

Psychiatric Comorbidity and Gender Effects in Heroin and Cocaine-Addicted Patients in Specified Long-Term Treatment and Acute Inpatient Detoxification Treatment

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Abstract

Objective: Previous reports on heroin and cocaine addicts showed drug-related and gender differences in psychiatric comorbidity, which has relevant consequences for treatment. However, studies vary substantially with respect to methods and timeframes. Studies on German patient groups are scarce.

Methods: Data on psychiatric and somatic comorbidity, substance addiction history, present intake patterns and socio-demography were obtained from 43 female ($n=11$) and male ($n=32$) heroin and cocaine addicts in acute inpatient detoxification treatment or specified long-term treatment. A European Addiction-Severity-Index (EuropASI) based centre questionnaire and the Mini-DIPS were applied.

Results: Treatment groups did not differ in psychiatric comorbidity. Female subjects, however, had a significantly higher prevalence of psychiatric comorbid diagnoses ($p<.05$), mostly anxiety and affective disorders which significantly correlated with low occupational status ($p<.05$). Patients in long-term treatment abused more other substances and had an earlier onset of regular substance abuse (in particular alcohol and cannabis) ($p<.05$).

Conclusion: Heroin and cocaine addicted females are more likely than males to have affective and anxiety disorders. Long-term treatment attenders appear to be more severely addicted (earlier onset and additional abuse) than acute treatment patients but do not differ in comorbidity. However, no axis-II diagnoses were recorded and the sample-size was small. Results should be regarded as preliminary (German J Psychiatry 2009; 12: 1-7).

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Introduction

Comorbid psychiatric disorders are a common finding in opiate- and cocaine-addicted subjects. However, many treatment units diagnostically and therapeutically, still focus exclusively on the prevalent substance disorder and detection rates of psychiatric comorbidity are low (Hu et al., 2006).

From an etiological point of view it seems reasonable to assume interactions of addiction and existing psychiatric comorbidity (Moggi et al., 1997). On the one hand, pre-existing psychiatric comorbidities may trigger the development of substance abuse and substance addiction and may consequently go in line with specific substance-related intake patterns (Khantzian, 1985) and predict drug use severity (Hesse, 2006). Relationships between certain drugs to specific psychiatric disorders may be presumed. On the other

hand substance addiction may be a biopsychosocial trigger for certain axis-I comorbidities over the time, also leading to substance and gender specific developments of disorders. A third option would be an interaction of addiction and psychiatric comorbidity due to existing biological variables modulating the development of both conditions.

Psychiatric comorbidity in opiate-addicted subjects, for instance, is a common phenomenon, concerning up to 86.9% of this group over lifetime (Rounsaville et al., 1982). Reliable data on psychiatric comorbidity in addicted adults also emerged from the Epidemiologic Catchment Area Survey (Regier et al., 1990), the National Comorbidity Survey (Kessler et al., 1994; 2005) and a number of studies with a lower number of investigated subjects (Gsellhofer and Fahrner, 1994, Hendriks, 1990, Pozzi et al., 1997, van Limbeek et al., 1992, Verthein et al., 1998). In summary, this patient group displays psychiatric comorbidity in 55-82.9% over lifetime with a 6-month prevalence ranging between 32 % and 64.4 %. The odds ratio for any other psychiatric diagnosis in addicts can be estimated 4.5 (Regier et al., 1990) and for opiate addiction in particular 6.7 (Verthein et al., 1998).

However, there is still a paucity of data from epidemiologic studies in German heroin and cocaine addicts. Taken together, results from the Munich Follow-up Study (Wittchen et al., 1991) and from outpatient addicts in Hamburg (Krausz, 1998) showed consistency with the previously mentioned investigations. Wittchen (Wittchen et al., 1991) could demonstrate that, before all, affective disorders and anxiety disorders are the most frequent comorbid psychiatric diseases in substance addicted subjects, with a lifetime prevalence of 13.9% for anxiety and 12.9% for affective disorders.

Epidemiologic studies, however, show a great diversity of applied methods. Different classificatory systems have been used, and there is a low consistency concerning the applied instruments and interviews for recording data. The time-frame in those investigations is varying enormously and a high number of trials focussed on a certain subset of addicts exclusively, namely patients in opioid maintenance programs.

Gender differences in psychiatric comorbidities in substance addicted patients have been demonstrated (Kessler et al. 1994). There are also hints that comorbid patients are seeking treatment more frequently (Robins et al., 1991). Krausz et al., (1998) could not show a difference in the prevalence of comorbid anxiety and affective disorders in an acute inpatient opioid detoxification group compared to inpatient long-term withdrawal treatment and patients in an opioid maintenance program.

