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Lifetime-comorbidity of obsessive-compulsive disorder and subclinical obsessive-compulsive disorder in northern Germany

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Abstract *Objective* Inspite of the worldwide relevance of obsessive-compulsive disorder (OCD), there is a substantial lack of data on comorbidity in OCD and subclinical OCD in the general population. *Methods* German versions of the DSM-IV adapted Composite International Diagnostic Interview were administered to a representative sample of 4075 persons aged 18–64 years, living in a northern German region. *Results* In both genders, high rates of comorbid depressive disorders were found in OCD and subclinical OCD, whereas somatoform pain disorder was only associated with OCD. In female subjects, OCD was additionally associated with social and specific phobias, alcohol, nicotine and sedative dependence, PTSD and atypical eating disorder. *Conclusion* Due to low comorbidity rates, subclinical OCD seems to represent an independent syndrome not restricted to the presence of other axis-I diagnoses. Comorbidity patterns show a disposition to anxiety and to depressive disorders in OCD and subclinical OCD. A broad association with obsessive-compulsive spectrum disorders could not be confirmed in our general population sample.

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Introduction

The Epidemiologic Catchment Area (ECA) (Robins et al., 1984) survey, based on the Diagnostic Interview Schedule (DIS) (Robins et al., 1981) which included the DSM-III (APA, 1980) criteria for OCD, was the first epidemiologic study providing information about the epidemiology and comorbidity of OCD. Carried out across five different sites in the US, it showed a lifetime prevalence rate for OCD ranging from 1.9 % to 3.3 % diagnosed without DSM-III exclusion criteria and 1.2 % to 2.4 % with such exclusions (Karno et al., 1988).

After the American National Survey of Comorbidity (Kessler et al., 1994) had excluded OCD from the diagnostic assessment, the ECA study was the only study providing community-based comorbidity data on OCD. In OCD subjects (N=468), major depressive episodes occurred in 31.7 %, panic disorder in 13.8 %, phobias in 46.5 %, schizophrenia in 12.2 %, schizophreniform disorder in 1.2 %, alcohol abuse or dependence in 24.1 % and other drug abuse or dependence in 17.6 % (Karno et al., 1988). Epidemiological evidence for an association between OCD and the so-called "OCD-spectrum disorders" (Hollander et al., 1996) like eating disorders, dissociative and somatoform disorders is missing because these diagnoses were not assessed in the ECA survey. Moreover, suspected oversampling of OCD subjects in the ECA survey and the use of DSM-III criteria require additional research on comorbidity in OCD.

Although it is assumed that obsessive-compulsive symptoms not meeting the diagnostic criteria are far more prevalent than OCD, little systematic investigation concerning this "subclinical OCD" has been carried out (Bebbington 1981, 1998). Angst (1993) set up specific DSM-III related criteria for the subclinical diagnosis of OCD and found a lifetime prevalence in subjects (age ≤ 30) of 5.7 %, whereas the full DSM-III diagnosis was met

in 1 %. Investigating comorbidity patterns of subclinical OCD in the Zürich study (Angst et al., 1993), it was found to be associated with depressive disorders as well as with social phobia and agoraphobia. Based on DSM-IV criteria, Stein et al. (1997) reported a 1-month prevalence of 0.6 % of subclinical OCD; however, comorbidity rates were not assessed in this study.

In a previous study on OCD and subclinical OCD in our general population sample (N=4075), we found lifetime prevalence rates of 0.5 % for OCD and 2 % for subclinical OCD. Both conditions were associated with a significant psychosocial impairment (Grabe et al., 2000 a). In the present study we investigated the following hypothesis:

1. Following the results from the ECA study (Karno et al., 1988) and the Zürich study (Angst et al., 1993), OCD and subclinical OCD are significantly associated with depressive disorders and anxiety disorders.
2. In accordance to the concept of "OCD-spectrum disorders" (Hollander et al., 1996), at least OCD should be associated with hypochondriasis and other somatoform disorders.
3. In accordance to the concept of "OCD-spectrum disorders", significant rates of eating disorders and dissociative symptoms have been found in clinical samples (Grabe et al., 1999, 2000 b). From this we hypothesize that, also in the general population, these disorders are associated with OCD and subclinical OCD.

In order to control for the known gender-differences in the prevalence of psychiatric disorders (APA, 1994), we will present gender-specific data on DSM-IV based comorbidity rates.

