

Research on the Current Situation of Loneliness among Empty Nest Elderly and Its Correlation with Successful Aging

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Abstract: In order to explore the correlation between the loneliness of empty-nest elderly individuals and successful aging, the study analyzes the influencing factors, and proposes coping strategies, providing a reference for promoting successful aging among empty-nest seniors. This study used a convenience sampling method to select 402 empty nesters with varying ages, educational backgrounds, marital statuses, and other characteristics as the subjects for the survey. An anonymous survey and statistical analysis were conducted using a general information questionnaire, the Chinese version of the Successful Aging Scale, and the Loneliness Scale. The overall score for successful aging among empty-nest elderly individuals with different characteristics is 31.72 ± 10.85 . Among these, educational level, occupation, social activities, health check-up status, and feelings of loneliness are the main influencing factors for successful aging in empty-nest elderly individuals ($P < 0.05$). The successful aging status of empty-nest elderly individuals is relatively low. It is advised to approach this issue from both physical and psychological aspects. By enhancing self-exercise, scheduling regular health check-ups, maintaining a balanced diet, and implementing relevant health education and psychological crisis intervention measures, we can reduce feelings of loneliness and strengthen their psychological resilience, thereby improving the successful aging of empty-nest elderly individuals.

Keywords: Empty Nest Elderly; Current Situation of Loneliness; Successful Aging

1. Introduction

China is a populous country. Since 1999, it has entered an aging society and is now in a stage of

deepening, characterized by a large number of elderly people, rapid growth, and a high prevalence of illnesses. According to estimates [1], by 2040, the elderly population in China is expected to reach 324 million, accounting for nearly one-quarter of the total population. During this period, the proportion of "empty-nest" elderly individuals is also on the rise, increasing from 50% to 90%. "Empty-nest" elderly refers to those who have no children or have not had the companionship of children for an extended period. As they age, the social connections and economic capabilities of the elderly are affected to varying degrees, which inevitably leads to some mental impacts on them and results in a series of mental health issues. Loneliness is a prevalent psychological issue among the elderly. Several studies conducted in China have found that over half of empty-nest seniors experience chronic loneliness [2,3]. Therefore, alleviating feelings of loneliness and enhancing the well-being of older adults has become a significant challenge we face today. To address this issue, the government has issued a series of policies and documents as part of the national strategy to cope with population aging. Successful aging means being free from disease and disability, maintaining high cognitive and physiological functions, and being able to actively participate in life [4]. The core goal of a successful aging strategy is to maintain the physical and mental health of the elderly and to interact positively with the external environment so that they can still feel their value and be satisfied in old age, thereby achieving their success and happiness. Driven by the wave of successful aging, achieve comprehensive and systematic development, and promote sustainable social development. Realizing healthy elderly care is an important measure for China to cope with population aging, and it is also an important way to solve the problems of

China's medical system, financial system, and human resource allocation [5]. By analyzing the main factors affecting the loneliness of empty nesters and its correlation study with successful aging, this study can provide a reference basis for health and health-related departments to effectively improve the mental state of empty nesters in China and reduce the loneliness of empty nesters, and provide a theoretical addition to the nursing field's research on the successful aging of empty nesters, which is of great significance to their achievement of successful aging.

2. Objects and Methods

2.1 Participants

Using convenience sampling, 402 empty nesters in a city in Anhui Province were selected from March 2024 to September 2024 for the questionnaire survey. Inclusion criteria: (1) aged 60 years or older; (2) elderly people whose children have been away from home for a long time or who have no children; (3) able to understand and communicate with each other in a normal way; and (4) people who voluntarily participate in the questionnaire survey with informed consent. Exclusion criteria: (1) previous mental illness or cognitive impairment; (2) inability to co-operate with the investigator due to illness; (3) withdrawal midway.

2.2 Measurements

2.2.1 Survey tool

(1) General information survey: including 20 items such as age, gender, marital status, education level, occupation, average monthly income, place of residence, living situation, number of children, primary caregiver, etc. (2) Chinese version of the Successful Ageing Scale: Professor Flood developed the Successful Ageing Scale in 2008 based on the theory of successful aging intermediate care, which consists of 20 entries and consists of simple phrases [6]. The scale consists of five dimensions with 20 questions, and the five dimensions are inner factors and meaning of existence: 3, 7~9, 17~20 questions; functional coping mechanisms: 1, 2, 4~6; beyond aging: 10, 12~14; a sense of inheritance: 16; and spirituality: 11, 15. 4 = "always", 3 = "often", 2 = "sometimes", 1 = "occasionally", and 0 = "never". The scale is scored on a total scale of 0 to 80, with higher scores indicating higher levels

