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Mental illness in a representative sample of homeless men in Munich, Germany

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Abstract The aim of the study was to reliably assess the 6-month and lifetime prevalence of mental illness according to DSM-III criteria in a representative sample of homeless individuals in the city of Munich, Germany. Because the characteristics of the homeless population were unknown, we first conducted a pre-sampling survey to determine a proportionate allocation of the main interviews in three nested sampling strata. For the pre-sampling we approached 300 males, who appeared to be homeless, for a brief interview; of these, 271 were homeless according to our definition and were allocated to one of three sectors ("shelter", "meal services", "outdoor"). Thereafter, we randomly sampled homeless males in these three strata until the indicated allocations were met. The Diagnostic Interview Schedule (DIS) was used for diagnostic classification according to DSM-III in the main interview. Results from this representative urban sample show that the mean age of the homeless males was 43 years; most were unmarried or divorced, had a relatively low level of school education and a long duration of homelessness. Based on the main interviews with 146 homeless males the following lifetime prevalence rates were obtained: 91.8% for substance use disorder (82.9% alcohol dependence), 41.8% for affective disorders, 22.6% for anxiety

disorders and 12.4% for schizophrenia. Of the homeless males in Munich, 94.5% had at least one DIS/DSM-III axis I diagnosis. Six-month prevalence data is also presented. Results are compared with those of a very similar study on homeless individuals in Los Angeles, which also used DIS/DSM-III diagnoses. In comparison with representative community samples in the United States and in Germany, mental illness was much more frequent among homeless individuals in Munich as well as in Los Angeles. Implications for health care planning are discussed.

Introduction

The question of how many homeless people are mentally ill has generated media attention and political concern. In response a growing number of epidemiological studies has examined this question, mostly in the United States, Canada, Great Britain, Scandinavia and Australia. In doing so they have had to address a number of methodological challenges that face researchers on homelessness: how to define homelessness; how to draw a representative sample of a population that is extremely difficult to enumerate or list; how to define and assess mental illness; how to collect valid and reliable data from homeless people. While the majority of studies about homelessness and mental illness have been based on selected, non-representative samples usually from shelter populations (Arce et al. 1983; Crystal 1982; Fischer et al. 1986; Ladner et al. 1986), several methodologically more refined studies have been carried out in more recent years (Koegel et al. 1988; Herrman et al. 1989). Over time, research efforts have collectively made great strides in the methodological challenges. Rossi (1987) and Burnam and Koegel (1988) have discussed sampling designs. Studies have increasingly used standardized instruments of a known reliability and validity for the assessment of mental illness. Calsyn et al. (1993) have shown that reliable reports can be obtained from homeless individuals. As a result of these advances, methodological noise in estimates of mental illness has been substantially reduced.

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In contrast to developments in several other countries, there is very little research on homelessness and mental illness in Germany, except for some studies on selected shelter or hospital samples (Eikermann et al. 1992; Kujat 1991; Rieger and Wesel 1992; Stössel and Locher 1991 (recently reviewed by Rössler et al. 1994 and by Greifenhagen and Fichter, *in press*). Unfortunately, although the problem of homelessness is now increasingly visible and recognized, there is a lack of epidemiologically founded solid data upon which to base policy development and the planning of relevant services.

This study was designed to begin filling the gap. The major aim of the present study was the assessment of mental disorders according to DSM-III criteria in a representative sample of homeless individuals in the city of Munich. Other aims were (a) to compare our data on homeless males with data obtained on homeless individuals in Los Angeles; the methodological approach was very similar to that used by Koegel et al. (1988) in a study on mental illness among homeless individuals in the inner city of Los Angeles; and (b) to compare data on mental illness in homeless individuals with those of representative community studies using DSM-III criteria. The main hypothesis was that homeless individuals in the city of Munich would have higher prevalence rates than community residents for most specific mental disorders assessed in the study.