Material and methods

Sample

The data come from the baseline cross-section of a longitudinal study as part of the project "Transitions in Alcohol Consumption and Smoking". The survey is based on individuals living in the northern German city of Lübeck or in one of 46 surrounding communities, constituting the catchment area of Lübeck. The aim of the community selection was precise representation with regard to settlement structure. The total population living in this area consisted of 325,107 individuals. Considering the inclusion criteria according to age (18–64) and nationality (to avoid language problems, only Germans were included) 193,452 citizens remained in the target population. A random sample of 6447 addresses was drawn from all registration office files. Of these 619 (9.6 %) turned out as not fulfilling the inclusion criteria (subject moved out of the sampling area; subject was not known under the registered address; subject had non-German nationality; subject was deceased, lived in prison or in other institutions). Of the remaining 5829 individuals, a total of 4093 completed the interview which corresponded to a response rate of 70.2 %. Reasons for non-response were refusal (n= 979), no contact with the sampled individual (n=668), non-participation due to disease; incompleted interview or interview obtained by phone (n=9). An analysis of the reasons for non-response revealed that older subjects refused more often and younger ones more frequently moved out of the sampling area or could not be reached (Hess et al., 1998). Due to these compensatory effects, a very small total amount of deviation from the target population and the final sample resulted, which would not justify the methodological problems of weighting procedures. Of the 4093 interviews 18 could not be analyzed due to non-systematic reasons.

Diagnostic assessment

The diagnostic interview was done by face to face interview with the fully structured and standardized M-CIDI (Wittchen et al., 1995; 1998), a modified and extended version of the WHO CIDI (Robins et al., 1988) adapted to DSM-IV. The responses of the participant were directly entered into a portable computer. The interviews were performed by trained freelancer workers, interviewing both in chief occupation and as a sideline; however, all were experienced in conducting health surveys. To control for a possible interviewer bias, a heterogeneous interviewer crew was selected, consisting of 56 individuals of all age groups (M=36.1; SD=11.2; range 48) and both sexes (46.3 % females). After 5 days of initial interviewer training, continuous individual brush up sessions were administered by WHO-CIDI trainers. A complete hardcopy of all interviews was edited by WHO-CIDI trainer with regard to consistency and clinical relevance of the symptoms. In regular meetings, offered by experts, uncertain cases were clarified by consensus and homogeneous editing work was guaranteed. Weekly contacts and feedback made it possible to add missing information by immediate inquiry and continuous monitoring of interviewer activities.

All diagnoses were made according to DSM-IV by M-CIDI diagnostic software (version 1.0 of 3–3–1997).

Diagnosis of subclinical OCD was based on DSM-IV criteria. To enter the OCD section of the CIDI, a general question, describing the essential features and examples about obsessions and compulsions must be affirmed. Then the formal features of obsessions and compulsions are considered. These additional questions concern the feeling that the symptoms are foolish or overdone, that the symptoms are repetitive or recurrent and that the symptoms are time-consuming or cause a substantial impairment or distress. These formal features correspond to the DSM-IV criteria A, B, C. To meet our criteria for subclinical OCD the formal criteria of obsessions or compulsions were fulfilled only partially (at least 1 criterion but not all). In the last diagnostic step, the contents of obsessions and compulsions of each selected individual were checked according to DSM-IV exclusion-criterion A2 (excessive worries about real-life problems) and criterion D (symptoms restricted to another Axis I disorder).

Analysis procedures

Most of the results were calculated with descriptive statistical procedures. Results of the comparisons of gender-specific comorbidity-rates between clinical and subclinical OCD subjects and non-affected subjects were presented as zero-order odds ratios (ORs). Significance testing was done by chi-square analysis. If the frequency of at least one cell of the 2x2 table was ≤ 5, the Fisher's Exact Test (two-tailed) was calculated. For the comparison of comorbidity rates in OCD and subclinical OCD with unaffected subjects, the age distribution of the non-affected subjects was adjusted to the age-distribution of each of the 4 OCD groups. All described computations were performed with the SPSS software package Version 7.5.1.

Results

A brief description of the subjects with OCD and subclinical OCD is given in Table 1. Control subjects were 2007 males and 1971 females with no diagnosis of OCD or subclinical OCD (for details see Grabe et al., 2000 a).

