European Child & Adolescent Psychiatry [Suppl 1]
12:91–98 (2003) DOI 10.1007/s00787-003-1112-x

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The outcome of adolescent eating disorders

Findings from an international collaborative study

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Abstract Within the International Collaborative Outcome Study of Eating Disorders in Adolescence (ICOSEDA) we studied the clinical features, treatment, and outcome in consecutive cohorts of adolescent patients at five sites in former West Berlin and East Berlin, Zurich, Sofia and Bucharest. A total of N = 242 patients were followed up after a mean interval of 6.4 years in young adulthood. Using semi-structured interviews it was found that on average the patients were in either inpatient or outpatient treatment for 30 % of the entire period between first admission and follow-up. Across the five sites 70 % recovered from the eating disorder and a similar rate showed good or fair psychosocial functioning and no other psychiatric disorder. However, the combination of these three criteria showed that at follow-up only every second former patient was a mentally healthy and psychosocially well functioning person. The univariate and joint consideration of a large list of predictors lead to the conclusion that individual prognosis of the course of adolescent eating disorders is a hazardous undertaking.

Key words eating disorder – adolescence – outcome

Introduction

In the second half of the twentieth century there was an increasing clinical and scientific interest in eating disorders leading to a multitude of studies in various areas. One of the areas was devoted to the outcome of the eating disorder. Most frequently, the outcome of anorexia nervosa has been addressed (for a comprehensive review see Steinhausen, [2]). These studies came up with conflicting findings due to the heterogeneity of age distribution both at onset of the disorder and at follow-up, limited sample sizes in many studies, deficiencies of diagnostic criteria and assessment procedures, and insufficient follow-up duration.

In order to overcome some of these deficiencies a new generation of studies on the outcome of eating disorders was designed in the 1980s of the last century (for reviews see [3, 4, 9, 10]). The present study of adolescent eating disorders originated in the early 1980s in West Berlin from studies by the senior author (H.-C. S.) who later also studied a second sample of adolescent eating disordered patients from the same period who were treated in Zurich, Switzerland. In the mid-1980s the study was extended to East Berlin (K-J. N.) at a time when Berlin was still a divided city, and to Eastern Europe, samples of patients from the period of profound social changes after the collapse of the socialistic system. With the collaboration of further senior clinicians it was possible to include additional patient samples from Sofia, Bulgaria (S. B.) and Bucharest, Romania (M. G.-S.). The resulting study from five different sites

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was called the International Collaborative Outcome Study of Eating Disorders in Adolescence (ICOSEDA). Preliminary reports were based on data coming from two and three sites only [5–7].

The characteristics of the study are as follows: Firstly, the age range at onset was narrowly restricted to adolescence, and thus avoided age-related variations in the interpretation of the disease course. Secondly, the resulting large sample size allowed rather robust findings. Thirdly, the composition of several samples from different social backgrounds and health systems allows a test of any potential transcultural impact on clinical phenomena, treatment and outcome of the eating disorders. In the present report we address the clinical phenomena, the treatment and the outcome of our patients and compare findings across the five sites of ICOSEDA.

Material and methods

Samples

All samples consisted of series of consecutively admitted patients who were initially seen between 1979 and 1988 in West Berlin, between 1979 and 1991 in East Berlin, between 1979 and 1988 in Zurich, between 1987 and 1993 in Sofia, and between 1984 and 1992 in Bucharest. All 338 patients fulfilled the ICD-10 criteria for the various forms of the eating disorders. The samples were predominantly composed of anorectic patients with only the Berlin sample and the Zurich sample having 10% each of patients suffering from either bulimia or atypical eating disorders. Almost all of the patients were female (West Berlin, 95%; East Berlin 90%; Zurich 97%, Sofia, 93%; Bucharest, 100%).

As can be seen from the sample characteristics shown in Table 1, the age ranges were rather homogeneous, with only slight differences (i. e. lower age at admission for the Sofia sample compared to the Berlin sample (ANOVA with post hoc Scheffé test $p < 0.05$) and lower age at onset for the East Berlin, the Sofia sample and the Bucharest samples compared to the West Berlin sample (Scheffé test $p < 0.05$). The body mass index (BMI, expressed in kg/m^2) was substantially below the criterion value of 17.5 in all samples, as set by ICD-10 criteria. It was significantly lower in the Sofia sample than in the two Berlin ($p < 0.01$) and Bucharest ($p < 0.01$) samples.

