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Does psychiatric comorbidity in alcohol-dependent patients affect treatment outcome?

■ **Abstract** Comorbidity in alcohol research refers to the presence of alcohol dependency and another major psychiatric disorder. The existence of additional disorders may have consequences for treatment planning and success. The aims of this paper are therefore: 1) to give an overview on prevalence rates in studies with representative cohorts and hospital-based samples; 2) to report results on gender differences and 3) to determine the impact of comorbidity on treatment outcome.

Comorbidity was examined with the Composite International Diagnostic Interview (CIDI) in N = 118 (61 male and 57 female) alcohol-dependent patients who were socially well integrated. Results show that 65 % of the female patients but only 28 % of the male patients had a lifetime history of additional psychiatric disorders. Significantly more phobic/anxiety disorders, mood disorders occur in female patients. One year after inpatient treatment, overall 39 % had suffered a relapse. More detailed analysis revealed that 55 % of the non-comorbid but only 28 % of the comorbid women suffered a relapse, thus contradicting our initial hypothesis that comorbid patients have a poorer prognosis with regard to their alcohol dependence. Male comorbid (40.9 %) and non-comorbid (35.3 %) patients showed no significant differences regarding relapse rates.

■ **Key words** alcoholism · comorbidity · gender · treatment outcome · CIDI

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Introduction

Increasing attention has been given to the association between alcoholism and other psychiatric disorders in patients with alcohol problems. Although there are inconsistent results, high rates of comorbid disorders were found in clinical samples of alcoholics generally (e. g. Powell et al. 1982, Hesselbrock et al. 1985, Ross et al. 1988a). The most common comorbid disorders are anxiety disorders, mood disorders and personality disorders. Table 1 provides an overview on studies with clinical samples in which the comorbidity (lifetime prevalence) of anxiety disorders was concerned. Mood disorders are another class of mental disorders that could be observed in samples of alcohol dependent patients (see Table 2).

Both tables show quite inconsistent data. This can be explained by a number of reasons including different assessment instruments, diagnostic interviews or the point in time when data are collected. If comorbidity was assessed close to the beginning of the inpatient treatment, it is more likely that symptoms of acute or prolonged withdrawal (such as psychomotor agitation, insomnia, anxiety or dysphoric states) can be taken for symptoms of an anxiety or mood disorders (see Schuckit and Hesselbrock 1994). Another very important aspect deals with the connection between symptomatology and alcohol consumption. The Fourth Diagnostic and Statistical Manual of the APA (DSM-IV, American Psychiatric Association 1994) acknowledges this point. Clinicians are permitted to diagnose "substance-induced" disorders. If a clear distinction between concurrent and independent disorders is not made, the prevalence rates of independent comorbid disorders could be overestimated (Schuckit et al. 1997).

Lejoyeux et al. (2000) examined the occurrence of alcohol dependency among patients who came to a psychiatric emergency unit and found a relatively high prevalence rate of 37.5 %. This result indicates that patients seen in a psychiatric emergency unit represent a

Table 1 Lifetime prevalence of anxiety disorders in selected clinical studies [in %], entries in parentheses refer to pooled categories of mental disorders, references for inventories and criteria[1]

Authors	N Male/female	Diagnostic inventory criteria	Agora-phobia	Social phobia	Panic disorder	Specific phobia	Gen. anixiety disorder	Obs.-comp. disorder
Powell et al. (1982)	565 565/0	PDI RDC	(10)		13			12
Smail et al. (1984)	60 40/20	Not specified	41	39				
Bowen et al. (1984)	48 35/13	SADS RDC	12	8	21	6	23	
Weiss & Rosenberg (1985)	84 74/10	SCID DSM-III	2	2	3	7	8	
Hesselbrock et al. (1985)	321 231/90	DIS DSM-III	15		6	17		5
Hasin et al. (1988)	123 86/37	SADS-L RDC	(20)	(20)	10		7	3
Chambless et al. (1987)	75 not specified	SADS RDC	8	19	9	9		3
Ross et al. (1988b)	501 260/241	DIS DSM-III	(37)	(37)	11	(37)	56	10
Johannessen et al. (1989)	154 154/0	ADIS-R DSM-III			13			
Penick et al. (1994)	928 928/0	PDI DSM-III	(7)	(7)	10			9
Tomasson & Vaglum (1995)	240 168/72	DIS DSM-III			4/13		31/43	5/7
Sallmen et al. (1997)	104 73/31	SCID DSM-III-R	(7)	(7)	13	(7)	9	3
Schuckit et al. (1997)	2713 1792/921	SSAGA DSM-III-R	1.6[a] 1.1/2.6	3.2[a] 2.4/4.9				1.3[a] 1.0/1.9
Driessen et al. (1998)	250 181/69	CIDI DSM-III-R	9	13	2	16	3	2

