

C. Wewetzer
T. Jans
B. Müller
A. Neudörfel
U. Bücherl
H. Remschmidt
A. Warnke
B. Herpertz-Dahlmann

Long-term outcome and prognosis of obsessive–compulsive disorder with onset in childhood or adolescence

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C. Wewetzer (✉) · T. Jans
U. Bücherl · A. Warnke
Department of Child and
Adolescent Psychiatry
University of Würzburg
Füchsleinstraße 15
97080 Würzburg, Germany

B. Müller · A. Neudörfel
B. Herpertz-Dahlmann
Department of Child and
Adolescent Psychiatry
Technical University of Aachen
Pauwels-Straße 30
52057 Aachen, Germany

H. Remschmidt
Department of Child and
Adolescent Psychiatry
University of Marburg
Hans-Sachstraße 6
35033 Marburg, Germany

Introduction

Until the early 1980s, juvenile obsessive–compulsive disorder (OCD) was still thought to be a very rare disorder. For example, Hollingsworth et al. (20) reported a prevalence rate of 0.2% and Adams (1) stated a rate of 1.2% for their clinical samples. However, according to more recent epidemiological studies the population prevalence rate is now thought to be higher. The reported point prevalence rates vary between 1% and 4% (Flament et al. (9): 1%; Maina et al. (25): 2%; Apter et al. (3): 2.3%; Valleni-Basile et al. (43): 3%; Zohar et al. (48): 3.6%; Douglass et al. (8): 4%). This would classify OCD as a frequent psychiatric disorder in children and adolescents.

■ **Abstract** The aim of the catch-up follow-up study is to describe the long-term outcome of obsessive–compulsive disorder (OCD) with onset in childhood and adolescence. The psychiatric morbidity in adulthood including personality disorders was assessed and predictors in childhood for the course of obsessive–compulsive symptoms were examined. The total study group consisted of the entire patient population treated for OCD at our departments for child and adolescent psychiatry between 1980 and 1991. We reassessed 55 patients personally by way of structured interviews. The mean age of onset of OCD was 12.5 years and the mean follow-up time was 11.2 years. At the follow-up investigation 71% of

the patients met the criteria for some form of psychiatric disorder, while 36% were still suffering from OCD. Of the patients with a present diagnosis of OCD 70% had at least one further clinical disorder (especially anxiety and affective disorders). The most frequent personality disorders diagnosed were obsessive–compulsive (25.5%), avoidant (21.8%), and paranoid (12.7%) personality disorders. In-patient treatment, terminating treatment against advice and tics in childhood or adolescence significantly correlated with more severe OC symptoms in adulthood.

■ **Key words** Obsessive–compulsive disorder – prognosis – follow-up – outcome

In the past it was assumed that OCD rarely began during childhood and adolescence. Nowadays, however, we know that in 60% of the patients with OCD the disorder developed before the age of 25 years, and that the disorder can often begin between the ages of 12 and 14 years (10, 37, 41).

In recent years, fundamental new findings have been made by biological research and efficient pharmacotherapy studies concerning the etiology and treatment of OCD (17). Several studies, for example, have reported short-term remission due to therapy with serotonin-specific antidepressant medication (29, 31, 44) or behaviour therapy (11, 26). There are, however, few studies on the medium-term or long-term outcome of OCD with onset in child-

hood and adolescence (28). These publications report on follow-up periods ranging from six months to 20 years, with most studies exceeding a two-year follow-up (2, 5, 7, 10, 20, 23, 24, 30, 38). The mean age at first consultation lay between 12 and 15 years; the mean age at follow-up was 17 to 25 years. Most of the studies used a catch-up follow-up design. The study by Thomsen (38) was the only one which reported on a long-term follow-up period among 47 personally examined patients with a mean duration of 15.6 years (range 6–22 years) following the first consultation. The mean age at follow-up was 27.4 years. The outcome was assessed by DSM-III criteria. In addition, a control group was incorporated into Thomsen's study to allow comparison of the incidence of personality disorders with those of the general population.

