### ARTICLE IN PRESS

Geriatric Nursing xx (2017) 1-8



Contents lists available at ScienceDirect

# **Geriatric Nursing**

journal homepage: www.gnjournal.com



#### Feature Article

# Characteristics of the Chinese rural elderly living in nursing homes who have suicidal ideation: A multiple regression model

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#### ARTICLE INFO

#### Article history: Received 27 August 2016 Received in revised form 9 February 2017 Accepted 13 February 2017 Available online xxx

Keywords:
Suicidal ideation
Rural nursing home
Elderly
Path analysis
Depression
Hopelessness
Loneliness
Self-esteem

#### ABSTRACT

*Background:* Chinese rural elderly are at higher risk of committing suicide. However, little is known about the suicidal ideation (SI) of institutional elderly residents in rural China.

*Methods:* 250 participants aged 60 or above living in Chinese rural nursing homes were recruited. Data were collected on subjects' SI, social-demographic characters, physical illness and psychological factors. Univariate comparisons and path analysis were conducted then.

Results: 19.5% (40/205) of the participants reported a current SI. Hopelessness and depression had significant direct impacts on SI, and self-esteem and loneliness can impact SI through the mediating of depression and hopelessness. Visiting frequency of children, number of physical illnesses and social activities can also affect SI through the mediating of loneliness or self-esteem.

Conclusion: As the first study on path analysis of SI of rural institutional elderly, the findings are significant. All these factors in our model should be considered when interventions are being conducted.

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#### Introduction

As a significant public health issue, suicide is the 13th leading cause of death worldwide, and its global rate has been estimated to be 16 per 100,000 persons annually. In China, suicide is the fifth leading cause of death and the reported suicide rate is 6.6 per 100,000 persons annually. The suicide rate of older Chinese adults is higher than that of younger adults in China and in other countries. Studies have found that the suicide rate in this population

Abbreviations: SI, suicidal ideation; NSI, without suicidal ideation; RSES, Rosenberg Self-esteem Scale; ULS, UCLA Loneliness Scale; HADS-D, Hospital Anxiety and Depression Scale-Depression; BHS, Beck Hopelessness Scale.

Description of authors' roles: Formulated the research questions: JZ, JJ, YS, DZ. Designed the study: DZ, JJ, YS, JZ, YY, YS, MW, HX. Performed the experiments: DZ, YY, YS, MW, HX, YS. Analyzed the data: DZ, YY. Wrote the article: DZ, KW. This study was funded by the Ministry of Education of China Grant: (14YJAZH068) and Innovation Fund for Youth Team of Shandong University: (IFYT15008). Conflict of interest declaration: None.

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varies with differences between rural and urban areas. The mean annual suicide rate among older Chinese adults living in rural areas (82.8/100,000 persons) is five times higher than that of their counterparts living in urban areas (16.7/100,000 persons).<sup>4</sup> Given the rapid aging of China's rural population,<sup>6</sup> suicide prevention should be a top priority for nurses and other healthcare providers.

Suicidal ideation refers to thoughts of killing oneself that can range from a vague idea about dying to a specific suicide plan. Although suicidal ideation does not necessarily lead to suicide, it serves as a warning of suicidal behavior and a strong predictor in the assessment of a potential suicide. B.9 Therefore, understanding suicidal ideation and its related factors among older adults in rural settings is critical.

Although living with one's family is the predominant living arrangement in China due to traditional cultural values, an increase in the number of older adults in rural areas has led to a growing demand for nursing homes. S. China's smaller family size, resulting from its previous "one-child" policy, along with its increasing number of "empty nesters" due to large youngsters' migrated from rural to urban areas, have challenged family support systems for

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rural older adults, and this has necessitated the development of rural nursing homes. <sup>6,10</sup> The Ministry of Civil Affairs of the People's Republic of China has reported that the number of beds in Chinese nursing homes has grown from 3.41 million in 2012 to 5.84 million in 2015. <sup>11,12</sup>

Compared with community-dwelling older adults, those living in institutions are more likely to suffer from poorer physical and cognitive health and nutritional deficiencies, and have a higher prevalence of loneliness and depression. <sup>13,14</sup> The increasing number of older residents with poor physical and mental health in rural nursing homes highlights the importance of understanding their suicidal ideation and intervening to prevent their suicides. However, current studies tend to focus on community-dwelling rather than institutionalized older adults in rural settings. Thus, we should pay more attention to this potentially vulnerable group.

