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Eating Disorders on College Campuses in the United States: Current Insight on Screening, Prevention, and Treatment

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Abstract

Background: Eating disorders are prevalent on college campuses and pose significant risks to student health, well-being, and academic performance. However, few students receive access to evidence-based prevention and treatment.

Objective: The present review synthesizes the recent literature on ED screening, prevention, and treatment approaches on college campuses in the United States. We provide an overview of ED screening efforts on college campuses, including relevant screening tools, summarize the extant literature on prevention programming, as well psychological and pharmacological treatment approaches, and outline limitations of current programming and provide future directions for research.

Conclusion: Recent advances in ED screening, prevention, and treatment efforts highlight the importance of early detection and intervention. Innovative approaches to screening and dissemination of evidence-based prevention and treatment programs on college campuses are warranted. Implications for future research are discussed.

Keywords

College students; eating disorders; pharmacotherapy; psychotherapy; screening; treatment; United States

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AUTHORS'S CONTRIBUTION

Anne Claire Grammer, Ellen E. Fitzsimmons-Craft, and Denise E. Wilfley conceived the purpose for this article. Anne Claire Grammer, Ellen E. Fitzsimmons-Craft, Olivia Laing, and Bianca DePietro drafted the manuscript. All authors reviewed and edited the manuscript and approved the final version for submission.

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CONFLICT OF INTEREST

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1. INTRODUCTION

An estimated 11% to 17% of females and approximately 4% of males on college campuses in the United States screen positive for clinical ED symptoms [1]. Further, 20% to 67% of college students experience subthreshold ED symptoms [1–3]. The transition from adolescence to young adulthood is a high-risk period for the development and persistence of EDs and unhealthy weight control behaviors [4, 5]. Indeed, the median age of ED onset (*i.e.* ages 18–21) [6] coincides with the typical age of college enrollment, and weight-related behavior changes are salient during the college years [5, 7]. Delayed detection and treatment of EDs have negative long-term medical consequences (*e.g.*, bradycardia, gastrointestinal disorders, metabolic syndrome, hypo/hypertension, over-weight/obesity) [8–11], which may contribute to disease progression and the overall economic burden of EDs [12]. Further, EDs have some of the highest mortality rates of mental health disorders [13] and are associated with impaired education attainment [14] and psychosocial functioning [15], which may significantly impact student quality of life. There is also a burgeoning body of research on the identification of etiological factors involved in EDs (*e.g.*, genome-wide association studies, gut microbiome) [16–18]. However, much of this work has focused exclusively on anorexia nervosa (AN), and the application of these findings to precision medicine remains unclear at present.

Despite the prevalence and deleterious effects of EDs, current screening, prevention, and treatment efforts on college campuses in the United States are lacking. One study found that only 20% of college students who positively screen for an ED report receiving treatment in the past year [1]. Further, several challenges preclude implementation of evidence-based ED programming on college campuses, such as understaffing and the rapidly rising student demand for mental health services [19]. Indeed, the average student to counselor ratio is 1731:1, thereby highlighting the limited capacity of counseling centers to deliver effective care [1]. Taken together, these findings underscore the need to implement ED screening, prevention, and treatment on college campuses to expand access to evidence-based care. The present review aims to synthesize the recent literature on ED screening, prevention, and treatment approaches on college campuses. Specifically, we aim to: 1) provide an overview of relevant screening tools to facilitate ED assessment and three prominent screening programs; 2) summarize the extant literature on prevention and psychological and pharmacological treatment approaches, including evidence-based in-person interventions and digital interventions; 3) outline limitations of current programming and provide future directions for research.