Most of the follow-up studies cited above examined associations between childhood variables and the course of OC symptoms. In summary, prognostic factors including age at onset and gender have proven to be inconclusive. It must be noted, however, that negative findings might partly be due to a lack of statistical power, because some studies worked with rather low sample sizes (Allsopp and Verduyn (2): $n=20$; Flament et al. (10): $n=25$; Bolton et al. (7): $n=14$). Only Thomsen (39) concentrated on the description of predictive factors for the long-term course of childhood OCD.

The aim of the present catch-up follow-up study is to describe the outcome of OCD with onset in childhood and adolescence, and to assess psychiatric morbidity including the prevalence of personality disorders in the follow-up patients. Predictors in childhood were examined for the course of obsessive-compulsive symptoms.

Method

■ Sample

The total study group was made up of the entire population of patients who had received in-patient or out-patient treatment for OCD at the Departments of Child and Adolescent Psychiatry of the Universities of Marburg and Würzburg between 1980 and 1991. Patient charts were checked carefully by an experienced clinician at each of the two departments (B. H-D., Ch. W.), and the final study group included those patients only who met the DSM-IV diagnostic criteria for OCD. If the information available from the case record was too sparse to ascertain that DSM-IV diagnostic criteria had been fulfilled a patient was not included in the study group. In order to obtain a more homogenous sample, in case of additional diagnosis,

it had to be ensured that OCD predated the onset of the comorbid disorder in the patients concerned. This restriction is in line with other follow-up studies. Flament et al. (10) and Leonard et al. (24) also focussed on the investigation of patients with primary OCD. Further inclusion criteria were age at follow-up ≥ 18 years and $IQ \geq 85$, as measured upon initial referral. All subjects were paid for their participation. The Ethics Committee of the University of Würzburg granted approval for the study.

A total of 116 patients were contacted and asked to participate in a personal follow-up examination. Despite extensive efforts both by mail and phone, only 55 subjects of the original sample agreed to be interviewed personally. A former patient had in the meantime committed suicide; however, while still alive, the patient had suffered a severe case of OCD. We managed to conduct an interview by telephone with 24 patients. Consequently, we were able to gather information on the clinical course of 69% of the former patients. Four patients could not be traced, one patient had died from heart failure, and 31 patients refused to take part in this investigation. The results presented here focus on 55 patients, all of whom were questioned personally.

Of the 55 personally interviewed patients 30 were male (54.5%), 25 were female (45.5%). Of these 55 patients 10.9% and 27.3% had already had in-patient or out-patient treatment before consulting Marburg or Würzburg University. 74.5% were readmitted to in-patient and 25.5% to out-patient treatment upon initial referral to one of the two departments. These departments of child and adolescent psychiatry are referral centres by origin and are not specialised on treating severe cases only or on focussing solely on research issues. However, the high number of patients treated on an in-patient basis may indicate that in our clinical sample patients with more severe OC symptoms may be more numerous than expected regarding the entirety of patients suffering from OCD. The mean age at onset of OCD was 12.5 years ($sd=3.2$; $min=4.7$; $max=18.5$). One patient was 18.5 years old at the onset of OCD and did not present a case of juvenile OCD. He was included in the study group because we wanted to follow up as many of the OCD patients as possible who had been treated at our clinics. All of the other patients were younger than 18 years at onset of OCD. The mean duration of the disorder prior to first treatment for OCD was 1.8 years ($sd=2.1$; $min=0$; $max=9.4$). One patient had an acute onset of obsessive-compulsive symptoms. Contact with one of our clinics was established within a few days. So the minimal duration of the disorder prior to treatment stated above is 0 years. The patients' mean age at follow-up investigation was 25.7 years ($sd=3.5$; $min=19.5$; $max=34.2$). The

mean length of follow-up period was 11.2 years ($sd = 3.7$; $min = 4.5$; $max = 17.7$).

At the time of the first consultation, most of the 55 patients who had been interviewed personally suffered both from obsessions and compulsions. The most common obsessions referred to contamination, religion, forms of aggression and body functioning. Compulsions were mainly cleaning, washing, repeating, arranging and checking rituals. Commonly associated coexisting symptoms not directly related to OCD included symptoms of anxiety (56%), depression (42%) and aggressive behaviour (31%). The aggressive behaviour often arose from the OCD symptomatology, in that opposition was mostly aimed at parents who attempted to prevent the patient from carrying out his/her rituals or who objected to taking part in them.