of successful aging. The Cronbach's alpha coefficient of the Successful Aging Scale in this study was 0.894. (3) Loneliness Scale Short Version: The Loneliness Scale was developed by Russell [7], equal to 1978, to evaluate the loneliness resulting from the research subject's "discrepancy between the desire for social interaction and actual level of" resulting in feelings of loneliness. The Loneliness Scale Simplified [8] was adapted by Hays and DiMatteo in 1987 based on the UCLA Loneliness Scale, and its simplified version has a reduced need for reading level in comprehending the items, and the language is more easily understood by the elderly. There were 20 questions in this study, 11 positively rated and 9 negatively rated, each on a scale of 1-4, ranging from 1 "never" to 4 "always", with scores ranging from 20-80. The Cronbach's alpha coefficient for the loneliness scale in this study was 0.898.

2.2.2 Survey method

Before the questionnaire survey, the questionnaire was studied to understand how and what the questionnaire would be used for, and simulations and exercises in the field were used to ensure that the questionnaire survey was correct. During the fieldwork, the investigator informed the elderly of the purpose of the survey and the protection of privacy and started the survey after asking for their permission. During the survey process, the investigator conducted a question-type survey on the empty-nesters recorded the results, and thanked the person for his/her cooperation at the end of the survey. Immediately after completing the survey, all members checked the questionnaire, verified whether there were omissions, filling errors, logical choices, and other problems in the questionnaire, corrected the problems, and ensured that the information was complete before completing the survey. For individual questions that cannot be answered on their own or encounter difficulties, the researchers will read them one by one and seek their opinions before completing the survey.

2.3 Statistical Analysis

All questionnaires were collated, coded, and entered, and a test level of $\alpha=0.05$ was set. The data obtained were collated, described, and counted by applying SPSS27.0 software. General demographic characteristics, successful aging, and loneliness status of empty nesters

were analyzed in this study using percentages, and mean \pm standard deviation. Independent samples t-test was conducted to compare the general demographic characteristics of empty nesters for two groups of data and one-way ANOVA was conducted for multiple groups of data. Pearson's correlation was used to analyze the correlation between successful aging and loneliness among empty nesters. Multiple linear regression analysis was used to analyze the effects of general demographic characteristics and loneliness on successful aging among empty nesters.

3. Results

3.1 General Demographic Characteristics

The results of the study showed that of the 402 study participants, 234 were from rural areas and 168 were from urban areas. The age of the study participants was mainly in the age groups of 65-70 years old and over 75 years old, and there were more males; the overall education level of the study participants was low, with more than half of them having junior high school or less than primary school education; most of the study participants were farmers, with a higher proportion of those with an average monthly income of less than 2,000 yuan, and the main

source of income was children's support; and more than half of them were accompanied by their spouses or had no accompanying caregivers; In terms of dietary status, more than half of the study subjects do not have the habit of drinking and smoking; the proportion of people who do physical exercise 1-2 times/month is relatively high, and more than half of the study subjects do not participate in social activities; more than half of the study subjects suffer from chronic diseases; and not more than half of the study subjects consider themselves to be in good health.

3.2 Scores on the Successful Ageing Scale

The results of the survey of 402 empty nesters showed that the total score of the Successful Ageing Scale of the study participants was (31.72 ± 10.85), of which the mean score of inner factors and meaning of existence was (11.84 ± 5.84), the mean score of functional coping mechanisms was (9.74 ± 3.15), the mean score of beyond aging was (5.88 ± 2.30), the mean score of spirituality was (2.23 ± 1.01), and the mean score of sense of inheritance was (2.02 ± 2.26). The score was (2.23 ± 1.01), and sense of heritage mean score was (2.02 ± 2.26). See Table 1.

Table 1. Scores on the Successful Ageing Scale for study participants ($n = 402$)

Category	Number of Entries	Successful Ageing Scale Score ($\bar{x} \pm s$, points)
Internal factors and existential significance	8	11.84 ± 5.84
Functional coping mechanisms	5	9.74 ± 3.15
Beyond ageing	4	5.88 ± 2.30
Spirituality	2	2.23 ± 1.01
Sense of inheritance	1	2.02 ± 2.26
Sense of inheritance	20	31.72 ± 10.85

3.3 Comparison of Successful Ageing Scores for Empty Nesters with Different Characteristics

The study participants were grouped according to their place of residence, gender, education level, marital status, and number of children to compare their total Successful Aging scores. The results showed that age, gender, marital status, education level, occupation, average monthly income, place of residence, living conditions, number of children, primary caregiver, health insurance, physical exercise, social activities, medical checkups, number of chronic illnesses, conscious health, sleep quality, source of income, and the total score of successful aging were

statistically significant when comparing the different empty-nested elderly ($P < 0.05$). See Table 2.

