

## Prevalence of Alcohol and Drug Abuse in Schizophrenic Inpatients

M. Soyka<sup>1</sup>, M. Albus<sup>2</sup>, N. Kathmann<sup>1</sup>, A. Finelli<sup>1</sup>, S. Hofstetter<sup>1</sup>, R. Holzbach<sup>1</sup>, B. Immler<sup>1</sup>, and P. Sand<sup>1</sup>

<sup>1</sup>Psychiatric Hospital of the University of Munich, Nussbaumstraße 7, W-8000 Munich 2, Germany

<sup>2</sup>Mental State Hospital Haar/Munich, Germany

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**Summary.** All schizophrenic patients admitted consecutively either to the Psychiatric Hospital of the University of Munich (group 1,  $N = 183$ ) or the Mental State Hospital Haar/Munich (group 2,  $N = 447$ ) between 1.8.1989 and 1.2.1990 were examined to assess prevalence estimates for substance abuse in schizophrenic inpatients. Psychiatric diagnosis were made according to ICD-9 criteria. Psychopathology and psychosocial variables were documented by means of the AMDP-protocol on admission and discharge. The diagnostic procedure included a detailed semi-structured interview concerning the individual alcohol and drug history and sociodemographic data, the Munich Alcoholism Screening Test (MALT), a physical examination and the screening of various laboratory parameters such as GGT and MCV, among others.

The results show that substance abuse is a very common problem in schizophrenics. Lifetime prevalence rates for substance abuse were estimated at 21.8% in group 1 and 42.9% in group 2, 3-month prevalence rates for substance abuse were estimated at 21.3% resp. 29.0%. Alcohol abuse was by far the most common type of abuse with prevalence estimates being 17.4% resp. 34.6%. Prevalence rates for substance abuse were much higher in the more "chronic" sample of the Mental State Hospital and in male patients. With respect to schizophrenic subtype few differences could be demonstrated with drug dependence being more common in patients with paranoid schizophrenia. The MALT proved to be a valuable screening instrument for alcohol abuse in schizophrenics with both a high specificity and sensitivity. "Dual diagnosis" schizophrenics had a significantly higher rate of suicide attempts and were less likely to be married. Possible clinical implications of these findings are discussed.

**Key words:** Schizophrenia – Alcoholism – Substance abuse

Many clinical and epidemiological studies prove that alcoholics often suffer from an additional psychiatric dis-

order such as depression, personality and anxiety disorder (Hesselbrock et al. 1985; Hirschfeld et al. 1989; Hasin et al. 1989; Roy et al. 1991a, b; Schuckit 1986a, b). A possible correlation between substance abuse and schizophrenia has long been suspected. In his 1975 review Freed reported prevalence rates for alcohol abuse in schizophrenia ranging from 3 to 63%. More recently, several authors (Alterman et al. 1980–1982; Test et al. 1985, 1989; Mueser et al. 1990) further emphasized this issue and reported a high comorbidity of alcohol or drug abuse and schizophrenia. Open questions concerning this topic have been addressed by Kesselmann et al. (1982) and Pulver et al. (1989) who pointed at the lack of valid epidemiological and clinical data on the prevalence of alcohol and drug abuse in schizophrenia, the temporal relationship between the onset of schizophrenia and an additional abuse as well as the specific psychopathology in "dual diagnosis" patients. Both clinical and epidemiological studies suggest that drug, especially cannabis, as well as alcohol abuse might be a risk factor for developing psychosis (Knudsen and Villmar 1984, Tsuang et al. 1982, Tien and Anthony 1990, Eikmeier et al. 1991). In previous studies, the lifetime prevalence of alcohol abuse/dependence in schizophrenia was estimated at 12.3% (Alterman et al. 1981), 14.2% (McLellan and Druley 1977), 14.8% (Drake et al. 1989 for alcohol dependence), 23.0% (O'Farrell et al. 1983) up to 42.8% (Barbee et al. 1989, alcohol dependence in male schizophrenics). Bernadt and Murray (1986) reported a prevalence for alcoholism in schizophrenics of 8.8% in the year preceding survey and 6.3% for schizoaffective psychosis. Drake et al. (1990) found a lifetime diagnosis of an "alcohol use disorder" of 50.3% in schizophrenic outpatients. In a recent study, Mueser et al. (1990) reported a prevalence rate for alcohol abuse of 33.0% and a lifetime prevalence of 47.0%.