The lifetime comorbidity for male and female subjects with OCD and subclinical OCD is shown in Tables 2 and 3. In females with OCD, 3.8 additional lifetime di-

Table 1 Prevalence rates, age of onset and duration of OCD and subclinical OCD (Grabe et al., 2000 a)

	Males (N=2045)		Females (N=2030)		Total (N=4075)		T-test
	OCD	Subclinical OCD	OCD	Subclinical OCD	OCD	Subclinical OCD	
Lifetime prevalence N (%)	3 (0.1)	35 (0.9)	17 (0.4)	43 (1.1)	20 (0.5)	78 (2.0)	
12-month prevalence N (%)	1 (0.02)	27 (0.66)	15 (0.37)	33 (0.8)	16 (0.39)	60 (1.6)	
Age of onset (SD)	22.7 (13)	37.1 (10.7)	25.4 (10.1)	34.1 (14.5)	25 (10.5)	35.5 (12.8)	t=3.8; df=97; p=0.003
Duration of OCD/ subclinical OCD (SD) (years)	6.3 (6)	0.5 (3.1)	9.1 (10.8)	1.2 (6.1)	8.7 (10.1)	0.9 (4.8)	t=−7.3; df=97; p < 0.001

Table 2 Lifetime comorbidity of male subjects with OCD and subclinical OCD

	OCD Males N=3		Onset before/ same year/ after OCD	Subclinical OCD Males N=35		Onset before/same year /after subclinical OCD
	N	%	N	N	%	N
Alcohol abuse	0	0		2	5.8	2/0/0
Alcohol dependence	0	0		9	26.1	8/1/0
Nicotine dependence	0	0		12	34.8	11/1/0
Any major depression (MDD)	1	33.3	0/1/0	6	17.4	2/4/0
MDD, single episode, mild	0	0		1	2.9	1/0/0
MDD, single episode, moderate	0	0		1	2.9	0/1/0
MDD, single episode, severe	0	0		3	8.7	1/2/0
MDD, recurrent, severe	1	33.3	0/1/0	1	2.9	0/1/0
Dysthymic disorder	1	33.3	1/0/0	1	2.9	0/1/0
Agoraphobia	1	33.3	0/1/0	0	0	
Panic disorder with agoraphobia	0	0		1	2.9	1/0/0
Social phobia	0	0		0	0	
Any specific phobia	0	0		5	14.3	5/0/0
Animal type	0	0		3	8.7	3/0/0
Natural environment type	0	0		3	8.7	1/0/0
Blood-injection type	0	0		1	2.9	1/0/0
Situational type	0	0		2	5.8	2/0/0
PTSD	0	0		1	2.9	1/0/0
Undifferentiate somatization	1	33.3	0/1/0	7	20.3	7/0/0
Hypochondriasis	0	0		0	0	
Pain disorder	2	66.6	0/0/2	3	8.7	3/0/0
Eating disorder NOS	0	0		1	2.9	1/0/0

Table 3 Lifetime comorbidity of female subjects with OCD and subclinical OCD

	OCD females N=17		Onset before/ same year/ after OCD	subclinical OCD females N=43		Onset before/same year/after subclinical OCD
	N	%	N	N	%	N
Alcohol abuse	0	0		1	2.3	1/0/0
Alcohol dependence	3	17.6	1/1/1	0	0	
Nicotine dependence	10	58.8	3/1/6	11	25.6	10/0/1
Sedative-hypnotic dependence	2	11.8	0/0/2	1	2.3	0/0/1
Hypomania	1	5.9	0/0/1	1	2.3	1/0/0
Bipolar disorder	2	11.8	2/0/0	0	0	
Any major depression (MDD)	9	52.9	3/3/3	11	25.6	5/4/2
MDD, single episode, mild	1	5.9	0/0/1	1	2.3	1/0/0
MDD, single episode, moderate	0	0		2	4.6	1/1/0
MDD, single episode, severe	3	17.6	1/1/1	4	9.3	2/2/0
MDD, recurrent, mild	1	5.9	0/1/0	1	2.3	1/0/0
MDD, recurrent, moderate	1	5.9	0/0/1	1	2.3	0/0/1
MDD, recurrent, severe	3	17.6	2/1/0	2	4.6	0/1/1
Dysthymic disorder	2	11.8	1/1/0	2	4.6	2/0/0
Agoraphobia	1	5.9	1/0/0	0	0	
Panic disorder with agoraphobia	1	5.9	1/0/0	1	2.3	1/0/0
Social phobia	3	17.6	3/0/0	4	9.3	3/0/1
Any specific phobia	8	47.1	6/0/2	12	29.9	10/1/1
Animal type	4	23.5	3/0/1	4	9.3	3/1/0
Natural environment type	1	5.9	1/0/0	3	7	3/0/0
Blood-injection type	4	23.5	3/0/1	3	7	2/0/1
Situational type	2	11.8	2/0/0	3	7	3/0/0
GAD	1	5.9	1/0/0	0	0	
PTSD	4	23.5	2/1/1	1	2.3	1/0/0
Conversion disorder	0	0		1	2.3	1/0/0
Dissociative disorders	0	0		0	0	
Somatization disorder	1	5.9	1/0/0	0	0	
Undifferentiate somatization	5	29.4	4/0/1	7	16.3	7/0/0
Hypochondriasis	0	0		0	0	
Pain disorder	8	47.1	6/0/2	11	25.6	7/1/3
Anorexia nervosa	0	0		0	0	
Bulimia nervosa	0	0		0	0	
Eating disorder NOS	1	5.9	0/0/1	1	2.2	1/0/0