However, it has been shown that addicts with an additional anxiety or affective disorder display a higher rate of multiple substance addiction and a pattern of substance abuse starting earlier in their lifetime (Strain et al., 1991).

This study was done to assess whether patient with a heroin and cocaine addiction disorder in an acute detoxification program differed in the prevalence of comorbid psychiatric disorders from long-term treatment attenders and whether subjects with comorbidity had an earlier onset of abuse and addiction, respectively, a longer duration of substance intake, and more substance-related diagnoses. Additionally, it was

analysed whether gender differences concerning comorbidity and other addictions were evident.

A secondary aim was to investigate if addicts with psychiatric comorbidity had a history of more substance related treatments and a higher number of treatment interruptions.

Finally, we investigated sociodemographic data obtained from patients, assuming that comorbidity had a negative impact on education, occupation and social relationships.

Subjects and Methods

This study was conducted in accordance to a multicentre project of the Northern German addiction research federation, and has been approved by the local ethics committees.

Subjects included had to be heroin- and / or cocaine addicted and aged between 18 and 55 years. They were recruited either from two different inpatient detoxification wards in the Departments of Psychiatry and Psychotherapy of the Universities of Hanover and Goettingen between June and September 2003, 7-10 days after acute withdrawal symptoms had ceased, or from a specified inpatient long-term-treatment unit for addicted patients attached to the University of Goettingen. The characteristics of the centres were asked by a centre questionnaire and did not show relevant differences.

Patients enrolled in the detoxification group were consecutively asked to participate after admission to the ward to control for selection biases. With regard to the long-term treatment group, all patients from the respective unit could be recruited. Subjects were interviewed with a centre-questionnaire based on the Addiction Severity Index (EUROP-ASI) (Gsellhofer and Fahrner, 1994) in order to record data on sociodemography, history of substance dependence, previous and present substance-related diagnoses and somatic disorders. Items for substance addiction and substance abuse according to DSM-IV (APA, 1998) and ICD-10 (WHO, 1993) were included in this scale. Subjects were asked for additional substance abuse over the last 30 days.

The Mini-DIPS (Margraf, 1994) was applied in all subjects checking for affective disorders, anxiety-, somatization-, stress-related, and eating disorders.

To monitor for present or previous psychotic episodes patients were interviewed with the German version of the SKID-1 subchapter on psychosis (Wittchen et al., 1997).

Interviews were carried out during a 4-month period during the summer of 2003 by specially trained professional raters. Data were evaluated anonymously.

Statistical Analysis

Main group comparisons used χ^2 -test or Fisher's exact test for categorical variables, and the t-test for continuous variables. SPSS 8.0 for windows was used for analysis. The level of significance was set a priori to $p < .05$.

Table 1. Group description and sociodemography of the study population

n, number of patients

Variable		All subjects N=43		Subjects in acute detoxification treatment		Subjects in specified long-term treatment	
		n	%	n	%	n	%
Gender	Female	11	25.6	11	35.5	0	0
	Male	32	74.4	20	64.5	12	100
Age	81-19 yrs	2	4.6	2	6.5	0	0
	20-24 yrs	9	21.0	5	16.1	4	33.3
	25-29 yrs	11	25.7	6	19.3	5	41.7
	30-34 yrs	8	18.6	7	22.6	1	8.3
	35-39 yrs	9	21.0	7	22.6	2	16.7
	40-44 yrs	2	4.6	2	6.5	0	0
	45-49 yrs	1	2.3	1	3.2	0	0
	50-54 yrs	1	2.3	1	3.2	0	0
Family status	Single	32	74.4	20	64.5	12	100
	Married	4	9.3	5	16.1	0	0
	Widowed	1	2.3	1	3.2	0	0
	Divorced	5	11.6	5	16.1	0	0
Children	Yes	14	32.6	9	29.0	5	41.7
	No	29	67.4	22	71.0	7	58.3
Education	None	8	18.6	5	16.1	3	25.0
	Secondary	21	48.8	16	51.6	5	41.7
	Secondary advanced	11	25.6	8	25.8	3	25.0
	High school	3	7.0	2	6.5	1	8.3
	University	0	0	0	0	0	0
Qualified occupation	Yes	19	44.2	13	41.9	6	50.0
	No	24	55.8	18	58.1	6	50.0

Results

43 subjects enrolled in this study (32 males and 11 females). The average age was 30.2 ± 7.4 years with a range of 18-52 years. 31 patients underwent acute inpatient detoxification treatment, whereas 12 patients were in specified long-term treatment. Of all 43 individuals included, 39 (90.7%) were addicted to heroin and 21 (48.8%) to cocaine. A high proportion of 34 (79.1%) participants were abusing cannabis. Sociodemographic data of both groups are shown in Table 1.

