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Factors related to successful aging among community-dwelling elderly in Wenzhou, China

Original Article

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Abstract: **Objectives:** To examine the level of successful aging and the relationship between successful aging and activities of daily living (ADL), life satisfaction, social support, income, and self-efficacy among community-dwelling elderly in Wenzhou, China.

Methods: A descriptive correlational design was applied. Subjects were community-dwelling elderly in 4 districts of Wenzhou, China. Simple random sampling was used to recruit 83 participants. All participants were screened using the Mini-Cog tool. Data were collected using 6 questionnaires such as a demographic questionnaire, the Successful Aging Inventory (SAI), the Barthel Index for ADL, the Satisfaction With Life Scale (SWLS), the Social Support Rating Scale (SSRS), and the General Self-Efficacy Scale (GSES). Data were analyzed using descriptive statistics and Pearson correlation analysis.

Results: The results showed that 53% of the participants had a higher level of successful aging and 43.4% had a moderate level of successful aging with a mean score of 56.76 (standard deviation [SD] = 12.31). Factors such as elderly income ($r = 0.73$, $P < 0.001$) and self-efficacy ($r = 0.72$, $P < 0.001$) had high correlations with successful aging, whereas ADL ($r = 0.67$, $P < 0.001$), life satisfaction ($r = 0.63$, $P < 0.001$), and social support ($r = 0.36$, $P < 0.001$) had moderate correlations with successful aging.

Conclusions: There was a significant positive correlation between successful aging and ADL, life satisfaction, social support, income, and self-efficacy among community-dwelling elderly in Wenzhou, China. The findings may guide the formulation of more effective health education and intervention measures to improve successful aging among the elderly.

Keywords: *China • community-dwelling • elderly • risk factors • successful aging*

1. Introduction

The elderly population is increasing globally. Since the 1970s, aging populations have been the trend in most countries. With longer life expectancy and declining birth rates, the proportion of older people is rising steadily. The World Health Organization estimates about 10% of the world's population to be aged >60 years and 6% aged >65 years resulting in aging societies. By 2050, the elderly proportion of the world's population is projected to jump from 12% to 22%.[1] The global number of older people will nearly double, reaching 1.5 billion

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over the next 3 decades.[2] In developing countries, the older population growth rate is the largest and the fastest. Furthermore, an aging population impacts a society's economy, education, employment, and healthcare system, impeding the country's development.[3]

The rapid growth and increasing size of the older population, unbalanced regional development, and many nations experiencing aging populations before corresponding economic development are significant attributes of the development of the aging population in China.[4] China's older population is now growing at unprecedented rates and magnitude. The country's elderly accounts for >14% of its population in 2022; China will become a super-aged society (20% elderly) in 2033.

As noted, aging societies have become a global phenomenon due to declining fertility and increased life expectancy. However, China's population is aging significantly despite the long-term implementation of family planning policies.[5] Currently, the rapid growth of China's older population poses a significant challenge in terms of the economy, policymaking, and facilities for caring for the aged. Additionally, there is a double strain due to the increase in the number of older people and the shortage of medical and healthcare resources, old-age security funds, and social support.[6]

This study was conducted in Wenzhou, a major commercial and central regional city on the southeast coast of China, a large city with a high number of older persons. To address the needs of its older population, the Wenzhou government has actively responded to the challenges of population aging, aiming to develop an age-friendly society and enhance the elderly quality of life. This study, by assessing successful aging and its influencing factors among the elderly in Wenzhou, Zhejiang Province, may serve as a guideline for the Wenzhou government's efforts to improve successful aging.

Successful aging is a well-known and comprehensive strategy for dealing with aging. Successful aging is defined as having good physical and mental balance, optimal physical functioning, active social participation, experiencing psychological and spiritual connectivity, and having a strong appreciation for and realization of the significance of one's formative years.[7] Promoting successful aging reduces health care costs and social pension burden while enhancing the elderly quality of life and well-being.[8] In China, there is comparatively less evidence of successful aging than is found in other countries. Therefore, based on the synthesized literature and the successful aging model described above, this study sought to examine the relationship of various factors to successful aging to promote successful aging among the elderly in Wenzhou.