Subjects and methods

Sample

A sampling procedure very similar to that described by Burnam and Koegel (1988; see also Koegel and Burnam 1988 and Koegel et al. 1988) for homeless people in Los Angeles was used. For the present study it was the primary objective to obtain a representative sample of homeless males in a large German city (Munich). Because the characteristics of the population of homeless people in Munich (e.g. size, composition) were largely unknown, a presampling procedure was used. It was conceptualized that homeless people live in one of the following three overlapping sectors: (a) those who make use of shelters, missions or voucher hotel-room beds; (b) those who make use of free meal services; and (c) those who congregate on the streets or other outdoor areas of the city of Munich. The aim of the presampling was to find out the distribution of homeless persons over the city of Munich, and thus to obtain the proportion of homeless men in each of the three sectors. The presampling was performed in all three sectors (in- and outdoor) and each homeless person was – based on the information obtained in the presampling interview – assigned to one sector. The presampling was conducted to determine a proportionate allocation for the main interviews in three nested sampling strata. We then randomly sampled homeless males in these three strata until the allocations indicated by the presampling were met (see below). In order to be classified as homeless, a person had to be homeless (“no-home criterion”) for at least the 30 days preceding the interview (“time criterion”) and he had to have stayed in Munich during this time period (“location criterion”). A short presampling interview served to find out whether or not a person met this definition of homelessness and to which sector he belonged. The three sectors were defined hierarchically in the order listed above, which means that a person who mentioned that he had stayed in a shelter, mission or voucher hotel-room bed at least once in the preceding 30 days was counted as belonging to the “shelter sector”, even if he also used free meal services or had stayed over night at outdoor

areas. Similarly, a person who had lived mainly in an outdoor area, but occasionally used free meal services, was counted as belonging to the “meal service sector”. The “outdoor sector” thus contains only persons who used neither shelter, mission or voucher hotel-room beds nor free meal services during the 30-day time period preceding the presampling. A person classified as belonging to the “shelter sector” had within the past 30 days slept in a shelter, mission or voucher hotel-room bed. A person classified as belonging to the “meal service sector” had made use of one or several soup kitchens or similar institutions within the past 30 days, but had not used a shelter. Persons from the “outdoor sector” had slept outdoors or in an unfinished or old deserted house within the preceding 30 days and had not used either shelter or meal services. Thus, vagrants were not excluded from the sample, because in order to qualify as homeless according to our definition, a person had to use the “shelter” or “meal sector” a minimum of one time in the preceding 30 days or to belong to the “outdoor sector”.

Because we expected that a considerable proportion of the homeless males might be found in the “outdoor sector”, people in this sector were also included in the presampling. It was, however, anticipated that sampling of individuals would be fairly difficult in the “outdoor sector”. We therefore first sampled those persons who used shelters, missions or voucher hotel beds, then moved on to the “meal service sector”, in which we sampled only those persons who used meals, but not beds, and finally we moved on to the “outdoor (autark) sector”. A good cooperation was established with the social workers (“streetworkers”) who had been working with homeless individuals in Munich over the years. With their knowledge and experience it was possible to compile a list of all relevant places where homeless from the outdoor sector might be found. In addition to results obtained in the presampling, statistics of the existing institutions (shelters, missions, cheap hotels and the meal service sector) were used. This information was used for plausibility checks. With the help of streetworkers we were able to resolve some discrepancies; some persons approached more than once during presampling (and the main interview) were excluded post hoc.

Because seasonal variations and shifts between the sectors were expected, one presampling was done in summer (June 1988) and another in winter (December 1988). Seasonal differences in the three sectors were observed; they were, however, less pronounced than expected. Of 128 homeless males identified during the summer presampling, 20 (15.6%) were allocated to the “shelter sector”, 65 (50.7%) to the “meal service sector” and 43 (33.5%) to the “outdoor sector”. In the winter presampling 143 males identified as homeless according to our definition were allocated in 35 cases (24.4%) to the “shelter sector”, 65 belonged to the “meal service sector” (45.5%) and 43 (30.0%) to the “outdoor sector”.

Final sampling and selection for main interview

The final sample was drawn from the universe of facilities in the “shelter sector” (1), the “meal service sector” (2) and the “outdoor sector” (3). The presampling survey had been designed to reveal the relative proportions of homeless people in each sector. Interviews were proportionally allocated to persons in the three sectors on the basis of the results of the presampling survey adjusted for overlap between locations. For the final selection of the main sample the results of the summer and winter presampling were taken into account. The 172 persons of the sample for the main interview were chosen such that 20.0% belonged to the “shelter sector”, 48.6% to the “meal service sector” and 31.7% to the “outdoor sector” (percentage for summer presampling plus percentage for winter presampling divided by two). Six of 11 shelter facilities for homeless males in Munich and eight of ten free meal facilities co-operated in the study. Selection of persons to be interviewed at each location was random. Of the 172 homeless males who were approached for the main interview, 146 (85%) participated. The distribution of these 146 homeless males across the three sectors was as follows: 17.1% were from the “shelter sector”, 49.3% from the “meal service sector” and 33.6% from the “outdoor sector”.

