Review

Interventions to reduce stress in university students: A review and meta-analysis

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ABSTRACT

Background: Recent research has revealed concerning rates of anxiety and depression among university students. Nevertheless, only a small percentage of these students receive treatment from university health services. Universities are thus challenged with instituting preventative programs that address student stress and reduce resultant anxiety and depression.
Method: A systematic review of the literature and meta-analysis was conducted to examine the effectiveness of interventions aimed at reducing stress in university students. Studies were eligible for inclusion if the assignment of study participants to experimental or control groups was by random allocation or parallel cohort design.
Results: Retrieved studies represented a variety of intervention approaches with students in a broad range of programs and disciplines. Twenty-four studies, involving 1431 students were included in the meta-analysis. Cognitive, behavioral and mindfulness interventions were associated with decreased symptoms of anxiety. Secondary outcomes included lower levels of depression and cortisol.
Limitations: Included studies were limited to those published in peer reviewed journals. These studies over-represent interventions with female students in Western countries. Studies on some types of interventions such as psycho-educational and arts based interventions did not have sufficient data for inclusion in the meta-analysis.
Conclusion: This review provides evidence that cognitive, behavioral, and mindfulness interventions are effective in reducing stress in university students. Universities are encouraged to make such programs widely available to students. In addition however, future work should focus on developing stress reduction programs that attract male students and address their needs.

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1. Introduction

On September 5, 2012, a Canadian national news magazine ran a cover story entitled "Mental Health Crisis on Campus: Canadian students feel hopeless, depressed, even suicidal" (Lunau, 2012). The story highlighted a 2011 survey at University of Alberta in which over 50% of 1600 students reported feeling hopeless and overwhelming anxiety over the past 12 months. The story continued by recounting incidents of suicide across Canadian campuses. The following month, the CBC reported a survey conducted at another Canadian university indicating that 88.8% of the students identified feeling generally overwhelmed, 50.2% stated that they were overwhelmed with anxiety, 66.1% indicated they were very sad, and 34.2% reported feeling depressed (Craggs, 2012).

Other studies confirm concerning rates of anxiety and depression in university students. The American Foundation for Suicide Prevention sponsored a suicide screening project at Emory University in the United States between 2002 and 2005 (Garlow et al., 2008). Of the sample of 729 student participants, only 16.5% reported no symptoms of depression, while 30.6% reported moderate depression and an additional 23.2% reported moderately severe or severe depression using the Physician Health Questionnaire (PHQ-9). Among the 5689 American university students who participated in a 2007 Healthy Minds Survey, 50.7% tested positive for major depression, panic disorder and/ or generalized anxiety using the PHQ-9 (Keyes et al., 2012). A study of 1,616 Turkish university students revealed rates of moderate depression in 27.1%, anxiety in 47.1%, and stress in 27.1% of the sample (Bayran and Bilgel, 2008). A large study in the United Kingdom involving 16,460 undergraduate students charted the longitudinal course of anxiety and depression over the course of their university careers (Bewick et al., 2010). This study revealed that student anxiety scores peaked in the first term of second year and final year, whereas depression scores rose steadily over time, peaking at the end of the final year. Nevertheless, anxiety symptoms were significantly higher than depression scores at all time points, and at no time during university did psychological distress fall to pre-admission levels (Bewick et al., 2010).

Students with mental health problems report poorer relationships with other students and faculty members, lower levels of engagement in campus clubs and activities, lower grade averages, and lower rates of graduation than students not suffering from mental health problems (Byrd and McKinney, 2012; Keyes et al., 2012; Salzer, 2012; Storrie et al., 2010). Furthermore, 11.1% of the Emory University students reported suicidal ideation over the preceding 4 weeks, and 16.5% reported a life-time incidence of suicide or self-harm behavior (Garlow et al., 2008). In a random sample of 8155 students from 15 US universities, 6.75% reported suicidal ideation and 0.5% reported an attempt in the past year (Downs and Eisenberg, 2012). Thus, stress and its mental health implications amongst students is a significant issue for universities.

Studies indicate that few students experiencing stress-related mental health problems receive treatment. Garlow et al. (2008) reported that only 15% of the students with moderately severe or severe depression or with suicidal ideation in their sample were receiving treatment. Downs and Eisenberg (2012) reported that just over half (51.5%) of the students with suicidal ideation received some type of treatment. In part, low treatment rates are related to help-seeking behaviors among students. In the Downs and Eisenberg (2012) study, the most commonly reported barriers to seeking treatment were: (1) a preference for dealing with stress alone (73.3%); (2) the belief that stress is normal in university (52.2%); (3) not seeing their needs as serious (52.1%); and (4) not having time for treatment (46.7%).

In light of repeated studies that suggest that approximately 50% of the student body experiences significant levels of stress in the form of anxiety and/or depression, we conclude that universities must employ preventative interventions that have the potential to reach larger groups of students and not merely rely on individual counseling services to meet student needs. This paper is a meta-analysis of such interventions with the aim of providing an evidence-based approach for interventions to reduce stress in university students. While meta-analyses have previously been conducted on the use of various models of invention for mixed groups of people suffering from anxiety and depression (Hunot et al., 2007; Jorm et al., 2008; Krisanaprakornkit et al., 2006), previous meta-analyses and reviews have not shed light on whether such interventions are effective for university students.

2. Method

Studies in this analysis included experimental and parallel cohort quasi-experimental evaluations of psychological intervention programs to reduce stress in university students. Studies were eligible for the review if they used: (1) random assignment to create treatment and comparison or control groups or (2) parallel cohort designs in which groups were assessed at the same points in time. Single-group designs were excluded from the analysis but are included in the summary of studies (Table 1). Study participants included undergraduate, graduate, and professional students who had participated in interventions aimed at reducing their levels of stress. Any type of psychological, psychoeducational, and/or psychosocial intervention aimed at reducing stress in university students was eligible for inclusion in the review. Studies that exclusively examined pharmacological interventions; that compared psychosocial, psychological, or psychoeducational treatments to pharmacological treatment; or studies that combined these treatments with pharmacological treatments, were excluded.

The assessment of the primary outcome of psychological stress and anxiety symptoms included various standardized measures such as the Spielberger State-Trait Anxiety Inventory (STAI) (Spielberger, 1983) and the Perceived Stress Scale (PSS) (Cohen et al., 1983). Secondary outcomes were decreased levels of depression and physiological stress responses. Secondary outcome measures included: severity of depressive symptoms using scales such as the Beck Depression Inventory (BDI) (Beck and Steer, 1996) and physiological arousal as measured by salivary cortisol.

3. Search strategy

Searches were conducted on electronic databases, including the Cochrane database on systematic reviews, Medline, Embase, PsychINFO, ERIC, Applied Social Science Abstracts, Social Sciences