The entire cohort of patients was invited for follow-up assessment. The drop-out rate at follow-up was acceptable in the West Berlin (10%) and Sofia (1.3%) samples, and was non-existent in the Bucharest sample. In contrast, the drop-out rate was sizeable in both the East Berlin (43.2%) and the Zurich (43.8%) sample. Thus, extensive analyses based on comparison of participants and non-participants in the East Berlin sample and the Zurich sample were mandatory in order to determine whether refusal resulted in a serious bias of these follow-up samples.

These drop-out analyses compared participants and non-participants for diagnostic criteria and symptoms (9 items), personal history (12 items), family history (31 items), treatment (40 items), i. e. a total of 92 items. It was found that East Berlin drop-outs were characterised by a) higher age at onset, b) lower BMI at first assessment, c) more frequent laxative abuse, and d) longer total duration of inpatient treatment. Zurich drop-outs were characterised by a) higher mean number of siblings, b) shorter duration of outpatient therapy, and c) higher rates of disharmonious families. Given the large number of variables that were compared the few significant differences may be considered as chance findings. However, the East Berlin drop-outs may have been slightly more incapacitated by the disorder as compared to the participants.

With a mean period of 6.4 years, all patients received extended follow-up. The duration of follow-up was significantly longer in the East Berlin and the Zurich sample than in the other samples ($F = 31.39$, $df = 4$,

Table 1 Sample characteristics at the five sites of the study

	West Berlin	East Berlin	Zurich	Sofia	Bucharest	Total
Sample size at admission (N)	60	118	64	53	43	338
Mean age at admission (± SD) (years)	15.7±1.6	14.1±1.8	14.9±2.2	14.8±2.0	14.9±1.3	14.7±1.9
Mean age at onset (± SD) (years)	14.6±1.6	13.6±1.7	14.1±1.9	13.4±1.7	13.9±1.2	13.9±1.7
Mean body mass index at admission (± SD)	14.2±2.3	14.6±2.0	14.6±1.7	13.2±1.8	14.4±2.1	14.3±2.0
Sample size at follow-up (N)	50	67	36	47	41	241
Mean duration of follow-up (± SD) years	5.0±1.3	8.3±3.3	9.4±3.2	4.3±1.9	6.0±1.7	6.4±3.0
Mean age at follow-up (± SD) years	20.9±1.7	23.5±3.3	24.6±2.5	19.0±2.4	21.1±2.2	21.8±3.2

$p < 0.001$). The mean age at follow-up was 21.8 years, with the Sofia sample being significantly younger than the Berlin and Bucharest samples ($F = 34.50$, $df = 4$, $p < 0.001$).

Procedure

All the clinical data were collected on standardised item sheets that dealt with clinical symptoms and personal and family history. In four of the samples these data were collected prospectively whereas they were retrospectively collected from the files in the Zurich sample. At follow-up all patients were directly interviewed by experienced clinicians who had, to a large extent, been involved in the patients' treatment, so that the assessment benefited from a good rapport and a trusting relationship in order to buffer against false reports by the patients. The total amount of treatment was recorded for both inpatient and outpatient therapy. Admission and discharge dates were taken from hospital records, while onset dates and the dates of termination of outpatient treatment were recorded according to patient information at follow-up assessment. The total absolute duration of treatment and relative duration of treatment, taking the duration of follow-up into account, was calculated. The latter is a quotient and was converted into percentage values.

A semi-structured interview was conducted at follow-up that requires the rating of topics that deal with symptoms of the eating disorders and psychosocial outcomes. Each of the eleven topics were rated on a 4-point scale reflecting the intensity or frequency of the respective item (absent, mild, moderate or severe) as described in the previous report on the West Berlin sample [11–13]. Five topics of the follow-up interview dealt with symptoms of the eating disorders, i. e. dieting, vomiting, bulimic episodes, laxative abuse and menstruation. These five items formed the eating disorder's outcome score. Two additional topics addressed the attitude towards sexuality and active sexual behaviour, and the remaining four items assessed the quality of relationship with the patient's family of origin, the quality of social relationships in general, and their educational or occupational status. From these six items a psychological outcome score was calculated. A total score of > 12 was defined as poor outcome, whereas a score of < 12 was considered to reflect a good or fair psychosocial outcome. All 11 items served for the calculation of a total outcome score. With both outcome scores a high score indicates a less favourable outcome.

Furthermore, each interview ended with formal diagnoses at follow-up according to ICD-10 criteria. In addition to diagnosis of any eating disorder the patients were also asked about current treatments for any other psychiatric disorder. With the exception of the West Berlin sample a final unstructured part of the clinical interview led to the establishment of further psychiatric disorders.

