Understanding the Associations Between Disordered Eating and Drinking Motives and Alcohol-Related Consequences in Community College Students Who Drink Alcohol

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ABSTRACT

Introduction: Disordered eating and alcohol use are common health risk behaviors among college students. Drinking motives and alcohol-related consequences may vary according to whether students experience body image concerns or engage in disordered eating behaviors. Little is known about these relationships among community college students. The purpose of this study was to evaluate the associations between disordered eating, drinking motives, and alcohol-related consequences among community college students who consume alcohol.

Methods: Community college students from 5 campuses in Washington and Wisconsin were recruited. Cross-sectional survey data were used to evaluate associations among body image concerns and disordered eating behaviors, drinking motives, and alcohol-related consequences.

Results: Among 181 participants, 82% were female, 78% were White, and the mean age was 22.9 years [SD, 3.2]. Participants who reported a fear of weight gain were more likely to drink alcohol to cope with anxiety (r=0.17; P=.0280), depression (r=0.17; P=.0214), and conformity-related motives (r=0.17; P=.0264) than those without this fear. Similarly, participants who reported fasting had significantly higher motivation to drink alcohol to cope with anxiety (mean [SD], 9.47 [3.77] vs 8.16 [3.48]; P=.0369) and depression (mean [SD], 17.70 [10.36] vs 13.62 [6.86]; P=.0191). Participants who reported a fear of weight gain and those who engaged in fasting also experienced more alcohol-related consequences (r=0.19, P=.0135 and mean [SD], 8.33 [5.01] vs 4.80 [5.10]; P=.0001), respectively).

Conclusions: Community college students who consume alcohol may benefit from targeted screening and intervention addressing the intersection of disordered eating, drinking motives, and alcohol-related consequences.

INTRODUCTION

Disordered eating and alcohol use are common health risk behaviors among college students. Approximately 7% of college students reported having been diagnosed with an eating disorder.[1] Risk factors and precursors of eating disorders, including body image concerns and disordered eating behaviors (DEBs), are frequently reported by college students. Among college freshmen, 50% reported a desire to lose weight, and 15% reported frequently skipping meals.[2] Compensatory eating behaviors, including self-induced vomiting, use of laxatives or diuretics, and overexercising, are also common among college students. In a study of undergraduate students, nearly half reported engaging in compensatory behaviors in the previous 28 days.[3] Thus, even among students without an eating disorder diagnosis, body image concerns and DEBs are common and concerning.

Despite the importance of these behaviors among college-aged individuals, little is known about disordered eating among young adults attending community colleges. Community colleges are postsecondary schools offering 2-year degrees; approximately 30% of all undergraduate students attend these institutions.[4] Community college students are a unique population that is typically older, more likely to attend school part-time, and more likely to come from racially and ethnically diverse backgrounds.[4] Although studies examining body image concerns and DEBs in community college students are limited, one study found that 32% of students weighed themselves at least weekly and 42% were dissatisfied or very dissatisfied with their weight.[5]

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Alcohol use is another health risk behavior commonly reported by college students. In prior work, the prevalence of past-year alcohol use among community college students was 84%[6] and past-month use was 63%.[7] The prevalence of heavy episodic alcohol use among community college students has been reported between 25% and 47%.[6,8]

Regular alcohol use and binge drinking can have negative effects on physical and mental health, as well as social and academic consequences. Alcohol intoxication can lead to immediate negative consequences by impairing decision-making capacity and impulse control.[9] Among students attending 2- and 4-year colleges, 18% of those who drank alcohol reported doing something they regretted while drinking during the past 12 months.[1] Given the consequences associated with alcohol use among college students, it is important to understand the factors that motivate alcohol consumption. Drinking motives have previously been explored through models that identify the most common reasons individuals consume alcohol, including enhancing positive mood, coping with negative mood, facilitating social interactions, and fitting in.[10,11]

Previous studies have explored the relationship between disordered eating and patterns of alcohol use and alcohol-related consequences among college students attending 4-year universities. For instance, college students who screened positive for eating disorders or engaged in DEBs were significantly more likely to binge drink.[12,13] In addition, undergraduate students who engaged in DEBs were significantly more likely to have positive expectations of alcohol use and to engage in riskier drinking behaviors than those who did not engage in DEBs.[13] Female college students who engaged in purging reported more frequent alcohol use and more negative alcohol-related consequences than those who did not purge.[14]

The relationship between disordered eating, drinking motives, and alcohol-related consequences has not been explored among community college students. As community college students represent a unique population of young adults with potential barriers to accessing care (eg, less access to on-campus health centers),[15] understanding these behaviors may help inform screening practices and intervention efforts.

