Published in final edited form as:

J Dual Diagn. 2015 ; 11(0): 233–237. doi:10.1080/15504263.2015.1104480.

Eating Disorder Symptoms And Length Of Stay In Residential Treatment For Substance Use: A Brief Report

JoAnna Elmquist, M.A.¹, Ryan C. Shorey, Ph.D.², Scott Anderson, Ph.D.³, and Gregory L. Stuart, Ph.D.¹

JoAnna Elmquist: Jelmquis@vols.utk.edu; Ryan C. Shorey: shorey@ohio.edu; Scott Anderson: scottanderson@cornerstoneofrecovery.com; Gregory L. Stuart: gstuart@utk.edu

¹University of Tennessee- Knoxville

²Ohio University

³Cornerstones of Recovery, Louisville, TN

Abstract

Objective—Treatment dropout is common both among people in treatment for eating disorders and for substance use disorders. Because of the high rates of co-occurrence and mortality associated with these disorders, the purpose of the current study was to examine the relationship between eating disorder symptoms, length of stay, and decisions to leave against medical advice among individuals in substance use treatment.

Method—We analyzed de-identified medical record data for 122 adult women enrolled in residential treatment for substance use disorders over a 12-month period. Routine treatment intake included standardized assessments of eating disorders, depression, and substance use.

Results—Participants averaged 43.1 years of age ($SD = 10.7$) and were primarily non-Hispanic Caucasian ($n = 118$, 96.7%). Approximately 8 (6.6%) patients met criteria for a probable eating disorder, and 79 (64.8%) for a probable alcohol use disorder. Mean length of stay was 28.1 days ($SD = 6.6$) and 21 (17%) patients left against medical advice. Logistic regression analysis showed that eating disorder symptoms were significantly associated with decisions to leave treatment against medical advice after controlling for age, years of education, depression symptoms alcohol problems, and drug problems; $\chi^2 = 14.88$, $df = 6$, $p = .02$. This model accounted for 19.1% (Nagelkerke R^2) of the variance in discharge type. Eating disorder symptoms were not associated with length of treatment.

Conclusions—Our findings suggest the importance of assessing and monitoring eating disorder symptoms among individuals in treatment for substance use disorders.

Corresponding Author: JoAnna Elmquist, B.A., University of Tennessee, Department of Psychology, 1404 Circle Dr., Austin Peay Building, 204, Knoxville, TN 37996, Phone: (214) 789-9486, jelmquis@vols.utk.edu.

The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIAAA or the National Institutes of Health.

DISCLOSURES

The authors report no financial relationships with commercial interests with regard to this manuscript. JoAnna Elmquist receives a graduate student stipend from the University of Tennessee. Dr. Shorey receives compensation as a consultant for Cornerstone of Recovery. Dr. Stuart received compensation as a consultant from the University of Texas Medical Branch- Galveston, Boston University, and Cornerstone of Recovery. He also received compensation for reviewing grants for the National Institutes of Health.

Keywords

substance dependence; eating disorders; treatment length; treatment dropout

Eating disorders (EDs) and substance use disorders (SUDs) often co-occur and are associated with negative course, poor treatment outcomes (Harrop & Marlatt, 2010; Pearlstein, 2002), and increased risk for treatment dropout (Ball, Carroll, Canning-Ball, Rounsaville, 2006; Brooks, Hilty, Liu, Hu, & Frye, 2006; McKella, Kelly, Harris, Moos, 2006). Due to the high mortality rates associated with both disorders, shortened treatment length and discharge against medical advice (AMA) among people with both disorders raise concern.

People with SUD are among the most likely to leave treatment AMA or have a shortened length of stay (McKella et al., 2006; Tawk, Freels, Mullner, 2013). People with eating disorders (EDs) are also prone to leave treatment AMA and dropout (Fassino, Pierò, Tomba, & Abbate-Daga, 2009; Mahon, 2000; Swan-Kremeier et al., 2005).