60.5% of all patients displayed psychiatric comorbidity. 46.5% had one comorbid disorder and 14% had multiple comorbidities. Whereas 9.7% of the acute detoxification group had 3 or more comorbid diagnoses, this was not observed at all in the long-term treatment group. However, prevalence and distribution of psychiatric comorbidity did not differ significantly between groups (61.3% vs. 58.3%, $r = .027$, $p = .86$). Overall the most frequent lifetime comorbid psychiatric diagnoses were anxiety disorders (37.2%) with 25.6% of all subjects suffering from specific phobias. 11.6% of both groups suffered from PTSD. Affective disorders could be found in 25.6% of the patients with dysthymia having the highest proportion (Table 2). Substance-induced life-time psychotic episodes could be documented in 7% of participants. Subjects with psychiatric comorbidity had undergone in- and outpatient detoxification programs and

long-term treatment numerically more often than subjects without comorbidity, however not significantly.

Subjects from the long-term treatment group had an earlier onset of any substance abuse ($d = 1.03$, $p = .012$) especially for alcohol (13.0 vs. 21.1 years, $p < .05$) and benzodiazepines (21.8 vs. 28.9 years, $p < .05$). Onset of abuse of heroin, cocaine, amphetamines, cannabis and other hallucinogenic drugs was also found to be earlier in the long-term treatment group but differences were not significant (Table 3).

A significant correlation between early onset of substance abuse and the prevalence of comorbidity could be shown for alcohol ($p < .05$). There was no significant correlation between age of onset of abuse for other substances and lifetime comorbid disorders.

Multiple substance addiction could be shown for the majority of patients (Table 4). Only 27.9% of patients had only one substance related diagnosis, in the long-term treatment group there were none at all. In the acute detoxification group those patients without comorbidities had less multiple addictions but 4 or more substance addiction diagnoses significantly more frequently (23.5% vs. 7.7%, $p < .05$). In the long-term treatment group more subjects showed 3 or more addictive disorders compared to the acute detoxification group (66.6% vs. 25.9%). Altogether, subjects in the long-term treatment group had more substance-related diagnoses ($d = 1.30$, $p < .001$) and displayed a statistical trend to more frequent substance abuse during the last 30 days ($d = .96$, $p = .007$).

Table 2. Psychiatric comorbidity (ICD-10) (multiple diagnoses possible)

Psychiatric diagnosis (ICD-10)	All subjects N=43		Acute detoxification		Long-term treatment	
	n	%	n	%	n	%
F2 Schizophrenia, schizotypic and delusional disorder	5	11.6	3	9.5	2	16.7
Present	0	0	0	0	0	0
Lifetime	2	4.6	1	3.2	1	8.3
Substance-induced psychosis – lifetime	3	7.0	2	6.5	1	8.3
F3 Affective disorders	11	25.6	9	29.0	2	16.7
F32.0 Depressive episode – mild	0	0	0	0	0	0
F32.1 Depressive episode – moderate	0	0	0	0	0	0
F32.2 Depressive episode – severe	0	0	0	0	0	0
F34.0 Cyclothymia	1	2.3	1	3.2	0	0
F34.1 Dysthymia	10	23.3	8	25.8	2	16.7
F4 Anxiety-, stress-related-, and somatoform disorders	19	44.2	12	38.7	7	58.3
F40–F41 Anxiety disorders	16	37.2	9	32.3	6	50.0
F40.00 Agoraphobia without panic disorder	2	4.7	2	6.5	0	0
F40.01 Agoraphobia with panic disorder	0	0	0	0	0	0
F40.2 Specific phobia	11	25.6	6	19.4	5	41.7
F41.0 Panic disorder	1	2.3	1	3.2	0	0
F41.1 Generalised anxiety disorder	2	4.7	1	3.2	1	8.3
F42 Obsessive compulsive disorder	1	2.3	0	0	1	8.3
F43.1 Posttraumatic-stress-disorder	5	11.6	5	16.1	0	0
F45 Somatoform disorders	1	2.3	1	3.2	0	0
F45.2 Hypochondriasis	1	2.3	1	3.2	0	0
F50 Eating disorders	1	2.3	1	3.2	0	0
F50.0 Anorexia nervosa	1	2.3	1	3.2	0	0
Prevalence of psychiatric disorders (present)	26	60.5	19	61.3	7	58.3