[1] *Inventories used:* ADIS-R (DiNardo & Barlow 1988), CIDI (WHO 1991b), DIS (Robins et al. 1985), PDI (Othmer et al. 1980), SADS (Spitzer & Endicott 1977), SADS-L Endicott & Spitzer 1978), SCID for DSM-III (Spitzer & Williams 1985), SCID for DSM-III-R (Spitzer et al. 1990), SSAGA (Bucholz et al. 1994)
Criteria used: RDC (Spitzer et al. 1977), DSM-III (APA 1980), DSM-III-R (APA 1987)
[a] Rates for "independent" disorders (Schuckit et al. 1997)

population at risk for alcohol dependency. The alcohol-dependent patients were more often men than women and had a poorer socio-economic status (higher rate of unemployment) than non-dependent patients. Furthermore they had higher prevalence rates for dysthymia, acute alcohol intoxication and an antisocial personality.

Conclusions about causality for the association between alcoholism and psychiatric disorders are difficult to draw. As noted by Schuckit (1986) there are several possible explanations for these coincidences. Firstly, a psychiatric disorder and alcohol dependence can coincide by chance, either sequentially or simultaneously. Secondly, psychiatric disorders might cause alcoholism. Thirdly, alcoholism can cause certain psychiatric conditions. Fourthly, both alcoholism and psychiatric disorders may be caused by other conditions. Finally, alcohol use or alcohol withdrawal can produce symptoms that mimic those of a psychiatric disorder.

General population surveys and clinical studies re-

vealed differences between men and women in the occurrence of additional mental disorders beside alcohol dependency. Community studies showed that female alcoholics were more likely to have an additional diagnosis, except for personality disorders (Helzer and Pryzbeck, 1988, Regier et al., 1990) which is important because it may be related to suicidal ideation (Waern et al., 2002). The gender effect was reflected in clinical samples, in which depression and phobias were more likely to be found amongst women, whereas antisocial personality disorders and substance misuse were more common amongst men (Hesselbrock et al. 1985).

Comorbid conditions may be important with regard to treatment outcome and the prognosis of long-term abstinence. Most of the studies revealed a negative correlation between the presence of psychiatric comorbidity and treatment outcome (e. g. Rounsaville et al. 1987, Hesselbrock et al. 1985, Schuckit 1983). Loosen et al. (1990) concluded that comorbidity with depression was

Table 2 Lifetime prevalence of mood disorders in selected clinical studies [in %] – references for inventories and criteria[1]

Authors	N Male/female	Diagnostic inventory criteria	Major depression	Dysthymia	Mania
Powell et al. (1982)	565 565/0	PDI RDC	42		22
Hesselbrock et al. (1985)	321 231/90	DIS DSM-III	38 32/52	–	4 5/3
Hasin et al. (1988)	123 86/37	SADS-L RDC	46	20	10
Ross et al. (1988a)	501 260/241	DIS DSM-III	24	17	2
Herz et al. (1990)	74 74/0	DIS DSM-III	21	11	3
Roy et al. (1991)	339 249/90	SADS-L RDC	33		
Penick et al. (1994)	928 928/0	PDI DSM-III	36		17
Tomasson & Vaglum (1995)	240 168/72	DIS DSM-III	15 12/21	15 11/24	3 1/7
Sallmen et al. (1997)	104 73/31	SCID DSM-III-R	37	11	5
Schuckit et al. (1997)	2713 1792/921	SSAGA DSM-III-R	11.5[c] 8.3/17.8	1.6[c] 1.0/2.8	
Driessen et al. (1998)	250 181/69	CIDI DSM-III-R	10[a] 4[b]	12	1

[a] Major depression, recurrent (Driessen et al. 1998)
[b] Major depression, single episode (Driessen et al. 1998)
[c] Rates for "independent" disorders (Schuckit et al. 1997)

associated with a poorer outcome. Whilst patients with a lifetime depression manage to stay abstinent for an average of 3.3 years, it took 6.8 years on average for those without depression until they suffered a relapse. In a study by Roy et al. (1991), the authors suggest that depressed alcoholics have a poorer outcome because they had a significantly higher daily alcohol intake since they started drinking than non-depressed alcoholics. Several studies showed that identification and treatment of specific coexisting psychiatric disorders can improve the overall prognosis. Kranzler et al. (1996) reported a poorer outcome in the presence of a comorbid disorder. Whereas antisocial personality disorder and an additional misuse of illicit drugs are related to a poorer outcome, the presence of an additional major depression leads to lower drinking intensity. This was interpreted as a specific effect of comorbidity. Rounsaville et al. (1987) found similar results, but pointed out a gender effect: Whilst men showed a poorer therapy outcome if comorbid mental disorders – including major depression – were present, women with an additional major depression had a better prognosis. Other studies revealed no significant difference between depressive and non-depressive groups of patients (e.g. Davidson and Blackburn 1998).

