents (all P<0.05). And no significantly statistical differences were found on the gender, populations, occupation and economics sources (all P>0.05).

The score distribution

As *Table 2* presented, there were significantly statistical differences on the dimensions of activities of daily living, mental state, perception and communication, and social participation among elders with intact ability, mild, moderate and severe disability (all P<0.05).

Correlation analysis on the characteristics of elders and scores

As *Table 3* showed, the age, education level, marital status and living situations were all corrected with the scores on the activities of daily living, mental state, perception and communication, and social participation among elders (all P<0.05). And the gender, populations, occupation and economics sources were not correlated with the scores on the activities of daily living, mental state, perception and communication, and social participation among elders (all P>0.05).

The risk factors for disability in the elderly

We use the disability level of the elderly as the dependent variable, and the potential influencing factors as the independent variable to conduct the logistic regression analysis. The variable assignments of multivariate logistic regression were indicated in *Table 4*. As *Table 5* presented, the age, education level, marital status and living situations were the independent influencing factors for the disability in the elderly (all P<0.05), indicating that the elderly with age ≥75 years, illiteracy, unmarried and live alone had higher risk for disability.

Discussion

At present, the aging of the population has become an obstacle to the development of countries around the world and it has attracted worldwide attentions. Compared with developed countries, China's aging problem is even more prominent. Compared with the aging process of the international community for tens or even hundreds of years, China has entered the era of aging in less than 30 years (17). Moreover, China's aging population is also characterized by aging, empty nesting, high disability rate, and high incidence of chronic diseases, which makes the challenge of aging in China more severe (18). In the next 20 years, China will enter a period of rapid growth of the elderly population, and the size and number of disabled elders will inevitably continue to increase accordingly, and the problems related to the elderly will also surge (19). However, a fact that cannot be ignored is that, on the one hand, the total amount of demand for health care by the disabled elderly is increasing (20). On the other hand, the traditional care function undertaken by the family for elders is decreasing

Table 1 The characteristics of respondents

Variables	Overall sample (N=2,878)	Intact ability (N=1,916)	Mild disability (N=866)	Moderate disability (N=42)	Severe disability (N=54)	χ^2/F	P
Age, years	72.9±4.29	71.2±3.24	76.1±3.65	78.0±3.38	79.0±4.81	10.663	0.008
Gender, n (%)						1.879	0.103
Male	1,385 (48.12)	967 (50.47)	364 (42.03)	24 (57.14)	26 (48.15)		
Female	1,493 (51.88)	949 (49.53)	502 (57.97)	18 (42.86)	28 (51.85)		
Populations, n (%)						3.044	0.286
The Han nationality	2,830 (98.33)	1,884 (98.33)	853 (98.50)	40 (95.24)	52 (96.30)		
The minorities nationality	48 (1.67)	32 (1.67)	13 (1.50)	2 (4.76)	2 (3.70)		
Education level, n (%)						2.216	0.014
Illiteracy	1,053 (36.69)	607 (31.68)	400 (46.19)	20 (47.63)	28 (51.85)		
Primary school	1,318 (45.80)	918 (47.91)	362 (41.80)	14 (33.33)	24 (44.44)		
Junior school	305 (10.60)	241 (12.58)	57 (6.58)	4 (9.52)	2 (3.71)		
Senior school	164 (5.71)	128 (6.68)	34 (3.93)	2 (4.76)	0 (0)		
College	38 (1.32)	22 (1.15)	13 (1.50)	2 (4.76)	0 (0)		
Occupation, n (%)						1.205	0.177
Business and services	49 (1.71)	48 (2.51)	12 (1.38)	2 (4.76)	2 (3.71)		
Farming	1,900 (66.01)	1,242 (64.82)	586 (67.67)	20 (47.6)	36 (66.67)		
Others	929 (32.28)	626 (32.67)	268 (30.95)	20 (47.6)	16 (29.62)		
Marital status, n (%)						2.109	0.008
Unmarried	49 (1.70)	17 (0.89)	30 (3.46)	2 (4.76)	0 (0)		
Married	1,903 (66.12)	1,393 (72.70)	462 (53.35)	24 (57.14)	24 (44.44)		
Widowed	901 (31.31)	487 (25.42)	372 (42.96)	16 (38.10)	28 (51.85)		
Divorced	25 (0.87)	19 (0.99)	2 (0.23)	0 (0)	2 (3.71)		
Living situation, n (%)						1.860	0.013
Alone	431 (14.98)	245 (12.79)	176 (20.32)	4 (9.52)	6 (11.11)		
Living with spouse/ partner	1,609 (55.91)	1,178 (61.48)	398 (45.96)	14 (33.33)	18 (33.33)		
Living with children	584 (20.29)	397 (20.72)	162 (18.71)	14 (33.33)	12 (22.22)		
Pension agency	242 (8.41)	88 (4.59)	126 (14.55)	9 (21.43)	17 (31.49)		
Other	12 (0.41)	8 (0.42)	4 (0.46)	1 (2.39)	1 (1.85)		
Economic sources, n (%)						1.596	0.079
Pension	311 (10.81)	218 (11.38)	86 (9.93)	8 (19.05)	0 (0)		
Child support	1,471 (51.11)	987 (51.51)	432 (49.88)	16 (38.10)	36 (66.67)		
Support from relatives and friends	6 (0.21)	4 (0.21)	2 (0.23)	0 (0)	0 (0)		
Other subsidies	1,090 (37.87)	707 (36.90)	346 (39.95)	18 (42.86)	18 (33.33)		