Thus, the three sectors were represented appropriately and the final random sample of homeless males who could be interviewed. The face-to-face main interviews lasted on the average 1.5 h; a small financial incentive was offered to enhance the participation (92% of homeless females approached for the interview agreed to participate). The main interviews were conducted from January 1989 to April 1990.

For comparison of prevalence rates for mental illness in the homeless with community data, three additional sources of information were used: (a) data from the Upper Bavarian Study (DSM-III diagnoses by physicians; Fichter 1990); (b) data from the Munich Follow-up Study (MFS; Wittchen et al. 1992); and (c) data from the Los Angeles site (LAECA; Koegel et al. 1988; Burnam et al. 1987; Hough et al. 1983; Karno et al. 1987) of the Epidemiological Catchment Area (ECA) Program (Regier et al. 1988). The data were adjusted for age and gender of the Los Angeles study on homeless individuals. The MFS and the LAECA used the same interview as we did in the sample of homeless individuals in Munich (DIS) and were also able to produce DIS/DSM-III diagnoses for specific mental disorders (as in our study with homeless males). The reasons for choosing these particular community studies for comparison were that (a) all three used DSM-III diagnostic criteria, (b) we had the data sets of the UBS and MFS in order to calculate data comparable with the Munich homeless sample and (c) the LAECA had already been adjusted for comparison with the Los Angeles homeless sample by Koegel et al. (1988). In addition to these data we had comparison data on social characteristics published by the German Federal Bureau of Statistics (Statistisches Bundesamt, 1989). Because both studies on homeless individuals (Munich and Los Angeles) used a very similar methodology of sampling, and because in both studies the same instruments were used, a direct comparison between the American and the German sample on homeless individuals is possible.

Instruments

As in the Los Angeles study on homeless individuals, diagnoses in our study on homeless men in Munich were made on the basis of

the "Diagnostic Interview Schedule" (DIS; Robins et al. 1981, 1985). Both the recent (6-month) and the lifetime prevalence of mental disorders were assessed (A.G., M.K., J.W.). Because some items for diagnosing antisocial personality were by definition fulfilled in homeless persons, this diagnosis was assessed and computed in its usual form and a reduced form excluding these items. The same version of the DIS that was used in the Los Angeles study of homeless individuals (DIS version 3) was translated into German and used in our study. The DIS allows the diagnosis of specific mental disorders according to DSM-III. The computer algorithm for deriving diagnoses was the same as in the Los Angeles study on homeless individuals and thus (except for antisocial personality) the same which had been used in the Los Angeles ECA study (Burnam et al. 1987). For analysing the DIS data from all studies in which it was used [homeless samples in Munich and Los Angeles; community samples (LAECA, MFS)], exclusion criteria of DSM-III diagnosis were ignored. In addition to the DIS, information was obtained on sociodemographic variables, social support, use of medical and other services and the development of homelessness in each individual. The Mini Mental State Examination (MMSE; Folstein et al. 1975) was used to assess cognitive impairment.

Results

Sociodemographic characteristics

Data on sociodemographic characteristics of the homeless sample in Munich are shown in Table 1.