The current study examined length of stay and AMA discharge among women with ED symptoms in treatment for SUD. We included depression symptoms as a control variable because of the high rates of co-occurrence between EDs and depression (Beebe, 1994; Tozzi et al., 2014; Wilson, & Lindholm, 1987) and SUDs and depression (Grant et al., 2005), and the significant relationship between depression and leaving treatment AMA (e.g., Arnow et al., 2007). We hypothesized that the ED symptoms would be associated with a shortened length of treatment and AMA discharge. We limited our analysis of EDs to bulimia nervosa and binge eating disorder because SUD is more common among people with these disorders than anorexia (Holderness, Brooks-Gunn, & Warren, 1994).

Method

Participants and Procedure

We collected de-identified data from the medical records of all female patients admitted to this 28–35 day residential 12-step treatment program between August 2013 and August 2014. As part of the program's routine intake process, patients completed a series of self-report assessments and provided historical and demographic information. Routine intake procedures also include informing patients that their de-identified medical records may be used for research purposes. The Institutional Review Board (IRB) of the first author approved the study and deemed that informed consent was not required.

Measures

Scores on the Psychiatric Diagnostic Screening Questionnaire (PDSQ; Zimmerman, 2002), which includes 125 yes-no statements, were used to assess eating disorders and depression. We evaluated bulimia and binge eating using the Eating Disorder subscale and depression using the Depression subscale. The 10 items on the ED subscale yield a score from 0 to 10. The PDSQ has excellent reliability and validity (Sheeran & Zimmerman, 2004; Zimmerman & Mattia, 2001).

Quantity, frequency, and intensity of drinking in the year prior to treatment were covered by the Alcohol Use Disorders Identification Test AUDIT (Saunders, Aasland, Babor, De La Fuente, & Grant, 1993). The AUDIT includes items that assess dependence, tolerance, and consequences associated with drinking. The AUDIT has good validity and reliability (Barbor, Higgins-Biddle, Saunders, & Monterio, 2001). The 14-item Drug Use Disorders Identification TEST (DUDIT; Stuart, Moore, Kahler, & Ramsey 2003; Stuart, Moore, Ramsey, & Kahler, 2004) assessed the use and problems related to the use of the following substances: cannabis; cocaine; hallucinogens/PCP; nonprescribed stimulants, sedatives/hypnotics/anxiolytics, and opiates; and other substances in the year prior to treatment. Reliability estimates for the DUDIT range from .89–.90 (Stuart et al., 2003, 2004).

Administrative records provided information regarding length of treatment and status at discharge. Participants who dropped out of treatment early or were discharged for rule violations were classified as having left treatment AMA.

Results

At intake, the mean age of participants was 43.1 years ($SD = 10.7$), and the mean years of education was 14.1 ($SD = 2.4$). Ethnically, they were mostly non-Hispanic Caucasian ($n = 118$, 96.7%), followed by African American ($n = 2$, 1.6%), while 41.8% were married ($n = 51$), 23.0% were never married ($n = 28$), and 18.9% were divorced ($n = 23$). The primary substance use disorders were: 62.3% ($n = 76$) alcohol dependence, 19.7% ($n = 24$) opioid dependence, 7.4% ($n = 9$) polysubstance dependence, 4.1% ($n = 5$) “other” (e.g., amphetamine dependence), 2.5% ($n = 3$) alcohol abuse, 2.5% ($n = 3$) cocaine dependence, and 1.6% ($n = 2$) cannabis dependence.

Self-reports on the PDSQ revealed that 8 (6.6%) participants met criteria for a probable eating disorder diagnosis, while 67 (54.9%) met criteria for a probable depressive disorder, 79 (64.8%) for a probable alcohol use disorder, and 32 (26.2%) for probable drug use disorder. Most of the women in the residential program completed treatment ($n = 101$, 82.8%), but 21 (17%) left against medical advice. Mean length of stay in the program was 28.1 days ($SD = 6.6$).

