

# Comorbidity of Obsessive-Compulsive Disorders and Duration of Eating Disorders

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**Abstract: Objective:** *This study explored the comorbidity of obsessive-compulsive disorder (OCD) and eating disorders (ED) and examined the relationship between OCD comorbidity and the duration of ED. Subjects with OCD were expected to show a longer history of ED.* **Method:** *ED females (N = 237; 84 with anorexia nervosa and 153 with bulimia nervosa) were assessed using the Structured Clinical Interview for DSM-IV Axis I disorders (SCID-I). Data were analyzed by logistic regression to determine whether OCD comorbidity is associated with duration of ED.* **Results:** *The total sample showed a prevalence rate for OCD of 29.5%. OCD prevalence did not differ between anorexic and bulimic subjects. OCD comorbidity was significantly associated with a longer history of ED.* **Conclusion:** *The findings of the study support previous research indicating a high comorbidity of ED with OCD. The results also suggest that OCD may play a role in the course of ED. Prospective studies are necessary to examine this hypothesis further.* © 2002 by Wiley Periodicals, Inc. *Int J Eat Disord* 31: 284–289, 2002; DOI 10.1002/eat.10013

**Key words:** *anorexia nervosa; bulimia nervosa; obsessive-compulsive disorders; duration of eating disorders; comorbidity*

## INTRODUCTION

Clinically, eating disorders (ED) and obsessive-compulsive disorders (OCD) show strong psychopathological similarities. Fear of gaining weight, dieting, exercising, checking of weight, and bingeing and purging have obsessional character. Like OCD behavior, food-related behavior is often ritualized in ED patients. Holden (1990) and Rothenberg (1986) even suggested considering anorexia nervosa (AN) as a form of OCD. Others (Kaye, 1999; Kaye, Gendall, & Kye, 1998; Kaye, Gwirtsman, George, & Ebert, 1991) interpreted the hyperkinesis of ED patients as part of a coexisting OCD. Both ED and OCD seem to be neurobiologically associated with the serotonin system.

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Previous studies vary with regard to the prevalence rates found for ED subjects (Braun, Sunday, & Halmi, 1994; Halmi et al., 1991; Herzog, Nussbaum, & Marmor, 1996), as well as the conclusions drawn about the role that OCD plays in the development of ED. Some research indicates that rates of OCD vary with the type of ED. Thornton and Russell (1997), in a retrospective study, reported an OCD comorbidity rate of 37% in anorexic and of only 3% in bulimic patients. In addition, their findings showed that OCD mostly predated the onset of ED, indicating that OCD may be a risk factor for developing an ED. However, in a prospective treatment study over 30 months, Thiel, Züger, Jacoby, and Schüssler (1998) found comparable rates of OCD in anorexic and bulimic patients (37% and 40%, respectively). Pretreatment OCD comorbidity was not associated with the level of improvement in ED symptomatology. Thiel et al. concluded that OCD comorbidity does not indicate a significantly poorer prognosis for ED subjects. Von Ranson, Kaye, Weltzin, Rao, and Matsunaga (1999) examined OCD symptoms in bulimic subjects and subjects who had recovered from bulimia nervosa (BN). They found no differences between these two groups with regard to levels of OCD symptoms, indicating that the course of ED and OCD does not necessarily correspond.

The principal idea for this study developed from the clinical observation that ED patients with OCD comorbidity show a greater tendency to retain ED symptomatology despite exhibiting therapy-compliant behavior. In short, they show a greater propensity for chronification. The present study assessed OCD comorbidity in ED subjects and studied its role with respect to the duration of ED. In accordance with clinical observations, it was expected that OCD comorbidity would be associated with a longer history of ED.

## METHODS

The subjects were enrolled during a period of 24 months (March 1997 until March 1999). Criteria for inclusion were a minimum age of 17 years, adequate ability to speak German, and an ED diagnosis based on criteria in the 4th ed. of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 1994). Subjects received information about the procedures and aims of the study and gave written informed consent. Of 300 ED persons, 67 subjects were recruited from the ED inpatient unit of the University Hospital Zurich, 66 subjects were outpatients at the psychiatric department of the University Hospital Zurich, and 31 subjects were recruited via ED self-help groups. In addition, 136 subjects were recruited via advertisements in local newspapers.