3.4 Correlation Analysis between Loneliness and Successful Aging

Pearson's correlation analysis showed that the total score of successful aging and the total score of loneliness in this group of empty nesters were negatively correlated ($r = 0.516$, $P < 0.001$). See Table 3.

3.5 Multiple Linear Regression Analysis of Successful Aging

To explore the impact of general demographic characteristics and factors such as loneliness on

successful aging, we conducted a multiple linear regression analysis using significant demographic variables identified in univariate analysis (age, gender, marital status, education level, occupation, average monthly income, place of residence, living situation, number of children, primary caregiver, health insurance status, physical exercise participation, social activities, health check-up status, number of chronic diseases, self-perceived health status,

sleep quality, and sources of economic income) and loneliness as independent variables, with successful aging scores as the dependent variable for empty-nest elderly individuals. The results indicated that education level, occupation, social activities, health check-up status, and loneliness are the main influencing factors of successful aging among empty-nest elderly individuals ($P < 0.05$). See Table 4.

Table 2. Comparison of Successful Ageing Scores for Empty Nesters with Different Characteristics ($n = 402$)

Project	Number of people [n (%)]	SA score ($\bar{x} \pm s$, points)	F/t value	P-value
Age			4.576	0.004
60~65 years old	65(16.2)	35.46 \pm 10.04		
65~70 years old	112(27.9)	32.26 \pm 10.67		
70~75 years old	99(24.6)	31.50 \pm 10.91		
Above 75 years old	126(31.3)	29.49 \pm 10.89		
Sex				
Male	239(59.5)	31.27 \pm 10.56	-1.017	0.309
Female	163(40.5)	32.39 \pm 11.25		
Marital status				
Married	297(73.9)	33.20 \pm 10.61	8.019	<0.01
Unmarried	18(4.5)	26.78 \pm 14.41		
Divorced	31(7.7)	28.90 \pm 10.14		
Remarried	8(2.0)	37.25 \pm 13.11		
Widowed	48(11.9)	25.35 \pm 7.27		
Educational Level				
Primary school and below	217(54.0)	29.67 \pm 10.08	9.868	<0.01
Junior High School	105(26.1)	33.00 \pm 9.71		
High School and Secondary School	46(11.4)	35.43 \pm 12.94		
College	25(6.2)	31.28 \pm 10.95		
Undergraduate and above	9(2.2)	48.55 \pm 9.46		
Occupation				
Labourer	41(10.2)	35.41 \pm 9.91	9.723	<0.01
Farmer	185(46.0)	30.28 \pm 10.16		
Retired	151(37.6)	33.82 \pm 11.30		
No occupation	25(6.2)	23.68 \pm 8.81		
Average monthly income			11.459	<0.01
<2000	219(54.5)	29.97 \pm 10.77		
2000-4000	132(32.8)	31.78 \pm 9.07		
4000-5000	34(8.5)	37.29 \pm 9.56		
>5000	17(4.2)	42.64 \pm 16.46		
Place of residence				
Urban	168(41.8)	33.27 \pm 11.08	2.438	0.015
Rural town	234(58.2)	30.61 \pm 10.56		
Residence				
With spouse	248(61.7)	32.81 \pm 10.96	5.358	0.005
Living with relatives other than a spouse	95(23.6)	31.34 \pm 10.53		
Living alone	59(14.7)	27.76 \pm 10.0		
Number of children				