■ Measures

A documentation system was developed for a systematic retrospective assessment of data by chart review, which included medical, social and family history, clinical symptomatology and course of OCD, psychopathology, therapy and outcome. The associated psychopathology was described on the level of coexisting symptoms. Making a diagnosis according to DSM-IV on the basis of the case records was limited to OCD. At follow-up, psychiatric disorders were diagnosed by DSM-IV criteria using the Munich Composite International Diagnostic Interview (M-CIDI, German version; 45). The CIDI is a standardised interview which was developed by the WHO and the US Alcohol, Drug Abuse and Mental Health Administration. It has a high interrater-reliability and for most diagnostic categories, it also has a satisfactory test-retest reliability. Its validity has also proven to be acceptable. We conducted the lifetime version of the M-CIDI. Because our main interest was to describe the patients' state at the time of follow-up investigation, the diagnoses referred to in the results relate to the day of the interview and the preceding two weeks. Contents and severity of OCD were rated using the Yale-Brown Obsessive Compulsive Scale (Y-BOCS, 13; German version; 15). The reliability and validity of this semistructured interview are satisfactory (13, 14). It is one of the best ratings for assessment of OCD symptoms (16) and reviews the symptomatology of a typical day of the previous week. The Structured Clinical Interview for DSM-III-R (SCID-II, German version, 47) was used for diagnoses of personality disorders. In terms of its reliability and validity, SCID-II compares well with other assessment measures for personality disorders.

The differential diagnosis of clinical and personality disorders sometimes turns out to be difficult. According to the SCID-II instructions it is necessary to avoid symptoms of an existing clinical disorder being classified as symptoms of a personality disorder. Therefore we always conducted the M-CIDI prior to the SCID-II. During the SCID-II the patient was instructed to relate as much as possible to periods in his life in which an existing clinical disorder was less prominent. In the case of coexisting OCD and obsessive-compulsive personality disorder, the obsessive-compulsive traits (e.g. parsimony, rigidity, orderliness, excessive work devotion) had to be ego-syntonic and ought not to be explained by existing symptoms of OCD.

In addition, a semistructured interview was administered to assess treatment episodes during the follow-up period as well as the morbidity of tic disorders and to obtain information on the social and occupational adjustment of the former patients in adulthood. The main results on the psychosocial adaptation have been reported by Jans et al. (21) and will be published in detail elsewhere. The interviews were conducted or supervised by two of the authors (B.H.-D., Ch.W.), both of them senior child and adolescent psychiatrists. The follow-up investigation also included the Beck Depression Inventory (4). We complied with the wishes of our former patients concerning place and time of the personal interview. The patients who were merely interviewed by phone clearly indicated that they were not willing to be involved in a thorough investigation. Therefore the telephone interview was only structured by a brief checklist and did not include the diagnostic instruments used for the personal investigation.

■ Reliability test

In order to examine the reliability of the assessment of data by chart review, selected variables were analysed by a second independent investigator reviewing the case records of 14 patients. A striking correspondence was determined between the ages at OCD onset coded by the two investigators ($r = 0.96$; common variance: $r^2 = 0.91$). This indicates a high reliability regarding the assessment of the age at OCD onset, since there were no substantial differences between the mean ages ($m_1 = 10.48$; $sd_1 = 3.89$; $m_2 = 10.27$; $sd_2 = 3.67$; t-test for paired samples: $T = 0.68$; $df = 13$, $p = 0.51$). The relation between the corresponding judgements and all judgements given by the two investigators amounted to 0.96 for the occurrence of obsessions and compulsions, 0.86 for the occurrence of comorbid mental symptoms and 0.91 for the applied therapeutic interventions. How-

ever, corrected for interjudge agreement expected by chance, there was a rather low reliability concerning the assessment of comorbid symptoms (obsessions and compulsions: Flander's $\pi = 0.84$; comorbid symptoms: $\pi = 0.66$; interventions: $\pi = 0.86$; Flander's π was computed according to Friede, 12). The interjudge agreement for therapeutic outcome was satisfying (Cohen's kappa = 0.76).

In order to test the reliability of the diagnosis of clinical disorders at follow-up, a second investigator coded the statements of 17 patients during the M-CIDI. Identical disorders were diagnosed by the two investigators. The interjudge agreement of 100% is due to the highly standardised character of the M-CIDI and does not apply to the other, semi-structured interviews conducted during the follow-up investigation for which no reliability check had been made. However, it reflects the accuracy of the personal investigation of our patients at the time of follow-up.