agnoses were present compared to 1.5 in subclinical OCD females. Significant higher comorbidity rates (chi-square; $p < 0.05$) in female OCD subjects than in subclinical OCD subjects were found in alcohol and nicotine dependence, in bipolar and depressive disorders and PTSD.

Comorbidity rates in males showed 2 additional disorders in OCD and 1.5 in subclinical OCD. OCD males had significant ($p < 0.05$) higher rates of dysthymia and pain disorder than subclinical male subjects.

The onset of anxiety disorders occurred in most OCD and subclinical OCD cases before the onset of OCD. The onset of major depressive disorders occurred to a comparable extent before, in the same year and after the onset of OCD.

The odds ratios of the risk to receive a specified ad-

Table 4 Odds ratios of risk for comorbid disorders of OCD (n=3) and subclinical OCD (n=35) in male subjects in comparison with none-affected males (n=2007) corrected for differences in age distribution.

	OCD Males		Subclinical OCD Males	
	OR	95 % CI	OR	95 % CI
Alcohol abuse	0	0	0.6	0.15–2.7
Alcohol dependence	0	0	5.7*	2.6–12.5
Nicotine dependence	0	0	1.6	0.8–3.4
Major depression, all	8.6*	0.8–99	3.4*	1.4–8.3
Dysthymic disorder	56.4*	4.9–651	2.5	0.3–19.3
Agoraphobia	76.4*	6.5–895	0	0
Panic disorder with agoraphobia	0	0	6.1	0.8–49.5
Specific phobias	0	0	2.3	0.9–6.1
PTSD	0	0	5.6	0.7–45
Undifferentiate somatization	2.5	0.23–28.4	1.3	0.5–2.9
Pain disorder	26.4*	2.4–293	1.1	0.4–3.7
Eating disorder NOS	0	0	12	1.4–106.3

* $p \leq 0.05$; two-tailed

Table 5 Odds ratios of risk for comorbid disorders of OCD (n=17) and subclinical (n=43) female subjects in comparison with non-affected females (n=1970) corrected for differences in age distribution.

	OCD Females		Subclinical OCD Females	
	OR	95 % CI	OR	95 % CI
Alcohol abuse	0	0	2	0.27–15.4
Alcohol dependence	15.2*	4.1–56	0	0
Nicotine dependence	7.5*	2.9–20	1.6	0.8–3.1
Sedative-hypnotic dependence	117*	16.4–830	1	2.3
Bipolar disorder	30*	3.2–279.8	0	0
Major depression, all	5.3*	2.6–10.7	2.2*	1.1–4.5
Dysthymic disorder	6.1*	1.4–27.7	2.3	0.5–9.8
Agoraphobia	5.7	0.7–45	0	0
Panic disorder with agoraphobia	4.2	0.5–33	1.7	0.2–13.1
Social phobia	9.9*	2.7–35.6	4.4*	1.5–12.9
Specific phobias	5.1*	2–13.4	2.3*	1.2–4.5
GAD	11.3*	1.4–93	0	0
PTSD	17.3*	5.4–55.7	1.1	0.2–8.4
Undifferentiate somatization	1.4	0.5–4.1	0.6	0.3–1.4
Pain disorder	4.6*	1.7–12.1	1.9	1–3.9
Anorexia nervosa	0	0	0	0
Bulimia nervosa	0	0	0	0
Eating disorder NOS	12.6*	1.5–104	3.2	0.4–24.8

*$p \leq 0.05$; two-tailed

ditional lifetime diagnosis between the subjects with OCD and subclinical OCD versus the non-affected subjects are shown in Tables 4 and 5.

Subjects with OCD and subclinical OCD with comorbid anxiety disorder had an increased odds ratio for additional depressive disorders (OR=3, CI=1.15–7.6; p=0.02) and for additional somatoform pain disorder (OR=4.2, CI= 1.6–11.1; p=0.003) compared to those without comorbid anxiety disorder.