All of the assessors were senior clinicians with expert knowledge of the eating disorders and extended training in both adolescent and adult psychopathology. All of the principal investigators were trained in data collection by the senior author (H.-C. S.).

Results

Treatment for the eating disorders

Various parameters of treatment in terms of quantity and type of interventions were calculated. As Table 2 shows, the average patient stayed in the hospital for 132 days for psychiatric treatment from onset of the eating disorder to follow-up. ANOVA of these data showed statistically significant differences ($F = 4.46$, $df = 4$, $P = 0.002$), with the Bucharest sample having received significantly less inpatient treatment than all other subsamples (Scheffé test $p < 0.05$). However, the Sofia patients received significantly less outpatient treatment

Table 2 Time spent in psychiatric treatment from onset to follow-up of the eating disorder

	West Berlin (N = 50)		East Berlin (N = 67)		Zurich (N = 36)		Sofia (N = 47)		Bucharest (N = 41)		Total (N = 241)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Total amount of treatment												
Inpatient treatment (days)	142.8	131.4	197.1	232.1	143.4	238.7	97.3	70.5	72.4	62.2	137.2	168.2
Outpatient treatment (months)	20.5	14.2	19.8	21.4	20.2	19.8	6.2	3.5	19.9	18.2	17.6	18.0
Quotient treatment duration by follow-up duration (%)[a]												
Inpatient treatment	8	8	7	9	4	7	7	4	3	2	6	7
Outpatient treatment	24	27	22	25	27	36	12	12	18	22	23	24
Total treatment	33	29	31	30	31	38	18	14	22	22	30	27

[a] figures are rounded to the nearest decimal

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($F = 4.33$, $df = 4$, $p = 0.002$, Scheffé test $p < 0.05$) than the other samples.

In order to obtain a clear impression of the total amount of time spent in treatment, we calculated the proportion of time spent in treatment during the total follow-up period expressed in percentages. According to the data presented in Table 2, at follow-up the average patient had spent 30 % of his or her time in treatment since the onset of the disorder. However, the variation in each subsample was huge, as indicated by the large standard deviations. There were significant differences for the total amount of in- and out-patient treatment ($F = 3.37$, $df = 4$, $p = 0.01$) and the proportion of time spent in patient treatment during the follow-up period ($F = 5.78$, $df = 4$, $p < 0.001$) and the total amount of total treatment ($F = 5.22$, $df = 4$, $p = 0.001$) across the five subsamples. However, all these significant differences disappeared in post hoc analyses. The average proportion of time spent in inpatient treatment was 6 %, and for outpatient treatment amounted to 23 %. In total, the average time spent in any kind of treatment was 30 %. The figures for a second hospitalization due to the eating disorder were as follows: West Berlin, 15 of 50 subjects (30 %); East Berlin, 42 of 67 (63 %); Zurich, 10 of 36 (28 %); Sofia, 34 of 47 (72 %); Bucharest, 22 of 41 (54 %); and 123 of 241 (51 %) for the total sample. The respective figures for a third inpatient treatment due to the eating disorder were as follows: West Berlin, 7 of 50 subjects (30 %), East Berlin, 22 of 67 (33 %); Zurich 5 of 36 (14 %); Sofia, 14 of 47 (30 %); Bucharest, 11 of 41 (27 %); and 59 of 241 (25 %) for the total sample. A total of 10 % required a fourth hospitalisation and 5 % even underwent a fifth admission due to the eating disorders.

The type of outpatient treatment showed large differences across sites. In West Berlin, psychodynamic treatment ranked first (32 %), followed by eclectic supportive psychotherapy (22 %), family therapy (10 %) and client-centred psychotherapy (2 %). In East Berlin almost all patients received supportive therapy (84 %). The Sofia sample was treated with supportive psychotherapy in 62 % of cases and family therapy in 15 % of cases, with very low frequencies of other interventions. Finally, the Bucharest treatment approach was dominated by drug treatment in 65 % of cases, followed by client-centred psychotherapy in 9 % of cases and some lower frequencies for other types of interventions.

Mortality

The total number of deceased patients was 7 (2.9 %). Four patients came from the West Berlin sample, one from Sofia and two from Bucharest. All of them died from direct or indirect consequences of the eating disorder, including suicide.

