Health status and associated factors among the community-dwelling elderly in China

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ABSTRACT

The objective of this study was to evaluate the health status and associated factors of the elderly Chinese population. A cross-sectional survey was administered to 849 elderly people aged 60 years and over living in a certain district of Nanjing, China. A health rating scale based on the characteristics of the elderly in China was used. The difference of self-rated health between different groups was tested using an ANOVA, and the associated factors were tested using an ordinal logistic regression. The results showed that the general health of the elderly Chinese people studied was not good. The scores of body function, self-care ability, and physical health decreased gradually with age. The scores of men were higher than those of women in terms of emotional personality. The factors associated with the health status of the elderly were education, living mode and marital status. The health status of the elderly Chinese and the associated factors highlighted in this study demonstrated that emotional and social support were more important than financial support for promoting the mental health of the elderly. These findings will provide a basis for the development of programmes promoting the health management and healthy ageing of the elderly in China.

1. Introduction

With a quarter of the world's population, China has been facing the growing problem of an ageing population in recent years. The rapid progression of population ageing not only has great influences on the development of the social economy but also poses significant challenges to health care in China (Forget, Roos, Deber, & Walld, 2008). It is therefore important to evaluate the health status and health needs of the elderly to provide a basis for decisions regarding health services for the elderly and programmes promoting healthy ageing. Although the health status of the elderly has a lot in common with that of the general population, the function and status in physiological, psychological and social adaptation of the elderly are weaker than those of young adults. Therefore, it is misleading to evaluate the health status of the elderly using standard health status indicators designed for the general population, such as average life expectancy and mortality rate. The quality of life for the same period of time may be different for the elderly due to differences in the extent of organ damage and disability. According to the changing trend of health measurements, the evaluation of population health should not only reflect the health status of the body but should also integrate physical, mental and social adaptability to reflect a comprehensive and accurate understanding of population health. Therefore, scales and health assessment index systems should include physical, mental and social adaptation when evaluating the health status of the elderly. Due to the growing number of elderly people in the general population, the development of health rating scales relevant to the elderly is a growing field of study, and some studies have already been carried out (Bradley Chen & Ajay Mahal, 2010; De et al., 1987; Lawton, 1982; Moineddin, Nie, Wang, Tracy, & Ross, 2010; Repetto, Camandini, & Mammoliti, 2001; Zheng, 2000; Zhou Liping, 2007). The meaning of health is understood differently by various researchers, resulting in a number of health rating scales and the absence of an internationally recognized scale. In addition, health status is a reflection of complex natural and social phenomena, which determine the complexity and uncertainty of the measurement content. Compared with other age groups, the elderly have special characteristics. Therefore, evaluating the health status of the elderly using specialized assessment scales can lead to more relevant measures, and some such studies have already been conducted (Dapp et al., 2011; Gilhoolya et al., 2007; Kalpa et al., 2012; Stuck et al., 2002; Stuck et al., 2007a,b). In China, some research on health evaluation has been performed (Jun, Jinhua, Liyi, & Inca, 2010; Ma, Wang, Zheng,

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& Zuo, 2008), but there are few adequate studies of health evaluation index systems for the elderly. Furthermore, empirical research on index systems based on established theories is even rarer.

In this study, the cluster random sampling method was used to investigate 1000 Chinese people aged 60 years and over from a certain district of Nanjing, China, using a health rating scale based on the characteristics of the elderly in China. The objective of the study was to evaluate the health status and associated factors of the Chinese elderly. These factors will provide a basis for the development of health management and healthy ageing programmes for the elderly in China.

2. Subjects and methods

2.1. Subjects and data collection

A cross-sectional survey was conducted from January to April in 2009. The 1000 elderly Chinese people aged 60 years and over who were cluster random sampled from a district hospital in Nanjing were interviewed to fill out questionnaires. All subjects were from a community with a community health service centre in Nanjing. Nanjing is located in southeastern China and is the provincial capital of Jiangsu province, one of China's more developed provinces. All subjects provided informed consent.

