Health Survey of the Elderly in Huizhou Traditional Villages

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Abstract. This work aims to establish a health self-assessment questionnaire from three aspects of physical health, mental health, and social health through the improvements to the Mos 36-item Short-Form Health Survey, and conduct a questionnaire survey of 219 the elderly in Zhaji village and Hou’an village to find out the healthy condition of the elderly at home in rural areas in Southern Anhui province. The survey results found that the general health status of the elderly living at home in rural areas in Southern Anhui province is relatively better, with a total score mean of 74.08, the mental health is best, and the social health is worst. The indicators with the lowest percentage of “good” votes are: physical health is energy (PH9), mental health is sleep (MH5), and social health is participation in the elections (SH2). The Body Mass Index (BMI) and health self-care ability of the elderly are good. Similarly, the Body Mass Index (BMI) and health self-care ability of the elderly could be better. The survey results show that the indoor environment of Huizhou architecture has benefits for the health of the elderly, so it can be referred to in the subsequent construction of the elderly.

1 Introduction

It has been acknowledged that the aging of the population is not only a global issue, but also the fundamental realities of the country in China for a long time [1]. The “14th Five-Year Plan for Healthy Aging” issued in 2022 to actively respond to the aging of the population, improve the health of the elderly. To promote healthy aging, we must optimize supply side reform guided by the health needs of the elderly, promote the high-quality development of elderly health services and create a livable environment for the elderly, and integrate the construction of an accessible environment and the transformation of an aging environment into urban renewal, the transformation of old urban communities, the transformation of dilapidated rural houses, and the improvement of the rural living environment. With the growth of age, the elderly’s physiological function and defense and protection mechanism ability continue to decline. Therefore, The influence of indoor environment on the health of the elderly can not be ignored.

Compared to the urban areas of the country, the rural areas have a rapidly aging population with a large population base [2] and the characteristics of young people going out to work, there are more left behind elderly who provide for the aged at home. However, most of the current health surveys on the rural elderly only focus on a certain kind of health, such as physical or psychological or social health. Zhang et al. [3] Used a questionnaire to study the impact of social health on the prevalence of chronic diseases in the elderly. Zhou et al. [4] Used the method of random cluster sampling and K10 scale to study the mental health status and its influencing factors of the rural elderly. Gao et al. [5] used a questionnaire to study the impact of personal and family factors on the physical health and mental health of the rural elderly. Therefore, it is necessary to carry out a questionnaire survey on the overall health status of the rural elderly and research healthy aging and influence of indoor environment on the health of the elderly. This study investigates the overall health status of the elderly of Huizhou traditional villages and provides a theoretical basis for the follow-up of rural elderly services and elderly construction.

2 Methods

2.1 Design, setting and participants

The study was conducted over a 9-days period from August 15 to 23, 2020, and investigated 219 the elderly over 60 years old in Zhaji village and Hou’an village, Xuancheng City. In order to comprehensively reflect the health status of the local elderly and considering that the rural elderly are illiterate or have a biased understanding of the questionnaire and cannot easily fill out the questionnaire on their own, we used systematic sampling and a semi-structured interview to obtain self-measured health data from the elderly. During the survey, members were divided into 3 groups working simultaneously.

The subjects of the study included the permanent elderly aged between 60 and 95 who were in stable...
condition and voluntarily participated in the study; It excludes the elderly with basic communication barriers, the elderly with serious primary diseases such as heart, brain, liver and kidney, or the residents with whom the interviewer cannot have direct contact, as well as the elderly living underground or semi underground.

Zhaji and Hou’s village retained many traditional dwellings, and the new dwellings also imitate traditional dwellings in appearance or form. Most traditional dwellings have a two-story structure. The first floor is the main living and activity area, including living rooms, bedrooms, kitchens, bathrooms and courtyards. The second floor attic is mostly used as storage space. Most of the new dwellings have two or three floors, and a few have courtyards and attics. Their building materials and windows have been improved. The main living spaces of residents include bedrooms, living rooms, kitchens and bathrooms. And The elderly spend most of their time in the living room and bedroom.