Twelve male subjects and 11 female subjects older than 50 years were excluded from the current analyses in order to homogenize the sample and to permit comparisons with samples described in the literature. In addition, subjects with diagnoses of eating disorders not otherwise specified (ED-NOS), a clinically heterogeneous group, were excluded. Thus, the sample investigated in this study comprised 237 subjects, specifically 84 anorexic subjects (mean body mass index [BMI] = 15.2,  $SD = 1.6$ ) and 153 bulimic subjects (mean BMI = 21.6,  $SD = 3.8$ ). Table 1 provides details on the distribution of age at interview, age at ED onset, years of ED duration, and sociodemographic characteristics of the total sample and the diagnostic subgroups of AN and BN.

Over time, the symptomatology of AN frequently converts to bulimic symptoms (from AN-restrictive to AN-purge and from AN to BN in general). Similarly, bulimic patients can develop anorexic symptomatology, but this conversion occurs rarely. These observations are consistent with the distribution in our sample showing that bulimic subjects were older and tended to report a longer duration of ED than anorexic subjects, whereas

Table 1. Sociodemographic and ED-anamnestic characteristics of the sample

Variable		Total sample (N = 237)	Anorexic Subjects (n = 4)	Bulimic Subjects (n = 153)	Test Statistic	df	p
Age at interview	M (SD)	27.4 (7.4)	25.8 (6.7)	28.2 (7.6)	T=2.52	235	.01
Age at ED onset	M (SD)	19.8 (6.1)	19.2 (4.7)	20.0 (6.7)			
	Md (range)	18 (6–44)	18 (12–32)	18 (6–44)	Z <sup>b</sup> = .24	n.a.	.81
Years of ED duration	M (SD)	8.5 (7.0)	7.3 (6.1)	9.12 (7.4)			
	Md (range)	7 (1–39)	5.5 (1–29)	7 (1–39)	Z <sup>b</sup> =1.80	n.a.	.07
Single child <sup>a</sup>	n(%)	13 (5.8)	7 (9.0)	6 (4.1)	Fischer exact	n.a.	.15
Own children <sup>a</sup>	N(%)	25 (11.2)	6 (7.7)	19 (13.0)	χ <sup>2</sup> =1.45	1	.23
Marital status	n(%)				χ <sup>2</sup> = .42 <sup>c</sup>	1	.51
Single		122 (52.6)	45 (55.6)	77 (51)			
Relationship<1 year		3(1.3)	1(1.2)	2(1.3)			
Married/cohabiting/ relationship≥1 year		96 (41.4)	34 (42)	62 (41.1)			
Separated/divorced		11 (4.7)	1( 1.2)	10 (6.6)			
Highest level education <sup>a</sup>	n(%)				χ <sup>2</sup> = 2.73	4	.60
Obligatory schooling		43 (19.4)	18 (23.7)	25 (17.1)			
Apprenticeship		94 (42.3)	31 (40.8)	63 (43.2)			
High school		48 (21.6)	13 (17.1)	35 (24)			
Technical school/training		23 (10.4)	8 (10.5)	15 (10.3)			
University		14 (6.3)	6(7.9)	8(5.5)			
Employment last 6 months <sup>a</sup>	n(%)				χ <sup>2</sup> = 2.59	2	.27
No paid employment		80(34.8)	32 (40)	48 (32)			
Part-time employment		69 (30.0)	19 (23.8)	50 (33.3)			
Full-time employment		81(35.2)	29 (36.3)	52 (34.7)			

n.a.=not applicable; ED = eating disorders.

<sup>a</sup>Numbers vary slightly because of missing data.

<sup>b</sup>Mann-Whitney-U test.

<sup>c</sup>Single and relationship < 1 year versus all other categories.

the age of ED onset did not differ between the groups. No differences were found for any sociodemographic characteristics between the two diagnostic groups.

