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### **Original Article**

# Depression and Associated Factors in the Elderly Cadres in Fuzhou, China: A Community-based Study\*



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#### SUMMARY

*Background:* Depression is a significant global health burden among the aging population. The strength and relative importance of some known or potential factors associated with geriatric depression (GD) can vary with different regions and populations. The objective of this study was to explore the prevalence and risk factors of depression for the elderly cadres in the city of Fuzhou, China.

*Methods*: A total of 1910 community-dwelling elderly cadres aged  $\geq$  60 years have enrolled in this study. The cross-sectional survey was conducted to collect information on demographic characteristics, medical history, and the factors associated with the depression. Depressive symptoms were assessed using the 30-item Geriatric Depression Scale (GDS). Odds ratios (ORs) and 95% confidence intervals (CIs) were estimated using unconditional logistic regression models.

*Results*: The overall prevalence of depressive symptoms was found to be 10.5%, of which 10.6% was in men and 9.8% was in women. The highest risk factors were lack of social engagement, low family support, chronic disease, and disturbed sleep.

*Conclusion:* Depression is common among Chinese elderly cadres. Our results confirmed that late-life depression remains complex, and lack of social engagement and low family support were associated with increased risk of GD.

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#### 1. Introduction

The World Health Organization (WHO) estimates that by 2020 depression will be the most important single cause of disability in both developed and developing countries<sup>1</sup>. Although depression is a common mental health problem in the aging population, the estimates for the prevalence of depression in the elderly differ greatly<sup>2,3</sup>. Although previous studies had suggested that factors such as female sex, lower educational attainment, perceived income inadequacy, and major life events are possible risk factors associated with geriatric depression (GD)<sup>4,5</sup>, the strength and relative importance of some known or potential factors associated with GD varied widely with regions and population.

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China is one of the most rapidly aging countries in the world and accounts for one-fifth of the world's adult population aged  $\geq 60$  years and. It has been predicted that by 2020, the number of people aged  $\geq 60$  years will increase to 243.85 million, representing 17% of the Chinese population<sup>6</sup>. The number of individuals with late-life depression could increase substantially and the accompanying epidemiological transition will greatly increase the disease burden. In order to gain a better preventive interventions targeting geriatric depression, we have carried out this study to explore the prevalence rates and associated factors of depression in the elderly cadres in Fuzhou, China (Fuzhou is located on China's southeastern coast, the capital city of Fujian province, China).

#### 2. Patients and methods

#### 2.1. Study design and participants

A cross-sectional descriptive survey was conducted in community-dwelling elderly cadres in Fuzhou, China in 2009. There were 1950 elderly cadres aged  $\geq$  60 years who were recruited

<sup>\*</sup> Conflicts of interest: All contributing authors declare that they have no conflicts of interest.

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based on the complete registration list from the Fujian cadre health care database (Cadre Health Care Centre, Fujian province, China). All patients have retired from the government or other state employment. They could receive benefits on the health service from a government-financed system and have regular and free physical examinations, health care, and medications. Among them, 40 patients were not able to complete the questionnaire because of terminal diseases or severe cognitive impairment. There were 1910 patients who completed the survey, resulting in a participation rate of 98.0%.

#### 2.2. Measures

The 30-item Geriatric Depression Scale (GDS) was originally developed by Yesavage et al<sup>7</sup> in order to assess depressive symptoms in geriatric populations. It is widely accepted that the GDS is a valid and reliable screening tool for elderly depression in Englishspeaking, as well as many other non-English-speaking countries<sup>8,9</sup>. Previous studies have demonstrated an acceptable internal consistency and construct validity of this instrument among geriatric populations, and the Chinese version has also been validated<sup>9,10</sup>. The sensitivity was 70.6%, specificity was 70.1%, internal consistency reliability was 0.89 (alpha), and the test-retest reliability was 0.85 (alpha). GDS scores between 11 and 20 are generally considered to represent significant mild depression and scores of > 21 are considered severe depression<sup>11</sup>. In the current study, the Chinese version of the GDS was used, and the participants with scores > 11 were classified as depressed whereas those scoring < 11were classified as nondepressed.