Psychiatric and psychosocial status

Based on the psychiatric interviews we obtained data on eating behaviour and disorders, psychosocial functioning and further psychiatric disorders. Data on eating disorders are compiled in Table 3. As one can see around 80 % of the sample had normalisation of weight, eating behaviour and menstruation at follow-up. With the exception of lower rates of normalisation of menstruation in the Zurich and in the Bucharest samples ($Chi^2 = 13.3$, $df = 4$, $p = 0.01$) none of the other samples differed significantly from each other across these three variables. On average 70 % of the total sample were free from an eating disorder with some variation across samples ($Chi^2 = 11.08$, $df = 4$, $p = 0.03$). The Bucharest sample had the poorest outcome regarding the presence of eating disorders at follow-up. This was mainly due to a high rate of persisting anorexia nervosa. In general, bulimia nervosa or atypical eating disorder were the most fre-

Table 3 Comparison of eating disorder criteria

	West Berlin (N = 50) %	East Berlin (N = 67) %	Zurich (N = 36) %	Sofia (N = 47) %	Bucharest (N = 41) %	Total (N = 242) %
Normalisation of weight (BMI > 17.5)	80	92	78	89	66	83
Normalisation of eating behaviour	82	78	91	79	81	81
Normalisation of menstruation	72	93	69	82	68	79
No eating disorder (N = 169)	68	79	64	81	54	70
Anorexia nervosa (N = 22)	14	2	5.5	6	22	9
Bulimia nervosa/ atypical eating disorder (N = 44)	18	5	30.5	13	19	19

Table 4 Comparison of different outcome-criteria in four samples (N = 191)

	East Berlin (N = 67) %	Zurich (N = 36) %	Sofia (N = 47) %	Bucharest (N = 41) %	Total (N = 191) %
No eating disorder	79	64	81	54	70
Good or fair psychosocial outcome	82	67	64	64	71
No other psychiatric disorder	86	56	81	73	76
No eating disorder or other psychiatric disorder	67	44	68	42	7
No eating disorder, no other psychiatric disorder, and good or fair psychosocial outcome	62	42	57	34	51

quent eating disorders at follow-up, most specifically in the Zurich sample with almost a third of the sample receiving one of these two diagnoses.

A more complex outcome evaluation has to take the psychosocial status and other psychiatric disorders than the eating disorder into account. Findings based on a comparison of these different outcome criteria are shown in Table 4. West Berlin data are missing in this table because no other psychiatric disorder than the eating disorder was assessed in this patient group. Starting from the previously described mean frequency of no eating disorder in 70 % of the total sample one can see from the table that a good or fair psychosocial outcome was seen in a similar mean proportion of 71 % with only a statistical trend for any differences across sites. Three quarters of the entire sample did not have another psychiatric disorder at follow-up. The rate was significantly lower for the Zurich sample ($Chi^2 = 12.28$, $df = 3$, $p < 0.01$). The other psychiatric disorder in the third sample were affective disorders (N = 25), obsessive-compulsive disorder (N = 8), anxiety disorder (N = 8), somatoform disorders (N = 9), substance abuse (N = 3), schizophrenia (N = 2), and other disorders (N = 21).

The combination of the various outcome criteria is also shown in Table 4. Clearly, the outcome is worse if one combines the criteria. Only slightly more than half of the patients are free from both an eating disorder and any other psychiatric disorder, with the Zurich and the Bucharest patients having even significantly lower rates than the two other groups ($Chi^2 = 11.87$, $df = 3$, $p < 0.01$). If one looks at the most complex outcome measure, i. e. the combination of being free from an eating disorder and any other psychiatric disorder and enjoying a good or fair psychosocial outcome, then only half of the sample fulfils this optimal criterion of mental health. The outcome regarding this most complex measure is significantly worse in the Zurich and in the Bucharest sample than in the two other samples ($Chi^2 = 9.41$, $df = 3$, $p = 0.02$). Furthermore, there is a significant association but not a coexistence in all cases between eating disorder and other psychiatric disorder at follow-up as Table 5 indicates ($Chi^2 = 9.73$, $df = 1$, $p = 0.002$).