A possible relationship between substance abuse and psychosis can be considered in different ways:

1. Alcohol or drug abuse could cause a schizophrenia-like psychosis. For example McLellan et al. (1979) reported a higher prevalence rate for psychosis among amphetamine users when compared with barbiturate users. Andreasen et al. (1987) reported a six-fold rate of

a schizophrenic psychosis among Swedish cannabis users as opposed to non-users.

2. A preexisting psychosis may predispose to an additional alcohol or drug abuse by which the psychiatric disorder can be masked (Bagley and Binitie 1970) leading to serious problems in differential diagnosis. Some authors suggested the "self-medication hypothesis" as an explanation for substance abuse in affective disorder and schizophrenia.

3. Substance abuse in schizophrenic patients can cause additional psychiatric symptoms such as anxiety, delusional and hallucinatory symptoms and influence course of illness.

4. Treatment-relevant variables such as social integration and compliance could be significantly impaired by an additional alcohol or drug abuse in schizophrenic patients (Miller and Tanenbaum 1989; Kofoed et al. 1986; Drake and Wallach 1988). This is supported by the finding that among city shelters, patients with substance abuse and psychotic patients predominate (Priest et al. 1985; Susser et al. 1989).

These findings together with the obvious lack of valid data on the co-morbidity of alcohol/substance abuse and schizophrenia were reasons for us to perform a prospective study on the prevalence of alcohol and drug abuse in schizophrenic inpatients as well as on the psychopathology, psychosocial integration and other sociodemographic variables in "dual diagnosis" patients. This article will focus on the prevalence of alcohol/drug abuse in schizophrenia and possible clinical implications.

## Methods

All psychiatric inpatients admitted consecutively either to the Psychiatric Hospital of the University of Munich or the Mental State Hospital Haar between 1. August 1989 and 1. February 1990 were included in the study. During that period 183 patients with a schizophrenic psychosis were admitted to the former (= group 1) and 447 schizophrenic patients to the latter (= group 2). The psychiatric diagnoses were made according to ICD-9 criteria; psychopathology and sociodemographic data were assessed by means of the AMDP protocol (Guy and Ban 1982) on admission and discharge. In addition, the alcohol and drug abuse was assessed by means of a detailed semi-structured interview concerning all relevant variables such as the individual drinking history, past psychiatric admissions and somatic as well as psychosocial variables possibly affected by either alcohol or drug abuse. Details of the diagnostic instruments and statistical analyses have been described elsewhere (Soyka et al. 1992). Furthermore, the "Munich Alcoholism Test", a diagnostic instrument with both high reliability and validity for alcoholism (Auerbach and Mechertsen 1981, Gorenc et al. 1984, Feuerlein et al. 1977) was performed for each patient. The diagnostic process included a somatic and neurological examination and the screening of various laboratory parameters such as GGT, GOT, GPT and MCV on admission.

## Results

Patient characteristics are given in Table 1. Group 2, the sample derived from the Mental State Hospital, represented

**Table 1.** Patient characteristics

	Group 1 N	Group 2 N
Number of patients	183	447
Male/female ratio	70/113	237/210
Paranoid subtype	56 (30.6%)	196 (43.8%)
Male/female ratio	19/ 37	117/ 79
Schizoaffective	55 (30.0%)	112 (25.1%)
Male/female ratio	19/ 36	39/ 73
Residual type	27 (14.7%)	75 (16.8%)
Male/female ratio	9/ 18	34/ 41
Mean age (years)	36.1 (18-73)	38.9 (17-78)
Males	32.2 (19-73)	37.2 (17-78)
Females	38.5 (18-71)	40.9 (19-73)
Duration of psychosis (years)	7.3 (1-36)	11.2 (1-50)
No. psychiatric admissions	4.2 (1-16)	5.9 (1-40)
Sociodemographic characteristics		
Married	48 (25.3%)	76 (17.0%)
Employed	128 (69.9%)	212 (47.4%)
Housewife	24 (13.1%)	46 (10.2%)
Unemployed/retired/other	31 (16.9%)	189 (42.2%)

resented a more "chronic" patient group with a higher rate of past psychiatric admissions, among others, and was therefore analysed separately from group 1, the sample derived from the psychiatric hospital at the University of Munich.