2.2 Measurements

2.2.1 Body Mass Index (BMI)

BMI can be a more direct indicator of the health status of the elderly. It has been shown that the level of BMI has a significant effect on the level of blood pressure and the prevalence of hypertension in the population [6], especially in the elderly [7]. Therefore, it is significant to analyze the BMI of the elderly to study the health of the elderly. The BMI calculation formula is as follows.

\[ BMI = \frac{M}{H^2} \]

where \( M \) is the human body mass in Kg; \( H \) is the human body height in m.

2.2.2 Frailty level

Rockwood presented the concept of frailty classification for the elderly in the 1990s, divided into seven classes, as shown in Table 1, to reflect the frailty and health of the elderly [8].

Table 1. Rockwood frailty rating scale for the elderly.

<table>
<thead>
<tr>
<th>Frailty level</th>
<th>Specific measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Very health</td>
<td>Energetic, active and regular exercise, with the best health status of the same age</td>
</tr>
<tr>
<td>2 Health</td>
<td>There is no motor disease, but slightly less health than 1</td>
</tr>
<tr>
<td>3 General health</td>
<td>Mild and controllable disease</td>
</tr>
<tr>
<td>4 Surface weakness</td>
<td>There is no significant dependence but often complaints of slower action or presence of certain disease symptoms</td>
</tr>
<tr>
<td>5 Mild weakness</td>
<td>Functional daily life self-care ability (IADL) is partially dependent</td>
</tr>
<tr>
<td>6 Moderate weakness</td>
<td>Self-care ability (ADL) and IADL are both dependent</td>
</tr>
<tr>
<td>7 Severe weakness</td>
<td>ADL is completely dependent or in end-stage disease</td>
</tr>
</tbody>
</table>

2.2.3 The Mos 36-item Short Form Health Survey (SF-36)

Designed by Institute for Health Research, New England Medical Center, Boston, USA, the SF-36 is a brief, 36-item self-report scale designed to assess physiological function, physical function, somatic pain, general health, vitality, social function, and emotional function, as well as mental health.

Through a series of debugging and modifications of the SF-36, a self-assessed health questionnaire with 25-item was finally designed. This 25-item questionnaire assesses physical health (items 1-10), mental health (items 1-8), and social health (items 1-7) over the last month, as shown in Table 2.

Table 2. Self-assessed health questionnaire with 25-item

<table>
<thead>
<tr>
<th>Physical health questionnaire (PH 1-10)</th>
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<tbody>
<tr>
<td>PH1</td>
</tr>
<tr>
<td>PH2</td>
</tr>
<tr>
<td>PH3</td>
</tr>
<tr>
<td>PH4</td>
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<tr>
<td>PH5</td>
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<tr>
<td>PH6</td>
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<tr>
<td>PH7</td>
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<tr>
<td>PH8</td>
</tr>
<tr>
<td>PH9</td>
</tr>
<tr>
<td>PH10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mental health questionnaire (MH 1-8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MH1</td>
</tr>
<tr>
<td>MH2</td>
</tr>
<tr>
<td>MH3</td>
</tr>
<tr>
<td>MH4</td>
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<tr>
<td>MH5</td>
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<tr>
<td>MH6</td>
</tr>
<tr>
<td>MH7</td>
</tr>
<tr>
<td>MH8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social health questionnaire (SH 1-7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SH1</td>
</tr>
<tr>
<td>SH2</td>
</tr>
<tr>
<td>SH3</td>
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<tr>
<td>SH4</td>
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<tr>
<td>SH5</td>
</tr>
<tr>
<td>SH6</td>
</tr>
<tr>
<td>SH7</td>
</tr>
</tbody>
</table>

Each item is assigned a numeric value to yield a total score ranging from 0 to 100, with higher scores reflecting better health. Each part of the health level is measured on a five-point scale (1= very bad; 2= bad; 3= middle; 4= good; 5= very good). The three parts of health are scored separately, and the equation is as follows.

\[ F_{X_i} = \frac{f_i - f_{low}}{f_{high} - f_{low}} \times 100 \]

\[ f_{total} = \sum_{i=1}^{n} f_{X_i} \]

\( F_{X_i} \) is the score for each dimension of physical, mental, and social health; \( f \) is the actual score of each dimensional question item; \( f_{low} \) is the lowest score for each dimensional question item; \( f_{high} \) is the highest score for each dimensional question item. \( f_{total} \) is the total score of the whole questionnaire; \( n \) is the number of dimensions; \( x_i \) is the number of question items in each dimension; \( X \) is the total number of questionnaire items.
2.2.4 Statistical analysis

The statistical analysis was performed using SPSS23.0. Numeric variables were reported with frequency, and categorical variables were illustrated by the mean. Independent samples t-test and spearman rank correlation analysis are the relatively more statistical methods used in the study.