The objective of this study was to evaluate the associations between disordered eating (body image concerns and DEBs), drinking motives, and alcohol-related consequences among community college students who consume alcohol.

METHODS

This cross-sectional, secondary analysis used data from an online survey of community college students originally conducted as part of a larger intervention study examining substance use and social media use. The study was approved by the University of Wisconsin Health Sciences Institutional Review Board and the 5 participating community colleges (2 in Washington and 3 in Wisconsin).

Table 1. Modified Survey Questions Adapted From the Eating Disorder Diagnostic Scale

Body image concerns questions:	
Over the past 3 months…	• Have you felt fat? • Have you had a definite fear that you might gain weight or become fat? • Has your weight or shape influenced how you judge yourself as a person?
Disordered eating behaviors (DEBs) questions:	
In order to prevent weight gain or counteract the effects of eating, how many times per month on average over the past 3 months have you…	• Made yourself vomit? • Used laxatives or diuretics? • Fasted (skipped at least 2 meals in a row)? • Engaged in more intense exercise specifically to counteract the effects of overeating?
During the past 3 months have there been times when you have eaten what other people would regard as an unusually large amount of food given the circumstances?	
During the times when you ate an unusually large amount of food, did you experience a loss of control?	

Data were collected from March 2018 through December 2019. Eligibility criteria included enrollment in a community college; age 18 to 29 years, English-speaking, ownership of a Facebook account, and current alcohol use (within the previous 28 days) with at least 1 episode of heavy episodic drinking in the previous year (≥4 drinks for females and ≥5 drinks for males on a single occasion).

Recruitment strategies included: (1) sharing study information on community college websites; (2) distributing study information through community college listservs in up to 3 emails; and (3) displaying study flyers in public locations on campus. Interested students completed an online eligibility screening survey and, if eligible, an online consent process. After providing consent, participants were invited to complete an online survey. The survey took approximately 45 to 60 minutes to complete, and participants received a $20 incentive upon completion.

Measures

Demographic information collected included age, sex assigned at birth, race, ethnicity, and state of community college attendance (Washington or Wisconsin).

Disordered Eating: Body Image Concerns and DEBs

A modified version of the Eating Disorder Diagnostic Scale (EDDS)[16] was used to evaluate body image concerns and DEBs. The EDDS is a self-report instrument that aids in the diagnosis of anorexia nervosa, bulimia nervosa, and binge-eating disorder. We examined specific items from the scale relevant to this study (Table 1). Three body image concerns were evaluated: having felt fat, having experienced fear of weight gain or becoming fat, and the extent to which weight or shape influenced self-judgment. Each item was assessed using a Likert scale (0 = not at all to 6 = extremely). DEBs included fasting, self-induced vomiting,

use of laxatives or diuretics, compensatory exercise, and binge eating. Two questions assessed binge eating: (1) whether a binge episode occurred and (2) whether loss of control was experienced during the binge episode. For the remaining DEBs, participants reported the number of occurrences during the previous 3 months. Reporting a behavior at least 4 times per month during the previous 3 months was considered a positive response. This cutoff was extrapolated from the *Diagnostic and Statistical Manual of Mental Disorders,* Fifth Edition (DSM-5) criteria, which specify that compensatory behaviors occur at least weekly for 3 months.[17]

Drinking Motives

Participants' motives for drinking alcohol were assessed with the validated Modified Drinking Motives Questionnaire-Revised (MDMQ-R).[11] The MDMQ-R is a 28-item questionnaire that assesses drinking motives across 5 factors: social, coping with anxiety, coping with depression, enhancement, and conformity. Items are scored on a 5-point Likert scale (1 = almost never/never to 5 = almost always/always). Scores for each factor were calculated as the sum of the corresponding items. Higher scores indicate a greater likelihood of drinking alcohol for that reason.

Alcohol-related Consequences

Alcohol-related consequences were assessed with the validated Brief Young Adult Alcohol Consequences Questionnaire (B-YAACQ).[18,19] The B-YAACQ is a 24-item yes/no (yes = 1, no = 0) questionnaire that assesses the number of alcohol consequences experienced during the previous month. Consequences range in severity from "While drinking, I have said or done embarrassing things" to "I have neglected my obligations to family, work, or school because of drinking." The total score is calculated as the sum of all items and ranges from 0 to 2, with higher scores indicating a greater number of alcohol-related consequences during the previous month.

