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StudentBodies-eating disorders: A randomized controlled trial of a coached online intervention for subclinical eating disorders☆

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ABSTRACT

Objective: Eating disorders and subclinical eating disorders are serious and disabling diseases with high prevalence rates on college campuses. Many symptomatic students are never screened nor formally diagnosed with an eating disorder and do not receive mental health treatment.
Method: This pilot study examines the feasibility, acceptability, and short-term efficacy of a 10-week online intervention, *StudentBodies-Eating Disorders*, designed to reduce eating disorder symptoms, related psychopathology, and weight and shape concerns. A total of 65 participants were randomized to the online intervention or waitlist control.
Results: Results indicate that for study completers, the intervention had large effects for reduction of eating-related psychopathology ($d = 1.5$), weight concerns ($d = .7$), and psychosocial impairment ($d = .7$). Those who completed it rated the program very acceptable. This pilot study suggests the potential efficacy of *StudentBodies-Eating Disorders* as a self-help intervention for subclinical eating disorders in a non-clinical setting.

1. Introduction

Eating disorders (EDs) are common and disabling diseases affecting a significant proportion of individuals, with lifetime prevalence rates as high as 6.1% in adolescents and 5.9% for adult women (Hudson et al., 2007; Swanson et al., 2011). EDs are associated with considerable medical and psychological consequences (Massey-Stokes, 2009; Roerig et al., 2002), contributing to markedly higher health care costs, such as more outpatient psychotherapy, more emergency room visits (Striegel-Moore et al., 2003), and longer hospital stays as compared to healthy individuals (Robergeau et al., 2006). Thus, highly scalable, cost-effective, evidence-based interventions are essential to developing a model of care for EDs, which can then be applied to address other mental health problems (Ybarra and Eaton, 2005). Fortunately, early detection and treatment predicts better outcome (Agras, 2001). In order to accomplish this, prevention and early-intervention programs must focus on reducing established modifiable risk factors, such as dieting and weight and shape concerns. When coupled with negative affect, teasing, and compensatory behaviors, the risk of developing an ED increases significantly (Jacobi et al., 2011; Taylor et al., 2006). These risk factors have been shown to predict future eating pathology (Field et al., 1999; Killen et al., 1996; Stice, 2001; Wertheim et al., 2001; Wichstrøm, 2000) and, if present, should be concurrently addressed in preventive interventions.

A large proportion of ED prevention research, either in person or Internet-delivered, has focused on targeted prevention, in which individuals exhibiting eating disorder risk factors are assigned to an intervention (Ciao et al., 2014). A smaller number of studies has examined indicated prevention programs, which aim to reduce symptoms and cease symptom progression among individuals who already present with ED symptoms but do not meet full criteria for diagnosis (Ciao et al., 2014). Addressing subclinical symptoms is important because when treatment is delayed, individuals with subclinical EDs are likely to experience disease progression, poorer prognosis, and greater likelihood of relapse (Yager et al., 2006). To effectively actualize ED prevention within a defined population, interventions spanning universal,

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targeted, and indicated prevention, with as-needed clinical referral, are needed.

Evaluation of prevention effects is typically done within a defined population and should target participants at key developmental periods associated with symptom onset and progression (e.g., adolescence and early adulthood). University-aged students are an ideal population for targeted and indicated prevention programs because adolescent and young adult females are at the highest risk for EDs and have a high prevalence of eating disorders (Eisenberg et al., 2011; Striegel-Moore et al., 2003). Universities face the challenge of serving the mental health needs of these students, and ED appropriate services are lacking at most universities (Eisenberg et al., 2012). Thus, evaluating the feasibility, acceptability, and effectiveness of an Internet-delivered intervention for reducing ED symptoms and preventing symptom progression is an important step toward closing the gap in access to effective mental health services. Evaluation of implementation in university settings also has high relevance for other educational and health care delivery systems, serving the preventive and treatment needs of a defined population.

Bauer and colleagues evaluated an Internet-based prevention and early intervention program (*Appetite for Life*) and publications to date describe a model of university-based, online screening and personalized stepped care Internet-delivered prevention, but to date have reported no results for ED prevention effects (Bauer et al., 2009; Lindenberg et al., 2011). Both the Bauer et al. and Lindenberg et al. papers report low adherence: 16.7% of all users used the monitoring module in the program and 20.5% of the users only used this feature once. The Bauer et al. model is similar to the *Healthy Body Image Program* (Jones et al., 2014), which also involves comprehensive online screening, targeted and indicated prevention, and referral. However, the interventions included in *Healthy Body Image Program* have a substantial evidence-base as described below.

