



## Prevalence and correlates of depression among college nursing students in China



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### SUMMARY

This study aims to assess the prevalence of depression and examine potential risk factors correlated to depression among nursing college students in China. Between September and November 2012, a total of 763 college nursing students were randomly selected to participate in a survey, which included the Center for Epidemiologic Studies Depression Scale (CES-D). The result showed that 22.9% (95% CI: 20.0%–25.9%) of participants reported high score on the CES-D (16 or above). Risk factors significantly associated with depression in the univariate analysis were academic performance, academic stress, interest in majors, occupational future, interpersonal relationship, frequency of exercise, self-reported health status, social support, educational level of father, relationship with parents and making decisions without interference by parents. Backward multivariate logistic regression analysis revealed that lower academic stress, and better occupational future were strongly related to lower risk of depression, followed by active use of social support, full making decision power, better relationship with father and higher self-reported health status. The findings suggested that in order to prevent depression among college nursing students, school- and family-based strategies should be developed and implemented.

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### Introduction

Depression is considered as a multi-problematic disorder that leads to impairment in inter-personal, social, and occupational functioning and is often associated with suicide among college students (Farabaugh et al., 2012; Ibrahim et al., 2013; Wilcox et al., 2010), and even as the greatest risk factor for suicide and a logical starting point with respect to identification of at-risk individuals (Konick and Gutierrez, 2005). For example, in 2006, the American College Health Association reported that 10% of college students seriously considered suicide and nearly suffered from significant depression. About 95% of students who commit suicide are clinically depressed, causing great suffering not only to themselves, but also to family members and people living around them. Therefore, in recent years, a great deal of attention has been placed on the prevalence and correlates of depression in college students worldwide (Aselton, 2012; Christensson et al., 2011).

In light of prior studies, the prevalence of depression among college students varies largely across settings, depending on cultural backgrounds and study instruments (Ibrahim et al., 2013). Several studies have found that the rates of depression ranges from 7.6% to 22% among American and Indian young adults (Roberts et al., 2010; Sidana et al., 2012) and from 3.7% to 14.8% among Chinese college students (Jin et al., 2009). Furthermore, a review paper of Herman et al. (2011) showed that the prevalence of depression in the three largest U.S. ethnic racial groups (African American, European American, and Hispanic) was conflicting. In this review, some studies found the levels of depressive symptoms among African Americans or Hispanics were higher than European Americans, while other studies demonstrated no differences or the differences varied depending on how depression was defined.

Being in the medical field, nurses are faced with heavier academic pressure and psychological stressors and future medical practice. They are at a higher risk for depression as other professions in the same field (Ibrahim et al., 2013; Quince et al., 2012; Sidana et al., 2012). Nursing students are likely to become nurses, with occupational stress and the ambiguities of the profession, who most directly and frequently interact with patients and affect those patients by their behavior and attitudes. Therefore, their wellbeing cannot be taken lightly. Some studies have indicated that depression may decrease the function of nurses and disturbs the nurse–patient's relationship (Ahmadi et al., 2004; Uras et al., 2012). Depression among nurses has

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attracted great attention from hospital and society (Christensson et al., 2011; Furegato et al., 2008; Lawlor et al., 2005).

To our knowledge, there are limited studies on depression regarding prevalence and correlates among college nursing students in China (Ni et al., 2010). Notably, the medical education systems are diverse in different countries (Hsieh et al., 2011). In China, majority of the nursing students are female and fresh graduates from senior or junior school, aged from 16 to 25 and not married. This population of nursing students is very different from the participants who are married, and/or with prior work experiences in other studies (Christensson et al., 2011; Furegato et al., 2008; Lawlor et al., 2005). Therefore, there is a need to assess the prevalence and risk factors of depression among contemporary nursing students in China. Thus, this study aims to examine the prevalence of depression and to identify various possible factors (e.g. family socioeconomic status, academic, career prospect, social support as well as self evaluation of health status) related to depression in Chinese college nursing students.

## Methods

### Participants

A cross-sectional design was used in this study and the students were randomly selected by multi-stage cluster sampling approach. Firstly, two out of the six nursing colleges in six medical universities in Guangzhou of Guangdong Province, south of China were selected. Secondly, five and fifteen classes were sampled in the two selected nursing colleges respectively, which corresponded to 80% of the students, and finally a total of 763 students from the 20 classes were invited to participate in the study. This study was approved by the administrative committee of the two participating universities.