The inclusion criteria of the subjects were as follows: (1) aged 60 years and over and (2) local permanent resident. The exclusion criteria were as follows (Nakanishi et al., 1995): (1) cognitive defect, severe psychological disorder or mental illness; (2) severe chronic diseases such as heart failure, respiratory failure, liver cirrhosis, renal function failure or need for aided living beyond himself/herself; (3) limitation in physical activity; and (4) participating in or participated in other trials within 30 days prior to our study.

To recruit sufficient subjects, we displayed posters and notices and carried out oral propagation in the community and community health service centres before our investigation began. Additionally, before the research began, a pilot study was conducted with a relevant population. The results of the pilot study were used to modify the questionnaire. During the full research survey, strict quality control measures were taken, such as quality checks on completed questionnaires and correction of identified mistakes.

2.2. Measurements and scoring methods

According to the research objectives, the Elderly Health Assessment Scale was designed by referring to many health rating scales; consulting numerous experts; and adapting the scale to Chinese culture, social structure and concept of value. The first part of the questionnaire covers sociodemographic characteristics, and the second part includes five dimensions (body function, self-care ability function, emotional personality, memory function, and social adaptability) with 39 indicators referring to physical health (including body function and self-care ability), mental health (including emotional personality and memory function) and social adaptability. The weights of each index and dimension defined by the Analytic Hierarchy Process are shown in Table 1.

There are 26 positive and 13 negative indicators. The scoring method for each indicator is as follows: for the positive indicators with five categories, the score is the same as its rating rank; for the negative indicators, the score is calculated by subtracting the rating rank from the value of 6. Specifically, for the indicators with three categories, the positive indicators are given scores of 1, 3, and 5, and the negative indicators are given scores of 5, 3, and 1; for the indicators with two categories, the positive indicators are given scores of 1 or 5, the negative indicators are given scores of 5 or 1. The score of each dimension as calculated in this way. The composite score reflecting the health status of the elderly can be obtained by the weighted average method. The formula is as follows:

$$ZHJK = 0.376 \times QTJN + 0.215 \times SHZLGN + 0.215 \times QXXG + 0.074 \times JYGN + 0.121 \times SHSYX$$

ZHJK, QTJN, SHZLGN, QXXG, JYGN, and SHSYX represent general health, body function, self-care ability, emotional personality, memory function and social adaptability, respectively.

The health level of the elderly for each dimension studied can be calculated using the weighted average method for the indicators in each health dimension.

Table 1
Elderly health assessment index system composition and weights.

Index	Weight	Index	Weight	Index	Weight	Index	Weight
I. Body function	*0.376*	*II. Self-care ability function*	*0.215*	*III. Emotional personality*	*0.215*	*IV. Memory function*	*0.074*
1. Self-rated health	0.223	1. Capacity of cooking on their own	0.056	1. Self-rated psychological state	0.249	1. Long-term memory capacity	0.333
2.Health status compared with peers	0.223	2. Capacity of nailing on their own	0.056	2. Living happily	0.152	2. Short-term memory capacity	0.667
3. Chronic disease	0.138	3. Capacity of managing finances on their own	0.056	3. Feeling hopeful for the future	0.152	*V. Social adaptability*	*0.121*
4. Bodily pain	0.084	4. Capacity of taking car out on their own	0.056	4. Sad	0.081	1. Self-rated social relationship	0.294
5. Illness within two weeks	0.138	5. Capacity of shopping on their own	0.056	5. Depressed	0.081	2. Degree of family harmony	0.173
6. Vision	0.048	6. Capacity of walking up and down stairs on their own	0.056	6. Lonely	0.081	3. Participation in social activities	0.090
7. Hearing	0.048	7. Capacity of eating on their own	0.111	7. Emotional irritability	0.081	4. Social range	0.090
8. Dental health	0.048	8. Capacity of bathing on their own	0.111	8. Nervous	0.081	5. Degree of relying on family	0.173
9. Nutritional status (BMI)	0.048	9. Capacity of dressing on their own	0.111	9. Quality of sleep	0.045	6. Degree of relying on friends	0.090
		10. Capacity of going to the toilet	0.111			7. Relations with relatives and friends	0.090
		11. Capacity of controlling bowel and bladder	0.111				
		12. Capacity of indoor activities on their own	0.111				