Based on these findings the aim of our study was to investigate the impact of comorbidity on the long-term outcome. For this purpose we investigated the prevalence of ICD-10 and DSM-III-R (American Psychiatric Association 1987) Axis I comorbidity in a socially well-integrated (residence, partnership and/or work place still exist) sample of hospital-based alcohol-dependent male and female patients. In contrast to most other studies this was done long enough after detoxification but still under controlled hospital conditions.

Methods

This study was performed within the project "Long-term course and relapse-prevention in alcohol-dependent women and men", funded by the Federal Ministry of Education and Research. Primary aim of this project was to study the situation of alcohol dependent women.

■ Subjects

Subjects in this study were 118 patients, 61 male and 57 female (consecutive admissions), recruited from an inpatient treatment program for alcoholics at the psychiatric department at the University of Tübingen. The therapy consists of a 6-week inpatient treatment which is followed by a period of 1-year outpatient aftercare with weekly group sessions (Mann and Batra 1993). Inclusion criteria for the study was a diagnosis of alcohol dependence according to ICD-10 and DSM-III-R. Exclusion criteria were Korsakoff's disease or Wernicke's syndrome, portocaval encephalopathy, head injury with post-traumatic amnesia of longer than 12 hours, as well as convulsions or delirium tremens three weeks prior to admission.

Instruments

Lifetime and current Axis I comorbidity was assessed using the Composite International Diagnostic Interview (CIDI, World Health Organisation 1991b). The CIDI is a comprehensive, fully standardised diagnostic instrument for assessing mental disorders based on the definitions and criteria of ICD-10 Diagnostic Criteria for Research (World Health Organisation 1991a) and the third edition of the Diagnostic and Statistical Manual of Mental Disorders – revised (DSM-III-R). This instrument contains 276 questions, many of which are coupled with probe questions to evaluate symptom severity. Diagnoses in the present study were made using the DSM-III-R and were generated with the use of the CIDI diagnostic programme. Prior studies have found good interrater reliability and satisfactory rating for test-retest reliability and an acceptable validity for all the CIDI diagnoses that are considered here (Wittchen 1994).

Statistical analysis

Pairwise comparisons presented in the tables and in the text were evaluated using χ^2-tests for categorical data. t-tests are reported for comparisons of continuous variables across groups.

Procedure

Data on drinking history and clinical background were obtained by trained psychiatrists and psychologists. Subjects were interviewed with the CIDI between the fourth and sixth week of inpatient treatment. They were free of anti-withdrawal medication had completed detoxification. This was confirmed by additional measurements. The BDI (Beck Depression Inventory, Beck and Steer 1987) was administered at the beginning and end of inpatient treatment. Subjective symptomatology decreased during the inpatient treatment phase for women (treatment entry: M = 14.00, s = 9.23, treatment ending: M = 6.67, s = 6.35) and men (treatment entry: M = 11.41, s = 8.45, treatment ending: M = 5.44, s = 5.60). Because only female controls were assessed, additional information on the course of subjective symptomatology were available for women only. The results obtained at the end of the inpatient treatment phase were comparable with healthy controls (significant interaction: measurement [entry vs. after six weeks] x sample [patients vs. controls]: F(1,60) = 37.16, p < 0.001). Administering the short form of the "Beschwerdeliste" (List of medical conditions, BL, v. Zerssen 1976) revealed almost the same results (Interaction: F(1,64) = 19.52, p < 0.001). The CIDI was performed by trained interviewers who took part in training workshops at the National WHO Training Center (Munich). Follow-up examinations were conducted after 6 months and one year after the inpatient period. Patients were seen regularly in outpatient group sessions where the examinations took place. Possible alcohol consumption was assessed through regular breath analysis and biological markers. Additional information was derived from spouses if necessary. Elevated values were addressed during the next session. A one-week inpatient crisis intervention was offered to patients who did not manage to stay abstinent. Exclusion was considered if a patient did not attend two successive group sessions without excuse. Treatment outcome (drinking behaviour) was divided into three categories: i) total abstinence, ii) relapse (any amount or form of alcohol intake) which could be handled and led to abstinence again within one week, iii) relapse (any amount or form of alcohol intake) which could not be improved and led to dropout from treatment.