The age group from 26 to 45 years (57.5% in homeless males vs 30.0% in the total male population in Germany (Statistisches Bundesamt)) and the age group from 46 to 60 years (39.0 vs 21.8%) were overrepresented in the homeless men in Munich. The average age of the homeless men in Munich at the time of assessment was 43.0

Table 1 Sociodemographic characteristics of homeless adults in Munich. MFS Munich Follow-up Study

	Homeless men (n = 146)		Population in in Germany ^a	MFS men (community; n = 230) ^b
	N	%	%	%
Age (years)				
18–25	2	1.4	12.8	0.0
26–45	84	57.5	30.0	56.2
46–60	57	39.0	21.8	39.3
61–65	2	1.4	4.8	4.5
> 65	1	0.7	10.9	0.0
Mean	43.0		–	41.3
SD	8.7		–	6.3
Range	19–68		–	26–64
Marital status				
Never married	80	54.8	27.1 ^c	20.0
Married	1	0.7	65.2 ^c	51.7
Separated	4	2.7	–	6.1
Widowed	6	4.1	3.5 ^c	5.2
Divorced	55	37.7	4.2 ^c	17.0
School education				
Very low (left school without qualification)	19	13.0	} 68.9 ^c	0.9
Low ("Volksschule" = 9 years)	100	68.5		50.4
Medium ("Mittlere Reife" = 10 years)	15	10.3		21.3
High ("Abitur" = 13 years) or more	7	4.8	12.9 ^c	27.4
No information	5	3.4	0.0	0.0

^aFigures from the Statistisches Bundesamt

^bFrom Wittchen et al. 1992

^cPopulation ages ≥ 20 years

Table 2 Onset and duration of homelessness and employment status

	Homeless men (n = 146)	
	N	%
Age at onset of first homelessness (years)		
≤ 20	20	13.7
21–30	37	25.3
31–40	50	34.2
41–50	27	18.5
51–60	8	5.5
Older than 60	0	0
No information	4	2.7
Duration of homelessness (years)		
< 1	7	4.9
1– 2	23	16.2
3– 5	40	28.2
6–10	24	16.9
11–20	32	22.5
> 20 years	16	11.3
Employment status (multiple answers possible)		
Registered job	1	0.7
Unregistered job	43	29.4
Working and (reduced) welfare	47	32.2
Jobless, searching	58	39.7
Jobless, nonsearching	23	15.7
Unable to work	7	4.8
On pension	58	39.7
Other	47	32.1
Unknown	1	0.7

years. Concerning marital status, unmarried and divorced men were overrepresented among the homeless males in Munich. On average, homeless males in Munich also had less school education: Of the 146 homeless men, 13.0% had left the lowest grade school without qualifying for graduation.

Homeless history and lifestyle

Data on the onset and duration of homelessness and the employment status at the time of assessment are shown in Table 2. On average, males became homeless at age 33.7 ± 10.4 (SD). The duration of homelessness (first episode of homelessness to present) was quite long with an average of 9.0 ± 8.1 (SD) years. Of the homeless males, 13.7% had become homeless twice and 18.5% had become homeless three or more times with intervals of being settled in interim phases. These data point to risks of relapse, to difficulties in reintegration and rehabilitation possibly associated with mental disorders. With respect to employment at the time of assessment, a large proportion of the homeless males in Munich were unsuccessfully searching for a job (39.7%), lived from welfare and worked occasionally (32.2%), had an unregistered job (29.4%) or were jobless and had resigned themselves to

unemployment (15.7%; multiple answers possible). On average, homeless males had been without a job for 19 months; many had unregistered occasional or part-time jobs only. For homeless males the longest time period without a job (lifetime) was on average 5.5 years. The longest time period of continuous employment was 84 months for homeless males. The annual income in Deutsche Marks as reported by the subjects was as follows: below 20000 for 89.7% and below 10000 for 67.8% (homeless females 100 and 81%, respectively; 18.8% of females earned their living from prostitution). At the time of the main interview (lifetime in parentheses), 42.7% (26.0%) lived exclusively from welfare; 17.8% (8.9%) received unemployment compensation money; 2.7% (0.7%) had a pension and were not able to work in any job; 0.7% (6.8%) received welfare and a pension; 1.4% (52.0%) received welfare and unemployment compensatory money (for homeless females the corresponding figures are 59.4% (43.8%) on welfare; 9.4% (6.2%) unemployment compensation and 9.4% (6.2%) inability to work in any job (pension).

Applications to the city for placement in a more permanent home were made by homeless males never in 46.7%, and at least once in 53.3%. Only 37.7% of those who had applied for a more permanent, cheaper home had received a positive answer, but had not been accepted by tenants.