Sociodemographic data analysis revealed that substance addicted subjects with psychiatric comorbidity had a significantly lower educational status than those without ($r = -.334$, $p = .014$). This difference was not evident between the acute detoxification group and the long-term treatment group ($r = -.036$, $p = .80$) and both groups did not differ with regard to their occupational status. The treatment modality had no significant correlation with existing partnerships or friendships (Table 1).

Substance addicted females suffered from psychiatric comorbidities significantly more frequently than males ($r = -.26$, $p = .047$) and also displayed a higher number of psychiatric

comorbid conditions ($d = .55$, $p = .048$) (Table 5).

There was a high prevalence of somatic comorbidity in the sample. Hepatitis was a common condition among subjects with an even higher prevalence in individuals without psychiatric comorbidity. However, psychiatrically comorbid patients displayed a higher prevalence of two or more somatic diagnoses, but the results were not statistically significant.

Table 3: Onset of regular substance abuse

n, number of subjects; M, mean age in years; SD, standard deviation

Substance	All subjects		Acute detoxification		Long-term treatment	
	n	M (SD)	n	M (SD)	n	M (SD)
Alcohol	15	17.9 (7.9)	9	21.1 (8.8)	6	13.0 (1.1)
Heroin	39	23.6 (5.4)	29	24.1 (5.3)	10	22.2 (5.5)
L- or D,L -methadone	1	35.0 (n.a.)	1	35.0 (n.a.)	0	
Codein/DHC	3	29.3 (4.0)	3	29.3 (4.0)	0	
Benzodiazepines	17	26.4 (8.7)	11	28.9 (9.3)	6	21.8 (5.2)
Barbiturates	4	24.5 (5.3)	2	24.5 (7.8)	2	24.5 (5.0)
Cocaine	21	24.1 (6.2)	10	25.9 (6.5)	11	22.6 (5.6)
Amphetamines	11	18.4 (2.2)	5	18.8 (1.8)	6	18.0 (2.6)
Cannabis	34	17.2 (4.1)	23	17.8 (4.8)	11	15.73 (1.42)
Hallucinogenes	10	17.2 (2.0)	5	17.4 (2.9)	5	17.0 (1.0)

Discussion

Psychiatric comorbidity is an often underestimated problem in substance addicted patients. Although there is a reliable amount of epidemiologic data on this issue, reports differ in their diagnostic and interview methodology, substantially. There is a paucity of respective studies on German patient groups, most of which have focussed on individuals in opiate maintenance programs.

However, previous reports implied that substance dependent subjects had higher odds ratios for psychiatric comorbidity and that such individuals with psychiatric comorbidity display discrete consumatory patterns and specific clusters of comorbid disorders, namely, before all, anxiety, stress-related, and affective disorders. It had become obvious that female patients tended to have a higher number of comorbid conditions showing a correlation to earlier onset of substance abuse and a greater number of regularly consumed drugs.

This study investigated 43 patients addicted to primarily illegal substances undergoing either an acute inpatient detoxification program or a specific long-term treatment.

In agreement with previous reports we could demonstrate a comparable prevalence of ICD-10 comorbidity in both groups of patients. Patients in the acute detoxification group did not differ in the prevalence of psychiatric comorbidity compared to the long-term treatment group although it has been described that comorbid patients remained in treatment longer (Gelkopf et al., 2006). The most frequently observed comorbid diagnoses were anxiety disorders, affective disorders and PTSD. With regard to affective disorders, dysthymia was observed in most cases. This has been reported in some studies on patients in opioid maintenance programs before. What could also be demonstrated is that both groups did not differ in discrete sociodemographic variables such as education, occupational status, partnerships and friendships.

In accordance to existing data our study revealed that in this sample heroin or cocaine addicted females suffered from psychiatric comorbidity more frequently than males. Especially depression appears to be more frequent in female opiate addicts (Peles et al., 2007). Additionally, addicted patients with psychiatric comorbidity had a lower occupational status compared to those without. This may character-

ize a certain subgroup of patients with a higher risk for suicide (Phillips et al., 2004).