Comment

Prevalent additional lifetime-diagnoses in our OCD and subclinical OCD subjects were major depressive disorders in both genders and anxiety disorders in females which confirms our first hypothesis. This corresponds roughly to the DSM-III based ECA data (Karno et al., 1988) which were not analyzed for gender specific differences and to the results of the Zürich study on subclinical OCD, which found an association with depressive disorders, social phobia and agoraphobia (Angst et al., 1993).

In discordance to our second hypothesis, we could not confirm the proposed association between OCD / subclinical OCD and hypochondriasis as none of these subjects received the diagnosis of hypochondriasis. No statement can be given on the prevalence of body dysmorphic disorder (BDD) or trichotillomania because both were not covered by the CIDI interview. However, in a recent study, Bienvenu et al. (2000) confirmed a significant association between OCD, hypochondriasis and BDD in an OCD treatment sample which indicates that severely affected, treatment seeking OCD patients may show different patterns of comorbidity than subjects from the general population.

However, in our OCD subjects undifferentiated somatization disorder and pain disorder were highly prevalent in both genders. The high rate of undifferentiated somatization did not reflect an excessive aggregation in OCD as shown by the non-significant odds ratios in comparison to the OCD-unaffected subjects.

The diagnoses of dissociative disorder and anorexia and bulimia nervosa were not found in the subjects with OCD or subclinical OCD. Three subjects were found with comorbid eating disorder not otherwise specified and one subject with conversion disorder. Again, in severely affected patients seeking clinical treatment for their OCD, higher rates of comorbid spectrum disorders seemed to occur (Hollander et al., 1996; Grabe et al., 1999, 2000 b).

In line with this thinking is in fact that subclinical OCD subjects had a smaller number of comorbid diagnoses than our OCD subjects. With comorbidity rates of 1.5 in females and males with subclinical OCD, one may additionally conclude that subclinical OCD might represent an independent syndrome which does not predominantly occur only in the presence of other full DSM-IV diagnoses.

The rate for alcohol abuse or dependence was lower in our sample than in the ECA (24.1 %). Other drug abuse or dependence except for nicotine and sedative dependence were not found in our OCD subjects. However, alcohol dependence as indicated by the significant odds ratios may represent a relevant precursor of subclinical OCD in males. In females with OCD, alcohol, nicotine and sedative-hypnotic dependencies might develop during the course of OCD.

In agreement to the ECA data, depressive disorders

occurred about equally before and after the onset of OCD and in most cases agoraphobia, specific phobias and social phobias had their onset before the onset of OCD and subclinical OCD. From this we hypothesize the existence of a predisposition for excessive anxiety responses in many individuals with OCD and subclinical OCD subjects (Black et al., 1992; McKeon et al., 1987). We also could demonstrate that the occurrence of a comorbid anxiety disorder significantly influences the pattern of other comorbid diagnoses in OCD and subclinical OCD: more than 50 % of the diagnoses of depressive and somatoform pain disorder occurred in subjects with comorbid anxiety disorders.

Depressive disorder episodes may precede OCD and subclinical OCD suggesting a genetic liability for depressive disorders at least in some OCD and subclinical OCD patients as described by Sciuto et al. (1995). The occurrence of depressive disorders after the onset of OCD may be triggered by the enhanced distress caused by OCD. In line with this assumption is the finding that only 2 of the subclinical subjects, who were in general less affected by the obsessive-compulsive symptoms than the OCD subjects (Grabe et al., 2000 a), developed depressive disorders clearly after the onset of OCD.

Limitations

Sampling procedures aimed to define a representative community sample. Of the selected individuals, 70.2 % completed the interview which can be considered satisfactory. However, it is assumed that non-response in general population surveys is associated with higher degrees of impairment and illness which might lead to an underestimation of severe OCD cases in our study. Psychotic disorders were not included in the diagnostic assessments of our study. Thus, we were not able to discuss previous findings concerning the association between OCD and schizophrenia and the schizo-obsessive spectrum with our data.

From a methodological point, lay interviews always present a source of concern. However, the structured CIDI interview was conceptualized and validated especially for lay interviewers, and sophisticated training and supervision was provided as described. The small number of male OCD subjects substantially limits a general interpretation of the comorbidity rates.

Conclusion

Our results have provided data on the comorbidity of the probably heterogeneous spectrum of OCD and subclinical OCD. In a subsample, high associations between depressive and anxiety disorders with OCD and subclinical OCD were found. However, we could not generally confirm the association with the so-called "obsessive-compulsive spectrum disorders" which was described in severely affected clinical patients in our general population sample.

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