3 Results

The survey was completed by 219 respondents aged at least 60 years and living in Zhaji village and Hou’an village. Demographic characteristics of the study sample as shown in Table 3.

There is a significant correlation (p < 0.05) between the four demographic variables on the overall health self-assessment scores of the elderly. And the regression coefficient B between gender, age, marital status, and elderly health composite self-assessment scores was negative, and the regression coefficient B between education level and health self-evaluation score is positive.

Table 3. Demographic characteristics of the study sample and correlation with health of the elderly (N = 219)

<table>
<thead>
<tr>
<th>Demographic variables</th>
<th>No. of elderly (%)</th>
<th>Regression coefficient and significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>B</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>103(47.0)</td>
<td>-2.491</td>
</tr>
<tr>
<td>Female</td>
<td>116(53.0)</td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td>-2.15</td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td>2.184</td>
</tr>
<tr>
<td>Illiterate</td>
<td>70(32.0)</td>
<td></td>
</tr>
<tr>
<td>Elementary or middle</td>
<td>138(63.0)</td>
<td></td>
</tr>
<tr>
<td>school</td>
<td>11(5.0)</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td>-2.994</td>
</tr>
<tr>
<td>Married</td>
<td>148(67.6)</td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>71(32.4)</td>
<td></td>
</tr>
</tbody>
</table>

3.1 Body Mass Index (BMI)

The normal range of BMI for Asian adults proposed by the International Obesity Task Force in 2000 is 18.5-24.9 [9], and 84.02% of the surveyed the elderly have a BMI within the normal range, as shown in Figure 1.

3.2 Frailty level

The frailty grade tends to rise with age, which is also in line with the natural development of human aging. It can be seen from Figure 2 that only 3 male and 6 female among the elderly have dependence on IADL when the grade below 4 indicates the elderly who have no direct dependence on IADL, and the local elderly have good health and self-care ability.

Fig. 2. Distribution of frailty levels in males (a) and females (b).

3.3 Self-assessment health questionnaire

The results as shown in Figure 3, where scores 4 and 5 are considered “good” and scores 1, 2, and 3 are considered “bad”. From the scores of each indicator of the physical health dimension of the elderly, poor energy status is the physical health problem faced by most of the elderly. The proportion of “good” for question is mostly higher for male elderly than for female elderly. From the self-assessment results of mental health, the poor sleep quality is the mental health problem faced by most seniors. The proportion of “good” for each question is higher for male elderly than for female elderly. In terms of the percentage of votes for each indicator of the social relationship dimension of the elderly, the neighborhood support and social participation of the elderly is not optimistic, and male elderly having better interpersonal situations than relationships with family and friends, while the opposite was true for females.

Fig. 3. Distribution of self-assessed health score in physical health (a) , mental health (b) and social health (c).
4. Conclusion

This study gives a detailed introduction on the contents of the actual questionnaire survey and the survey respondents and analyzes the health situation of the elderly in Huizhou traditional villages.

1. 84.02% of the elderly surveyed had a BMI within the ideal range, and a higher percentage of men than women had a BMI within the normal range. And the IADL of the local elderly is relatively light, so the local elderly were in good health and self-care.

2. Self-rated health of older adults differed by gender, with male older adults having better physical, mental and social health and better overall health than female older adults. The greatest differences in the proportion of "good" by gender were in the degree of restriction of heavy physical activity, quality of sleep and interpersonal interaction.

3. The analysis of the scores of each dimension showed that the social health of the local elderly was the worst (66.01) and the mental health (82.58) was better than the physical health (72.92). The mean overall health score was 74.08, which is in the better range. Poor energy status was the physical health problem faced by most of the elderly. Sleep and unexplained fatigue were the two mental health indicators with low scores. Social health problems were mainly reflected in the low social activities and social participation of the elderly.

References