Subjects in the long-term treatment group had more substance-related diagnoses and consumed a higher number of substances, frequently. These patients had an earlier onset of substance abuse than individuals in the acute inpatient detoxification group.

One remarkable issue is that addicted subjects with psychiatric comorbidity had a significantly earlier onset for alcohol and benzodiazepine abuse compared to patients without any other non-substance related comorbidity. This implies that pre-existing affective- and anxiety disorders might trigger self-medication with anxiolytic drugs, namely benzodiazepines and alcohol and consequently lead to more severe addictions with illegal substances later.

One shortcoming of this study is the comparatively small sample size. Even though significant gender differences could be demonstrated, there enrolled only 11 females altogether in this investigation. These are exclusively from the acute detoxification group so that consequently the revealed gender differences relate to this group only.

Furthermore, even though we made an accurate documentation of substance addiction and sociodemography, the application of the Mini-DIPS for economic reasons could be a matter for underestimating comorbidity by neglecting certain diagnoses. Adding the psychosis subchapter of the SKID 1 made the diagnostic methodology more complete, however not entirely.

This study did not focus on personality disorders. These were shown to be a commonly associated condition in drug addicted individuals (e.g. (Brooner et al., 1997): 35% and (Teplin et al., 2004): 77%) and the prevalence of certain personality disorders, mainly antisocial personality disorder, goes in line with a greatly enhanced risk of being substance addicted.

The fact that the subjects of both groups in this trial did not differ in prevalence of comorbidity may be due to the neglect of personality disorder diagnoses. It could also be possible that impairment in educational, occupational status or relationships is more closely related to comorbid personality disorders as our groups did not show such differences.

The higher prevalence of psychiatric comorbidity in females must be regarded cautiously. The number of females en-

Table 4. Number of substance related disorders
n, number of subjects

Number of substance related disorders	Entire sample		Acute detoxification treatment		Long-term treatment		Subjects with comorbidity		Subjects without comorbidity	
	n	%	n	%	n	%	n	%	n	%
1	12	27.9	12	38.7	0	0	7	26.9	5	29.4
2	15	34.9	11	35.5	4	33.3	10	38.5	5	29.4
3	8	18.6	6	19.4	2	16.7	6	23.1	2	11.8
4	6	14.0	2	6.5	4	33.3	2	7.7	4	23.5
5	1	2.3	0	0	1	8.3	1	3.8	0	0
6	1	2.3	0	0	1	8.3	0	0	1	5.9

Table 5: Gender differences in axis-I comorbidity
SD, = standard deviation

	female mean \pm SD	male mean \pm SD	t _{emp}	p
Number of psychiatric comorbidities	1.18 (0.98)	0.69 (0.78)	- 1.696	.048
Number of anxiety disorders	0.73 (0.91)	0.41 (0.56)	- 1.390	.086
Number of affective disorders	0.36 (0.51)	0.22 (0.42)	- 0.938	.177
Number of present substance related disorders	2.00 (0.78)	2.47 (1.34)	- 1.091	.141
Number of regularly consumed substances	3.09 (1.14)	3.78 (1.93)	- 1.116	.136

rolled in this study is rather small ($n = 11$) and particularly anxiety disorders are more frequently observed in the community in females, anyway. However, results were significant despite the small subgroup of female patients.

Schuckit and Hasselbrock (1996) suggested rather complex interactions of anxiety disorders and substance abuse/dependence. The high grade of comorbidity may also be caused by temporary substance (or substance withdrawal that can last for weeks for cocaine) induced anxiety symptoms mixing with a prevalence of pre-existing anxiety disorders close to the general community.

Our data demonstrate a high prevalence of psychiatric comorbidity in patients addicted to heroin and cocaine. It stresses that long-term treatment attenders differ from acute inpatient detoxification patients with regard to the number and amount of substances consumed and the number of previous treatments and age of onset of substance abuse but not in the number of other psychiatric comorbidities. Heroin and cocaine addicted females are more prone to axis-I comorbidity compared to males. The number of comorbid disorders is also higher in women. Heroin and cocaine addicted subjects with psychiatric comorbidity are more likely to display impairments in occupational status. However, the data for this investigation have been evaluated retrospectively. A longitudinal study appears surely to be the more precise method, however difficult to perform.

In conclusion, this study demonstrates epidemiologic data comparable to previous reports, however in a rather mixed population of subjects addicted to heroin and cocaine. It emphasises the enormous impact of psychiatric comorbidity and its correlation to discrete patterns of drug intake particularly in female subjects.

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