■ Analyses

Personally re-examined patients ($n = 55$) and those not personally re-examined ($n = 59$; the two patients who died had been excluded) were compared in order to judge the representativeness of the follow-up subjects. Furthermore, patients with a diagnosis of OCD at the time of the follow-up investigation were compared with patients without current OCD with respect to the rate of other psychiatric disorders. The present study was conducted on a descriptive level. Depending on the type of data, χ^2 test, Fisher's Exact test, Mann-Whitney U-test or t-test were used for single comparisons; all p-values are nominal. In the case of low expected frequencies in 2×2 tables, the associations were tested using the phi-coefficient.

Pearson's or point biserial correlations were used to test the associations between the predictors in childhood and the severity of obsessive-compulsive symptoms in adulthood (Y-BOCS score). Ordinally scaled variables in childhood had been dichotomised (comparison with the corresponding Spearman's correlations showed no substantial loss of information). A logistic regression analysis was used in order to further analyse the associations between the predictors in childhood and outcome. The criterion to be predicted was the diagnosis of OCD at the time of follow-up investigation (M-CIDI). The logistic regression analysis was performed in two steps (first step: all predictors included, stepwise regression; second step: simultaneous regression, only the significant predictors of the first regression model included). All analyses were computed using SPSS for Windows 8.0.

Results

The statistical comparison of the 55 participants with the 59 non-participants revealed a higher proportion of males in the non-participants (participants: 30 males, 25 females; non-participants: 44 males, 15 females). In other words, out of 74 males 40.5% did take part in the personal examination and out of 40 females 62.5% did participate (Fisher's Exact, $p = 0.03$). The participants revealed a higher rate of obsessions (participants: 94.5%; non-participants: 81.4%; Fisher's Exact: $p = 0.045$) and a lower rate of compulsions (participants: 90.9%; non-participants: 100%; phi-coefficient: $r = 0.22$; $p = 0.02$). Response to treatment was higher in the personally examined patients (U-test: $p = 0.04$). In summary, 82% of the participants versus 63.5% of the non-participants had been rated as improved following the treatment at our departments. A larger number of non-participants terminated treatment in childhood against the therapist's advice (non-participants: 21.2%; participants: 9.8%), but this divergence failed to be significant at the 5% level. With respect to other variables in childhood (e.g. age at OCD onset, comorbid symptoms, severity of OCD at referral, in-patient versus out-patient treatment, speech or motor development, intelligence, socio-economic background), the two groups did not differ significantly.

Of the 55 patients who had been re-examined personally, 20 (36.4%) were still suffering from OCD at follow-up. Thus, 39 (70.9%) of the patients showed at least one psychiatric disorder (clinical or personality disorder) at follow-up, 33 (60%) fulfilled DSM-IV criteria for at least one clinical disorder, and 13 patients had more than one diagnosis (two diagnoses: $n = 7$, three diagnoses: $n = 3$, more than three diagnoses: $n = 3$). A personality disorder was diagnosed in 20 (36.4%) subjects; 14 (25.5%) had at least one single clinical disorder as well as a personality disorder according to the DSM III-R criteria. (Fig. 1).

Regarding the course of OCD, Thomsen (38) described four groups of patients in his sample: 1) one group who no longer suffered any OCD symptoms; 2) one group who showed subclinical symptoms; 3) patients with episodic improvement and worsening of symptoms and 4) patients with a chronic course. According to his classification, 16 patients (29.1%) of our sample no longer suffered obsessive-compulsive symptomatology after the initial treatment episode; 15 (27.3%) still had subclinical symptoms during the follow-up period. In 17 cases (30%), we found an episodic course of OCD and in seven cases (12.7%), a chronic course was ascertained. More men than women had a chronic course of OCD. All 10 women who still suffered from OCD during the follow-up period were found to have an episodic