Results

Sociodemographic data and history of alcoholism

The age of the patients ranged from 22–70 with a mean of 39.6 (sd 9.9) years for the men and 41.2 (sd 9.1) years for the women (p = n. s.). Only 2.5 % of the patients had not completed a normal school education. 37 (61.6 %) male and 31 (55.3 %) female patients lived in a stable relationship. There were no differences in marital and partnership status between men and women. Male patients had been alcohol dependent for 9.7 (sd 7.2) years on average and female patients for 6.2 (sd 5.6) years (p = 0.003). As could be expected, age at onset of alcohol dependence differed between male (mean 29.9, sd 8.94) and female patients (mean 34.98, sd 9.67; p = 0.003). The average alcohol consumption (alcohol in g per day) during the last year (males: mean 191.82, sd 112.23; females: mean 163.81 sd 78.31; p = n. s.) and the last month (males: mean 164.43, sd 120.92; females: mean 165.89 sd 101.89; p = n. s.) did not differ significantly between men and women, even without adjusting for body weight.

Prevalence of comorbidity

Out of the 118 alcohol dependent patients, 64 (54.2 %) met criteria for alcoholism only. The remaining 54 (45.8 %) met diagnostic criteria for one or more additional psychiatric disorders. 25 (21.2 %) were positive for only one additional disorder, 15 (12.7 %) met criteria for two additional disorders, 7 (5.9 %) were positive for three comorbid disorders and again 7 (5.9 %) for four or more additional disorders. As can be seen in Table 3,

Table 3 Number of additional diagnoses according to CIDI/DSM-III-R/Lifetime prevalence (excluding nicotine dependence)

Number of additional diagnoses	All patients		Males		Females	
	N	%	N	%	N	%
0	64	54.2	44	72.1	20	35.1
1	25	21.2	9	14.8	16	28.1
2	15	12.7	6	9.8	9	15.8
3	7	5.9	1	1.6	6	10.5
4	6	5.1	1	1.6	5	8.8
5	–	–	–	–	–	–
6	1	0.8	–	–	1	1.8
	118	100	61	100	57	100

women were more likely than men to have lifetime psychiatric disorders in addition to their alcohol dependence (64.9 % vs. 27.9 %).

Prevalences for each diagnosis are shown in Table 4. The number of additional lifetime diagnoses of mood and anxiety disorder differed significantly between men and women (*mood disorders – males: 9.8 %; females: 33.3 %; p = 0.003; anxiety disorders – males: 24.6 %; females: 50.9 %; p = 0.002*). Women were more likely to show lifetime major depression and agoraphobia than men. There were no statistically significant differences for dysthymia, panic disorder, generalised anxiety disorder, social and simple phobias or other disorders. Anxiety disorders appeared most frequently followed by mood disorders and other substance use disorders.

■ Treatment outcome

No relapse was detected during hospitalisation. Apart from self reports this was checked through random breath analyses, biological markers and information from spouses/significant others. At the end of outpatient treatment (one year), overall 46 (39 %) of all patients had suffered a relapse. Among them were 30 (25.4 % based on the entire sample) who dropped out of treatment.

Table 5 shows a more detailed analysis of relapse rates in general, severe relapses with dropouts and retention rates with respect to gender and comorbidity.

Discussion

Psychiatric comorbidity in alcohol dependent patients presents problems for patients and clinicians alike. Patients with "dual diagnoses" may not respond as well to treatment as other patients, may have higher relapse and readmission rates, and may manifest symptoms that are more severe and chronic in nature (Sheehan 1993).

■ Comparison between male and female patients

Regarding lifetime prevalence of comorbid psychiatric disorders, the data of our study are consistent with those of previous clinical studies (e. g. Hesselbrock et al. 1985, Rounsaville et al. 1987). Alcohol-dependent women have higher prevalences than men in mood disorders and anxiety disorders. Despite this general result, the reported prevalence rates differ from study to study. There are some factors that may explain the range of prevalence rates reported by different research groups. Apart from the fact that patient populations vary across studies and countries, the timing of an interview may influence the diagnostic process. As mentioned above, alcohol intoxication and withdrawal can cause symptoms of depression that may closely resemble those of a primary mood disorder. Thus, making reliable psychiatric diagnoses in patients with substance use disorders during the early stages of abstinence is difficult. Ross et al. (1988b) found no gender differences regarding mood disorders (29 % for men and 30.4 % for women) when interviewing only 4.5 days after admission of the patients. At this point in time, withdrawal could have played a major role. Furthermore, differences in inter-

Table 4 Lifetime prevalence of additional disorders according to CIDI/DSM-III-R [+] excluding alcohol and nicotine dependence