### Prevalence Rates

The prevalence rates for any kind of addiction and abuse of or dependence on legal or illegal drugs were estimated as lifetime and 3-month prevalence. As demonstrated in Table 2 and 3, prevalence rates in group 2 were much higher than in group 1 with alcohol abuse or dependence being by far the most common kind of addiction. Alcohol and drug abuse were significantly more common in male than in female patients in both groups. The lifetime prevalence rate for any kind of addiction (abuse or dependence) was 21.8% in group 2 and 42.9% in group 1, the prevalence rate for females was 15.0% resp. 31.4%. The lifetime and three-month-prevalence rates for any kind of dependence were much lower.

When comparing the estimated prevalence rates in both groups the higher percentage of male patients in group 2 must be taken into consideration. Looking only at the male subgroup in both groups, the 3-month prevalence rates for alcohol abuse were both 30%.

The "Munich Alcoholism Test" identified 81.2% resp. 90.3% of the schizophrenics with alcohol abuse/dependence correctly. False positive results were very rare (Table 4).

### Abuse Pattern

The prevalence rates in group 1 being very low, the abuse pattern of schizophrenic patients only of group 2 is given in detail. Apart from ethanol, cannabis, cocaine and amphetamines were the most common substances

**Table 2.** Prevalence of alcohol and drug abuse/dependence in schizophrenic inpatients – Results of Group I

Diagnoses	Total		Male		Female		Significance <i>P</i>
	<i>N</i>	(%)	<i>N</i>	(%)	<i>N</i>	(%)	
Total	183	100	70	100	113	100	
Any abuse/dependence							
Lifetime	40	21.8	23	32.8	17	15.0	<0.01
3-Month	39	21.3	22	31.4	17	15.0	<0.01
Dependence only							
Lifetime	13	7.1	8	11.4	5	4.4	ns
3-Month	12	6.5	7	10.0	5	4.4	ns
Alcohol abuse/dependence							
Lifetime	32	17.4	21	30.0	11	9.7	<0.001
3-Month	32	17.4	21	30.0	11	9.7	<0.001
-dependence only							
Lifetime	9	4.9	5	7.1	4	3.5	ns
Now	9	4.9	5	7.1	4	3.5	ns
Abuse/dependence of legal drugs							
Lifetime	11	6.0	5	7.1	6	5.3	ns
3-Month	10	5.5	4	5.7	6	5.3	ns
-dependence only							
Lifetime	4	2.1	3	4.2	1	0.9	ns
3-Month	3	1.6	2	2.8	1	0.9	ns
Abuse/dependence of illegal drugs							
Lifetime	10	5.5	6	7.1	5	4.4	ns
3-Month	10	5.5	5	7.1	5	4.4	ns
-dependence only							
Lifetime	2	1.1	2	2.8	0	–	ns
3-Month	2	1.1	2	2.8	0	–	ns

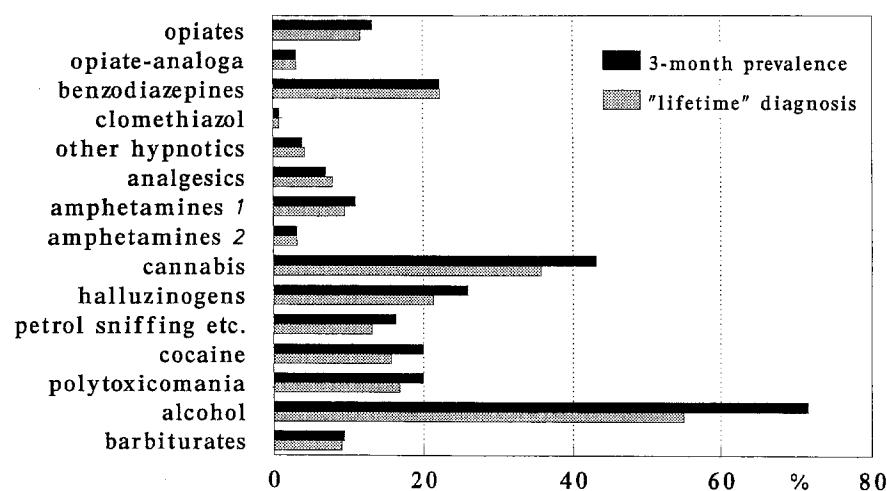
**Table 3.** Prevalence of alcohol and drug abuse/dependence in schizophrenic inpatients – Results of Group II