2. RELEVANT SCREENING TOOLS

Various self-report screening tools have been utilized to assess ED risk on college campuses (Table 1). Among these screening tools, the Eating Attitudes Test-26 (EAT-26) [20], the Eating Disorder Examination-Questionnaire (EDE-Q) [21], the SCOFF [22], and the Stanford-Washington University Eating Disorder Screen (SWED) [23] are some of the most commonly used assessments in large screening studies on college campuses [24]. These measures have been shown to have adequate psychometric properties in college populations [1, 23, 25, 26]. Currently, there is a lack of consensus on a preferred screening tool for

college populations, as the goals of ED screeners vary considerably. Fitzsimmons-Craft and colleagues note that the goal of screening should drive screener selection [24]. If the goal is to determine if students are at risk for an ED or not, the EAT-26 may be the most inclusive and simple screening tool to use. If there is more interest in examining the frequency of different ED-related behaviors in a student population, the EDE-Q may be a good option. Considering its brevity, the SCOFF could easily be implemented with other health screenings. Finally, the SWED may be the best option for colleges and universities interested in grouping students into ED risk and diagnostic categories.

3. ONGOING SCREENING EFFORTS ON COLLEGE CAMPUSES

Multiple large-scale studies have aimed to disseminate some of the aforementioned screening tools on college campuses through various recruitment strategies, including population-wide surveys, solicited screenings (*e.g.*, advertising at student health centers), and simple randomization of selected students [24]. However, college surveillance data indicate that only 45% of colleges provide ED screening once per semester or year, and 22% provide year-around ED screening [27]. Screening efforts are crucial in closing the treatment gap because they can mobilize help-seeking behavior by providing students with accurate feedback on their ED risk profile and connecting them to available treatment options. Here, we summarize two research programs focused on ED screening on college campuses (*i.e.* the Healthy Body Image Program and the Healthy Minds Study). Next, we comment on the availability of ED screening to college students in the “real world,” as offered through the National Eating Disorders Association (NEDA).

3.1. The Healthy Minds Study (HMS)

HMS is a web-based survey that examines mental health and service usage in college students [27, 28]. The survey uses the SCOFF to measure ED symptoms along with other measures that assess the presence of additional mental health diagnoses. The study has a broad reach across many campuses, with over 300 participating schools and around 300,000 respondents. A randomly selected sample of students at each university are invited to participate, and 16% to 29% of selected students typically elect to take the survey [27, 28]. In a 2018–2019 survey, HMS found that 13.5% of women and 6.2% of men screened positive for an ED [27].

3.2. Healthy Body Image (HBI) Program

HBI uses an online platform to identify university students at low risk for, high risk for, or with current subthreshold or threshold ED diagnosis [29, 30]. Based on the clinical profile, students are directed to a tailored, online cognitive-behavioral program or provided with a referral for in-person care as follows: 1) “Low risk” individuals are offered StayingFit, a universal preventive intervention, which targets increased fruit/vegetable consumption, weight/shape concerns, healthy weight management for students with normal weight, and weight loss for students with overweight [31]; 2) “high risk” individuals are offered StudentBodies-Targeted, a targeted preventive intervention, which addresses ED risk and symptom onset [32, 33] (see “Prevention”). Students with a subthreshold or threshold ED other than AN are offered Student Bodies-Eating Disorders (SB-ED), an online cognitive-

behavioral guided self-help treatment program that targets symptom progression [34]; 4) Students with possible AN are referred to in-person treatment services on their campus.

HBI was disseminated at 28 universities as part of a randomized controlled trial [30]. Over the course of 3 years, 4,894 students completed the screen, which used the SWED, representing an average of 1.9% of undergraduate females on each campus. About 60% of participating students were indicated to be at high risk for or to have an ED. These rates are higher than the proportion of ED-indicated students in the HMS, which was implemented as a population-level survey, whereas the HBI survey used self-selection recruitment methods (e.g., flyers, social media postings), which appear to have attracted students with elevated levels of eating pathology. Notably, high rates of uptake were demonstrated for students who were offered online interventions within HBI. For example, 83% of those screening positive for a clinical ED, other than AN, who were offered an online intervention began the mobile program, while only 28% of those randomized to receive a referral to usual care sought treatment over the 2-year follow-up period (Fitzsimmons-Craft *et al.* under review).

3.3. National Eating Disorders Association (NEDA) Screener and the Collegiate Survey Project

NEDA, the leading U.S.-based non-profit organization for eating disorders awareness, offers a web-based ED screener for self-directed assessment of ED symptoms using the SWED. In a recent study that examined the screening results among 71,362 respondents (primarily college-aged women), the majority (86.3%) screened positive for an ED [35]. However, only 3% of those who screened positive for an ED were currently in treatment, thereby demonstrating the great potential for screeners to connect individuals with information about accessing interventions.