From what is known we must assume that the characteristics of the homeless populations differ over time and location. At the time of assessment (1989–1990) homeless males in Munich were quite settled – different from what the German term “*nichtsesshaft*” (vagrant) implies: 78.7% of the homeless males in Munich had lived in the city during the 12 months preceding the interview; 12.3% had lived in Munich and one other town or city during that time and the remaining persons had lived in three or more towns or cities (2.8% of them in more than ten places). For homeless males in Munich the preferred place to sleep at night during the preceding 4 weeks (in parentheses during the past years) was in 70.5% outdoors (50.0%), in 19.9% (8.9%) in shelters, in 18.5% (7.5%) in some other person's home, in 13.7% (7.5%) in unfinished new or broken old houses. Contact with family members was very reduced. Only 76 of 137 homeless males (55.5%) reported no contact at all with family members. Nine homeless males had no living relatives. Of homeless males, 19.7% had occasional contacts with one person of the family; 24.8% of the males reported contacts with several family members. The quality of the social contact with family members was overall reported to be poor in homeless males as well as females.

Conclusive data on the *development and aetiology of homelessness* can hardly be obtained in a cross-sectional study. According to the subjective report of homeless males in Munich, the reasons for their homelessness were financial problems (65.1%), lack or loss of work (49.3%), divorce (8.2%), other problems in the family (11.0%), psychiatric problems (17.1%), alcohol problems (37.0%), drug problems (2.7%) or general health problems (12.3%); multiple responses were possible.

Only 4.7% of the males considered their homelessness a matter of lifestyle.

Life out on the street can be dangerous. Of 146 homeless males in Munich, 59 (40.4%) have been a *victim of violence* resulting in physical injury; 33.6% of the homeless males have been the victim of robbery; 28.8% of the homeless males have been the victim of theft; 9.6% of sexual harassment or abuse.

Homeless individuals have contact with the police quite frequently; however they infrequently contact the police themselves because of fears of getting into further trouble. Of the homeless males in Munich, 78.1% have been arrested at least once; in most cases the reasons were misdemeanors (train ride without ticket, small incidents of theft explicable in the context of their marginal living situation). However, a minority have major criminal histories: Of the homeless males in Munich, 18.5% have been sentenced because of a major crime such as robbery or physical injury.

Not all persons identified in our project as homeless defined themselves as homeless: 11.6% of the males did not. Of the 129 males who considered themselves as homeless, the following problems were mentioned most frequently: having no home in 55.0%, loneliness in 24.4%, having no money in 20.3%, and living an insecure, anxious life in 22.5% (multiple responses possible).

Prevalence of mental illness

The lifetime prevalence rates for DIS/DSM-III mental disorders are shown in Table 3 for homeless males in Munich as compared with homeless males in Los Angeles and in comparison with two community samples (MFS, Germany; LAECA, USA). The lifetime prevalence rates for homeless males in Munich (and those of homeless individuals in Los Angeles) are considerably higher than

Table 3 Lifetime prevalence rates for mental disorders according to DIS/DSM-III in homeless adults

Disorder categories (diagnoses and DSM-III codes)	Germany					Los Angeles		
	Homeless men in Munich (<i>n</i> = 146)		MFS men in community sample ^a			Homeless ^b (<i>n</i> = 328)	LAECA (<i>n</i> = 3,055) ^c	
	<i>N</i>	%	<i>N</i>	%	Risk ratio A/B	%	%	Risk ratio C/D
Schizophrenic disorder	18	12.4	2	0.7	17.7	13.7	0.5	27.4
Schizophrenia	18	12.4	2	0.7	17.7	13.1	0.5	26.2
Schizophreniform disorder	0	0	—	0	—	0.6	0.0	—
Affective disorder	61	41.8	19	6.4	6.5	29.5	8.8	3.4
Manic episode (bipolar)	46	31.5	0	0	—	10.6	0.6	17.7
Major depressive episode	27	18.5	13	5.8	3.2	18.3	6.3	2.9
Dysthymia	8	5.5	7	2.5	2.2	9.3	4.0	2.3
Cognitive Impairment	13	8.9	0	—	—	≥ 3.4	—	—
Anxiety disorder	33	22.6	27	(9.1)^f	—	17.6	8.9	2.0
Panic disorder	19	13.0	5	1.7	7.6	8.4	1.0	8.4
Generalized anxiety disorder	21	14.4	6	3.2	4.5	14.3	8.5	1.7
Substance use disorder	134	91.8	46	21.2	4.3	69.2	30.9	2.2
Alcohol abuse	12	8.2	51	21.0 ^g	4.3	62.9 ^g	23.9	2.6
Alcohol dependence	121	82.9						
Drug abuse	1	0.7	4	1.4 ^h	12.7	30.8 ^h	13.9	2.2
Drug dependence	25	17.1						
Any DIS/DSM-III axis I diagnosis	138	94.5^e	69	30.3	3.1	68.7ⁱ	—	—
Antisocial personality disorder (symptoms specific for homeless people missing) ^d	6	4.1	—	—	—	20.8	4.7	4.4