The data presented in this study were collected during the baseline phase of a mixed retrospective-prospective survey examining the course of EDs. OCD and ED were diagnosed using the German version of the Structured Clinical Interview for Axis I of the DSM-IV (SCID-I; Wittchen, Wunderlich, Gruschwitz, & Zaudig, 1997). Four psychologists who had been trained by the first author conducted the SCID-I interviews. The SCID-I shows a good interrater reliability and diagnostic accuracy (Ventura, Liberman, Green, Shaner, & Mintz, 1998). Age of ED onset was defined as the time of first diagnosis of ED by a health professional. The study was approved by the Research Ethics Commission of the Psychiatric University Hospital Zurich.

For the purpose of sample description, descriptive statistics were computed. Logistic regression analysis was performed to determine whether OCD comorbidity is associated with duration of ED. All analyses were performed using SPSS for Windows, release 9.0.0 (1998).

## RESULTS

Of the 237 ED subjects, 70 (29.5%) showed OCD comorbidity. The OCD prevalence differed significantly between the different recruitment groups,  $\chi^2$  ( $df = 3$ ) = 44.9,  $p < .001$ .

The highest rate of OCD (64%) was diagnosed in self-help groups ( $N = 25$ ), followed by inpatients (46.3%;  $N = 54$ ), outpatients (34.9%;  $N = 63$ ), and newspaper respondents (7.4%;  $N = 95$ ). The OCD prevalence rate did not differ between anorexic (28.6%) and bulimic subjects (30.1%),  $\chi^2$  ( $df = 1$ ) = .06, n.s. Because much of the ED literature is limited to inpatient samples, we also examined OCD rates among the inpatients of our sample. Here, too, the rates between anorexic (42.1%) and bulimic patients (48.6%) did not differ significantly,  $\chi^2$  ( $df = 1$ ) = .21, n.s. No significant differences were found when the OCD rates between the different ED subtypes were compared (AN-restrictive vs. AN-purge; BN-purge vs. BN-nonpurge). No significant differences were found between subjects with and without OCD comorbidity with regard to age (mean = 28.0 and 27.1 respectively),  $t$  (1,235) = .82, n.s.

Because of the nonnormality in the outcome variable ED duration, the nonparametric procedure of logistic regression was chosen. Based on the sample's median value of 7 years of ED duration, subjects were divided into two groups to represent ED duration <7 years and ED duration  $\geq 7$  years. As with all disorders, it is difficult to determine when the course of an ED can be considered chronic. Thus, the above grouping is not meant to reflect a distinction between acute and chronic ED cases, although it is likely that the group ED duration  $\geq 7$  years represents mostly chronic cases. Thus, 116 subjects (49%) comprised the first group with a duration of less than 7 years and the second group included 121 (51%) subjects with a duration of 7-plus years. A logistic regression model was tested that incorporated ED diagnosis (AN vs. BN) and OCD comorbidity as predictors of ED duration. Age at time of interview was included as a covariate and results showed a significant association with ED duration (odds ratio [OR] = 1.17, confidence interval [CI] = 1.11/1.24,  $p < .001$ ). In addition, the results revealed that OCD comorbidity was associated strongly with ED duration. Subjects were 4.2-fold more likely to be in the group with a duration of 7-plus years if they had OCD comorbidity than if they did not (CI = 2.15/8.19,  $p < .001$ ). Because the model controlled for age at time of interview, a higher probability for chronification should be interpreted as a higher probability that the ED began at an earlier age, resulting in a longer duration at the time of interview. In fact, subjects with OCD reported a median age of ED onset of 16 years and a median ED duration of 9 years, whereas subjects without OCD reported a median age of ED onset of 19 years and a median ED duration of 5 years. Type of ED diagnosis was not associated with ED duration. In total, 74.7% of all cases were correctly classified by this model with a sensitivity of 73.6% and a specificity of 75.9%. The predictive negative and positive values of the model were 73% and 76%, respectively.