Taken together, large-scale studies have demonstrated the feasibility of using a range of screening tools to assess ED risk in college-aged populations. However, studies highlight the need to capitalize on post-screening opportunities in order to link respondents to evidence-based care.

4. PREVENTION

ED prevention programs are effective in mitigating ED risk through early detection and intervention. We summarize the approaches and efficacy of two evidence-based prevention programs that have been used with college women, The Body Project and Student Bodies.

4.1. The Body Project

The Body Project is a dissonance-based ED prevention program for high school and college-aged women that targets two prominent ED risk factors, thin-ideal internalization and body dissatisfaction [36]. The Body Project applies persuasion principles to facilitate cognitive conflict between endorsed ED attitudes and criticism of the thin-ideal. Consequently, dissonance is posited to reduce subscription to ED attitudes and subsequent engagement in ED behaviors [36]. Recent meta-analytic findings indicate that dissonance-based ED programs demonstrate more robust effects than non-active and active controls [37]. Specifically, participation in The Body Project is associated with short- and long-term

reductions in core ED risk factors (*e.g.*, thin-ideal internalization, body dissatisfaction, negative affect) [38–40], ED symptoms (*e.g.*, binge eating and purging) [39–41], and the prevention of future onset of EDs and obesity [42]. Further, participation in the Body Project is associated with less frequent use of mental-health services, demonstrating the effectiveness of connecting students with early access to care [42].

Barriers to the dissemination of the Body Project on college campuses include the lack of available clinicians to deliver the prevention program, and even when clinicians are available, there may be high turnover [43]. To address these limitations, Stice and colleagues developed an internet intervention, eBody Project, which is a 3-week, standalone intervention that does not involve monitoring from a clinician. Pilot data indicate that eBody Project demonstrated similar effect sizes in reductions in ED risk factors and symptoms compared to the group-based version [43]. However, these effects were more robust in the group-based intervention at 1- and 2-year follow-up [44]. Additionally, recent data suggest that ED onset over 4-year follow-up was marginally lower among students who received an in-person, peer-led version of the Body Project compared to students who received the eBody Project intervention [45].

4.2. Student Bodies-targeted

The limited long-term effects of eBody Project may suggest the need to include clinicians as part of digital programs to monitor symptoms, encourage engagement, and tailor the intervention for non-responders. Student Bodies-targeted is an online, cognitive-behavioral prevention program for students at high risk for EDs. Students complete 8 online modules that focus on addressing shape and weight concerns, improving body image and healthy weight regulation, reducing ED symptoms, and providing psychoeducation on EDs [33]. Students are also asked to engage in therapist-monitored discussion forums in order to reinforce the weekly material. Results from RCTs indicate that Student Bodies-targeted is associated with 2-year reductions in ED risk factors (*e.g.*, shape and weight concerns) and decreases the risk of ED onset in some high risk participants [32, 33]. Among students with comorbid depressive symptoms and ED pathology, Student Bodies-targeted was more efficacious in addressing depressive symptomology than control [46]. Prevention programs, such as The Body Project and Student Bodies-targeted, are promising methods for identifying students at high risk for EDs and connecting them to further assessment and treatment.

5. TREATMENT

5.1. In-person Psychological Interventions

Significant research advances on treatments for EDs have been made in recent years [47], and psychological treatments are considered primary treatments for EDs [48]. Various international clinical guidelines recommend individual or guided self-help cognitive behavioral therapy (CBT), which targets cognitions and behaviors that maintain an ED, as an evidenced-based treatment for adults with bulimia nervosa (BN), binge eating disorder (BED), and subclinical BN and BED [48]. National guidelines also recommend interpersonal psychotherapy (IPT), which targets the interpersonal context that contributes to