Table 1 presents descriptive statistics and bivariate correlations. ED symptoms were negatively associated with length of stay and treatment dropout and positively associated with drug problems and depression symptoms. Length of stay was positively associated with age, and alcohol and drug use were negatively associated with each other. Treatment dropout was negatively associated with depression symptoms.

We conducted hierarchical multiple regression analyses in two steps, shown in Table 2. In the first step, we included age, years of education, depression symptoms, alcohol problems, and drug problems as predictors of length of stay. Age was the only significant predictor of length of stay. In the second step, we added ED symptoms without significant increase in prediction.

Next, we used a logistic regression analysis to examine whether ED symptoms predicted the type of discharge (i.e., completing treatment successfully [$N = 101$] vs. leaving AMA

[$N=21$]). Table 3 shows that the logistic regression model was significant, $\chi^2(6, N=122)=14.88, p=.02$). This model accounted for 19.1% (Nagelkerke R^2) of the variance in discharge type. ED symptoms predicted being discharged AMA relative to discharge due to completing treatment, after controlling for age, education, depression symptoms, alcohol problems, and drug problems.

Discussion

We found that ED symptoms were associated a greater likelihood to leave treatment AMA over and beyond age, education, depression symptoms, alcohol, and drug problems. These results are consistent with previous research and suggest that individuals with co-morbid ED symptoms and SUDs are likely at an increased risk for leaving treatment early and AMA compared to patients with a single SUD or ED diagnosis.

We considered several possible explanations. First, heightened impulsivity relative to patients with single diagnoses could be explanatory (Fassino et al., 2009; Fernández-Serrano, Pérez-García, & Verdejo-García, 2011; Verdejo-García, Lawrence, & Clark, 2008). Both EDs and SUDs are characterized by impulse control problems, thus patients with co-morbid ED symptoms and SUDs might have a more difficult time adhering to the rigid and highly structured environment of residential treatment facilities (Fassino et al., 2009; Fernández-Serrano et al., 2011; Verdejo-García et al., 2008). Second, patients with dual diagnoses are likely to experience more significant and distressing symptomatology (Mahon, 2000; McKellar et al., 2006), which might decrease their ability and willingness to participate in treatment and ultimately lead to shorter treatment lengths or decisions to leave AMA. Third, people with co-morbid ED symptoms and SUDs might feel that their experience in recovery is more difficult and different relative to other patients (Kaplan & Garfinkel, 1999; McKellar et al., 2006). Finally, EDs and SUDs are associated with increased social stigma, which could increase treatment resistance and dropout among individuals with these disorders (Rodgers et al., 2015).

ED symptoms were associated with treatment dropout even after controlling for depression symptoms. The significant relationship between ED and depression symptoms (Beebe, 1994; Tozzi et al., 2014; Wilson, & Lindholm, 1987) and depression and SUDs (Grant et al., 2005) is well documented. Past work has also demonstrated a significant relationship between depression symptoms and treatment dropout (Arnold et al., 2007). Furthermore, a reduction in depression symptoms has been associated with better treatment outcome among women in treatment for EDs (Thompson-Brenner and colleagues (2015)). Future research should continue to examine the interactions between comorbid psychopathology and treatment outcome among people in treatment for SUDs.

Several limitations should be noted. We examined the association between treatment dropout and ED symptoms rather than ED diagnoses, thus precluding conclusions regarding the predictive nature of EDs. Our results do not generalize to men and more ethnically diverse women is limited. The assessments of ED symptoms, alcohol problems, and drug problems were based on self-reports. At the time the study was conducted, a revised PDSQ based on the 5th edition of the *Diagnostic and Statistical Manual of Mental Disorders*

(DSM-5; American Psychological Association, 2013) was not available. We used total scores for ED symptoms provided by the treatment facility; thus it was not possible to determine which ED symptoms were associated with treatment length and the decision to leave AMA. Finally, the SUD diagnoses were based on non-structured clinical interviews.