2. Methods

2.1. Research design

This descriptive correlational study was conducted among community-dwelling elderly in Wenzhou, a large city with nearly 1.51 million elderly. Simple random sampling was used to select the participants residing in one of 4 districts of Wenzhou: Lucheng, Ouhai, Longwan, and Dongtou. Using data from the Wenzhou Bureau of Statistics, the population proportion in each district was estimated. The sample size was calculated using G-power analysis software. Based on a previous study,[8] the parameters were estimated as follows: Tail = two, effect size = 0.3, α err prob = 0.05, Power (1-β err prob) = 0.8. A total sample size of 83 was calculated. The inclusion criteria were: (1) aged ≥60 years old, (2) residing in one of the 4 Wenzhou districts, (3) no cognitive impairment based on the Six Item Cognitive Impairment Test (6CIT) screening tool, (4) can communicate and understand Wenzhounese or Mandarin, and (5) willing to participate in this study.

2.2. Instruments

Permission to use each instrument was obtained from the original authors before data collection. The participants were screened for cognitive impairment using the Mini-Cog tool.[9] The questionnaire is composed of 6 parts and was administered in Chinese. The description of the 6 questionnaires is as follows.

2.2.1. Demographic questionnaire

The demographic questionnaire collected data on age, gender, religion, marital status, number of children, education level, monthly income, type of medical insurance, physical condition, and current illnesses.

2.2.2. The successful aging inventory (SAI)

The Chinese version of the SAI was used to measure successful aging.[10] The SAI was initially developed based on Flood's Successful Aging Theory.[11] This 20-item instrument yields scores ranging from 0 to 80, with higher scores indicating more successful aging. The content validity index of the Chinese scale was 0.975, and Cronbach's α was 0.83.

2.2.3. The Barthel Index of activities of daily living (ADL)

The Chinese version of the Barthel Index for ADL, developed by Mahoney and Barthel[12] and Hou and

Zhang et al.[13], was used to assess participants regarding their ability to perform ADL. This scale is widely used as an ADL evaluation method in China due to its reliability and sensitivity. Scores for this 10-item scale range from 0 to 100, with 100 indicating no dependency, 61–99 indicating mild dependency, 41–60 indicating moderate dependency, and ≤40 indicating severe dependency. Cronbach's α was 0.80.

2.2.4. The satisfaction with life scale (SWLS)

The Chinese version of the SWLS was used to measure life satisfaction.[14] The scale was initially developed by Pavot and Diener[15] and consists of 5 items with overall scores ranging from 5 to 35. Higher scores reflect higher levels of life satisfaction. Cronbach's α was 0.78, and the split-half coefficient was 0.70.

2.2.5. The social support rating scale (SSRS)

The SSRS was designed and compiled by Xiao[16] and other mental health workers to assess social support.[16] This scale was based on foreign scales and adapted to reflect Chinese culture and context. This 10-item scale is composed of 3 dimensions. Total scores range from 12 to 65 points, with ≤22 indicating a low social support level, 23–44 a moderate level, and >44 a high level of social support. Cronbach's α was 0.73.

2.2.6. The general self-efficacy scale (GSES)

The GSES was developed by Schwarzer et al.[17] and translated into Chinese by Wang et al.[18] Scores for this 10-item scale range from 10 to 40, with higher scores indicating more self-efficacy. Cronbach's α was 0.78.

A pilot study was conducted with 30 elderly people to test the reliability of the instruments. Cronbach's α for the Barthel Index ADL scale, GSES, SWLS, SSRS, and SAI were 0.80, 0.96, 0.94, 0.77, and 0.94, respectively.

2.3. Data collection procedures

The data collection took place between 1 July and 20 August 2021. The 6CIT instrument, which takes 3–5 min to complete, was used to screen the elderly willing to participate in the study. A total of 83 elderly participants who met the inclusion criteria were selected. After obtaining informed consent, the data was collected through a face-to-face interview lasting approximately 30 min. The questionnaires were checked for completeness and numbered at the end of data collection. All the data were kept confidential, and only the researcher had access to the data.

Characteristics	Frequency	%
Gender		
Female	44	53.0
Male	39	47.0
Religion		
Buddhism	34	41.0
Catholicism	2	2.4
Christian	4	4.8
Taoism	1	1.2
No	42	50.6
Age, years (M = 78.42, SD = 7.677, range = 60–95 years)		
60–69	9	10.8
70–79	36	43.4
80–89	33	39.8
≥90	5	6.0
Education level		
No formal education	54	65.1
Primary school	15	18.0
Junior high school	11	13.3
High school	3	3.6
Marital status		
Married	68	81.9
Widowed	15	18.1
Numbers of children		
1	2	2.4
2	22	26.5
≥3	59	71.1
Types of medical insurance		
Agricultural insurance	42	50.6
Commercial insurance	5	6.0
Social insurance	36	43.4
Physical condition		
No underlying disease	27	32.5
Comorbidity	56	67.5
Comorbidity (present illness)		
Hypertension	41	73.2
COPD	1	1.8
Hypertension and diabetes	9	16.1
Others	5	8.9
Income, Yuan per month		
≤5000	70	84.3
>5000	13	15.7

Note: M, mean; SD, standard deviation; COPD, chronic obstructive pulmonary disease.

