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BRIEF REPORT**EATING DISORDERS IN FEMALE INPATIENTS WITH VERSUS WITHOUT SUBSTANCE USE DISORDERS**

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Abstract — This study assessed the relationship between substance use disorders and eating disorders in female psychiatric inpatients. Structured diagnostic interviews were reliably administered to a series of inpatients with substance use disorders ($n = 67$) and a comparison sample without substance use disorders ($n = 69$). Eating disorder diagnoses as a whole, including eating disorder not otherwise specified, were distributed significantly more frequently among subjects with substance use disorders than among psychiatric controls. Frequencies of the specific diagnoses of bulimia nervosa and anorexia nervosa, however, did not differ significantly between groups. The results suggest that eating disorder features may be overrepresented among female inpatients with substance use disorders.

The association between eating disorders and substance use disorders has received considerable attention (Krahn, 1991; Taylor, Peveler, Hibbert, & Fairburn, 1993). A high rate of eating disorder symptomatology has been observed in female patients with substance use problems (Beary, Lacey, & Merry, 1986; Jonas, Gold, Sweeney, & Pottash, 1987; Krahn, 1991; Lacey & Mourelli, 1986; Higuchi, Suzuki, Yamada, Parrish, & Kono, 1993; Peveler & Fairburn, 1990; Ross, Glaser, & Germanson, 1988; Suzuki, Higuchi, Yamada, Mizutani, & Kono, 1993). However, the implications of this research remain uncertain because relatively few studies have used relevant control groups, DSM-III-R criteria (American Psychiatric Association, 1987), or structured diagnostic interviews with demonstrated reliability (Higuchi, Suzuki, Yamada, Parrish, & Kono, 1993). A British study (Taylor et al., 1993) using a structured interview for eating disorders found that eating disorder symptoms were overrepresented among females who present for alcohol treatment, relative to a community sample ascertained via separate recruitment procedures — although no subjects in the outpatient sample met criteria for an eating disorder.

Most studies generally interpret diagnostic co-occurrence as “comorbidity.” Sampling and selection issues render this interpretation problematic (Berkson, 1946; Du Fort, Newman, & Bland, 1993). For example, Berkson’s (1946) bias is a mathematical bias that arises because persons with two psychiatric disorders can seek treatment for either or both disorders. An example of a selection bias is a clinical bias that arises from the potential impact of seeking treatment for one disorder on the second

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disorder (Du Fort et al., 1993). Since studies of severely disturbed inpatients generally find multiple diagnoses and high base rates of diagnoses, comparison groups can provide a context for interpreting diagnostic co-occurrence (Allison, 1993). We propose that significant co-occurrence potentially reflecting comorbidity be defined as frequency of association greater than that observed in a comparison group from the same overall sample, ascertained by the same recruitment procedures, and characterized by similar base rates of most disorders. To our knowledge, this definition of comorbidity has not been used in previous studies of eating disorders and substance use disorders among inpatients. Using this rigorous definition of comorbidity, we examined the frequency of co-occurring eating disorders in a female sample of inpatients with substance use disorders versus a comparison sample of female inpatients without substance use disorders.

METHOD

Subjects

Between 1986 and 1990, the Evaluation Unit of the Yale Psychiatric Institute (a 66-bed, not-for-profit, tertiary-care facility) used structured interviews to conduct diagnostic assessments on all adolescent and adult patients admitted. Subjects for this study were drawn from a series of 307 consecutively evaluated patients. Patients who were admitted were acutely ill and required an inpatient level of treatment. The most frequently diagnosed disorders included, in descending order, mood disorders, substance use disorders, anxiety disorders, and disruptive behavior disorders. Thus, our sampling is reflective of a general psychiatric inpatient facility and is not characteristic of a specialty program for either substance use disorders or eating disorders.

Because of gender differences in eating disorders, we used only female subjects for this study ($N = 136$). Of these, 67 subjects had a substance use disorder and 69 did not. The substance use disorders group included individuals who had abused the following substances: alcohol only (21 patients), nonalcohol substances only (9 patients), and combined alcohol and nonalcohol substance use disorders (37 patients).