the development and maintenance of EDs, as an evidence-based treatment for BN/BED [49]. Indeed, CBT and IPT demonstrate equivalent long-term improvements in binge eating [50]. Conversely, meta-analytic findings have not identified a well-supported evidence-based psychological treatment for adults with AN [51–53]. Research in pediatric populations suggests that family-based treatment for AN (FBT), which harnesses family support in ED recovery, is a leading evidence-based psychological treatment for children and adolescents with AN [54–56], and this approach has also been adapted for young adults (ages 16–25) [57, 58]. Given that many students still dependent on their parents during the transition to adulthood, FBT adapted for transition age youth (FBT-TAY) may be a viable treatment option for college students with AN [58]. Preliminary findings from the first open trial [58] suggest that FBT-TAY is acceptable to young adults with AN, as evidenced by preferential selection of FBT-TAY over treatment as usual by approximately 70% of the participants. Further, participants demonstrated improvements in ED symptoms and achieved weight restoration following treatment and follow-up. These preliminary findings suggest that FBT-TAY may be a promising treatment option for transition age youth with AN. However, rigorous RCTs are needed to assess the efficacy in college populations.

Despite the promising body of research on treatment approaches, the implementation and dissemination of evidence-based psychological treatments on college campuses is a significant challenge [59]. Importantly, in one report, 60% of surveyed university college counseling centers reported offering year-round access to a counselor specializing in EDs, demonstrating the challenge many universities face in offering evidence-based treatment for EDs to the many students in need [60]. Further, perceived barriers such as stigma, the time-intensive nature of in-person interventions, and the financial costs of treatment may deter student engagement with in-person care [59, 61]. Given these limitations, there is a dire need to develop innovative strategies in order to increase access to treatment on college campuses [62].

5.2. Digital Psychological Interventions

Digital interventions may represent one viable solution for maximizing access to care and reducing the burden associated with in-person interventions. As summarized by a recent review of meta-analytic findings on mental health digital programs [63], digital programs for EDs are effective in reducing ED symptoms, with effect sizes in the small to moderate range. A common theme among the reviewed studies was the use of internet-based, CBT guided-self-help (iCBT). Evidence suggests that iCBT is associated with reductions in BN and BED symptoms, including abstinence from binge eating and purging at post-treatment and follow-up [64–66]. Moreover, some [67–69] but not all [70] studies found that iCBT sustains these improvements more than bibliotherapy [69] or waitlist control [67–69].

Overall, digital ED programs demonstrate improvements in ED symptoms, with evidence supporting iCBT. However, intervention engagement remains a significant challenge [71]. Future research is needed to develop strategies that promote continued engagement with digital treatment programs. Future work should investigate whether tailored interventions that further tailor treatment according to an individual's risk profile (*e.g.*, symptom severity, demographics) or that utilize sensor detectors to provide momentary feedback and

intervention (e.g., just in time adaptive interventions) may address the problem of intervention engagement.

5.3. Pharmacological Treatment

Psychological treatment, including in-person and guided self-help, is considered first-line treatment for EDs according to both international and national guidelines [48, 72]. However, given the chronicity of EDs, psychotropic medications are often used clinically as part of multimodal approaches to ED treatment [73]. We review the extant literature on the efficacy of pharmacological treatments for EDs.

For the treatment of AN, a series of RCTs identified antidepressants and atypical antipsychotics as the most investigated pharmacological interventions [74]. Clinically, these medications are used to reduce the prevalence of depression, anxiety, and obsessive-compulsive behaviors and to facilitate weight restoration [75]. However, there is a lack of empirical evidence that weight gain occurs; and while psychiatric symptoms may reduce slightly, there is minimal impact on symptoms of AN specifically [76]. To date, the efficacy of pharmacotherapy for AN is inconclusive, and rigorous RCTs are needed to further evaluate their benefit to treatment [74].