Diagnoses	Total		Male		Female		Significance <i>P</i>
	<i>N</i>	(%)	<i>N</i>	(%)	<i>N</i>	(%)	
Total	447	100	237	100	210	100	
Any abuse/dependence							
Lifetime	192	42.9	126	53.1	66	31.4	<0.001
3-Month	130	29.0	96	40.5	34	16.2	<0.001
Dependence only							
Lifetime	96	21.5	64	27.0	32	15.2	<0.01
3-Month	59	13.2	46	19.4	13	6.1	<0.001
Alcohol abuse/dependence							
Lifetime	155	34.6	109	46.0	46	21.9	<0.001
3-Month	93	20.8	71	30.0	22	10.5	<0.001
-dependence only							
Lifetime	60	13.4	42	17.7	18	8.6	<0.01
3-Month	34	7.6	27	11.4	7	3.3	<0.01
Abuse/dependence of legal drugs							
Lifetime	66	14.7	33	13.9	33	15.7	ns
3-Month	39	8.7	24	10.1	15	7.1	ns
-dependence only							
Lifetime	29	6.4	14	5.9	15	7.1	ns
3-Month	13	2.9	7	3.0	6	2.9	ns
Abuse/dependence of illegal drugs							
Lifetime	64	14.3	51	21.5	13	6.2	<0.001
3-Month	51	11.4	44	18.6	7	3.3	<0.001
-dependence only							
Lifetime	30	6.7	25	10.5	5	2.4	<0.001
3-Month	23	5.1	21	8.9	2	1.0	<0.001

**Table 4.** Results of the “Munich Alcoholism Test”

	Group I		Group II	
	N	(%)	N	(%)
Total N	183	100	447	100
Patients with score 11 or more points	23	12.5	108	24.2
“False positive” results (score $\geq 11$ points)	2	1.1	5	1.1
Patients with alcohol abuse/dependence (lifetime diagnosis)	32	100	155	100
Score $\geq 11$ points	21	65.6	103	66.5
Patients with alcohol abuse/dependence (3-month-prevalence)	32	17.4	93	20.8
Score $\geq 6$ und $< 11$ points	5	15.6	15	16.1
Score $\geq 11$ points	21	65.6	69	74.2
Score $\geq 6$ points	26	81.2	84	90.3
Average score in patients with alcohol abuse/dependence	19.30 ( $\pm 10.65$ )		15.40 ( $\pm 8.03$ )	

Munich Alcoholism Test: Score  $\geq 11$  points confirming alcoholism, score  $\geq 6 < 11$  points suggesting alcoholism

**Fig. 1.** Abuse pattern in “dual diagnosis” schizophrenics (results of group 2). 1 stimulant, 2 weight reducer

legal drugs (see Fig. 1). The number of patients taking hallucinogenes was surprisingly high. Among legal substances, benzodiazepines were by far the most commonly abused drug. While 89 of the 155 patients with a lifetime history of alcoholism had no history of an additional drug abuse, an isolated drug abuse was rarely found (Fig. 2). None of the patients abused antiparkinsonian medication.

#### Prevalence Rates in Schizophrenic Subgroups

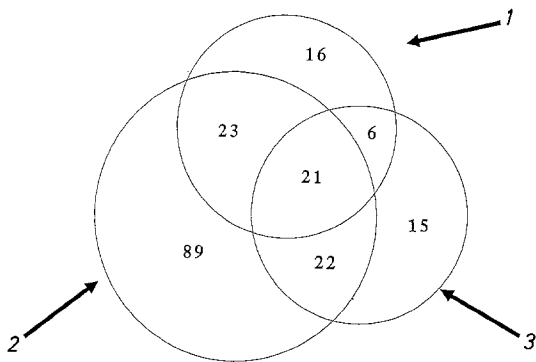
In both groups of schizophrenic patients the paranoid subtype was the most common schizophrenic psychosis, followed by schizoaffective and residual type (Table 1). While for the schizophrenic patients in group 1 no statistically significant differences could be demonstrated, schizophrenic patients with paranoid subtype from the larger group 2 did have a significantly higher lifetime (9.6% vs. 4.3%,  $P < 0.05$ , Table 5) and 3-month (8.2% vs. 2.7%,  $P < 0.01$ ) prevalence rate for drug dependence and a higher 3-month prevalence for any kind of dependence (16.6% vs. 10.8%,  $P = 0.08$ ) than the other schizo-

phrenics in this group, whereas no significant differences could be demonstrated for the variables such as alcohol abuse as listed in detail in Tables 2–4. Patients with schizoaffective psychosis did not differ significantly from other schizophrenics. Patients with chronic (residual) type schizophrenia had the highest lifetime prevalence rates for any kind of abuse/dependence (54.7% vs. 40.6%,  $P < 0.05$ ) in comparison with non-residual schizophrenics.