Disorders	Lifetime prevalence		
	Males [%] (n = 61)	Females [%] (n = 57)	Sign.
Mood disorders	9.8	33.3	0.003
Major depression, single episode	1.6	10.5	0.041
Major depression, recurrent	8.2	22.8	0.027
Dysthymia	1.6	8.8	n. s.
Anxiety disorders	24.6	50.9	0.002
Panic disorder	4.9	7.0	n. s.
Generalised anxiety dis.	–	1.8	–
Agoraphobia	8.2	26.3	0.009
Social phobia	11.5	24.6	n. s.
Specific phobia	9.8	21.1	n. s.
Substance dependence[+]	–	5.3	–
Somatoform disorders	–	1.8	–
Eating disorders	–	1.8	–

Table 5 Treatment outcome and retention rates – number and percentage of relapsed patients

Time after inpatient treatment	Males			Females		
	Comorbid	Non-comorbid	Sign.	Comorbid	Non-comorbid	Sign.
6 months						
Relapse overall	5 (27.3)	10 (23.5)	n. s.	10 (27.8)	9 (45.0)	n. s. (0.19)
12 months						
Relapse overall	7 (40.9)	18 (35.3)	n. s.	10 (27.8)	11 (55.0)	0.044.
Relapse with dropout	2 (11.8)	13 (29.6)	n. s. (0.14)	8 (22.2)	7 (33.3)	n.s
Retention rates (12 months):						
Overall:						
88 patients (74.6 %)	15 (88.2)	31 (70.4)		29 (77.8)	13 (66.7)	

view techniques and diagnostic criteria can affect study results. For example, standardised diagnostic interviews contain "probe" questions to find out whether reported symptoms can be explained by effects of medication, drugs, alcohol or withdrawal. The aim is to differentiate an independent psychiatric disorder from a drug-induced disorder. After taking this point into consideration Schuckit et al. (1997) found rates of "independent" mental disorders that are almost similar to those of controls.

■ Comparison with clinical samples

Only 27.9 % of our *male patients* showed any psychiatric disorder (lifetime prevalence) other than their alcohol dependence. In contrast, higher rates of comorbidity were reported in many other studies. In a large study of lifetime psychiatric comorbidity among male alcoholic patients (Penick et al. 1994; N = 928) almost two-thirds provided clinical histories that were consistent with one or more additional disorder. Ross et al. (1988a; n = 260) found that the great majority of male patients (84 %) had a lifetime DIS-disorder other than substance use, and over two-thirds had a current psychiatric disorder. The high prevalence rates in this study could be explained by the fact that the time between intake and interview was less than one week (see above). In a recent German study Driessen et al. (1998) assessed psychiatric comorbidity in 250 hospitalised alcohol-dependent male patients (CIDI/DSM-III-R). Additional Axis I disorders were found in 41.2 %. Mood and/or anxiety disorders were diagnosed in more than one-third of all patients and represented a rate of 91.3 % of all lifetime Axis I comorbid disorders. In our sample all male patients with any comorbidity showed mood and/or anxiety disorders. Despite the use of identical assessment instruments and classification criteria, the sample of Driessen et al. (1998) had a higher rate of CIDI-diagnosed lifetime mood disorders (19.2 % vs. 9.4 % in our sample), and anxiety disorders (34.4 % vs. 24.6 %). The lower lifetime prevalence rates of comorbid disorders among male patients in our study may be a consequence of patient selection procedures, since the sample in this study can be considered a well-defined subgroup of chronically alcohol-dependent patients with a relatively good overall adjustment and good motivation for treatment (Stetter et al. 1991, Mann et al. 1996).

Regarding the *female patients*, the lifetime prevalence rates for additional diagnoses in this study is 64.9 %. A lifetime mood disorder was diagnosed in 33.3 %. Half of the women (50.9 %) had lifetime anxiety disorders, most by agoraphobia (26.3 %) and social phobia (24.6 %). These prevalence rates correspond to the results of Haver and Dahlgren (1995; n = 60). 60 % of their female problem drinkers treated in a specialised programme fulfilled the criteria for at least one psychiatric lifetime disorder, diagnosed by use of the SCID and according to DSM-III-R. The most common disorders were mood disorders (48 %) and anxiety disorders (38 %). Only small proportions of patients satisfied the criteria for lifetime obsessive compulsive disorder (5 %), somatoform disorder (1.7 %), anorexia (1.7 %), and bulimia (1.7 %). The female patients in the study of Haver and Dahlgren (1995) are judged by the authors to be "early" in their treatment careers, since none had been previously treated for alcohol problems. For a subgroup of female patients with an alcohol disorder, prevalence rates for lifetime major depression (26.8 %), dysthymia (14.6 %), phobias (40.7 %), panic disorder (12.2 %), and generalised anxiety disorder (49.6 %) are reported from the study by Ross et al. (1988b; n = 241) using the DIS and following DSM-III criteria. The overall prevalence rate for any disorder was 85.4 % in all female patients, i. e. patients with alcohol and/or drug disorders. This high rate includes psychosexual disorders, and antisocial personality disorders. Moreover, only 38 % of the women initially planned for participation took part in this study. The authors suggest that patients who had more severe drug dependence problems or who were less motivated to obtain treatment may be under-represented in this sample.