Table 1. Demographic characteristics of the participants ($N = 83$).

2.4. Data analysis

The data were analyzed using Statistical Product Service Solutions (SPSS) version 21 (IBM Corporation, Armonk, New York, United States). Descriptive statistics was used to analyze the demographic characteristics of the sample. Pearson correlation analysis was used to determine the correlation between independent factors and successful aging among community-dwelling elderly. The significance level was set at $P = 0.05$.

3. Results

3.1. Characteristics of the sample

Of the 83 elderly participants enrolled in this study, 53.0% were females. Nearly half (43.4%) of the participants were aged between 70 years and 79 years (mean age = 78.42 years, SD = 7.67). A total of 41% of the participants believed in Buddhism. Most participants were married (81.9%) and had 3 or more children (71.1%). About 65.1% of the elderly had no formal education and 84.3% earned less income than the average adult in Wenzhou. Almost all participants had either agricultural (50.6%) or social (43.4%) insurance. Two-thirds (67.5%) had comorbidities, and 3-quarters (73.2%) suffered from hypertension (Table 1).

3.2. Univariate analysis of factors associated with successful aging

Of the five predictor factors, the elderly participants' highest mean score was 84.58 for ADL; the lowest mean score was 28.75 for self-efficacy (Table 2).

3.3. Successful aging level of community-dwelling elderly

Over half (53%) of the participants had a high level of successful aging, and 43.4% had a moderate level of successful aging (Table 3).

3.4. Relationship between selected factors and successful aging

Pearson correlation analysis indicated that elderly income ($r = 0.73$) and self-efficacy ($r = 0.72$) had high correlations with successful aging. ADL and life satisfaction had moderate *r*-values, while social support had the lowest correlation with successful aging. All five factors, however, were significantly ($P < 0.001$) and positively related to successful aging (Table 4).

4. Discussion

To the best of our knowledge, this was the first study on successful aging among the elderly in Wenzhou, China. Compared with other studies in China, the level of successful aging in this study was relatively high.[19,20]

The marital status of the elderly could influence their support system. In this study, 81.9% of the elderly were married and living with spouses. They were enthusiastic, had a better lifestyle, shared their thoughts and feelings with their spouse, and received more family support than unmarried participants. Logically, elderly people with 3 or more children would receive more moral and economic support than others. For instance, a study found that the elderly having more living children was positively related to successful aging.[21]

Most elderly had comorbidities such as hypertension, diabetes, COPD, and other chronic diseases, and as a result, they need increased attention and care. Wenzhou has a developed economy and good medical facilities that provide relatively favorable conditions for elderly health promotion, disease treatment, and successful aging. Even though the great majority of elderly participants had less income than the average Wenzhou adult, >90% had agricultural or social health insurance to mitigate the economic burden of health care. This additional financial support increases the willingness of older people to seek medical care and promotes earlier and better diagnosis, treatment, and recovery. It may also make them realize the significance of successful aging.

Variables	Possible range	Actual range	Percentage of actual range	Mean	SD
ADL	0–100	50–100	50.00–100.00	84.58	13.16
Life satisfaction	5–35	20–35	57.14–100.00	29.05	3.48
Social support	12–65	26–55	40.00–84.62	42.42	5.19
Income of elderly	-	300–8000	3.75–100.00	3413.25	1727.66
Self-efficacy	10–40	12–40	30.00–100.00	28.75	6.7
Successful aging	0–80	22–76	27.50–95.00	56.76	12.31

Note: ADL, activities of daily living; SD, standard deviation.

Table 2. Univariate analysis of factors associated with successful aging ($N = 83$).

Successful aging level (M = 56.76, SD = 12.31)	Frequency	%
Low (0–27)	3	3.60
Moderate (28–55)	36	43.4
High (56–80)	44	53.0

Note: SD, standard deviation.

Table 3. Successful aging level of community-dwelling elderly (*N* = 83).

Variables	*r*-value	*P*-value
Successful aging	-	-
ADL	0.67	< 0.001
Life satisfaction	0.63	< 0.001
Social support	0.36	< 0.001
Income of elderly	0.73	< 0.001
Self-efficacy	0.72	< 0.001

Note: r = 0.1 - 0.3 – small, r = 0.3 - 0.7 – moderate, and *r* = 0.7 – large; ADL, activities of daily living.