#### Order of Onset of Psychosis and Addiction

Firstly, a drug abuse was found nearly exclusively in schizophrenics younger than 30 years. All 11 patients with drug abuse in group 1 and 43 of the 64 patients in group 2 were younger than 30 years.

Secondly, a detailed analysis of the data of the larger group 2 showed that the onset of addiction in general was later than the onset of a psychosis, especially in female patients (Table 6). An additional substance abuse more often followed than preceded onset of psychosis. The onset of psychosis had to be defined retrospectively



**Fig. 2.** Comorbidity of alcohol and substance abuse lifetime diagnoses in 192 schizophrenic inpatients (group 2); 1 abuse of legal drugs (*n* = 66); 2 alcohol abuse (*n* = 155); 3 abuse of illegal drugs (*n* = 64)

**Table 5.** Differences in prevalence rates for alcohol/substance abuse among schizophrenic subtypes (results of Group 2)

	Paranoid subtype		Other schizophrenics		<i>P</i>
	<i>N</i>	(%)	<i>N</i>	(%)	
	196	100	251	100	
Any kind of addiction					
Lifetime diagnosis	32	16.3	27	10.8	0.08
Drug addiction					
Lifetime diagnosis	19	9.6	11	4.3	<0.05
3-Month prevalence	16	8.2	7	2.7	<0.01
	Residual type		Other schizophrenics		
	75	100	372	100	
Any kind of abuse					
Lifetime diagnosis	41	54.7	151	40.6	<0.05

**Table 6.** Age at onset of psychosis, duration of illness and number of psychiatric admissions in schizophrenics with and without the diagnosis of an alcohol/drug abuse (results of group 2)

	Schizophrenics		<i>P</i>
	With abuse <i>N</i>	Without abuse <i>N</i>	
Age at onset of psychosis (years) in patients with			
– Any kind of abuse (lifetime)	27.1 (±10.4)	28.4 (±9.9)	
– With alcohol abuse ( <i>N</i> = 155)	27.4 (±10.3)		
– Any kind of abuse (3-Month-prevalence, <i>N</i> = 130)	27.3 (±10.9)		
Alcohol abuse ( <i>N</i> = 93)	28.0 (±10.8)		
Illegal drugs ( <i>N</i> = 51)	20.8 (±4.8)		
Duration of illness (years)	10.8 (±9.5)	11.4 (±9.9)	
Age at examination (years)	37.9 (±11.5)	39.8 (±13.2)	
Age at begin of abuse (years)	29.7 (±10.7)		
– Alcohol abuse	30.3 (±10.3)		
– Illegal drugs	22.0 (±4.6)		
Duration of abuse at examination (years)			
– All patients	8.3 (±6.9)		
– Alcohol abuse	8.9 (±7.6)		
– Drug abuse	5.9 (±3.4)		
No. of psychiatric admissions	5.79 (±6.1)	4.60 (±5.7)	<0.05

symptoms were reported. Since many patients had been admitted repeatedly to psychiatric hospitals the past psychiatric history could be assessed quite accurately. With respect to alcohol abuse (155 patients) in 85 (54.8%) of the cases psychosis preceded, in 62 (40.0%) followed, the onset of alcohol/drug abuse, in 8 (5.2%) patients both disorders had a simultaneous onset. In patients with onset of psychosis prior to begin of alcohol abuse (mean age 38.5 ± 11.5 years) onset of psychosis had been 14.8 (± 10.2) years, onset of abuse 4.9 (± 4.5) years before examination. In patients with alcohol abuse prior to onset of psychosis (mean age 38.2 ± 10.9 years), onset of abuse had been 11.9 (± 8.2) years, onset of psychosis 5.3 (± 5.6) years before examination.

Interestingly, 36% of the 74 patients with first manifestation of schizophrenic psychosis fulfilled the criteria for lifetime diagnosis of an additional alcohol/drug abuse, the 3-month prevalence rate was 31%. Alcohol abuse/dependence (23%) was more common than abuse of illegal (13%) or legal drugs (13%).

*Sociodemographic Parameters*

When compared with patients without addiction (Tables 7 and 8), both the numbers of married individuals and descended children were found to be markedly smaller among schizophrenics with an additional alcohol/drug abuse. Also, patients with a history of alcohol/drug abuse had made significantly more suicide attempts than those without (Table 9) and had been homeless significantly more often in the past.

**Discussion**

The results of the study suggest a high prevalence rate for alcohol and drug abuse among schizophrenic patients.



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