Schuckit et al. (1997) emphasised the important issue of the relation between symptoms of mental disorders and alcohol dependency. Based on the fact that the majority of psychiatric symptoms, although clinically relevant, might temporarily be linked with phases of intoxication and withdrawal, it is important to distinguish between concurrent and independent conditions. Schuckit and colleagues conducted a study using data from the COGA (Collaborative Study of the Genetics of Alcoholism) investigation (see e. g. Reich 1996). They used the SSAGA (Semi-Structured Assessment for the Genetics of Alcoholism, Bucholz et al. 1994) which allowed them to separate concurrent from independent symptoms and syndromes (three mood disorders and four anxiety disorders were concerned) by assessing the medical history of the patient. The results indicate that only 10 % of alcohol-dependent men and women fulfilled criteria for lifetime "independent" additional anxiety disorder and 14 % fulfilled criteria for an "independent" mood disorder which is about the same magnitude that controls had shown. The lifetime rates for several disorders were essentially lower than in many other studies (see Tables 1 and 2). The authors concluded that higher rates are likely to be reported if it is not carefully distinguished between independent and concurrent syndromes. Compared with the results of our study, men reached about the same level of comorbidity regarding mood disorders, but our patients showed higher rates of anxiety disorders. Women showed higher rates in general. This could indicate that our lifetime prevalence rates consist of concurrent and independent rates.

Overdiagnosing additional mental disorders is not only a problem in studies with clinical samples but also in epidemiological studies with representative samples. Schuckit et al. (1997) noted that the ECA (Regier

et al. 1990) and the COGA investigations accounted about the same (low) levels of independent additional disorders, whereas the NCS (Kessler et al. 1994) reported significantly higher rates possibly due to methodological problems (insufficient distinction between "independent" and "concurrent" syndromes, training and supervision of interviewers, methods for screening, thresholds used for diagnosing a certain disorder).

■ Comparison with population-based samples

Since our study design did not contain a control group from the population, it seems of interest to compare the results with general epidemiological surveys. There are two relevant German investigations: The "Munich Follow-Up Study" (MFS, Wittchen et al. 1992) and the "Transmission in Alcohol Consumption and Smoking" investigation (TACOS, Meyer et al. 2000). Furthermore two American studies are of interest: the "National Comorbidity Survey" (NCS, Kessler et al. 1994) and the "Epidemiologic Catchment Area Study" (ECA, Regier et al. 1990). Tables 6 and 7 give an overview for males and females. Unfortunately, Regier et al. (1990) do not report prevalence rates for men and women separately.

This comparison indicates that our patients showed higher lifetime prevalence rates than the participants in the epidemiological surveys. Females seem to be more affected than males. This applies especially for social phobia, agoraphobia and major depression. As an exception of this pattern, lifetime rates for mood disorders in male patients are lower than the data reported in the NCS.

The German epidemiological surveys, the MFS (Wittchen et al, 1992) and TACOS (Meyer et al. 2000) revealed comparable magnitudes of lifetime prevalence rates of mental disorders but lower lifetime prevalence rates than the NCS (*anxiety disorders:* MFS 13.9 %;

Table 7 Lifetime prevalence rates in women (current study compared to epidemiological investigations)

Disorders	Current study %	MFS %	TACOS %	NCS %
Mood disorders	33.33	18.68	17.3	23.89
Major depression	33.33	13.58	14.3	21.29
Dysthymia	8.77	5.35	3.3	8.01
Anxiety disorders	50.88	18.13	20.8	30.49
Panic disorder	7.02	2.92	3.2[b]	4.99
Generalised anxiety dis.	1.75	–	1.1	6.60
Agoraphobia	26.32	8.27	1.5[c]	6.99
Social phobia	24.56	10.35[a]	2.5	15.49
Specific phobia	21.05	10.35[a]	14.7	15.70
Substance abuse[+]	1.75		0.5	3.51
Substance dependence[+]	5.26		0.4	5.90

[+] excluding alcohol and nicotine dependence
[a] MFS: social and specific phobia
[b] TACOS: panic disorder with and without agoraphobia
[c] TACOS: agoraphobia without panic disorder

TACOS 15.1 %; NCS 24.9 %; *mood disorders:* MFS 12.9 %; TACOS 12.3 %; NCS 19.3 %; details are shown in Tables 6 and 7). This applies to the ECA (Regier et al., 1990) as well. Prevalence of alcohol use disorders and other mental disorders in general population samples in five cities of the United States were assessed. As in the MFS, DSM-III criteria were used to diagnose mental disorders. Regier et al. (1990) found that during lifetime, 14.6 % of their sample show an anxiety disorder and 8.3 % showed a mood disorder.