#### 2.3. Data collection

A structured questionnaire, including sociodemographic characteristics, physical health, and health-related events, living activities, and family status, was completed by all individuals. The patients were also guestioned with respect to their social activities and their family support. The questions related to their social activity include, for example, how often did they participate in the social activities (never, seldom, or frequently); did they participate in meetings, do they contact their friends often; (present or not); and do they have many interesting things to do in their day-to- day life (yes or no). The questions related to their family support included: do they get along well with their family? (yes or no); will their family help them out when they were in trouble? (yes or no); are they satisfied with their children? (very unsatisfactory, general unsatisfactory, general satisfactory, and very satisfactory); how satisfied are they with their marital life? (very unsatisfactory, general unsatisfactory, general satisfactory, and very satisfactory). The Physical Health Problems Checklist contains 18 somatic disorders commonly encountered in the elderly people in China, including chronic bronchitis, pulmonary heart disease, hypertension, coronary heart disease, hepatocirrhosis, gallstone, chronic gastritis, chronic enteritis, chronic renal failure, hyperplasia of prostate gland, diabetes, high blood lipids, cerebral atrophy, lacunar infarct, Parkinson's disease, sequelae of stroke, cervical spondylosis, and anemia. Chronic health conditions were evaluated using a selfreport method of doctor diagnosis, and verified by a physician from the department of cadres ward, the affiliated union hospital, Fujian Medical University, Fuzhou, China. The participants in this study were able to have a full understanding of the information presented on questionnaire, and answered the questions by themselves.

All the participants included in the study gave their informed consent, and at the conclusion of this study, they were given the appropriate health counseling based on the information they provided. This study was approved by the Institutional Review Board and Ethics Committee of Fujian Medical University.

Over the course of the study, 143 participants randomly selected from the name list of all patients were resurveyed using the same questionnaire 2 months later. Good agreement (90%) on assessment of depression was found between the two surveys. The interrater reliability was excellent, with an ICC of 0.88–0.96.

#### 2.4. Data analysis

The prevalence of depression among elderly cadres in the various sex and age (in 5-year increments to age  $\geq$  80 years) groups was evaluated used the Chi-square test. Student *t* test or analysis of variance was conducted to test differences between groups regarding continuous variables. Adjusted odds ratios (ORs) for confounding variables and 95% confidence intervals (95% CI) were calculated to evaluate the associations of the chronic somatic diseases with depression. A stepwise unconditional logistic regression was performed to assess the independent effects of risk factors for depression. All analyses were performed using SPSS version 16.0 (SPSS Inc., Chicago, IL, USA). An alpha level of 0.05 was used as the criterion of statistical significance and all statistical tests were two-sided.

#### 3. Results

#### 3.1. Demographic characteristics

There were 1910 participants who had valid information, with a mean age of 74.51  $\pm$  6.69 years, and 75.6% (n = 1443) of them were aged  $\geq$  70 years. Overall, 1665 of the study participants were men (87.17%) and 245 were women (12.83%). The ratio of men to women was 6.80:1. The sex distribution of the patients reflected the fact that the number of male cadres greatly exceeded that of female cadres in China. Mean age of men (74.41  $\pm$  6.80 years) and women patients (75.20  $\pm$  5.83 years) was similar (t = 1.920, p > 0.05). There were no differences between sexes in percentage of age groups ( $\chi 2$  = 10.678, df = 5, p > 0.05). All of the participants in this study are Han Chinese, and have retired from government agencies or public institutions in Fuzhou, China.

#### 3.2. Prevalence estimates

In the current study, 10.5% (n = 200) of patients were considered to be depressed, 9.4% (n = 179) were considered mildly depressive, and 1.1% (n = 21) were severely depressive. The mean score of the GDS were presented in Table 1; it was 5.12 ± 4.42 for men and 4.98 ± 4.3 for women (t = -0.471, p > 0.05). The prevalence rate of depression in men and women was found to be 10.6% and 9.8%, respectively. No significant difference was found between the sexes ( $\chi^2 = 0.137$ , p > 0.05). However, there were significant differences between the age groups on the GDS score (F = 21.034, p < 0.01). The prevalence rate was from 14.0% to 16.1% for all individuals aged  $\geq$ 75 years, the highest rates (16.1%) can be found in individuals aged  $\geq$  85 years, and lowest (4.1%) was in the youngest age group of 60–64 years ( $\chi^2 = 31.672$ , df = 5, p < 0.01).

#### 3.3. Chronic diseases and depression

Table 2 shows the distribution of each chronic disease by the presence of depression among elderly cadres. The most frequently reported chronic diseases were hyperplasia of the prostate gland (70.63%), hypertension (57.07%), and high blood lipid levels (42.51%). After adjusting for age and sex, significant and positive associations were noted with pulmonary heart disease (OR = 1.99,

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