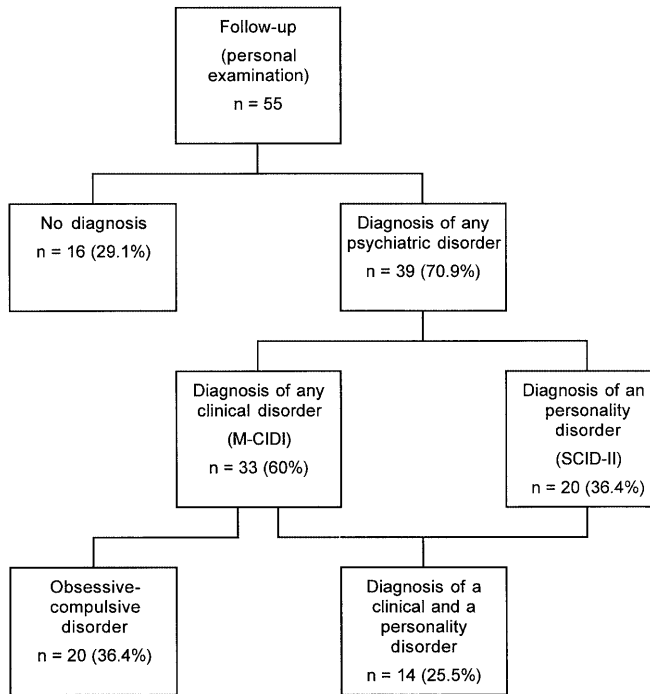


Fig. 1 Psychiatric disorders at the time of the follow-up investigation

course. However, seven of the 14 men with OCD during the follow-up period presented a chronic course and seven presented an episodic course ($n = 24$; Phi coefficient: $r = 0.54$, $p = 0.008$).

Mean Y-BOCS score was 18.2 ($sd = 10.2$) in the 20 patients with present OCD. In the 35 patients without OCD, the Y-BOCS score averaged 1.7 ($sd = 2.4$). A strong correspondence was found between the

severity of obsessive-compulsive symptoms and depressive symptoms (correlation between Y-BOCS and BDI scores: $n = 43$, $r = 0.63$, $p < 0.001$; 12 patients did not answer all BDI items).

Of the 20 patients with a present diagnosis of OCD, 14 (70%) had at least one clinical disorder, opposed to 37% of patients without a present diagnosis of OCD. Thus, patients with current OCD were more likely to suffer from additional clinical disorders ($\chi^2 = 5.5$; $df = 1$; $p = 0.02$). The most prevalent clinical disorders were anxiety disorders and affective disorders, among which social phobia and major depressive disorder were the most common. None of the patients personally re-examined met the criteria for a schizophrenic or delusional disorder (Table 1).

At least one personality disorder was diagnosed in nine (45%) of the 20 patients with a current diagnosis of OCD and in 11 (31.4%) of the 35 patients without current OCD. All in all, six patients had one, five patients had two, a further five patients had three and four patients had four diagnoses of personality disorders. The results are shown separately for patients with and without a current diagnosis of OCD in Table 2. In summary, a slightly higher prevalence of personality disorders was seen in the group of patients currently suffering from OCD. But this value was not statistically significant.

Of our 55 patients 74.5% had at least one out-patient treatment unit and 39.9% had at least one in-patient treatment during the follow-up period. At the time of the follow-up investigation, 27.3% received current out-patient treatment and no patient was actually treated on an in-patient basis. In summary,

Table 1 Clinical disorders according to DSM-IV at the time of the follow-up investigation (in some of the patients more than one disorder was diagnosed)

	All patients at follow-up (n = 55)		Patients with OCD at follow-up (n = 20)		Patients without OCD at follow-up (n = 35)	
	N	%	N	%	N	%
OCD	20	36.4				
Major depressive disorder	8	14.5	5	25.0	3	8.6
Cyclothymia	1	1.8	1	5.0		
Dysthymia	6	10.9	3	15.0	3	8.6
Social phobia	11	20.0	7	35.0	4	11.4
Specific phobia	3	5.5	1	5.0	2	5.7
Phobic anxiety disorder NOS	2	3.6	2	10.0		
Generalised anxiety disorder	2	3.6	2	10.0		
Panic disorder with agoraphobia	3	5.5	2	10.0	1	2.9
Posttraumatic stress disorder	1	1.8			1	2.9
Alcohol dependence	3	5.5	2	10.0	1	2.9
Alcohol abuse	3	5.5			3	8.6
Cannabinoid abuse	1	1.8			1	2.9
Pain disorder	1	1.8	1	5.0		
Atypical anorexia nervosa	1	1.8	1	5.0		
Tourette disorder	1	1.8	1	5.0		

