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Analysis of the Correlation between Social Isolation and Health-Promoting Behaviors among Rural Empty-Nest Elderly

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Abstract: This study aims to analyze the current status of social isolation and health-promoting behaviors among rural empty-nest elderly and explore the relationship between the two, so as to provide a basis for improving the quality of life of the elderly and enhancing the rural elderly health care system. A questionnaire survey was conducted among 350 rural empty-nest elderly using the General Social Isolation Scale and the Health-Promoting Lifestyle Profile II(HPLP-II). The total score of social isolation among rural empty-nest elderly was (42.44±2.85), and the total score of health-promoting behaviors was (103.07±12.41). There was a negative correlation between social isolation and health-promoting behaviors among rural empty-nest elderly (r=-0.539, P<0.01). Grassroots community personnel should take targeted intervention measures to improve the social isolation of the elderly, enhance their health-promoting behaviors, and promote healthy aging.

1. Introduction

Population aging is a major challenge faced by countries around the world today. With the improvement of medical standards and living conditions, human life expectancy continues to increase, and the proportion of the elderly population gradually rises. According to data from the Seventh National Population Census, China's rural population aged 60 and older exceeds 120 million, accounting for 23.81% of the total rural population. This figure is 7.99 percentage points higher than the proportion of the urban population aged 60 and older, indicating that the level of aging in rural areas is significantly higher than in urban areas[1]. In rural areas, due to the large-scale migration of young and middle-aged laborers to cities, the number of empty-nest elderly is large and growing rapidly[2]. Research reports indicate that among rural elderly aged 65 and older in China, more than 43.86% are in an empty-nest status[3]. Because their children are often away for extended periods, empty-nest elderly receive less daily care, emotional interaction, and financial support from their families. This weakening of family support functions makes it easy for empty-nest elderly to experience feelings of loneliness and marginalization in social life, leading to social alienation. Additionally, rural areas still have significant gaps compared to cities in terms of

economic development level, infrastructure construction, and public service provision. Under this context of uneven social development, rural empty-nest elderly face problems such as difficulty obtaining information, lack of cultural and recreational activities, and narrow social circles, making it hard for them to keep up with the fast pace of societal development. Gradually, they fall behind in social interactions and increasingly distance themselves from mainstream social groups, thereby deepening their sense of social alienation[4-5]. Research shows that older adults who experience prolonged social isolation are more prone to mental health issues such as depression, anxiety, and loneliness, which can lead to memory loss and cognitive decline, severely impacting their quality of life and placing a heavy burden on families and society[6–7]. Health-promoting behaviors, as an important behavioral strategy for individuals to actively maintain health, are not only key indicators for measuring their level of health management but also an important way to achieve active aging[8]. Based on this, this study aims to investigate the current situation of social isolation and health-promoting behaviors among empty-nest elderly in rural areas, and to analyze the correlation between the two, in order to provide a basis for formulating targeted health intervention strategies and improving the physical and mental health of rural empty-nest elderly.

2. Methods

2.1. Participants

Participants were adults aged 60 or older from Chenzhou City, China. People are rural household residents, living alone or only with their spouse; without children or with children who are not around for a long time. Individuals with mental disorders, Alzheimer's disease, or cognitive impairments, those who are bedridden or completely incapacitated, and children living nearby who can provide care at any time were excluded.

2.2. Measures

A questionnaire on demographic characteristics designed by the researchers was used. It included age, gender, educational level, marital status, residence status, number of children, monthly personal income, method of paying for medical care, and presence of chronic diseases. The general social isolation scale was used to measure the elderly, including four dimensions: self-alienation, social isolation, distrust, and meaninglessness, with a total of 15 items. The total score of the scale ranges from 15 to 60, with higher scores indicating a higher level of social alienation. The total Cronbach's α coefficient of the scale is 0.81, indicating good reliability and validity[9].

Health-promoting behaviors were measured using the Health-Promoting Lifestyle Profile II(HPLP-II). This scale was introduced in China by Cao and colleagues[10] after cultural adaptation and translation. It includes six dimensions: health responsibility, nutrition, stress management, physical activity, interpersonal relationships, and spiritual growth, with a total of 40 items. The total score ranges from 40 to 160 points, with higher scores indicating higher levels of health-promoting behaviors. The scale's Cronbach's α coefficient ranges from 0.63 to 0.81, demonstrating good reliability and validity.