Table 5 The relation between eating disorders and other psychiatric disorders at follow-up (N = 182)

	Eating disorder absent (N = 129)		Eating disorder present (N = 53)	
	N	%	N	%
Other psychiatric disorder absent (N = 138)	106	82	32	60
present (N = 44)	23	18	21	40

Prediction of outcome

Three criteria were chosen for the prediction of outcome, namely, the BMI, the eating disorder's outcome score and the total outcome score. Whereas a high BMI was indicative of normalisation a high score on the two composite scores indicated a less favourable outcome. On the basis of both the literature and, more specifically, the item sheet with all of the clinical data at intake, a set of potential predictors was defined. This set included four variables from the developmental history (premorbid eating disorders during the first year of life or later during childhood and adolescence; premorbid overweight; premorbid behavioural abnormalities), four variables from the family history (anorexia nervosa or bulimia nervosa, any eating disorder, including obesity; other psychiatric disorder; family conflict or divorce), five clinical variables (age at onset; duration of symptoms before treatment; anorectic vs. other forms of the disorder; restrictor vs. purger type; BMI at admission) and four treatment and outcome variables (total duration of inpatient and outpatient treatment, respectively; rejection or premature termination of treatment; duration of follow-up).

Among the 51 (3 x 17) correlation coefficients, 13 were significant, which is more than a simple chance finding. The results are shown in Table 6. The BMI at follow-up was positively predicted by two variables, namely premorbid overweight and BMI at admission and negatively by rejection or premature terminations

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Table 6 Single and multiple correlations (including standardised coefficients BETA) with outcome scores

	Outcome score					
	BMI		Eating disorder score		Total outcome score	
	r	BETA	r	BETA	r	BETA
Premorbid overweight	0.27[c]					
Eating disorder in the family					0.13[a]	
Family conflict or divorce			0.23[b]		0.19[b]	
Premorbid behavioural abnormalities					0.16[b]	
BMI at initial assessment	0.30[c]	0.27[b]			–0.12[a]	
Duration of outpatient treatment			0.20[b]	0.22[a]	0.21[b]	0.18[a]
Rejection/premature termination of treatment	–0.20[b]	–0.25[b]	0.21[b]	0.17[d]	0.30[c]	0.22[a]
Other psychiatric disorder at follow-up					0.26[c]	0.23[a]
Multiple R		0.48		0.41		0.51
R^2		0.23		0.17		0.26

[a] $p < 0.05$; [b] $p < 0.01$; [c] $p < 0.0001$; [d] $p < 0.10$

of treatment. The eating disorders score was significantly correlated with the following three variables: conflict or divorce in the family, duration of outpatient treatment, and rejection or premature termination of treatment. Finally, the total outcome score significantly correlated with eight variables, namely eating disorder in the family, conflict or divorce in the family, premorbid behavioural abnormalities, BMI at admission (negative correlation), total duration of outpatient treatment, rejection or premature termination of treatment, and other psychiatric disorder at follow up.

Subsequent multiple regression analyses attempted to identify the essential associations. For the BMI at follow-up, the two significant variables from the univariate analyses remained significant in the multiple correlation equation (i. e. the BMI at initial treatment and premorbid overweight). The total eating disorder score was predicted by total duration of outpatient treatment and rejection or premature termination of treatment. Finally, the total outcome score in the multiple correlation equation was predicted by only three variables, namely, total duration of outpatient treatment, rejection or premature termination of treatment, and other psychiatric disorder at follow up. The explained variance by the entire set of predictions for the three outcome measures ranged from 17 to 26%.

Discussion

The present study is based on the largest sample of adolescent eating disordered patients that has been followed up so far. Restricted to adolescent patients, the ICOSEDA deals primarily with the outcome of anorexia nervosa because of the typical onset of this disorder in adolescence. Thus, the present findings may be generalised to the majority of anorectic patients who have an early onset of this disorder in adolescence. However, limitations pertain to the fact that our findings were obtained only after an intermediate follow-up period of 6.4 years and are restricted to the young adult age range. From various reviews and further studies there is some evidence that a later than adolescent onset is associated with a less favourable course, whereas increasing duration of follow-up carries a better prognosis [2].

One of the novel approaches taken by ICOSEDA was the attempt to systematically assess treatment efforts. Besides the varying resources and types of treatment given to the patients at the five sites of ICOSEDA there is also impressive evidence of the seriousness and chronicity of the eating disorder in a sizeable proportion of patients. Over an average of 30% of the total follow-up period this group of patients received either inpatient or outpatient treatment. Thus, the patients required a large amount of professional involvement at a high cost rate. In the total sample, every second patient required a second hospital admission, and almost one in four patients required a third hospitalisation during the follow-up period. There was a marked transcultural variation in treatment. Particularly, outpatient treatment was markedly different due to different provisions in West and East at a time of declining but still strong societal restrictions at the Eastern European sites and also a lack of acceptance and compliance with psychotherapy for instance in the Bucharest patients.