Despite these limitations, our study has implications for research and treatment. Our findings highlight the importance of screening for and monitoring of ED symptoms in SUD treatment. We did not assess the influence of Axis-II. Symptomatology (e.g., borderline symptoms) on this relationship, but borderline symptoms are common among people with both EDs and SUDs. Given the relationship between impulsivity and both EDs and SUDs, treatments enhancing emotional regulation and distress tolerance could potentially improve treatment.

Acknowledgments

FUNDING

This work was supported, in part, by grant K24AA019707 from the National Institute on Alcohol Abuse and Alcoholism (NIAAA) awarded to the last author. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIAAA or the National Institutes of Health.

References

- American Psychological Association. Diagnostic and statistical manual of mental disorders: DSM-IV-5. American Psychiatric Publications; 2013.
- Armenian SH, Chutuape MA, Stitzer ML. Predictors of discharges against medical advice from a short-term hospital detoxification unit. *Drug and alcohol dependence*. 1999; 56(1):1–8. [PubMed: 10462086]
- Arnow BA, Blasey C, Manber R, Constantino MJ, Markowitz JC, Klein DN, ... Rush AJ. Dropouts versus completers among chronically depressed outpatients. *Journal of affective disorders*. 2007; 97(1):197–202. [PubMed: 16857266]
- Ball SA. Comparing individual therapies for personality disordered opioid dependent patients. *Journal of personality disorders*. 2007; 21(3):305–321. [PubMed: 17536942]
- Ball SA, Carroll KM, Canning-Ball M, Rounsaville BJ. Reasons for dropout from drug abuse treatment: Symptoms, personality, and motivation. *Addictive Behaviors*. 2006; 31(2):320–330. [PubMed: 15964152]
- Babor TF, Higgins-Biddle JC, Saunders JB, Monteiro MG. The alcohol use disorders identification test. Guidelines for use in primary care. 2001
- Beebe DW. Bulimia nervosa and depression: A theoretical and clinical appraisal in light of the binge—purge cycle. *British Journal of Clinical Psychology*. 1994; 33(3):259–276. [PubMed: 7994213]
- Bonfà DF, Cabrini S, Avanzi M, Bettinardi O, Spotti R, Uber E. Treatment dropout in drug-addicted women: Are eating disorders implicated? *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity*. 2008; 13(2):81–86.
- Brook M, Hilty D, Liu W, Hu R, Frye M. Discharge against medical advice from inpatient psychiatric treatment: a literature review. *Psychiatric Services*. 2006; 57(8):1192–1198. [PubMed: 16870972]
- Carter O, Pannekoek L, Fursland A, Allen KL, Lampard AM, Byrne SM. Increased wait-list time predicts dropout from outpatient enhanced cognitive behaviour therapy (CBT-E) for eating disorders. *Behaviour research and therapy*. 2012; 50(7):487–492. [PubMed: 22659158]
- Fassino S, Pierò A, Tomba E, Abbate-Daga G. Factors associated with dropout from treatment for eating disorders: a comprehensive literature review. *BMC psychiatry*. 2009; 9(1):67. [PubMed: 19818137]