Brady et al. (1993) concluded that, although female alcoholics in a treatment-seeking sample had a substantially higher psychopathology than male alcoholics, generally these differences were consistent with the ratios in the general population. This is confirmed by the results of our study. Female patients show increased risks for the development of major depression, anxiety disorder as category, and – as their male counterparts – the strongest risk for lifetime agoraphobia.

Because we examined a socially well-integrated sample of patients, it is interesting to have a closer look at the other side of the spectrum of social integration. Recent studies have dealt with the question of psychiatric morbidity among homeless people. Fichter and Quadflieg (1999) determined lifetime prevalences of mental disorders in a sample of homeless men in the city of Munich, Germany, (Munich Homeless Study, MHS) using the SCID (Structured clinical interview for DSM-IV, cf. First et al. 1996) and the MMSE (Mini Mental State Examination, Folstein et al. 1975). Their data revealed a remarkably high lifetime prevalence of 93.2 % for any psychiatric disorder. The lifetime prevalence of substance-related disorders was 79.6 %, particularly alcohol dependency 72.7 %. They found high rates of additional mental disorders beside alcohol dependency: 36.4 % showed mood disorders, 16.4 % anxiety disorders, 18.9 % also abused or were dependent upon illegal

Table 6 Lifetime prevalence rates in men (current study compared to epidemiological investigations)

Disorders	Current Study %	MFS %	TACOS %	NCS %
Mood disorders	9.84	6.42	7.3	14.70
Major depression	9.84	3.96	5.7	12.70
Dysthymia	1.65	2.46	1.6	4.80
Anxiety disorders	24.59	9.07	9.3	19.20
Panic disorder	4.92	1.70	1.3[b]	2.00
Generalised anxiety dis.	–	–	0.5	3.60
Agoraphobia	8.20	2.85	0.6[c]	3.51
Social phobia	11.48	5.47[a]	1.3	11.10
Specific phobia	9.84	5.47[a]	6.5	6.70
Substance abuse[+]	0.85	'	1.0	4.40
Substance dependence[+]	–	'	0.4	9.20

[+] excluding alcohol and nicotine dependence
[a] MFS: social and specific phobia
[b] TACOS: panic disorder with and without agoraphobia
[c] TACOS: agoraphobia without panic disorder

drugs, 31.9 % met criteria for antisocial personality disorders and 12.9 % showed cognitive impairment. All in all, 59.1 % showed at least one additional mental disorder. Comparisons with our sample (lifetime prevalence rates: 24.6 % anxiety disorders, 9.4 % mood disorders in men) revealed an interesting pattern: while the prevalence of mood disorders is higher, those of anxiety disorders is lower. On the one hand a potential explanation is that the homeless could probably be characterised by high levels of resignation. They had often given up their initial aims in life. This could lead to a higher prevalence of mood disorders. On the other hand, our socially-integrated sample of alcohol-dependent patients often face situations where they are aware that they are at risk of substantially reduced life quality if they do not manage to stay abstinent (e. g. loss of partnership, job or physical health). This could lead to an increased probability of developing anxiety symptoms. However we must keep in mind that this is an unexamined post hoc explanation and that homeless people are a very heterogeneous group. Salize et al. (2001) conducted a cross-sectional field study among the homeless in Mannheim, Germany, also using the SCID and MMSE. The point prevalence for psychiatric disorders was 68.6 % (lifetime prevalence: 82.4 %). Substance use disorders were the most common disorders currently found in this sample overall (55.9 %; men: 56.8 %, women: 50 %). The prevalence of any additional mental disorder was 38.6 % (lifetime prevalence: 59.6 %) which is about the same magnitude found by Fichter and Quadflieg (1999). In an Australian study (Teeson et al. 2000), the 12-month prevalence of alcohol and illegal drug use disorders in homeless men and women was assessed in Sydney with the CIDI: 15 % of the women and 49 % of the men showed an alcohol use disorder (dependency and abuse). These are remarkably lower rates than in the Munich sample (6 months prevalence: 71 %). Unfortunately Teeson et al. (2000) did not report comorbid disorders of alcohol-dependent persons in detail. Cousineau (1997) investigated the health status of and the access to health services by homeless in Los Angeles and found lower prevalences for substance abuse disorders as well (40 %).