ICOSEDA considered various outcome parameters. Firstly, mortality was studied and found to be very low at a 2.9% rate compared to the average rate of 5% that was calculated recently on the basis of the entire outcome literature on anorexia nervosa published in the

20th century [2]. Clearly, the low crude mortality rate reflects the early age of the disorder's onset and the young age at follow-up.

Secondly, the recovery rates from the eating disorder were also quite favourable in that on average 70 % no longer qualified for the diagnoses of an eating disorder. This finding is very much in accordance with other recent studies of this age range [8]. While it is difficult to say whether this remarkable outcome is due to earlier recognition of the disorder or better treatment, it suffices to state that this ICOSEDA finding favourably contrasts to the less benign findings of other and older studies. On average, only 57 % of patients with adolescent onset of anorexia nervosa and 47 % of all patients irrespective of age at onset recover from their eating disorder.

Thirdly, there was significant transcultural variation in outcome regarding the frequency of eating disorders. The poorest outcomes with regard to eating disorders were seen in the subsample from Bucharest. These outcomes might be associated with the predominance of outpatient drug treatment in Bucharest samples and the evidence from other studies and most clinical treatment centres that drug treatment plays no central role in the treatment of adolescent anorexia nervosa.

However, the outcome was also amazingly impaired in the Zurich group of patients. This group showed some features that may have affected the outcome. They received almost only family treatment as the mode of outpatient treatment (80 %), which may not have met the needs of these seriously ill patients, they had the highest rate of rejection or premature termination of outpatient treatment (58 %) and they showed the highest rate of disappointment with treatment (47 %).

Fourthly, the present findings of ICOSEDA show that, independent of each other, various outcome criteria like absence of an eating disorder, good or fair psychosocial outcome and lack of any other psychiatric disorder lead to relatively similar findings in the various subsamples. However, if one combines the various criteria by adding the psychosocial outcome and the presence of any other psychiatric disorder to the eating disorder then there is a marked deterioration of the patient's outcome. Using the most complex and demanding criterion, only every second former adolescent eating disordered patient may be considered a totally mentally healthy young adult who also functions psychosocially well in the domains of education or job and interpersonal relationships.

Finally, dealing with the issue of prognosis an attempt was made to analyse all of the relevant predictors of outcome that have been studied sporadically but not systematically in previous studies. With the use of three different outcome criteria and 17 potential prognostic indices, a relatively simple pattern of associations on univariate levels emerged. In general, these correlations were low to moderate. The various associations clearly show that one finds different predictors depending on the criterion. Furthermore, our findings support the conclusion in the recent outcome study by Strober et al. [8] that predictive associations are time-dependent and differ with respect to the outcome criterion of interest. The present findings are also consistent with the analysis of the eating disorders' outcome studies in the literature, indicating large variations in prognostic indicators across studies [2]. In contrast to other studies, our findings are not related to differences in the duration of follow-up because ICOSEDA does not show much of this variation.

With a multivariate procedure of data analysis that takes shared variance into account, these complex relations were reduced even further. The BMI at follow-up continued to be predicted by premorbid weight and BMI at intake. A similar finding with regard to the relevance of the BMI at intake was also reported in a recent multicentre study that included some of our data [1]. Furthermore, as on the univariate level, with the multivariate analyses the eating disorder's outcome was predicted by two treatment variables indicating that extensive outpatient treatment and rejection or premature termination of treatment reflect a subgroup of patients who profit little from treatment and have a poor outcome.

For the total outcome score, which takes into account both the eating pathology and the poor psychosocial development, it was the same combination of treatment failure augmented by other psychiatric disorders at follow-up that predicted a poor outcome. However, one should not overlook the fact that the amount of explained variance in each multiple correlation analysis was moderate to low. Thus one has to conclude that prediction, even using a large list of indices and a large sample, currently results in very low prognostic power, and is certainly not feasible for the individual clinical patient.

In conclusion, the main clinical implications are as follows: i) the outcome of adolescent eating disorders is relatively similar across cultures with regard to the main features of the illness. More complex and refined outcome criteria are associated with less benign findings. ii) The patients spend a considerable proportion of their lifetime in treatment. iii) The younger age at onset of the disorder carries a better prognosis. iv) The joint consideration of a large list of potential clinical features shows that only few have a significant predictive value, so that the prognosis for an individual patient is most problematic.

Acknowledgement The authors are indebted to the clinicians who assessed and treated the patients of this study. For their specific enrolment in the follow-up assessments the authors are grateful to M. Amstein, U. Dudeck, U. Neumärker and R. Seidel.

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