Table 2 The scores distribution of elderly ability assessment

Items	Intact ability (N=1,916)	Mild disability (N=866)	Moderate disability (N=42)	Severe disability (N=54)	χ^2/F	P
Activities of daily living	100.0±0.00	78.2±9.84	54.6±7.55	24.7±6.30	15.180	0.042
Mental state	0.0±0.00	1.1±0.24	2.1±0.28	4.2±0.55	2.205	0.018
Perception and communication	0.9±0.41	3.7±1.19	6.4±1.47	8.1±1.95	3.371	0.011
Social participation	1.4±0.38	5.7±1.18	10.6±2.11	16.3±4.28	5.098	0.003

Table 3 Correlation analysis on the characteristics and scores

Variables	Activities of daily living		Mental state		Perception and communication		Social participation	
	r	P	r	P	r	P	r	P
Age	0.615	0.008	0.554	0.012	0.648	0.003	0.508	0.031
Gender	0.129	0.183	0.150	0.118	0.264	0.079	0.120	0.105
Populations	0.310	0.092	0.223	0.075	0.227	0.134	0.188	0.079
Education level	0.485	0.040	0.506	0.014	0.447	0.019	0.492	0.012
Occupation	0.169	0.099	0.241	0.064	0.091	0.128	0.194	0.077
Marital status	0.598	0.044	0.572	0.009	0.615	0.010	0.589	0.013
Living situation	0.648	0.036	0.454	0.008	0.633	0.018	0.507	0.021
Economic sources	0.154	0.125	0.289	0.109	0.204	0.102	0.320	0.085

Table 4 The variable assignment of multivariate logistic regression

Factors	Variables	Assignment
Ability rating	Y	Mild disability =1, moderate disability =2, severe disability =3
Age	X_1	≥75 years =1, <75 years =2
Gender	X_2	Male =1, female =2
Populations	X_3	Unmarried =1, married =2, widowed =3, divorced =4
Education level	X_4	Illiteracy =1, primary school =2, junior school =3, senior school =4, college =5
Occupation	X_5	Business and services =1, farming =2, others =3
Marital status	X_6	Unmarried =1, married =2, widowed =3, divorced =4
Living situation	X_7	Alone =1, living with spouse/partner =2, living with children =3, pension agency =4, other =5
Economic sources	X_8	Pension =1, child support =2, support from relatives and friends =3, other subsidies =4

with industrialization, urbanization, and smaller family size (21). If this contradiction between demand and supply is not improved, it will surely become a major social problem affecting the life quality of elders and the future sustainable development of society (22). In our survey, the incidence of disability among the rural elders was 33.43%, which is higher than that of previous reports which focused on the urban residents, indicating that problems of old-age service

Table 5 Logistic regression analysis on the risk factors for disability in the elderly

Variables	β	SE	OR	95% CI	P
Age					
≥75 years (control)					
<75 years	0.185	0.202	0.784	0.150 to 1.592	0.048
Gender					
Male (control)					
Female	0.122	0.319	1.313	0.206 to 3.19	0.064
Populations					
The Han nationality (control)					
The minorities nationality	1.035	0.221	0.947	−1.372 to 2.863	0.133
Education level					
Illiteracy (control)					
Primary school	0.948	0.520	0.674	0.114 to 1.403	0.025
Junior school	1.242	0.217	0.601	0.042 to 0.998	0.009
Senior school	0.907	0.128	0.593	0.101 to 0.814	0.033
College	0.475	0.114	0.617	0.140 to 1.592	0.025
Occupation					
Business and services (control)					
farming	1.249	0.108	1.137	−0.034 to 2.974	0.122
Others	0.393	0.103	1.290	0.188 to 1.945	0.099
Marital status					
Unmarried (control)					
Married	1.480	0.422	0.365	−1.280 to 1.982	0.003
Widowed	1.718	0.294	1.129	0.240 to 2.785	0.017
Divorced	0.933	0.126	1.148	0.045 to 2.702	0.109
Living situation					
Alone (control)					
Living with spouse/partner	0.845	0.111	0.382	−0.097 to 1.004	0.001
Living with children	1.482	0.382	0.958	0.130 to 1.552	0.029
Pension agency	0.977	0.134	1.024	0.305 to 1.788	0.069
Other	0.316	0.120	0.283	−1.180 to 1.748	0.181
Economic sources					
Pension (control)					
Child support	0.648	0.106	3.097	0.322 to 5.785	0.135
Support from relatives and friends	2.177	0.172	1.180	0.192 to 2.039	0.970
Other subsidies	1.248	0.145	1.284	0.218 to 2.828	0.073

are more severe in the rural area in China. Furthermore, we have found that the age, education level, marital status and living situations are corrected with the activities of daily living, mental state, perception and communication, and social participation among rural elders, future policy and nursing care on the services for rural elders should be targeted on those factors.

