



Associations between negative life events and anxiety, depressive, and stress symptoms: A cross-sectional study among Chinese male senior college students



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ABSTRACT

The aims of this study were to explore the associations between negative life events and anxiety, depressive, and stress symptoms among male senior college students who experience negative life events in daily life. Data were obtained from 582 male senior college students recruited from universities in Chongqing China. Participants completed the Adolescent Self-rating Life Events Checklist (ASLEC), and the Depression, Anxiety, and Stress Scale-21 (DASS-21). Socio-demographic information, lifestyle information, and a blood sample were acquired. 39 (6.7%), 74 (12.7%), and 39 (6.7%) subjects were depressed, anxious, and stressed, respectively. The results confirmed that negative life events were positively related to mental health problems. Different types of negative life events had their specific associations with being depressed, anxious, or stressed. With respect to different types of negative life events, subjects with more “interpersonal relationship” related problems had a higher probability of being anxious and stressed; whereas, subjects with more “change for adaptation” related problems had a higher probability of being depressed and anxious. These results indicate that more concerns over the events with both high occurrence rate and severity might be helpful to mental health prevention and promotion for senior college students.

1. Introduction

Mental health problems are very common among college students, and these problems appear to be increasing in number and severity (Ketchen Lipson et al., 2015). Mental health problems in college students have been linked to poorer interpersonal skills, lower grade averages, lower rates of graduation, and even higher risk for suicidal behavior, all of which rise concerns about mental health problems for college students (Tang et al., 2018). The most common mental health problems among students were the status of negative emotions such as depression, anxiety, and stress (Pedrelli et al., 2015). In China, the prevalence of depression, anxiety, and stress symptoms of college students based on previous reports were 11.7% (Chen et al., 2013), 16.3% (Wu et al., 2015), and 44.6% (Yang et al., 2012), respectively. In addition, most lifetime mental health problems have first onset by early

adulthood (Kessler et al., 2005). This combination of the high prevalence rate and the early onset of mental health problems may make evaluating and addressing mental health important for college students. Moreover, paying attention to early-onset mental health problems such as depression, anxiety, and stress symptoms among college students may have broad benefits for campus health services and mental health policy making (Beiter et al., 2015; Vinas Poch et al., 2004).

Although the causes of mental health problems are multifactorial, one risk factor that has received much empirical consideration over the past years is negative life events (Boe et al., 2018). Negative life events are defined as “events that can lead to maladjustment and disturbances that most likely result in readjustment-requiring changes in one's daily life” (Holmes and Rahe, 1967). Negative life events have been reported to be significantly associated with an increased risk of depression and anxiety (Stikkelbroek et al., 2016). College students, especially seniors,

Abbreviations: ASLEC, Adolescent Self-rating Life Events Checklist; DASS-21, Depression, Anxiety, and Stress Scale-21; MARHCS, Male reproductive health in Chongqing college students; BMI, Body mass index; PARS-3, Physical activity rating scale-3

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are a special group of people who are enduring a critical transition period in which they are going from campus to society and making many major decisions associated with their lives, academic activity and future occupation (Chen et al., 2013). In this crucial stage, they may face various negative life events such as changes in daily routines, interpersonal relationships problems, competition and difficulties in academic studies, economic stress, and struggles with making important decisions (Zhou et al., 2012). Thus, negative life events are possibly an important risk factor for mental health problems, especially among senior college students.

Recently there have been some studies examining mental health problems and their correlations to negative life events (Stikkelbroek et al., 2016; Zhou et al., 2012), socio-demographic factors (Ramsawh et al., 2011), and lifestyle factors (Cheung et al., 2016; Unwin et al., 2013; Waqas et al., 2015). However, most of these studies were performed among the adults or medical students, and few studies focused on general students, especially senior college students. In addition, previous studies examining the negative life events mainly focused on the number of negative life events that occurred (Peng et al., 2012; Wen et al., 2015; Zhang et al., 2015). However, differential sensitivity and types of negative life events are significant dimensions that have not been studied adequately (Qiao et al., 2013). Assessing only the number of negative life events might limit the results and conclusions of their studies.

Therefore, associations between negative life events with depression, anxiety, and stress symptoms among senior college students merit further study. We hypothesized in this specific population, the negative life events may be associated with the prevalence of depression, anxiety, and stress symptoms. We undertook a cross-sectional study of 582 Chinese male senior college students from Chongqing, China, in June 2015. The present study was a part of the male reproductive health in Chongqing college students (MARHCS) cohort study, which was established in June 2013. The aims of our study were to describe the prevalence of depression, anxiety and, stress symptoms and the exposure of negative life events among male senior college students in China, and to investigate the correlations of these symptoms with negative life events.