Table 2 Personality disorders according to DSM-III-R at the time of the follow-up investigation (in some of the patients more than one disorder was diagnosed)

	All patients at follow-up (n = 55)		Patients with OCD at follow-up (n = 20)		Patients without OCD at follow-up (n = 35)	
	N	%	N	%	N	%
Obsessive-compulsive	14	25.5	8	40	6	17.1
Avoidant	12	21.8	7	35.0	5	14.3
Paranoid	7	12.7	5	25.0	2	5.7
Schizoid	5	9.1	3	15.0	2	5.7
Dependent	2	3.6	1	5.0	1	2.9
Schizotypal	2	3.6	1	5.0	1	2.9
Borderline	2	3.6			2	5.7
Histrionic	1	1.8			1	2.9
Not otherwise specified	2	3.6	1	5.0	1	2.9

the majority of patients who had been treated during the follow-up period did not receive behaviour therapy or medication.

The existing information from the 24 patients interviewed by phone was sparse, because not all of the patients gave full details on the points of interest. Concerning existing psychiatric symptoms, 13 out of 21 patients (61.9%) stated that they still had OC symptoms, but the severity of these symptoms remained unclear. Eight out of 17 (47.1%) patients reported other psychiatric symptoms (mostly depression and anxiety). However, it is not known how many of these patients would have met the diagnostic criteria for the corresponding clinical disorders.

Table 3 shows the examined correspondence between the predictors in childhood and the severity of obsessive-compulsive symptoms in adulthood (Y-BOCS scores). In-patient treatment, terminating treatment against therapist's advice and tics in childhood or adolescence were significantly correlated with more severe obsessive-compulsive symptoms at the time of the follow-up investigation. Excepting a tendency for a better prognosis of female patients, other variables showed no significant associations.

Logistic regression analysis resulted in a significant prediction model ($\chi^2 = 14.19$, $df = 2$, $p < 0.001$). All predictors were excluded apart from the remaining significant variables "setting" (in-patient versus out-

patient treatment) and "tics in childhood" (setting: Wald = 5.08, $df = 1$, $p = 0.02$; tics: Wald = 4.9; $df = 1$, $p = 0.03$). Of the 55 patients 74.6% could be classified correctly by these two variables; 34 of the 35 patients without a current diagnosis of OCD in adulthood were classified correctly (high specificity: 0.97). However, the prediction was wrong for 13 of the 20 patients with a current diagnosis of OCD (low sensitivity: 0.35).

Discussion

The aim of the study was to gain more knowledge about the long-term outcome of OCD with onset in childhood and adolescence. We succeeded in personally re-examining 55 of the 116 former patients with standardised assessment measures after a mean follow-up period of 11.2 years. Samples of similar size have so far only been followed up by Leonard et al. (24) and Thomsen (38).

Nevertheless, the major limitation of our study lay in the comparatively high number of non-participants who did not agree to a follow-up examination. In contrast to our previous experience with anorectic patients (18, 19, 33), we had the impression that OCD patients were not so willing to participate in a follow-up study. Compared to the original sample, more females than males took part in the follow-up assessment and there was a different distribution of obsessions and compulsions. During the treatment in childhood, the 59 non-personally interviewed patients reported fewer obsessions than the 55 personally interviewed patients. It might be speculated that the patients suffered obsessions to a similar degree but the non-participants were less open to talk about their thoughts with the therapist. Together with the higher rate of patients who terminated treatment against advice and the poorer treatment outcome in the non-participants, this clearly indicates that it was more difficult to establish a therapeutic alliance with the non-participants. Although there is no reliable data at

Table 3 Correlations between the predictors in childhood and the severity of obsessive-compulsive symptoms (Y-BOCS) in adulthood (n = 55)

Gender ²	-0.24 ⁺
Age at onset of OCD ¹	0.03
Severity of OC symptoms ¹	-0.03
Tic symptoms ¹	0.27*
Setting (outpatient/inpatient) ²	-0.32*
Terminating treatment against advice ¹	0.27*
Outcome ¹	0.17
OC symptoms in first degree relatives ¹	0.04
Length of follow-up period ²	-0.04

⁺ $p \leq 0.1$, * $p \leq 0.05$, ¹ one-tailed significance, ² two-tailed significance

hand to show different long-term courses of OCD in the different genders (except for the result in Thomsen's (39) study that more women than men had an episodic course of OCD), we cannot rule out the possibility that a systematic bias was established with the reduced sample size. However, the relatively large number of personally assessed patients, the long time of follow-up and the careful examination of the severity of OCD, clinical and personality disorders by standardised interviews reveal new aspects of the course of juvenile-onset OCD.