Suicidal ideation is related to multiple factors, which can be divided into four categories: (1) the demographic factors, such as age, gender, and economic status<sup>15,16</sup>; (2) physical health-related factors, such as numbers of physical diseases and duration of illness<sup>17,18</sup>; (3) psychological factors, including depression, <sup>19</sup> hopelessness, <sup>20</sup> low self-esteem, <sup>21</sup> loneliness, <sup>22</sup> etc.; and (4) social factors including frequency of participating social activities, <sup>23</sup> having no spouse, <sup>4</sup> children's lack of filial piety, <sup>23</sup> etc. However, the variables that have the largest effects on suicidal ideation and whether these effects are direct or indirect continue to be the subject of debate. <sup>17</sup>

Given this background information, we aimed to report the prevalence of suicidal ideation among older adults living in rural nursing homes, to compare suicidal ideation by subjects' characteristics, such as gender, age, financial status, and to identify the direct and indirect effects of factors associated with suicidal ideation using a comprehensive path analysis. Specifically we tested participants' gender, age, education background, marital status, monthly income, frequency of visit with their children, number of physical illnesses, number of different types of social activities and psychological factors including depressive disorder, hopelessness, self-esteem and feeling of loneliness.

#### Material and methods

#### Participants and procedures

Data were collected during the summer of 2015 in a rural area of northern China (Xintai County, Shandong Province). China is divided into provinces, cities, counties, and towns/villages (rural).<sup>4</sup> Five rural nursing homes were selected as convenience samples after they were approved by the local administration for inclusion in the study. All the institutions fulfilled the following criteria for inclusion in the study: (1) government-owned public institution, (2) total number of registered residents  $\geq$  30, and (3) normal operations for more than three years without any major accidents.

Residents of the five institutions comprised our target population and those who were included in the study fulfilled the following criteria: (1) aged  $\geq$  60 years, (2) lived in a nursing home for longer than three months, (3) had the physical and mental abilities to participate in interviews, (4) fluent in the local language, and (5) willing to participate in the study and sign an informed consent form. The exclusion criteria were: (1) a severe hearing impairment, which could impede communication (with others), (2) a diagnosis of "dementia" or a severe cognitive deficit, as indicated by a Mini-Mental State Examination (MMSE) score < 16 for participants with no formal education and a MMSE score < 20 for primary school graduates or above, <sup>24</sup> and (3) a terminal illness. A total of 205 participants (women = 110, men = 95, mean

age =  $77.31 \pm 7.86$  years) were recruited. The enrollment procedure is shown in Fig. 1.

Interviews were completed in the resident's room and lasted approximately 1 h. After the interview, the investigators were required to double-check the quality of the questionnaires and collect them. All the respondents who finished the interview received a thank you gift worth 20 Yuan. The study has been approved by the Shandong University Human Research Protections Program.

#### **Variables**

#### Demographic characteristics

The main demographic variables were age, gender, education, and family's monthly income.

#### Physical health

We selected medical disorders reported to be prevalent among older adults and asked participants whether they had one or more of the following medical conditions during the previous year: diabetes mellitus, hypertension, osteoarthritis, liver disorders, kidney disorders, cancer, congestive heart failure, chronic obstructive pulmonary disease, heart attack, gastrointestinal disorders, hearing problems, and ophthalmologic disorders.<sup>23</sup>

#### Social characteristics

Information was collected about participants' marital status, frequency of visits with their children, and the numbers of different types of social activities in which they engaged. Participants were asked whether they joined in one or more of the following social activities in the past three months: workplace-related activities, institutional activities, religious gatherings, voluntary activities, hobbies or clubs, sports, and educational or training activities.<sup>25</sup>

#### Self-esteem

The Rosenberg Self-esteem Scale (RSES), which has been found to be a reliable and valid instrument for use in the Chinese culture, was used to measure self-esteem. 8,9,26,27 Cronbach's  $\alpha$  for the RSES was 0.966 in this study. Respondents to the 10-item RSES are instructed to indicate how strongly they agree or disagree with statements describing their feelings about themselves. Examples of the items are "On the whole, I am satisfied with myself" "I feel that I have a number of good qualities" "I wish I could have more respect for myself." and "I certainly feel useless at times". Respondents' level of agreement/disagreement is rated on a 4-point-Likert scale ranging from 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree (items 2, 5, 6, 8, 9 are reverse scored). <sup>28</sup> The total score ranges from 10 to 40 points with a higher score indicating a higher level of self-esteem.

#### Loneliness

The UCLA Loneliness Scale (ULS) (Version 3), which has been found to have high validity in several languages, including Chinese, was used to evaluate loneliness.  $^{29,30}$  Cronbach's  $\alpha$  for the ULS was 0.942 in this study. The scale's items are 20 statements requiring respondents to indicate how often they think each statement describes them. Examples of the statements are "I lack companionship" "There is no one I can turn to" and "I feel isolated from others". The responses are rated on a 4-point scale ranging from 1 = never, 2 = rarely, 3 = sometimes, and 4 = often (items 1, 5, 6, 9, 10, 15, 16, 19, 20 are reverse scored). The total score ranges from 20 to 80 points with a higher score indicating stronger feelings of subjective loneliness and social isolation.

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