No children	9(2.2)	25.88 ± 8.95	2.847	0.037
1-2	296(73.6)	32.44 ± 11.36		
≥3	82(20.4)	30.78 ± 9.37		
Lost family (death of the only child occurred, no further birth or adoption of children)	15(3.7)	26.2 ± 8.57		
Main carer			2.28	0.046
Spouse	247(61.4)	32.72 ± 10.96		
Parents	7(1.7)	25.14 ± 11.75		
Sibling	31(7.7)	27.45 ± 11.78		
Friends	2(0.5)	23.00 ± 14.14		
Attendant	24(6.0)	32.33 ± 10.02		
No chaperone	91(22.6)	31.02 ± 9.88		
Medical Insurance			8.776	<0.01
Resident's medical insurance	164(40.8)	32.40 ± 10.16		
Employee Medical Insurance	121(30.1)	33.97 ± 11.34		
New Agricultural Cooperative	92(22.9)	29.96 ± 10.74		
Self-payment	25(6.2)	22.88 ± 7.84		
Smoking			-2.001	0.046
Yes	156(38.8)	30.37 ± 10.49		
No	246(61.2)	32.58 ± 11.00		
Alcohol consumption				
Yes	155(38.6)	31.73 ± 11.29	0	0.989
No	247(61.4)	31.72 ± 10.58		
Physical exercise			6.04	<0.01
Never	90(22.4)	27.53 ± 8.48		
1-2 times/month	225(56.0)	32.84 ± 10.77		
1-2 times/week	42(10.4)	32.80 ± 13.13		
>2 times/week	45(11.2)	33.48 ± 11.32		
Social activities			47.79	<0.01
Do not participate	140(34.8)	25.80 ± 8.40		
Occasionally	193(48.0)	33.41 ± 10.00		
Often	69(17.2)	39.01 ± 11.55		
Physical examination			11.267	<0.01
Half a year	3(0.7)	54.33 ± 6.35		
Once a year	175(43.5)	33.91 ± 11.37		
Once every two years	14(3.5)	30.5 ± 7.39		
Irregularly	78(19.4)	33.16 ± 11.48		
Never	132(32.8)	27.59 ± 8.25		
Number of chronic diseases			3.268	0.039
No chronic disease	12(3.0)	30.33 ± 8.85		
1-2 kinds	295(73.4)	32.54 ± 11.00		
3 or more	95(23.6)	29.34 ± 10.29		
Conscious health condition			8.475	<0.01
Poor	68(16.9)	26.95 ± 10.28		
Average	195(48.5)	32.33 ± 11.59		
Good	139(34.6)	33.20 ± 9.36		
Sleep quality			6.741	<0.01
Very poor	19(4.7)	27.63 ± 8.82		
Poor	92(22.9)	27.96 ± 11.25		
Good	265(65.9)	33.05 ± 10.57		
Very good	26(6.5)	34.46 ± 9.91		
Source of economic income			3.251	0.012

Child support	183(45.5)	30.75 ± 10.25		
Pension	147(36.6)	32.98 ± 11.23		
Re-employment income	50(12.4)	34.1 ± 11.98		
Government assistance	18(4.5)	27.05 ± 7.68		
Others	4(1.0)	21.5 ± 5.56		

Table 3. Correlation Analysis between Loneliness and Successful Aging in the Study Population (*n* = 402)

Projects	Successful Ageing	Total Loneliness Score	Inner Factors and Meaning of Survival	Functional coping mechanisms	Beyond ageing	Sense of inheritance	Spirituality
Successful Ageing	1.000	—	—	—	—	—	—
Total Loneliness Score	-0.516**	1.000	—	—	—	—	—
Inner Factors and Meaning of Survival	0.932**	-0.520**	1.000	—	—	—	—
Functional coping mechanisms	0.752**	-0.549**	0.692**	1.000	—	—	—
Beyond ageing	0.620**	-0.163**	0.441**	0.222**	1.000	—	—
Sense of inheritance	0.491**	-0.311**	0.476**	0.250**	0.123*	1.000	—
Spirituality	0.488**	-0.062	0.259**	0.086	0.452**	0.203**	1.000

Note: **Significant correlation at 0.01 level; *Significant correlation at 0.05 level.

4. Discussion

4.1 Successful Aging of Empty Nesters

The total score of the Successful Aging Scale for the research subjects is (31.72 ± 10.85) points, which is at a relatively low level. The scores of the five dimensions, from low to high, are spirituality, sense of inheritance, transcendence of aging, functional coping mechanisms, inner factors, and meaning of survival. The lowest score was obtained in the spiritual dimension of this study, which may be because Chinese people have developed certain cognitive abilities through long-term struggles with nature and various cultural influences. They do not worship religion at will but rather believe in their abilities. Moreover, this dimension involves religious beliefs, which have a certain degree of unreality and have no direct effect on solving problems encountered in life. They may even trap the thinking of the elderly in falsehood, restrict their thinking, and lead their thinking to extremism,

which has certain harmfulness. Elderly people have the highest scores in terms of inner factors and survival significance. A meta-analysis [9] pointed out that elderly people with sufficient living security income have a lower risk of malnutrition, which can also alleviate their potential loneliness to some extent; On the contrary, elderly people with lower professional levels tend to experience stronger feelings of loneliness. This also indicates that economic conditions may be one of the important factors affecting successful aging. Elderly people who have a basic source of income are more satisfied with their lives than those who rely on materials provided by their children, government subsidies, etc. Most empty-nest elderly people are self-sufficient in their basic living and have a certain level of labor ability. Therefore, they can obtain income through their labor to meet their basic living needs, as well as spiritual satisfaction, thereby improving their satisfaction with their quality of life.