2. Methods

2.1. Subjects and procedures

MARHCS cohort study was designed to assess the effects of environmental and socio-psycho-behavioral factors on the semen quality (Chen et al., 2017; Yang et al., 2015). Using propaganda poster in college class and publicity on campus network, our study was dependent on volunteer recruitment. Online registration was opened to all male sophomores until the number of registered volunteers reached the expected sample size. In brief, we recruited 796 out of 872 volunteers in June 2013 in Chongqing, China (as a baseline). Seventy-six subjects were excluded for having a history of urogenital disease, < 2 or > 7 days of abstinence, and nervous or mental disease. Two follow-up studies were carried out in 2014 ($n = 686$) and 2015 ($n = 582$), respectively. Subjects of present study were from the second follow-up study in 2015. The project proposal was approved by the Institutional Review Board of Preventive Medicine College, Third Military Medical University, Chongqing, China. Written informed consent was obtained from all subjects once they agree to participate in the study. A sample size of $N = 380$ allow us to estimate the prevalence of depression, anxiety, and stress symptoms with an accuracy of $\pm 5\%$, using a 95% confidence interval and assuming the prevalence of mental health problems as 44.6% according to the result of previous study in China (Yang et al., 2012). At last, a total of 582 (mean age = 22.4 years, standard deviation = 1.4 years) male senior college students were recruited from universities in Chongqing, China.

2.2. Measures

For interviewer-interviewing, subjects completed self-reported questionnaires which assessed mental health problems, negative life events and additional social-demographic or lifestyle information. A blood sample was also collected to detect the level of serum cortisol which was reported to be associated with mental health problems (Whirledge and Cidlowski, 2010).

2.2.1. Negative life events

Negative life events were assessed by Adolescent Self-Rating Life Events Checklist (ASLEC), which evaluated the impact of negative life events experienced within the past 12 months (Liu et al., 1997). ASLEC consisted of 26 items of negative life events, including 6 subscales: “interpersonal relationships,” (e.g. “misunderstanding by others”) “study pressure,” (e.g. “failure in examinations”) “being punished,” (e.g. “be criticized or disciplined”) “bereavement,” (e.g. “family member's death”) “change for adaptation,” (e.g. “marked changes in daily routines”) and “others” (e.g. “love failure”). For each event that occurred, responses were made based on a range, from 1 (not at all) to 5 (extremely severe). And scores were set to 0 (not occurred) for events that volunteers reported which did not occur in the past year. Cronbach's alpha coefficient of internal consistency was 0.85 and Spearman-Brown Split-Half coefficient was 0.88 in Liu's study. At present, ASLEC is generally used to measure stress levels in Chinese young adults (mean age = 21.8 years) (Zhang et al., 2012). Three variables could be calculated from the ASLEC, including the number of negative life events (total number of negative life events that happened), the intensity of negative life events (sum up scores of all the 26 items) and the individual sensitivity to negative life events (negative life events score divided by negative life events number) (Qiao et al., 2013). Cronbach's alpha coefficient of internal consistency was 0.81 and Spearman-Brown Split-Half coefficient was 0.73 in our study.

2.2.2. Mental health problems

Mental health problems were measured by the validated Chinese version of the Depression Anxiety Stress Scale-21 (DASS-21) (Cheung et al., 2016). DASS-21 was a set of three self-administered subscales (7 questions each) designed to measure the negative emotional states of depression, anxiety, and stress. The 21-item instrument asked respondents to rate the presence of these items of symptom over the past week on a four-point Likert scale scoring from 0 to 3 (0: not at all; 1: some of the time; 2: a good part of the time; and 3: most of the time). The score of each subscale was summed up and then was multiplied by two according to the guidelines of DASS-21. Scores were ranged from 0 to 42, and the following cut-off scores are used for each subscale according to previous studies (Cheung et al., 2016; Wang et al., 2016): depression: normal 0–9, abnormal 10–42; anxiety: normal 0–7, abnormal 8–42; stress: normal 0–14, abnormal 14–42. DASS-21 was reported to have good estimates of internal consistency (range = 0.82–0.97) (Henry and Crawford, 2005). DASS-21 was also a reliable and valid measure of depression, anxiety, and stress (at a Cronbach's alpha of 0.83, 0.80 and 0.82, respectively) in China (Wang et al., 2016). Cronbach's alpha coefficient of internal consistency was 0.84 and Spearman-Brown Split-Half coefficient was 0.86 in our study.

2.2.3. Social-demographic, physical examination and lifestyle information

Variables including age, race, family income per year, monthly spending, parents' education level, physical activity level, and current tobacco smoking or alcohol consumption were assessed using self-report questionnaire. Physical activity level was assessed by Chinese version of the physical activity rating scale-3 (PARS-3) which was widely used in China (Yu et al., 2013). The test-retest reliability of Chinese version of PARS-3 was 0.82 (Hao and Quan, 2010). The height (cm) and weight (kg) were measured by investigator using a single

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