Most patients in our study primarily suffered both obsessive and compulsive symptoms, which is in line with the studies of Riddle et al. (34) and Swedo et al. (36). As reported by Thomsen and Mikkelsen (40), the present study also shows depressive and anxiety symptoms to be the most frequent comorbid conditions during the acute stage of illness.

At the time of the follow-up, 36.4 % were still – or again – suffering from OCD. This rate is very similar to the results reported in the literature for juvenile-onset OCD (2) 30%; (5) 31%; (24) 43%; (38) 47%; (7) 43%. The high percentage of OCD (68%) reported by Flament et al. (10) was probably due to the fact that the sample of their follow-up patients was recruited from a nation-wide therapy study, which probably caused a negative selection bias. Furthermore, treatment was described as sparse during the follow-up period in contrast to the NIMH cohort seen by Leonard et al. (24), who found a better outcome in their sample. Of 21 patients who had been interviewed by phone, 62% reported that they still had OC symptoms. However, while 67% of the personally interviewed patients reported current OC symptoms at the time of the follow-up investigation, only 36% met DSM-IV diagnostic criteria for OCD. With respect to this, the morbidity of OCD in our sample of personally examined patients appears not to be underestimated due to a systematic selection bias.

Thomsen (38) not only reported on the condition of the patients at follow-up but also presented data on the development of the disorder throughout the follow-up period. A direct comparison of our study with the data given by Thomsen reveals a similar distribution of groups according to the course of OCD (Table 4; $\chi = 3.17$, $df = 3$, $p = 0.37$). In both studies,

almost 50% of the follow-up patients had either an episodic or a chronic course of OCD. Thus, early onset OCD often seems to persist or patients suffer from frequent relapses, which accounts for a rather unfavourable prognosis of the disorder.

Our results are only partly comparable with those of other studies cited in the literature concerning associated clinical disorders, because standardised assessment instruments have only just recently been introduced. Rates range from the 20% found by Allsopp and Verduyn (2) to 96% by Leonard et al. (24). The extremely high rates reported by Leonard et al. (24) most likely reflect a negative selection bias of the patients, as already assumed for the Flament et al. study (10). In the present study, however, psychiatric morbidity was also rather high with a prevalence rate of 70.9% including personality disorders. The most prevalent clinical disorders were anxiety and affective disorders, which correlate with the literature when standardised instruments were used (24). However, it has to be kept in mind that we used quite a narrow time frame of the two preceding weeks to assess the prevalence of clinical disorders. This leads to an underestimation of rates of clinical disorders in comparison with studies which refer to a prevalence of six months or a whole year. The exclusion of patients suffering from other disorders prior to the onset of OCD may also have resulted in reduced rates of comorbid disorders in our sample. Nevertheless, when making a comparison with epidemiological data it is obvious that the rate of clinical disorders in our sample was higher than expected for the general population. Wittchen et al. (46) reported epidemiological data on 14- to 24-year-old subjects. Their subjects were younger than our patients at the time of the follow-up, but the use of the same diagnostic instrument to derive DSM-IV diagnoses nevertheless makes a comparison interesting. Despite the fact that Wittchen et al. (46) reported a one-year prevalence the rate of depressive disorders and anxiety disorders was higher in our patients (major depression: 14.5% vs. 5.3%; dysthymia: 10.9 vs. 2.9%; social phobia: 20% vs. 2.6%). However, the rate of alcohol related disorders seems not to be elevated in our sample. The low percentage of Tourette disorder in our sample is most probably due to the fact that patients with a history of tic disorders were excluded from the study. Moreover, the higher age at follow-up investigation of our patients may have contributed to less frequent tic disorders in comparison with the rates reported by Leonard et al. (24). The strong association between the severity of depressive and obsessive–compulsive symptoms at follow-up is in line with the results of other follow-up studies (24). Current OCD enhances the probability of suffering from additional psychiatric disorders. On the one