- Fernández-Serrano MJ, Pérez-García M, Verdejo-García A. What are the specific vs. generalized effects of drugs of abuse on neuropsychological performance? *Neuroscience & Biobehavioral Reviews*. 2011; 35(3):377–406. [PubMed: 20451551]
- Grant BF, Hasin DS, Stinson FS, Dawson DA, Ruan J, Goldstein RB, ... Huang B. Prevalence, correlates, co-morbidity, and comparative disability of DSM-IV generalized anxiety disorder in the USA: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Psychological Medicine*. 2005; 35(12):1747–1759. [PubMed: 16202187]
- Harrop EN, Marlatt GA. The comorbidity of substance use disorders and eating disorders in women: Prevalence, etiology, and treatment. *Addictive Behaviors*. 2010; 35:392–398. [PubMed: 20074863]
- Holderness CC, Brooks-Gunn J, Warren MP. Co-morbidity of eating disorders and substance abuse: Review of the literature. *International Journal of Eating Disorders*. 1994; 16(1):1–34. [PubMed: 7920577]
- Johns K, Baker A, Webster RA, Lewin TJ. Factors associated with retention in a long-term residential rehabilitation programme for women with substance use problems. *Mental Health and Substance Use: Dual Diagnosis*. 2009; 2(1):40–51.
- Kaplan AS, Garfinkel PE. Difficulties in treating patients with eating disorders: a review of patient and clinician variables. *Canadian Journal of Psychiatry*. 1999; 44:665–670. [PubMed: 10500867]
- Kenne DR, Boros AP, Fischbein RL. Characteristics of opiate users leaving detoxification treatment against medical advice. *Journal of addictive diseases*. 2010; 29(3):383–394. [PubMed: 20635287]
- Lavender JM, Happel K, Anestis MD, Tull MT, Gratz KL. The interactive role of distress tolerance and eating expectancies in bulimic symptoms among substance abusers. *Eating behaviors*. 2015; 16:88–91. [PubMed: 25464073]
- Mahon J. Dropping out from psychological treatment for eating disorders: What are the issues? *European Eating Disorders Review*. 2000; 8(3):198–216.
- Masson PC, Perlman CM, Ross SA, Gates AL. Premature termination of treatment in an inpatient eating disorder programme. *European Eating Disorders Review*. 2007; 15(4):275–282. [PubMed: 17676697]
- Maynard C, Cox GB. Psychiatric hospitalization of persons with dual diagnoses: Estimates from two national surveys. *Psychiatric Services*. 1998; 49(12):1615–1617. [PubMed: 9856627]
- McKellar J, Kelly J, Harris A, Moos R. Pretreatment and during treatment risk factors for dropout among patients with substance use disorders. *Addictive behaviors*. 2006; 31(3):450–460. [PubMed: 15979244]
- Pearlstein T. Eating disorders and comorbidity. *Archives of Women's Mental Health*. 2002; 8:181–187.
- Rodgers RF, Paxton SJ, McLean SA, Massey R, Mond JM, Hay PJ, Rodgers B. Stigmatizing Attitudes and Beliefs Toward Bulimia Nervosa: The Importance of Knowledge and Eating Disorder Symptoms. *The Journal of nervous and mental disease*. 2015; 203(4):259–263. [PubMed: 25751709]
- Root TL, Pinheiro AP, Thornton L, Strober M, Fernandez-Aranda F, Brandt H, ... Bulik CM. Substance use disorders in women with anorexia nervosa. *International Journal of Eating Disorders*. 2010; 43(1):14–21. [PubMed: 19260043]
- Saunders JB, Aasland OG, Babor TF, De La Fuente JR, Grant M. Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption-II. *Addiction*. 1993; 88(6):791–804. [PubMed: 8329970]
- Sheeran T, Zimmerman M. Factor structure of the Psychiatric Diagnostic Screening Questionnaire (PDSQ), a screening questionnaire for DSM-IV axis I disorders. *Journal of behavior therapy and experimental psychiatry*. 2004; 35(1):49–55. [PubMed: 15157817]
- Stuart GL, Moore TM, Kahler CW, Ramsey SE. Substance abuse and relationship violence among men court-referred to batterers' intervention programs. *Substance Abuse*. 2003; 24(2):107–122. [PubMed: 12766378]
- Stuart GL, Moore TM, Ramsey SE, Kahler CW. Hazardous drinking and relationship violence perpetration and victimization in women arrested for domestic violence. *Journal of Studies on Alcohol and Drugs*. 2004; 65(1):46–53.