## DISCUSSION

This study revealed a 29.5% OCD comorbidity rate in a sample of 237 ED subjects examined with a standardized and highly reliable interview. This OCD prevalence did not differ between anorexic and bulimic subjects. The results of the analysis support the hypothesis that subjects with OCD comorbidity have a longer history of ED and indicate that subjects who suffer from OCD are likely to have developed an ED at an earlier age.

When considering anorexic subjects only, the OCD comorbidity rate of 28.6% is comparable to the results of Råstam, Gillberg, and Gillberg (1995). Using the same instrument (SCID-I), they found a proportion of 25% in a total population screening for AN. Studies using AN inpatient samples employing the SCID-I or a similar instrument (CIDI) found OCD rates comparable to (Thiel, Züger, Jacoby, & Schüssler, 1998; Thornton

& Russell, 1997) or lower (Braun, Sunday, & Halmi, et al., 1994) than the proportion of 42.1% found in our sample. The OCD prevalence of 30.1% in our total bulimic sample and of 48.6% in the bulimic inpatient group is higher than rates previously reported (Braun et al., 1994; Thiel et al., 1998; Thornton & Russell, 1997). Direct comparisons with other studies are limited through differences in methodology and differences in sample selection and composition. Although many studies in the ED literature include inpatient samples, even these can be expected to be highly diverse due to differences in patient admission and referral policies of institutions.

The OCD prevalence rates in our recruitment subgroups were substantially different with newspaper-recruited subjects showing low rates and self-help group members showing surprisingly high rates of OCD. An explanation for these differences may be that ED persons with higher levels of psychiatric comorbidity are more likely to enter treatment than persons with lower levels of comorbidity, thus increasing the OCD rate of patients compared with nonpatients (newspaper recruits). Self-help groups are often frequented by older persons who have achieved a certain level of self-management of ED, but may still have a higher propensity for OCD because of a longer history of ED. Our results indicate that studies using patient samples are likely to yield prevalence rates that are different from the general ED population.

The findings of this study support the notion that there is a significant association between OCD comorbidity and duration of ED. Subjects suffering from OCD reported a significantly longer duration of ED than those without OCD. Because our model controlled for age at time of interview, our results also indicate that subjects with OCD developed ED at a much younger age than those without OCD. The fact that OCD and non-OCD subjects differed in their age of ED onset may not just simply reflect a difference in ED duration, but could indicate that a young age of ED onset itself may be a factor contributing to psychiatric morbidity. Our findings showing an association of OCD comorbidity and ED duration contrast with the results of Thiel et al. (1998) who found that OCD comorbidity was not associated with a significantly poorer prognosis over a period of 30 months. However, it is difficult to compare the two studies because of differences in design and research questions. In order to clarify further the link between OCD and ED, more prospective long-term studies are needed that consider age of onset for ED and OCD.

The question of how the link between OCD and ED emerges requires further investigation. The notion that OCD is a result of starvation and of being underweight in AN patients (Guarda, Treasure, & Robertson, 1999; Kaye et al., 1991, 1999) is supported by results showing that being severely underweight seems to produce a dysregulation of the brain serotonin activity and increase the propensity for developing OCD symptoms (Kaye, 1999; Kaye et al., 1989; Von Ranson et al., 1999). However, Matsunaga et al. (1999) reported that BN subjects with a history of AN do not differ from BN subjects without such a history with regard to their levels of OCD symptoms. A different view is proposed by Von Ranson et al. (1999). They reported that OCD symptoms are present even after recovery from BN and hypothesized that OCD symptoms may be a trait-like attribute in ED patients.

The conclusions that can be drawn from the presented results are curtailed by the study's methodological limitations. The study employs a cross-sectional design and uses self-report retrospective data on the course of ED. However, the findings provide further evidence for a link between OCD and ED, support the notion that OCD is associated with a longer duration of ED and may be an ED-sustaining factor. In addition, the results indicate that age of ED onset may be important for the understanding of the link between

ED and OCD. Additional research is needed that examines the associations between ED and OCD by means of prospective designs.