Table 4 Course of obsessive–compulsive disorder according to Thomsen's criteria

	Thomsen (1994) (%)	Present study (%)
No OCD	27.7	29.1
Subclinical OCD	25.5	27.3
Episodic OCD	21.3	30.9
Chronic OCD	25.5	12.7

hand, the comorbid conditions are likely to affect the course of OCD, because the treatment of OCD might be more complicated in patients with additional anxiety or affective disorders. On the other hand, this finding might point to a higher "intrinsic" vulnerability for psychiatric disorders.

To our knowledge there are only very few follow-up studies that have assessed the prevalence of personality disorders in early onset OCD. More than one third of our patients met the full criteria for DSM-III-R personality disorder; more than half of the personally assessed patients suffered from a Cluster C personality disorder. The high incidence of obsessive-compulsive personality disorder (OCPD) deserves special consideration as the co-occurrence of OCD and OCPD in the same individual possibly indicates a common etiology. Studies have produced conflicting results on the lifetime prevalence of both disorders (35, 42). Rasmussen and Tsuang (32) found that 66% of 44 OCD patients met the criteria for a personality disorder: 55% had OCPD, 9% a histrionic personality disorder, 7% suffered from schizoid personality disorder and 5% from dependent personality disorder. Joffe et al. (22) found that 19 of 23 adult OCD patients had a personality disorder: avoidant, passive-aggressive and dependent personality disorders were the most common, whereas only one patient had OCPD. In most studies the OCD patients had no higher frequency of OCPD than the psychiatric controls (6, 40). However, the rate of OCPD in our sample was clearly higher than expected for the general population. Nestadt et al. (27) reported a prevalence rate of the DSM-III compulsive personality disorder of 1.7%. The relationship between OCD and OCPD has also been described in some studies reporting on the genetics of children with OCD. It seems that many parents of children with OCD have OCPD (34). The results of our study pertaining to personality disorders compare very well to those of Thomsen and Mikkelsen (40), who also used the SKID II interview for personality diagnoses. In their study the diagnoses most often given were also obsessive-compulsive (OCPD) and avoidant personality disorder. This shows that rather a large number of patients who suffered from OCD in childhood or adolescence either have OCPD or a combination of OCD and

OCPD in later life. Regarding therapy, it also seems of importance that a large number of former patients have an avoidant or dependent personality disorder and/or social phobia at follow-up. This should be taken into account in future therapy programmes.

The association between tics in childhood and a poor course of OC-symptoms – also found by Leonard et al. (24) – may reflect a common etiology of tic disorders and OCD in a subgroup of OCD patients. The better prognosis of patients who did not need inpatient treatment in childhood and of patients without compliance problems during the treatment in childhood may indicate the influence of the severity of OC symptoms on the clinical course, also reported by Thomsen (39). However, our retrospective severity rating failed to show this association (similar results are reported by 7, 10 and 24). The tendency for a better prognosis of female patients may be due to the fact that more men than women had a chronic course of OCD, a result also reported by Thomsen (39). However, in spite of significant relations, the predictive power of the examined variables was rather low (most of the variance of OCD symptoms remains unexplained, lack of sensitivity of the logistic regression model). Earlier age of OCD onset did not predict poor outcome, which is in agreement with all follow-up studies of childhood OCD which examined this association. With regard to the other examined variables which showed no association with the presence of OCD in adulthood (treatment outcome in childhood, psychiatric morbidity in relatives and length of follow-up period), conflicting results have been reported in the literature.

In conclusion, juvenile-onset OCD shows a protracted course in many patients with a high prevalence of psychiatric disorders in the long-term follow-up. However, it has to be kept in mind that we investigated a clinical sample. Without further investigation our results can not be transferred on children and adolescents who are suffering from OCD without calling on professional aid. Moreover, most of our patients did not receive behaviour therapy or SSRIs during the follow-up period. So it may be hoped that the growing availability of modern treatment approaches for OCD will lead to a better long-term outcome of childhood OCD.

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