Table 1 summarizes the demographic and psychosocial characteristics of the two groups. The groups did not differ significantly on potentially confounding variables, including age, race, marital status, occupation, parental socioeconomic status (based on the Two-Factor Index of Social Standing [Hollinshead & Redlich, 1958]), age at first psychiatric contact, psychiatric severity (based on the Global Assessment of Functioning Scale [GAF; American Psychiatric Association 1987]), and cognitive functioning (Intellectual Quotient based on *Wechsler Intelligence Scale for Children* — Revised [Wechsler, 1974] or *Wechsler Intelligence Scale for Adults* — Revised [Wechsler, 1981]).

Procedure

At admission, all patients were given structured diagnostic interviews by masters- and doctoral-level interviewers trained to high levels of reliability. Interviewers were blind to the aims of the study. Subjects were given the *Schedule for Affective Disorders and Schizophrenia for School-Age Children - Epidemiologic Version* (Orvaschel & Puig-Antich, 1987) if under 18 years of age, or the *Structured Clinical Interview for DSM-III-R - Patient Version* (Spitzer et al., 1987) if over 18 years of age. Interrater reliability was adequate; kappa coefficients (Cohen, 1960) for diagnosis ranged from .65 to 1.0 ($M = .77$).

Table 1. Sample demographics

Demographic variable	SUD (<i>n</i> = 67)	PC (<i>n</i> = 69)
Age in yrs		
Mean (<i>SD</i>)	20.0 (5.5)	19.6 (6.5)
Range	(13–36)	(13–38)
Race		
Caucasian	96.4%	82.6%
African-American	0.0%	15.9%
Hispanic	3.6%	0.0%
Other	0.0%	2.9%
Marital status		
Single	64 (95.5%)	62 (90.0%)
Occupation		
Student	45 (68.2%)	45 (65.2%)
Unemployed	13 (19.7%)	10 (14.5%)
Employed	8 (12.0%)	13 (18.8%)
Parental SES: Mean (<i>SD</i>)	3.0 (1.3)	3.4 (1.2)
Age at first psychiatric contact: Mean (<i>SD</i>)	14.0 (4.7)	14.8 (5.2)
GAF score: Mean (<i>SD</i>)	35.9 (9.9)	35.8 (10.5)
IQ: Mean (<i>SD</i>)	97.9 (16.0)	95.0 (15.2)

Note. SUD = substance use disorder group; PC = psychiatric control group. SES = socioeconomic status based on Two Factor Index of Social Standing. GAF = Global Assessment of Functioning Scale. IQ = Intelligence Quotient based on Wechsler Intelligence Scales. No significant group differences were observed.

R E S U L T S

Table 2 shows the frequency of co-existing eating disorders in the sample of patients with substance use disorders and in the comparison group without substance use disorders. We performed chi-square analyses to test whether eating disorders generally — or whether types of eating disorder diagnoses (anorexia nervosa, bulimia nervosa, and eating disorder not otherwise specified [NOS]) specifically — differed in their distribution between the substance use disorder and the psychiatric control groups. Table 2 also shows phi coefficients. Phi is an effect size measure for contingency table analyses (Cohen, 1977), and, in this case, reflects the strength of the association of the eating disorder diagnoses with each other category.

Table 2. Distribution of specific eating disorders among female subjects with a substance use disorder and psychiatric controls

Eating disorder diagnosis	SUD (<i>N</i> = 67)		PC (<i>N</i> = 69)		χ^2	Phi
	<i>n</i>	%	<i>n</i>	%		
Eating disorder	21	(31.3)	10	(14.5)	5.49*	.20
Anorexia	8	(11.9)	3	(4.2)	2.64	.14
Bulimia	4	(6.0)	5	(7.0)	0.09	.03
Eating disorder NOS	9	(13.4)	2	(2.9)	5.07*	.19

Note. SUD = substance use disorder group. PC = psychiatric control group. NOS = not otherwise specified.