2.3. Data analysis

The survey was conducted in accordance with the principle of informed consent. A total of 360 questionnaires were distributed, 350 were validly returned, with an effective response rate of 97.2%. Data were analyzed using SPSS version. Measurement data conforming to a normal distribution were expressed as mean and standard deviation, and basic data were described using counts and

percentages. Pearson correlation test was used to analyze the correlation between social isolation and health-promoting behaviors among rural empty-nest elderly. Probability values of less than 0.05 were seen as statistically significant. Reported P-values were two-tailed in all calculations.

3. Results

3.1. Sample demographic characteristics

This study surveyed a total of 350 rural empty-nest elderly, including 151 individuals aged 60–69 (43.14%), 114 aged 70–79 (32.57%), and 85 aged 80 or older (24.29%); 167 were male (47.71%) and 183 were female (52.29%); 114 (32.57%) had a primary school education or lower, 152 (43.43%) had a junior high school education, and 84 (24.00%) had a high school education or higher; 214 individuals (61.14%) with a spouse, and 136 (38.86%) without a spouse; 124 individuals (35.43%) lived alone, while 226 (64.57%) lived with family members; 62 individuals with no children (17.71%), 115 (32.86%) had one child, and 173 (49.43%) had two or more children; 112 people with a personal monthly income of <1,000 yuan (32.00%), 160 people with 1,000–3,000 yuan (45.71%), and 78 people with >3,000 yuan (22.29%); 187 people with medical insurance/social security (53.43%) and 163 people paying out of pocket (46.57%); 241 people with chronic diseases (68.86%) and 109 people without chronic diseases (31.14%).

3.2. Social isolation and health-promoting behavior scores among rural empty-nest elderly

Table 1 shows that the social isolation score of rural empty-nest elderly is (42.44±2.85) points, the health promotion behavior score is (103.07±12.41) points, the stress management dimension score is the highest, and the physical activity dimension score is the lowest.

Table 1 The social isolation and health-promoting behavior scores (n=350)

Items	Score	Equal distribution of entries
Total score for social isolation	42.44±2.85	2.83±0.19
Self-alienation	10.62±0.73	3.54±0.24
Social isolation	11.86±0.80	2.37±0.16
Distrust	10.21±0.75	2.55±0.19
Meaninglessness	9.75±0.42	3.25±0.14
Total score for health-promoting behaviors	103.07±12.41	2.58±0.31
Health responsibility	26.42±4.73	2.40±0.43
Nutrition	18.25±2.75	3.04±0.46
Stress management	15.62±2.34	3.12±0.47
Physical activity	16.84±3.27	2.11±0.41
Interpersonal relationships	13.51±2.62	2.70±0.52
Spiritual growth	12.43±3.18	2.49±0.64

Note: Data are Mean ±SD.

3.3. Correlation between social isolation and health-promoting behaviors among rural empty-nest elderly

The Pearson correlation analysis results in Table 2 show that the total score and each dimension score of social isolation among rural empty-nest elderly were negatively correlated with health promotion behavior and each dimension (P<0.05).

Table 2 Correlation between social isolation and health-promoting behaviors (n=350)

Items	Total score for social isolation	Self-alienation	Social isolation	Distrust	Meaninglessness
Total score for health-promoting behaviors	-0.539**	-0.416**	-0.482**	-0.360**	-0.349**
Health responsibility	-0.410**	-0.388**	-0.464**	-0.384**	-0.412**
Nutrition	-0.367**	-0.321*	-0.415**	-0.413**	-0.396**
Stress Management	-0.405**	-0.356**	-0.332**	-0.362**	-0.408**
Physical activity	-0.439*	-0.379**	-0.358**	-0.390*	-0.466*
Interpersonal Relationships	-0.351**	-0.432*	-0.270*	-0.354*	-0.382**
Spiritual growth	-0.226*	-0.305*	-0.309*	-0.336**	-0.325*

Note: Data are r values.*P＜0.05, **P＜0.01.