- Swan-Kremeier LA, Mitchell JE, Twardowski T, Lancaster K, Crosby RD. Travel distance and attrition in outpatient eating disorders treatment. *International Journal of Eating Disorders*. 2005; 38(4):367–370. [PubMed: 16254872]
- Tawk R, Freels S, Mullner R. Associations of mental, and medical illnesses with against medical advice discharges: the national hospital discharge survey, 1988–2006. *Administration and Policy in Mental Health and Mental Health Services Research*. 2013; 40(2):124–132. [PubMed: 22057857]
- Thompson-Brenner H, Shingleton RM, Sauer-Zavala S, Richards LK, Pratt EM. Multiple measures of rapid response as predictors of remission in cognitive behavior therapy for bulimia nervosa. *Behaviour research and therapy*. 2015; 64:9–14. [PubMed: 25462877]
- Trace SE, Thornton LM, Baker JH, Root TL, Janson LE, Lichtenstein P, ... Bulik CM. A behavioral-genetic investigation of bulimia nervosa and its relationship with alcohol use disorder. *Psychiatry research*. 2013; 208(3):232–237. [PubMed: 23790978]
- Umberg EN, Shader RI, Hsu LG, Greenblatt DJ. From disordered eating to addiction: the “food drug” in bulimia nervosa. *Journal of clinical psychopharmacology*. 2012; 32(3):376–389. [PubMed: 22544008]
- Verdejo-García A, Lawrence AJ, Clark L. Impulsivity as a vulnerability marker for substance-use disorders: review of findings from high-risk research, problem gamblers and genetic association studies. *Neuroscience & Biobehavioral Reviews*. 2008; 32(4):777–810. [PubMed: 18295884]
- Wilson GT, Lindholm L. Bulimia nervosa and depression. *International Journal of Eating Disorders*. 1987; 6(6):725–732.
- Zimmerman, M. *The Psychiatric Diagnostic Screening Questionnaire: Manual*. Western Psychological Services; 2002.
- Zimmerman M, Mattia JI. A self-report scale to help make psychiatric diagnoses: The Psychiatric Diagnostic Screening Questionnaire. *Archives of General Psychiatry*. 2001; 58(8):787–794. [PubMed: 11483146]

Table 1

Means, Standard Deviations, and Bivariate Correlations among study variables

	1	2	3	4	5	6	7	8
1. Age	--							
2. Years of Education	.12	--						
3. AUDIT	-.05	.13	--					
4. DUDIT	-.04	-.05	-.18*	--				
5. Depression symptoms	-.12	.02	.02	.31**	--			
6. Probable ED symptoms	-.15	-.06	.15	.20*	-.18	--		
7. Length of Stay	.26**	-.07	-.07	.03	-.18*	-.25**	--	
8. Treatment Dropout	.17	-.11	-.07	.04	.16	-.21*	-.80**	--
<i>M</i>	43.00	14.06	16.50	10.34	8.39	1.31	28.10	--
<i>SD</i>	10.51	2.43	11.70	12.19	4.94	2.97	6.61	--

* $p < .05$,

** $p < .01$

Table 2
Hierarchical Regression Examining the Relationship Between ED Symptoms and Length of Stay in Treatment

	B	SE	β	R ²	F
Model 1				.10*	2.50
Age	.16	.06	.25**		
Years of Education	-.25	.24	-.09		
Alcohol Use	-.02	.05	-.03		
Drug Use	.04	.05	.08		
Depression Symptoms	-.20	.13	-.15		
Model 2				.12*	2.69
Age	.15	.06	.23**		
Years of Education	-.28	.24	-.10		
Alcohol Use	.00	.05	.00		
Drug Use	.06	.05	-.10		
Depression Symptoms	-.16	.13	-.12		
ED symptoms	-.37	.21	-.17		

Note. *B* = unstandardized regression coefficient, *SE* = standard error, β = standardized regression coefficient, ED = eating disorder.

* $p < .05$,

** $p < .01$

Table 3
Logistic Regression Examining the Relationship Between ED Symptoms and Decisions to Leave AMA

	B	SE	Exp(B)	p	Nagelkerke's R²	χ²
Age	.04	.03	1.05	.10	.19*	.02
Education	-.16	.11	.85	.12		
Alcohol Use	.01	.02	1.01	.78		
Drug Use	.04	.03	1.04	.15		
Depression symptoms	-.10	.06	.91	.10		
ED symptoms	-.16	.08	.85	.03		

* $p < .05$,

** $p < .01$