Statistical Analysis

Survey responses measured on a Likert scale were summarized using means and standard deviations. Pearson correlation analyses were conducted to evaluate the correlations between body image concerns and drinking motives and alcohol-related consequences. Two-sample *t* tests were used to compare drinking motives and alcohol-related consequences between students who engaged in DEBs and those who did not. All reported *P* values were 2-sided and a significance level of $P < .05$ used to define statistical significance. Statistical analyses were conducted using SAS software, version 9.4 (SAS Institute).

RESULTS

A total of 726 students completed the screening eligibility survey, of whom 254 met study criteria; 181 students completed the survey and were included in this secondary analysis. Of the 181 participants, 148 were assigned female sex at birth (82%), 141 identified as White (78%), 123 attended a community college in Washington (68%), and the mean age was 22.9 years [SD, 3.2] (Table 2).

Table 2. Demographics

Category	Participants (N = 181)
Age, y; mean [SD], median, range	22.9 [3.2], 22, 18-29
Birth sex, n (%)	
Female	148 (82)
Male	33 (18)
Community college state, n (%)	
Wisconsin	57 (31)
Washington	123 (68)
Other	1 (1)
Race, n (%)	
White	141 (78)
African American	3 (2)
Asian	9 (5)
Native American/Pacific Islander	4 (2)
More than one race/other	13 (7)
Not answered	11 (6)
Ethnicity, n (%)	
Hispanic	47 (26)
Non-Hispanic	132 (73)
Not answered	2 (1)

Descriptive Information: Disordered Eating

For body image concerns, the mean scores for having felt fat and fear of weight gain or becoming fat were both 3.8 [SD, 2.1] on a 0- to 6-point Likert scale. The mean score for weight or shape having influenced self-judgment was 4.0 [SD, 2.1]. During the previous 3 months, approximately 54% of participants reported regularly engaging in binge eating, 24% reported fasting, 17% engaged in compensatory exercise, 4% used diuretics or laxatives, and 3% engaged in self-induced vomiting.

Descriptive Information: Drinking Motives and Alcohol-related Consequences

Among all participants, the mean score for drinking for social reasons was 15.0 [SD, 4.9; social factor scale, 5-25], for coping with anxiety was 8.5 [SD, 3.6; anxiety factor scale, 4-20], for coping with depression was 14.6 [SD, 8.6; depression factor scale, 9-45], for enhancement was 11.9 [SD, 4.8; enhancement factor scale, 5-25], and for conformity was 6.9 [SD, 3.2; conformity factor scale, 5-25). Cronbach α values were 0.81 for the social factor scale, 0.73 for the anxiety factor scale, 0.96 for the depression factor scale, 0.85 for the enhancement factor scale, and 0.87 for the conformity factor scale.

For alcohol-related consequences, the overall mean score on the B-YAACQ was 5.7 [SD, 5.3] during the previous month, with scores ranging from 0 to 21 (Table 3). Participants commonly reported having a hangover the morning after drinking (60.8%), having said or done embarrassing things while drinking (54.7%),

Table 3. Participant Responses on the Brief Young Adult Alcohol Consequences Questionnaire

Consequences	No. (%) Endorsing
1. While drinking, I have said or done embarrassing things.	99 (54.7)
2. I have had a hangover (headache, sick stomach) the morning after I had been drinking.	110 (60.8)
3. I have felt very sick to my stomach or thrown up after drinking.	76 (42.0)
4. I often have ended up drinking on nights when I had planned not to drink.	63 (34.8)
5. I have taken foolish risks when I have been drinking.	52 (28.7)
6. I have passed out from drinking.	28 (15.5)
7. I have found that I needed larger amounts of alcohol to feel any effect, or that I could no longer get high or drunk on the amount that used to get me high or drunk.	28 (15.5)
8. When drinking, I have done impulsive things that I regretted later.	60 (33.15)
9. I've not been able to remember large stretches of time while drinking heavily.	34 (18.8)
10. I have driven a car when I knew I had too much to drink to drive safely.	25 (13.8)
11. I have not gone to work or missed classes at school because of drinking, a hangover, or illness caused by drinking.	29 (16.0)
12. My drinking has gotten me into sexual situations I have later regretted.	38 (21.0)
13. I have often found it difficult to limit how much I drink.	29 (16.0)
14. I have become very rude, obnoxious or insulting after drinking.	28 (15.5)
15. I have woken up in an unexpected place after heavy drinking.	13 (7.2)
16. I have felt badly about myself because of my drinking.	47 (26.0)
17. I have had less energy or felt tired because of my drinking.	90 (49.7)
18. The quality of my work or schoolwork has suffered because of my drinking.	29 (16.0)
19. I have spent too much time drinking.	30 (16.6)
20. I have neglected my obligations to family, work or school because of drinking.	33 (18.2)
21. My drinking has created problems between myself and my boyfriend/girlfriend/spouse, parents or other near relatives.	21 (11.6)
22. I have been overweight because of drinking.	23 (12.7)
23. My physical appearance has been harmed by my drinking.	20 (11.0)
24. I have felt like I needed a drink after I'd gotten up (that is, before breakfast).	9 (5.0)