Table 4. The relationship between selected factors and successful aging.

ADL is a series of basic activities that a person performs, ideally independently, as part of their daily routines. ADL is a significant indicator of an individual's functional status, reflecting a fundamental ability to perform daily activities that foster independence, health, and physical mobility.[22] ADL had a moderate positive correlation with successful aging (r = 0.67; P < 0.001). These findings were consistent with a study in Shanghai, China.[23] Elderly who are highly dependent on personal assistance for ADLs may have a less positive self-image and may be less likely to achieve successful aging. Promoting a greater ability to perform daily living activities could increase the rate of successful aging in older persons.

Life satisfaction had a moderate positive correlation with successful aging (r = 0.63; P < 0.001). One possible explanation is that most elderly people residing in Wenzhou utilized medical insurance and had no financial constraints for their daily living. As the access to social security provisions and money could fulfill elderly needs, this in turn, increases their life satisfaction, subjective well-being, and positive emotional experiences and promotes optimal mental health. Also, these experiences encourage the elderly to face challenges associated with comorbidities, thereby raising the odds of successful aging. These findings mirror those of a study that found life satisfaction as a key predictor of successful aging among the Chinese elderly.[24] Furthermore, the elderly who are satisfied with their lives have higher self-acceptance and could achieve successful aging by actively participating in meaningful activities and by overcoming their death anxiety.

Social support had a moderate positive correlation with successful aging (r =0.36; P < 0.001); this could be explained by culture. Chinese culture advocates filial piety, where the younger generation is expected to respect and take the lead in caring for the elderly. Larger numbers of children in a family should provide more material and spiritual support to their aging parents. Additionally, elderly couples who lived together received greater assistance. High social support stimulates positive emotions and aids people in initiating and communicating with family, friends, and others to receive adequate support. In this study, most of the elderly (81.9%) lived with their spouses. This is a built-in source of care and emotional support that the elderly who do not live with a spouse may lack. Adequate social support could increase older adults' positive experiences and reduce loneliness and isolation. This agrees with the results of another study.[25] Furthermore, social support helps older people cope with physical and mental health problems. It positively affects their health beliefs, decision-making skills, and health-promoting behaviors regarding successful aging.

This study showed that the income of the elderly was highly positively correlated with successful aging (r = 0.73; P < 0.001). Most of the elderly's monthly income came from savings, child support, and old-age insurance. As age progresses, there is an inevitable decline in health and physical functioning, which raises the likelihood of illness and injury and the accompanying higher medical expenses. Having adequate economic resources and raising old-age pensions could ease this burden on the elderly and thus promote successful aging. In addition, higher personal income improves the elderly's living conditions and helps satisfy their physical and psychological needs. This finding is consistent with a study conducted in Guangzhou, China.[8]

Self-efficacy had a high positive correlation with successful aging (r = 0.72; P < 0.001). The elderly with higher self-efficacy can approach difficult situations optimistically. This relationship could be explained based on Flood's Successful Aging Theory, where intrapsychic factors increase the elderly's ability to adapt to new situations and solve problems more easily; this has a direct effect on successful aging. Consequently, elderly with high self-efficacy are more confident in maintaining their health and adhering to healthy behaviors. Self-efficacy also aids the elderly in effectively dealing with various problems or pressures while enhancing their physical, cognitive, and

psychosocial functions to achieve successful aging. Other studies have also demonstrated self-efficacy's role in predicting successful aging.[26]

5. Conclusions

The findings of this study are similar to those conducted in other regions of Asia. For older adults, successful aging was significantly positively correlated with factors such as ADL, life satisfaction, social support, income, and self-efficacy. Nurses or other healthcare providers should pay more attention to these factors to better promote successful aging among their older patients. In addition, factors correlated with successful aging can be incorporated into the curriculum and guide nursing students in providing a comprehensive understanding of the various influencing factors associated with successful aging.

Future research should consider the possible impact of different geographical factors, such as comparing the differences in successful aging between the elderly living in urban and rural areas. In addition, studies should also compare the current situation of successful aging in different countries.

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Ethical approval

This study was approved by the ethics committee of Burapha University Ethics Committee for Human Research (No. G-HS034/2564). The researcher explained the research objectives, risks and benefits, rights of participants, data collection procedures, confidentiality, and withdrawal from the study at any time without consequences. Informed consent was obtained from the recruited participants before data collection.

Conflict of interest

All contributing authors declare no conflict of interest.

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