4. Discussion

4.1. The current status of social isolation among rural empty-nest elderly

Social isolation refers to the lack of effective interaction between an individual and the outside world, the inability to satisfy their social desires, accompanied by negative emotions such as helplessness and loneliness[11]. The results of this study show that the total score of social isolation among rural empty-nest elderly is (42.44 ±2.85), which is higher than the survey results of urban community empty-nest elderly by Lu et al[12], possibly related to the difference in the survey subjects. On the one hand, compared to urban areas, rural regions have relatively scarce social resources such as transportation services, entertainment facilities, and cultural activities, which limit the social activities of the elderly and thus enhance feelings of social isolation[13]. On the other hand, rural older adults lack familiarity with modern information technologies, making it difficult for them to use tools such as the internet and smartphones for socializing and accessing information. This digital divide further exacerbates their sense of social isolation. However, research by Henning et al[14] shows that urban elderly people have higher levels of social isolation than rural elderly, which is contrary to the findings of this study. This discrepancy may be attributed to the slower pace of rural life, close-knit neighborhood relationships, frequent daily interactions among older adults, and greater family intimacy.

4.2. The current status of health promotion behaviors among rural empty-nest elderly

This study found that the total score of health-promoting behaviors among rural empty-nest elderly was (103.07±12.41), at a moderate level, which is consistent with the research by Qiu et al[15], indicating that the elderly have certain health self-management awareness and behavioral abilities, but the overall health promotion status still needs to be further improved, and a systematic and normalized health behavior model has not yet been formed. Health-promoting behaviors are a key factor in achieving healthy aging. With the advancement of the rural revitalization strategy, the continuous improvement of the rural healthcare system, and the in-depth popularization of health literacy among the entire population, rural elderly people's health awareness has gradually improved, and they have begun to actively pay attention to their own health and practice basic healthy behaviors. The stress management dimension has the highest score, which may be related to the simple living environment in rural areas, low material desires, gentle pace of life, simple interpersonal interactions, and few stress sources[16]. The physical activity dimension has the lowest

score. On the one hand, rural elderly are engaged in manual labor all year round and are often accompanied by chronic diseases such as lumbar muscle strain and joint pain. Their physical endurance and activity ability are reduced, resulting in a lack of subjective exercise willingness. On the other hand, public sports facilities in rural areas are incomplete and unevenly distributed. Some fitness equipment is outdated, damaged, and unmaintained. There is also a lack of low-intensity and safe sports facilities suitable for the elderly, which greatly reduces the feasibility of exercise for the elderly. At the same time, living alone and in an empty nest state lead to a lack of exercise companionship for the elderly, and their loneliness reduces their enthusiasm for participating in physical exercise.

4.3. Analysis of the correlation between social alienation and health-promoting behaviors among rural empty-nest elderly

The results of this study show that there is a significant negative correlation between social alienation and health-promoting behaviors among rural empty-nest elderly, suggesting that the higher the level of social alienation among the elderly, the worse their health-promoting behaviors are, which is consistent with the results of Li[17] and other studies. The reason may be that elderly people living alone in rural areas whose children live far away, lack of family care, reduced neighborhood interactions, and lack of health reminders, behavioral supervision and practical assistance from family, community and peers, resulting in a decline in the execution of the elderly's proactive health behaviors. Empty-nest elderly people with a high sense of social alienation are prone to psychological problems such as loneliness, anxiety, and depression due to a long-term lack of social interaction and social participation[18]. These negative emotions will reduce the subjective initiative of individual health self-management, neglect their own health maintenance, and adopt a passive avoidance attitude toward various health-promoting behaviors[19]. In addition, health education resources are scarce in rural areas, and older adults often obtain health information primarily through interpersonal channels such as social interactions and community outreach. However, social isolation has reduced their interaction with the outside world, resulting in limited access to health information and outdated content. This has led to insufficient health literacy, making it difficult for them to adopt scientifically sound health behaviors.

5. Conclusions

Our findings indicated that social alienation is an important factor affecting the health-promoting behavior of rural empty-nest elderly. Health issues among the elderly are not merely a matter of individual behavior, but rather a complex social problem stemming from a lack of social interaction, emotional void, and inadequate elderly care services. Therefore, in grassroots elderly care and public health work, priority should be given to rural empty-nest elderly populations at high risk of social isolation. By improving the social support system for rural elderly people, enriching social participation channels for the elderly, strengthening family support and community health education services, we can reduce the social alienation level of rural empty-nest elderly people and promote their formation of positive and standardized health-promoting behaviors, thereby improving the overall physical and mental health of rural empty-nest elderly people and promoting the development of rural active aging and elderly health.

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