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## REFERENCES

- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- Braun, D.L., Sunday, S.R., & Halmi, K.A. (1994). Psychiatric comorbidity in patients with eating disorders. *Psychological Medicine*, *24*, 859–867.
- Guarda, A.S., Treasure, J., & Robertson, M.M. (1999). Eating disorders and Tourette syndrome: A case series of comorbidity and associated obsessive-compulsive symptomatology. *CNS Spectrums*, *4*, 77–86.
- Halmi, K.A., Eckert, E., Marchi, P., Sampugnaro, V., Apple, R., & Cohen, J. (1991). Comorbidity of psychiatric diagnoses in anorexia nervosa. *Archives of General Psychiatry*, *48*, 712–718.
- Herzog, D.B., Nussbaum, K.M., & Marmor, A.K. (1996). Comorbidity and outcome in eating disorders. *The Psychiatric Clinics of North America*, *19*, 843–859.
- Holden, N.L. (1990). Is anorexia nervosa an obsessive-compulsive disorder? *British Journal of Psychiatry*, *157*, 1–5.
- Kaye, W.H. (1999). The new biology of anorexia and bulimia nervosa: Implication for advances in treatment. *European Eating Disorders Review*, *7*, 157–161.
- Kaye, W.H., Berrettini, W.H., Gwirtsman, H.E., Gold, P.W., George, D.T., Jimerson, D.C., & Ebert, M.H. (1989). Contribution of CNS neuropeptide (NPY, CRH, and beta-endorphin) alterations to psychophysiological abnormalities in anorexia nervosa. *Psychopharmacology Bulletin*, *25*, 433–438.
- Kaye, W.H., Gendall, K., & Kye, C. (1998). The role of the central nervous system in the psychoneuroendocrine disturbances of anorexia and bulimia nervosa. *Psychiatric Clinics of North America*, *21*, 381–396.
- Kaye, W.H., Gwirtsman, H.E., George, D.T., & Ebert, M.H. (1991). Altered serotonin activity in anorexia nervosa after long term weight restoration. *Archives of General Psychiatry*, *48*, 556–562.
- Matsunaga, H., Kiriike, N., Miyata, A., Iwasaki, Y., Matsui, T., Fujimaoto, K., Kasai, S., & Kaye, W.H. (1999). Prevalence and symptomatology of comorbid obsessive-compulsive disorder. *Psychiatry and Clinical Neurosciences*, *53*, 661–666.
- Råstam, M., Gillberg, I.C., & Gillberg, C. (1995). Anorexia nervosa 6 year after on-set: Part II. Comorbid psychiatric problems. *Comprehensive Psychiatry*, *36*, 70–76.
- Rothenberg, A. (1986). Eating disorders as a modern obsessive-compulsive syndrome. *Psychiatry*, *49*, 45–53.
- Thiel, A., Züger, M., Jacoby, G.E., & Schüssler, G. (1998). Thirty-month outcome in patients with anorexia or bulimia nervosa and concomitant obsessive-compulsive disorder. *American Journal of Psychiatry*, *155*, 244–249.
- Thornton, C., & Russell, J. (1997). Obsessive compulsive comorbidity in the dieting disorders. *International Journal of Eating Disorders*, *21*, 83–87.
- Ventura, J., Liberman, R.P., Green, M.F., Shaner, A., & Mintz, J. (1998). Training and quality assurance with the Structured Clinical Interview for DSM-IV (SCID-I/P). *Psychiatry Research*, *79*, 163–173.
- Von Ranson, K.M., Kaye, W.H., Weltzin, T.E., Rao, R., & Matsunaga, H. (1999). Obsessive-compulsive disorder symptoms before and after recovery from bulimia nervosa. *American Journal of Psychiatry*, *156*, 1703–1708.
- Wittchen, H.U., Wunderlich, U., Gruschwitz, S., & Zaudig, M. (1997). *Strukturiertes klinisches Interview für DSM-IV, Achse-I (SKID)*. Göttingen: Hogrefe.