Paxton et al. (2007) compared the effects of an Internet-based versus face-to-face cognitive-behavioral therapy (CBT) ED prevention program and found slightly favorable results for the face-to-face intervention (*Set Your Body Free*; Paxton et al., 2007). Stice et al. (2012) found no difference between a face-to-face, group-delivered, dissonance-based ED prevention program (*The Body Project*), and an Internet-based version of the same program (Stice et al., 2012). However, both the Paxton et al. and Stice et al. studies had small samples sizes and no definite conclusions can be drawn from these studies.

The *StudentBodies* programs are the most extensively studied Internet-delivered ED prevention programs. In the US, a randomized controlled trial with 480 women showed the *StudentBodies* program decreased the onset of clinical and subclinical EDs in participants with an elevated body mass index or those who reported compensatory behaviors at baseline (Taylor et al., 2006). Over the last decade, more than ten randomized controlled trials have been conducted on the *StudentBodies* prevention program and results consistently demonstrate moderate and sustained improvements in ED-related attitudes and behaviors among participants in the US and Germany (Beintner et al., 2012).

The most striking results for the potential efficacy of Internet interventions for ED indicated prevention and symptom reduction come from two studies conducted in Germany. The first study evaluated an Internet-delivered CBT-based program, *StudentBodies* + (*SB* +), with 126 women with ED symptoms (e.g., binge eating, vomiting, restrictive eating) and eating disorder not otherwise specified symptoms in a randomized controlled trial comparing *SB* + to waitlist control (Jacobi et al., 2012). At 6-month follow-up, *SB* + participation was associated with significant reductions in ED psychopathology, subjective and objective binges, and purging episodes but – at least for some outcomes – less effective for participants with restrictive eating (Völker et al., 2014). The second study, involving *StudentBodies-AN* (*SB-AN*), adapted *SB* + to target subclinical symptoms of anorexia nervosa (AN) (Ohlmer et al., 2013). *SB-AN* included more interactive support, such as individualized weekly feedback from a mental health specialist, and in the pilot study, yielded significant reductions in some ED symptoms.

Importantly, results from the two German studies using *SB* + and *SB-AN*, indicated high program engagement and adherence: 88.9% of all *SB-AN* participants completed some or all of the program and measures and the overall compliance rate for *SB* + was 66.2%. Given the strong evidence-base of the *SB* + and *SB-AN* programs and remarkably high adherence in *SB-AN*, this program was selected for evaluation with English-speaking participants and modified to broaden the scope to address all subclinical EDs (Ohlmer et al., 2013).

The present study builds upon previous research on *SB-AN* and *SB* + by creating an Internet-based program designed to help female college students reduce AN and bulimia nervosa (BN) symptom progression, reduce weight and shape concerns, enhance body image, promote healthy weight regulation, and increase knowledge about the risks associated with EDs. This pilot study provides insight regarding the feasibility and short-term efficacy of online, guided self-help programs.

2. Methods

2.1. Participants

Participants were selected based on positive screens for DSM-5 subclinical AN, BN, binge eating disorder (BED), or purging disorder. Inclusion criteria were: 1) females age 18–25 years, 2) access to a computer with an Internet connection, and 3) high weight and shape concerns (Weight Concerns Scale score > = 47). Individuals were included if they had subclinical ED symptoms. Those who screened positive for DSM-5 full-threshold AN, BN, or BED were offered a referral. Participants with current depression or who were currently in therapy to address their eating and body image concerns were also excluded from the study and provided a referral.

Although EDs affect a significant number of males and research is desperately needed on effective interventions for males at-risk for and with ED symptoms, this study was limited to female participants due to practical reasons. Specifically, the evidence-base for the *StudentBodies* programs has only been established for females, and this study sought to first adapt an already evidence-based intervention for a more symptomatic population before further adapting the intervention for males.

Participants were randomized to an intervention or waitlist control condition. Participants were recruited from a large private university in the United States and the surrounding communities. To detect a medium effect size on the Weight Concerns Scale and the Eating Disorders Examination–Questionnaire (EDE-Q), it was determined that 64 participants were needed. This estimated effect size is comparable to Jacobi et al., who found effect sizes of 0.40–0.84 with a sample size of 126.

2.2. Procedure

Participants were recruited through print and online advertisements, university list-serve emails, and classroom and dorm presentations. Residential education staff and student health services staff also directed students to the study. Additionally, students learned about the study through the Healthy Body Image Program, a comprehensive online eating disorders screening and prevention program for college students (Jones et al., 2014). Interested participants contacted the research coordinator via email and subsequently completed a brief online eligibility screen, including self-report height and weight measurements to determine body mass index (BMI) and the Weight Concerns Scale (Killen et al., 1994) to identify high-risk individuals. Eligible participants met in person with a research assistant to provide informed consent, completed self-report assessments, baseline interview (Eating Disorders Examination), and measure height and weight. Online assessments were administered through Qualtrics, an online survey software program licensed by the university. Participants were then randomized into the intervention or waitlist control group by random number