Table 4. Multiple Linear Regression Analysis of Successful Aging of Research Subjects (*n*=402)

Project	B	SE	β	t	P
(Constant)	56.343	8.134	—	6.927	P<0.001
Educational level	1.613	0.626	0.153	2.577	0.01
Occupation Profession	-1.586	0.647	-0.11	-2.449	0.015
Social Activities	2.747	0.767	0.177	3.582	p<0.001
Physical Examination	-0.818	0.414	-0.102	-1.977	0.049
Total Loneliness Score	-0.513	0.064	-0.395	-8.062	p<0.001

4.2 Factors Influencing the Successful Aging Status of Empty Nest Elderly with Different Characteristics

This study shows that educational level, occupation, social activities, physical examination status, and loneliness are the main influencing factors for the successful aging of empty nest elderly. This is similar to the research results of Gu et al [10]. This study found that there is a positive correlation between education level and successful aging, with higher education levels indicating higher levels of successful aging. The higher the level of education, the easier it is for individuals to receive external information, which in turn affects their beliefs and mentality. They naturally encounter fewer limitations in life and have a better degree of successful aging. With the aging population and the increasingly serious phenomenon of an "empty nest", elderly people often overlook some minor physical conditions due to their insufficient knowledge level, and these "minor health problems" bring huge health risks to the elderly, which is not conducive to the successful realization of aging. Research shows that [11] physical exercise also has a positive impact on the successful aging of middle-aged and elderly people. The main reason may be that physical activity can prevent the development of many chronic diseases, including type 2 diabetes, coronary heart disease, hypertension, and other common diseases of the elderly; In addition, physically active elderly people can better preserve cognitive and physical functions, both of which are factors that promote successful aging. Regular physical examinations can help patients detect, diagnose, and treat chronic diseases early, providing targeted and scientific methods for the prevention and treatment of chronic diseases in the elderly. This further proves the importance of physical examinations and exercise in promoting successful aging of empty nest elderly. Most of the empty nest elderly in this study are rural empty nest elderly. Compared with non-empty nest elderly in the same region, rural empty nest elderly receive lower levels of objective, subjective, and family support, and these factors are significantly correlated with loneliness; Therefore, empty nest elderly in rural areas are also one of the high-risk groups for depression [12].

The results of this study indicate that loneliness is an important factor affecting the successful

aging of empty nest elderly. The total score of loneliness among empty nest elderly in this group is negatively correlated with the total score of successful aging, that is, the higher the level of loneliness, the lower the degree of successful aging, similar to other related reports [13]. There is research [14] indicating that loneliness is a negative emotional experience that poses significant physical and mental harm to the elderly. Especially for women, are not only a high-risk group for negative emotions, but also a high proportion of those who suffer from depression as a result. The living environment also greatly affects the intensity of loneliness, and living in rural environments has a potentially high incidence of loneliness. It may be related to the fact that their children have been working outside for a long time and they are unable to receive companionship; It is also possible that the lack of communication may lead to a higher sense of loneliness due to the successive deaths of peers in the cohabitation area. For this group, we should pay special attention to their mental health status, enhance their psychological resilience, and promote their development towards successful aging. In society, elderly people with good psychological resilience can quickly recover from adversity, setbacks, and failures, have confidence in overcoming difficulties, and can view problems with a positive perspective [15, 16]. Only in this way can we view things correctly and overcome difficulties with a good attitude, combining our strengths and characteristics, to enable the elderly in the community to smoothly achieve retirement.

5. Conclusion

In summary, the score of successful aging of empty nesters in Anhui Province is at a low level, and different literacy, occupation, social activities, physical examination, and loneliness are the main influencing factors of successful aging of empty nesters. Based on this survey, it is suggested that we can promote the successful aging of empty nesters from both physical and psychological aspects. By strengthening their exercise, arranging regular medical check-ups, matching a reasonable diet, improving their health, actively carrying out relevant health education, and implementing psychological crisis intervention, we can reduce loneliness and increase their psychological resilience to enhance successful aging among empty nesters.

Although this study provides a good reference for the successful aging of empty nesters, its sample size has some limitations in terms of region and number. Therefore, the findings of this project are not very precise and cannot provide a complete and scientific theoretical basis for the aging of empty nesters.

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