Table 4. Associations Between Body Image Concerns and the Modified Drinking Motives Questionnaire-Revised and Brief Young Adult Alcohol Consequences Questionnaire

	Felt Fat Fat N = 177	Fear of Weight Gain Or Becoming Fat N = 177	Weight Influenced Self-judgement N = 177
MDMQ-R–social	*r* = 0.03 *P* = .6673	*r* = 0.11 *P* = .1405	*r* = 0.11 *P* = .1400
MDMQ-R–anxiety	*r* = 0.12 P=.1111	*r* = 0.17 *P* = .0280	*r* = 0.11 *P* = .1372
MDMQ-R–depression	*r* = 0.11 *P* = .1385	*r* = 0.17 *P* = .0214	*r* = 0.09 *P* = .2558
MDMQ-R–enhancement	*r* = 0.07 *P* = .3317	*r* = 0.08 *P* = .2751	*r* = 0.09 *P* = .2314
MDMQ-R–conformity	*r* = 0.07 *P* = .3509	*r* = 0.17 *P* = .0264	*r* = 0.14 *P* = .0557
BYAAC	*r* = 0.10 *P* = .1821	*r* = 0.19 *P* = .0135	*r* = 0.15 *P* = .0538

Abbreviations: MDMQ-R, Modified Drinking Motives Questionnaire-Revised; BYAAC, Brief Young Adult Alcohol Consequences.

Pearson correlation was used to evaluate associations between body image concerns and drinking motives and alcohol-related consequences.

and having less energy or feeling tired because of drinking (49.7%).

Disordered Eating and Drinking Motives

Participants who reported a fear of weight gain or becoming fat were significantly more likely to drink alcohol to cope with anxiety ($r = 0.17$; $P = .0280$), cope with depression ($r = 0.17$; $P = .0214$), and conform ($r = 0.17$; $P = .0264$) (Table 4) than participants who did not report this fear.

In addition, participants who engaged in fasting were significantly more likely to drink alcohol to cope with anxiety (mean [SD], 9.47 [3.77] vs 8.16 [3.48]; $P = .0369$) and cope with depression (mean [SD], 17.70 [10.36] vs 13.62 [6.86]; $P = .0191$) than those who did not fast.

Other body image concerns (feeling fat and weight or shape influencing self-judgment) and DEBs (binge eating, self-induced vomiting, laxative or diuretic use, and compensatory exercise) were not significantly associated with drinking motives (Table 4).

Disordered Eating and Alcohol-related Consequences

Reporting a fear of weight gain or becoming fat was associated with a higher number of alcohol-related consequences compared with not reporting this fear ($r = 0.19$; $P = .0135$) (Table 4). Fasting was significantly associated with a higher number of alcohol-related consequences than not fasting (mean [SD], 8.33 [5.01] vs 4.80 [5.10]; $P = .0001$).

Other body image concerns (feeling fat and weight or shape influencing self-judgment) and DEBs (binge eating, self-induced vomiting, laxative or diuretic use, and compensatory exercise) were not significantly associated with a higher number of alcohol-related consequences (Table 4).

DISCUSSION

This preliminary study explored the relationship between body image concerns and DEBs and drinking motives and alcohol-related consequences among community college students who consume alcohol. Our results highlight important associations between these health risk behaviors in this understudied population and underscore the importance of effective screening and intervention practices.