Between September and November 2012, the survey was administered to collect personal information, family background and social support of participants. The self-report questionnaire was required to complete in the classroom where students met for school activities. The students received explanations about the study objectives and their right to withdraw participation, and were informed how to complete the forms by the trained staffs. Participants were assured that their responses would be confidential and anonymous. All those enrolled in this study were compensated with a little gift in appreciation of their participation. A total of 763 students were enrolled in this study, of which 34 students provided incomplete questionnaire. The final number of data included in the multivariate model analysis was 729. Among all of the respondents, 661 students (86.6%) were females and 102 students (13.4%) were males. The grade distribution within the group was as follows: 279 (36.6%) were Year 1 nursing students, 295 (38.7%) were Year 2 nursing students, 146 (19.1%) were Year 3 nursing students and 43 (5.6%) were Year 4 nursing students.

### Instruments

A questionnaire of the Center for Epidemiologic Studies Depression Scale (CES-D) was administered to the students. Each of the 20 items on the CES-D is rated on a four-point scale ranging from “rarely or none of the time” (value = 0) to “most or all of the time” (value = 3). Respondents are asked to rate their feelings during the past week on each item. The sum of the response scores ranges from 0 to 60. In the current sample, CES-D scales showed good internal consistency reliability as measured by Spearman–Brown and Cronbach's Alpha, with coefficients of 0.740 and 0.829, respectively. Participants were classified as depressed or non-depressed based on the traditional cutoff (CES-D  $\geq$  16) which indicated mild to moderate depression. This study also collected personal information (sex, single-child or not, living place before college [urban or rural area], interpersonal relationship, frequency of exercise, self-evaluated scores of health status),

academic related information (grade, academic performance, study stress, interest in majors, career prospects), family background (educational level of parents and family income, participants' relationship with their parents and their decision-making power without interference by parents), and attained social support (objective support [the range of score was 6–24], subjective support [the range of score was 0–18] and use of support [the range of score was 3–12]). All of these variables were classified into 2 or 3 or 4 categories (shown in Table 1).

### Statistical Analysis

Chi-square analysis was performed to examine the association between depression and categorical variables; while, *t*-test was used for continuous variables. Multivariable logistical regression model by backward method ( $p_{out} < 0.10$ ) was used to estimate the association between statistically significant variables ( $p < 0.05$ ) in the chi-square/*t*-test analysis and depression. Odds ratios (OR) with 95% confidence interval (CI) were reported to determine the strength of association of these potential factors with depression. Data were analyzed using SPSS16.0 for windows (SPSS Inc., Chicago, IL) and  $p$ -value  $< 0.05$  was considered significant.

## Results

The overall prevalence of depression in the college nursing students was found to be 22.9% (95%CI: 20.0%–25.9%). In males, the prevalence was 17.6% (14.7%–20.5%), lower than 23.8% (15.5%–32.1%) in females. The mean score of CES-D was 2.5 times higher in the depressed group (CES-D scored 16 or above) than in the non-depressed group ( $21.5 \pm 4.94$  vs.  $8.4 \pm 4.01$ ,  $p < 0.001$ ).

In the univariate analysis, 16 variables were observed to be significantly associated with less depression (all  $p$ -values  $< 0.05$ ): better academic performance, less academic stress, greater interest in majors, feeling better for career prospects, better interpersonal relationship, higher frequency of exercise, educational level of father of more than 9 years, better relationship with parents and enjoying their full right to make decisions, higher self-evaluated score of health status and higher sum scores of attained social support including objective, subjective and use of support. The other variables, including gender, grade, single child or not, living place before college, educational level of mother and family monthly-income were non-significant risk factors for depression (all  $p$ -values  $> 0.05$ ) (Table 1).

By using backward method, 9 out of the above 16 significant variables were selected to be included in the multivariate logistic model according to  $p_{out} < 0.10$ . Compared to pre-adjustment, the strength of associations of the 9 variables with depression was attenuated and their ORs ranged from 0.196 to 0.947. The academic stress and career prospects were the strongest predictors of depression, followed by making decisions without interference by mother and relationship with father. Additionally, effective social support and modest or less subjective support could help to decrease depression. A better self-reported health status was associated with less depression. The association between frequency of exercise and educational level of parents with depression was not significant in the multivariate logistic model (Table 2).

## Discussion

This study showed that 22.9% participants had depressive symptoms. Poor perspective toward career prospect and stress from academic performance strongly increased the rate of depression among college nursing students. Having a good relationship with parents and making decisions without interference by parents were negatively associated with depression. Other risk factors such as frequency of exercise, self-reported health status, parents' education level, subjective social support, interest toward their major, and gender were weakly associated

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