For the treatment of BN and BED, only two psychotropic medications (*i.e.* fluoxetine for BN and lisdexamfetamine for BED) have been approved by US and international regulatory boards [77]. Findings from meta-analyses and reviews indicate that both medications have a good benefit-risk ratio [78] and result in short-term improvements in core ED psychopathology (e.g., bingeing and purging) compared to placebo [79–81]. However, there is a paucity of data to support their long-term efficacy beyond active treatment periods [82–85]. Findings from the longest maintenance trial of fluoxetine indicate that continued use of fluoxetine following an open-label trial is associated with lower relapse rate compared to placebo at 3-month follow-up [83]. However, relapse rates did not differ at 6- and 12-month follow-up. Only one study has examined the longer-term effects of lisdexamfetamine for moderate to severe BED. Similarly, results indicated that those who continued to take lisdexamfetamine over 6 months were 11 times less likely to relapse compared to placebo. Longer follow-up periods are warranted to evaluate the long-term efficacy of pharmacotherapy for BN and BED.

Few RCTs have compared fluoxetine and lisdexamfetamine to psychological interventions. Extant trials on BN and BED indicate that combined psychotherapy and pharmacotherapy are only superior compared to pharmacotherapy treatment alone but not compared to psychotherapy alone [79, 86, 87]. Evidence also suggests that individual CBT results in greater reductions in binge eating frequency [88] and abstinence from binge eating up at 2-year follow-up compared to drug alone [89]. Thus, pharmacological treatment may demonstrate modest improvements in ED symptoms when used as part of a multimodal approach to care. More data are needed to evaluate long-term improvements in ED symptoms and prevention of relapse. Further, given that these trials were conducted in adult samples, future research should also evaluate the safety and efficacy of pharmacological interventions in college-aged populations.

6. DISCUSSION

Considerable efforts have been made to reduce the prevalence of EDs on college campuses through implementation and dissemination of evidence-based screening, prevention, and treatment. However, we have identified several limitations of extant programming that warrant future research. Evidence supports the feasibility of using a range of screening tools to assess ED risk among college students. However, campuses seldom implement screening programs, and few screeners directly connect students with ED prevention and treatment programs. Future research should prioritize streamlining the process from screening to intervention in order to close the treatment gap. ED prevention programs are effective in mitigating ED risk through early detection and intervention and may offset the costs of treatment. The cost-effectiveness of prevention programs should be evaluated in order to make recommendations to college counseling centers and stakeholders regarding their wide-scale dissemination. Moreover, although considerable research has been dedicated to the evaluation of evidence-based treatment approaches, dissemination is limited. Digital programs may be a viable solution to increasing access to care on a population level, although sustained engagement can be a challenge, which future research will need to address. Further, given the dearth of data on pharmacological treatments in college populations, it would be useful for future studies to specifically examine potential efficacy of pharmacotherapy in college-age populations. Last, as relevant etiological factors are identified as being involved in the pathophysiology of EDs, future research should explore the use of precision medicine approaches to treatment.

CONCLUSION

EDs are serious public health problems that affect a significant proportion of college students. Recent advances in screening, prevention, and treatment efforts are promising and demonstrate the effectiveness of early detection and intervention. Future research is needed to investigate how to invest college campuses and stakeholders in population-level approaches to prevention and treatment.

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Table 1.

Common assessments used to screen college students for EDs [23].

Questionnaire	Construct Assessed	Number of Items	Strengths	Weaknesses
Eating-Attitudes Test-26 (EAT-26) [20]	ED attitudes and behaviors	26	Simple to score	Time intensive to administer and score due to the large number of items
Eating Disorder Examination-Questionnaire (EDE-Q) [21]	Presence and frequency of disordered eating thoughts and behaviors within the past 28 days; 4 subscale scores (eating concern, shape concern, weight concern, dietary restraint) and a global score can be generated	36	Examines both presence of ED psychopathology and frequency of ED behaviors	Time intensive to administer and score due to the large number of items
SCOFF [22]	Presence of core features of AN and BN	5	Brief and simple to administer and score either orally or in written form	Questions may not capture EDs other than AN or BN (e.g., BED)
Stanford-Washington University Eating Disorder Scale (SWED) [23]	ED psychopathology, behaviors and impairment within the past 3 months; Categorizes individuals into risk categories (i.e. possible AN, clinical/subclinical ED other than AN, high risk, low risk)	17	Examines both presence of ED psychopathology and frequency of ED behaviors; Assigns individuals to different ED-risk categories	More complex scoring procedure than utilizes a computer-based algorithm