Participants in this study commonly reported DEBs, including binge eating and fasting. These findings provide preliminary evi-

dence that DEBs are common among community college students, similar to findings among students attending 4-year colleges.[20,21] Participants reported an average of nearly 6 alcohol-related consequences during the previous month. Prior studies have reported similar findings, with community college students who engaged in binge drinking experiencing higher rates of alcohol-related consequences than those who abstained or did not binge drink.[6]

In this study, participants who reported a fear of weight gain or becoming fat and those who engaged in fasting were both significantly more likely to drink alcohol to cope with symptoms of depression and anxiety. Mental health concerns are common among college students; in a national survey of students attending 2- and 4-year colleges, 35% reported ever having ever been diagnosed with anxiety and 27% reported ever having been diagnosed with depression.[1] Among community college students specifically, 33% of reported health concerns were related to mental health.[22] Prior studies have demonstrated the relationship between eating disorders and mental health conditions; among individuals with eating disorders, nearly two-thirds also have anxiety and more than half have a mood disorder.[23] Our study provides preliminary support for an association between disordered eating and mental health concerns among community college students. Addressing disordered eating and mental health concerns concurrently may reduce the likelihood that students use alcohol as a means of coping and may decrease high-risk alcohol consumption overall.

In examining alcohol-related consequences, participants who reported a fear of weight gain or becoming fat and those who engaged in fasting reported significantly more alcohol-related consequences than other participants. Although not directly assessed in this study, food-restricted alcohol consumption (intentional restriction of food intake before drinking alcohol) is common among college students, with 14% of US college freshmen engaging in this behavior.[24] Restricting food intake before alcohol consumption may lead to more rapid attainment of peak blood alcohol concentrations, increasing the risk of negative alcohol-related effects. Continued research and student education are needed regarding the potential consequences of fasting before consuming alcohol.

Understanding these associations in community college students may be particularly relevant for clinicians who work with young adults attending community colleges, both on campus and in the community. Given the significant negative effects associated with disordered eating and alcohol use, early identification and intervention are crucial. Nationwide data from 165 colleges and universities demonstrated that fewer than half offer eating disorder screening once per year or semester and fewer than 1 in 4 offer year-round screening.[25] Although prior research has demonstrated the benefits of screening and brief intervention for reducing alcohol-related consequences among college students,[26] a study exploring alcohol-related resources on community college campuses found limited staffing and resources.[27] Community colleges face unique barriers to screening and intervention, including limited budgets and increased difficulty engaging off-campus and part-time students.[28] Offering virtual screening and intervention may be a promising strategy for reaching community college students. Validated screenings tools can be delivered electronically to assess disordered eating[29] and alcohol use,[30] with interventions targeted to students at high risk. Preliminary studies suggest that virtual options may be acceptable, feasible, and effective for reducing alcohol use and alcohol-related consequences among community college students.[28]

Limitations

Limitations of this study include the small sample size, which made it difficult to evaluate associations involving less prevalent DEBs and drinking motives and alcohol-related consequences. In addition, most participants were female and White, limiting our ability to explore differences by sex and race. However, this preliminary study provides a foundation for larger studies evaluating these behaviors in this understudied population.

The study population was limited to 2 geographic regions and therefore may not be nationally representative. However, it provides insight into the experiences of community college students in Wisconsin and a geographically distinct state. Because of the cross-sectional study design, we were able to establish associations but not causation. In addition, the study design did not allow assessment of changes in these behaviors and their relationships over time.

This study was limited to students who consume alcohol and therefore may not be generalizable to all community college students. However, this was an intentional design element that allowed the study to focus on students with alcohol use experience. Future studies should consider including community college students who do not consume alcohol should consider longitudinal follow-up to further evaluate these relationships.

In addition, because the full EDDS was not administered in the original survey, analyses focused on selected items rather than the total questionnaire score. However, questions were selected a priori to examine body image concerns and DEBs in this population. Despite these limitations, this preliminary study contributes to understanding the intersection between disordered eating, drinking motives, and alcohol-related consequences among community college students.

CONCLUSIONS

Overall, these findings provide preliminary evidence of associations between body image concerns and DEBs and drinking motives and alcohol-related consequences among community college students who consume alcohol. Understanding the connection between disordered eating and drinking motives, including drinking to cope with mental health concerns, may help inform

interventions that address these co-occurring behaviors. Although recommendations already exist to screen college students for alcohol use and disordered eating, barriers to implementation remain, particularly on community college campuses. Further research is needed to identify and deliver effective interventions for community college students. Future studies should explore associations between disordered eating, motives for drinking alcohol, and alcohol-related consequences in larger samples of community college students to confirm and expand upon our findings.

Financial disclosures: None declared.

Funding/support: This work was supported by the National Institute on Alcohol Abuse and Alcoholism under Grant R34AA025159.

Acknowledgements: The authors would like to thank Melissa Lewis, PhD, for input on measure selection.

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