**p* < .05.

Table 3. Distribution of different types of substance use disorders by specific eating disorders

	SUD (N = 67)		AO (n = 21)		SUDO (n = 9)		ASUD (n = 37)	
	n	%	n	%	n	%	n	%
AED	21	(31.3)	7	(33.3)	3	(33.3)	11	(29.7)
Anorexia	8	(11.9)	3	(14.3)	2	(22.2)	3	(8.1)
Bulimia	4	(6.0)	2	(9.5)	0	(0.0)	2	(5.4)
EDNOS	9	(13.4)	2	(9.5)	1	(11.1)	6	(16.2)

Note. AED = any eating disorder; EDNOS = eating disorder not otherwise specified; SUD = substance use disorder; AO = alcohol use disorder only; SUDO = non-alcohol substance use disorder only; ASUD = alcohol and substance use disorder.

As shown in Table 2, eating disorder diagnoses (comprising bulimia nervosa, anorexia nervosa, and eating disorder NOS) as a whole were diagnosed significantly more frequently in inpatients with substance use disorders than in the psychiatric control inpatients without substance use disorders. The frequency of the two specific eating disorder diagnoses, bulimia nervosa and anorexia nervosa, however, did not differ between the substance use disorder and the psychiatric comparison groups. As shown, the eating disorder NOS category was distributed more frequently in the substance use disorder group. In this study, patients were given eating disorder NOS diagnoses if they failed to meet rigorous specific criteria for anorexia nervosa or bulimia nervosa. Thus, patients with eating disorder NOS had many eating disorder features but failed to meet at least one of the required criteria. For instance, some subjects were not quite 15% below ideal weight or averaged slightly less than two binges per week during the previous three months.

As shown in Table 3, no significant differences were observed in the frequency of eating disorders among the different forms of substance use disorders (disorders of alcohol use, disorders of nonalcohol substance use, and combined disorders of alcohol and nonalcohol substance use); this may be due to sample size limitations.

DISCUSSION

This study represents an incremental addition to the literature in terms of nonselective ascertainment of a large series of inpatients. These inpatients were systematically assessed with structured diagnostic interviews performed reliably. The major contribution involves comparing the frequency of eating disorders among severely ill inpatients with substance use disorders to a relevant psychiatric comparison group recruited from the same overall sample. Such a comparison group does not differ in potentially confounding demographic or severity variables. These issues have hindered previous studies (Taylor et al., 1993).

Our findings suggest that eating disorders are prevalent among inpatients with substance use disorders, but that they are also prevalent in other psychiatric inpatients. Atypical constellations of eating disorders, as indicated by the diagnosis of eating disorder NOS, seem to be overrepresented in patients with substance use disorders relative to those without substance use disorders. The frequency of the two specific eating disorders, bulimia nervosa and anorexia nervosa, however, is not greater in patients with substance use disorders.

The generalizability of our findings may be limited to inpatient populations. This study examined the frequency of eating disorders in those patients with versus without substance use disorders among female inpatients admitted to a general psychiatric hospital for a variety of problems. Thus, our findings must be considered in this context and are likely to differ from those observed in outpatient populations, community samples, or specialty clinics for either eating disorders or for substance use disorders. Lastly, although we ascertained a large sample of inpatients, our sample was perhaps insufficiently large to test for specific differences between different categories of eating disorders and substance use disorders.

The nature of the co-occurrence between eating disorders and substance use disorders remains unknown, although several models have been suggested (Krahn, 1991; Lacey & Mourelli, 1986; Suzuki et al., 1993). One proposed mechanism linking the two problems is that of reciprocal reinforcement — increased drug use and binge eating both follow food deprivation (Krahn, 1991). Alternatively, the two disorders may represent different expressions of an underlying personality constellation (Beary et al., 1986; Lacey & Mourelli, 1986), characterized by impulse control and affect regulation deficits. In this case, the substance abuse and eating disorder symptoms would both represent self-regulatory behaviors.

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