The older the age, the more severe of the disabled in the elders, thereby the longer they need long-term care (23). Scholars (24,25) have found that the long-term care needs of the elderly in poor rural areas that the proportion of those who require long-term care has increased by nearly 38.1% compared with the older age group (≥80 years old) and the lower age group (60–69 years old). It may be because the elderly with older age have a higher prevalence of chronic diseases and the risk of disability and dementia (26). At the same time, previous surveys (27,28) have found that the age-gradient of hypertension occurrence is obvious, the prevalence of low, middle and high age groups is 60%, 72% and 77% respectively. However, the control rate of hypertension in rural China is rather low, only 5% patients diagnosed with hypertension may take the regimes (29). Lin *et al.* (30) showed that age is one of the important factors that affect the rise of long-term care for demented elderly. With the increase of age, the physical and mental condition often deteriorates and repeats. It requires continuous long-term care to meet the balance of physical and mental state of the elders. It is foreseeable that with the further intensification of aging in the future, the proportion of the elderly who need long-term care in rural China will also increase.

This survey has found that total scores of married and living with others are better than that of unmarried and live alone. Most unmarried elders live alone or with non-immediate relatives, and widowed or divorced elders mostly live with their children or live alone (31). In addition, according to previous research (32), the relationship network in Chinese society presents a "differentiated pattern". Immediate relatives have the closest relationship with the elderly, while non-immediate relatives are naturally not as careful and thoughtful as spouses and children (33). Therefore, not only for the elderly living alone, but also for the elderly who do not live with their immediate family members, more attentions and care services are needed to improve their life quality.

Affected by traditional culture, the elderly is reluctant to leave their familiar environment or community to go to the institutions of nursing care, which is particularly evident in rural China (34). Previous studies (35,36) have shown that 73.2% of disabled elders are more willing to choose home and community care. However, the role of the community in health care for the aged is still quite limited. Most elderly people do not take advantage of the services provided by the community, and a large proportion of the elderly do not know what services the community provides (37). Therefore, it's necessary to vigorously promote the development of rural community health care services for the disabled. Rely on village health service centers and other professional institutions, the social groups, community volunteers, non-governmental organizations and other social forces should be combined to establish professional service, to provide on-site services or multi-level care services for the disabled elderly, including physical function rehabilitation and mental comfort.

Interestingly, this study did not find a correlation between economic income and the ability of rural elderly. This may be related to the fact that the economic level of the elderly in rural areas is generally low (38). Economic income is an important factor affecting the choice of care mode. It's been reported that about half of the disabled elderly said that they did not choose a professional institution for care because they could not afford it (39). Furthermore, previous studies (40,41) have reported the disabled elderly with higher monthly income are more willing to choose professional institutions to provide care services. However, the current long-term care services for the disabled elderly are not covered by the basic medical insurance in China (42). The disabled elderly may be reimbursed for some medical expenses through inpatient treatment of other diseases (43). Although at this stage the disabled elderly still mainly rely on the help of spouses and children to provide care, but in the future, with the further increase of disabled elderly, and the family size continues to decrease, the nursing care provided by children and families is becoming more and more inadequate, and the demand for nursing care services provided by professional institutions or other social organizations will be greater (25,44). Thus, the cost of care for disabled elderly will increase in the future, future policies targeted on this issue are highlighted (45).

Conclusions

In conclusions, the overall ability of the elderly in rural China is poor, the age, education level, marital status and living situations are associated with the activities of

daily living, mental state, perception and communication, and social participation of rural elders. Furthermore, the elderly with age ≥75 y, illiteracy, unmarried and live alone had higher risk for disability. The government and health care providers should provide long-term, continuous and effective long-term care services for the elders in rural China, from the aspects of establishing long-term care evaluation standards and strengthening the interaction targeted on those influencing factors. However, limited by the local region and small sample size, our results should be understood with cautions, future studies on the ability assessment of elderly with larger sample are needed.

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Footnote

Reporting Checklist: The authors present the study in accordance with the SURGE reporting checklist. Available at http://dx.doi.org/10.21037/cdt-20-555

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at http://dx.doi.org/10.21037/cdt-20-555). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. The study was conducted in accordance with the Declaration of Helsinki (as revised in 2013). This present survey had been certified and approved by the ethical committee of Jinggangshan University (No. 2020032), and written informed consents had been obtained from all the included participants.

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