■ Treatment outcome

Overall, treatment was successful. Compared with results reported by Küfner and Feuerlein (1989) who performed a pioneering multi-centre evaluation study on inpatient treatment for alcoholism (21 hospitals were included, N = 1410) in Germany, our outcome data show about the same ratio of abstinent vs. relapsed patients. Six months after long-term inpatient treatments – 16 out of 21 centres offered treatment programmes lasting between four and six months – 67 % remained abstinence. 11.2 % were classified "improved" and 21.8 % were "unimproved" indicating that 33 % of all patients suffered a relapse (our data: 61 % abstinence – 13.6 % relapse without dropout – 25.4 % relapse with dropout).

Taking into account the prognostic significance of comorbid conditions, relapse rates of our alcohol-dependent men with and without any other psychiatric disorder are nearly identical (after 6 and 12 months of outpatient aftercare). Greenfield et al. (1998) showed that a diagnosis of current major depression at entry into inpatient treatment for alcohol dependence predicted shorter times to first drink and relapse in women and men.

Other studies indicate that men and women differ in the impact of depression upon return to drinking. An earlier study by Schuckit and Winokur (1972) showed that the presence of mood disorders predicted better outcomes 3 years after treatment for female alcoholics. This is consistent with our results. Rounsaville et al. (1987) investigated the prognostic significance of additional lifetime psychiatric diagnoses in 266 alcohol-dependent patients (1-year follow-up). They showed significant differences in outcome for men and women, suggesting better prognosis for alcohol-dependent women with a lifetime (including current) diagnosis of major depression. In a 3-year follow-up on the same patient sample (Kranzler et al. 1996), there were no outcome measures for which the interaction of gender by diagnoses was a significant predictor. The presence of comorbid major depression was associated with lower intensity of drinking in men and women and ASP was associated with a poorer global alcohol-related outcome.

What could be possible explanations for this pattern? Tellenbach, a representative of the classical school of German psychopathology, noted in 1974 that apart from depressive trends, people of the "Typus Melancholicus" could be characterised as being "determined by orderliness". Such people show this in their every-day lives in terms of diligence, consciousness, a high sense of duty and solidity. This pattern pervades all aspects of life such as in their occupation or interpersonal relationships, where it is expressed in terms of "achieve-for-others" or "be-there-for-others". High demands with regard to their own achievements are also a factor. In the case of comorbid alcohol-dependent patients, such a pattern could lead to situations where patients with additional affective symptoms (which is more likely for women than for men) are anxious to follow the contents learnt in therapy and, therefore, are less at risk of a relapse.

Another point that should be discussed is the amount of social support actually received by patients. Social support is obviously an important external resource that helps people to cope with stressful situations of all kinds. There is a great deal of evidence that the availability of social support is linked with a reduced risk of mental and somatic illnesses, or even mortality (see e. g. Cohen and Wills 1985, House et al. 1988, Schwarzer and Leppin 1989). This seems to be the case for alcohol-dependent patients as well. Mann et al. (1996) found that female patients with a larger network of supportive relationships are less at risk to suffer a relapse albeit the size of the strain network (cumbering relationships) is

about the same for relapsers and patients who managed to stay abstinent in the follow-up period. They further detected that the supportive network of relapsed women was significantly shrinking during the follow-up period of five years while those of abstinent females remains stable. Stroebe and Stroebe (1995) pointed out that receiving social support not only depends on its availability, but also on the occasions when help is needed. This is the reason why measures of received support are often positively related to negative life-events and symptomatology (Sarason et al. 1990). Patients who have an additional disorder may receive more social support than "pure" alcoholics, which enables them to stay abstinent more easily. However, it must be kept in mind that these are unexamined post hoc speculations.

On the other hand, in a study by Davidson and Blackburn (1998, N = 82), no significant differences were found between alcohol-dependent patients with a diagnosis of depression, and "pure" alcohol-dependent patients on any drinking outcome measure including abstinence status, alcohol consumption, pattern of drinking, or alcohol-related problems.

Relapse rates for alcoholic patients are not only influenced by state of comorbidity, but by many factors such as sample studied, age, sex, chronicity, work, interpersonal relations, severity of the alcohol dependence, and length of abstinence (Loosen et al. 1990). Comorbidity may be an additional factor but longitudinal data on the subjects in this study, and follow-up research would be needed to provide information on this point.

Early recognition of psychiatric disorders should be a promising addition to existing prevention strategies for alcohol dependence. The Diagnostic and Statistic Manual of Mental Disorders (fourth ed.) offers guidelines for differentiating alcohol-induced mental disorders from primary mental disorders. According to the DSM-IV guidelines, psychopathology should be labelled alcohol-induced if symptoms develop during, or within 1 month of, alcohol intoxication or withdrawal, and the symptoms are not better accounted for by another disorder that is not substance-induced (American Psychiatric Association 1994). With regard to the treatment implications, tailoring treatment programmes to individuals with psychiatric disorders and substance use disorders should facilitate meeting the specific management needs of this subgroup of patients.

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