NOTE: DIS code 2–5 used; exclusion criteria not used; also, dashes mean not assessed or calculated

^aPrevalence estimates weighted; from Wittchen et al. 1992

^bFrom Koegel et al. 1988

^cLos Angeles household (ECS) sample adjusted for genders, age and ethnic background on the basis of the LA homeless sample

^dThe following three symptoms were not considered in the assessment of the antisocial personality disorder: (1) frequent job change during the past 5 years; (2) unemployment lasting 6 months or longer during the past 5 years, not justified by illness; (3) homelessness during at least 1 month. All persons who met the criteria

for antisocial personality disorder also have a diagnosis on DSM-III axis I

^eIncludes cognitive impairment, manic episode, major depressive episode, dysthymia, substance abuse (alcohol and drugs), schizophrenic disorders and anxiety disorders

^fIncluding simple, social and agoraphobia

^gIncluding prevalence rates for alcohol dependence (303.9 ×)

^hIncluding prevalence rates for drug dependence (304.0 × 9 ×)

ⁱOverall prevalence according to Farr et al. (1986) containing all diagnoses mentioned above, including the antisocial personality disorder

those in community residents in Germany (MFS) and Los Angeles (LAECA). This was true for each specific diagnosis and subsequently each main diagnostic category (schizophrenic disorders, affective disorders, cognitive impairment, anxiety disorders, substance use disorders) and the global prevalence (any DIS/DSM-III axis I diagnosis). The only axis II diagnosis, antisocial personality disorder modified to achieve reasonable results for homeless individuals, was surprisingly low for homeless males in Munich (4.1%), whereas it was slightly higher in the Los Angeles community study LAECA (4.7%) and considerably higher for homeless individuals in Los Angeles (20.8%). If all DSM-III symptoms for antisocial personality are considered, the lifetime prevalence for antisocial personality is still considerably lower for homeless males in Munich (9.6%) as compared with homeless individuals in Los Angeles (31.4%). No data are available from the two community studies.

Comparing DMS-III axis I diagnoses between homeless males in Munich vs homeless individuals in Los Angeles, very similar rates were obtained for schizophrenia, major depressive episode and generalized anxiety disorder. Higher lifetime prevalence rates were observed for homeless males in Munich as compared with homeless individuals in Los Angeles for manic episodes (and therefore also for affective disorders), panic disorders (and therefore also for anxiety disorders), alcohol abuse/dependence and for the overall prevalence (any DIS/DSM-III axis I diagnosis; 94.5 vs 68.7%). Prevalences for the following diagnoses were higher for homeless individuals in Los Angeles as compared with homeless males in Munich: dysthymia, drug abuse/dependence (and, as mentioned above, antisocial personality disorder).

Comparing lifetime prevalence rates of homeless individuals (in Munich or Los Angeles) with community samples (MFS or LAECA) resulted in risk ratios larger than 1

Table 4 Six-month prevalence rates of DSM-III mental disorders in homeless adults

Disorder categories (diagnoses and DSM-III codes)	Germany					Los Angeles ^b		
	Homeless men in Munich (n = 146)		Upper Bavarian community sample (n = 690 ≥ 18 years) all degrees of severity ^a			Homeless (n = 328)	Los Angeles homeless sample (LAECA; n = 3,055)	
	N	%	N	%	Risk ratio A/B	%	%	Risk ratio C/D
Schizophrenic disorder	14	9.6	4	0.6	16.0	11.5	0.3	38.3
Schizophrenia	14	9.6	4	0.6	16.0	11.5	0.3	38.3
Schizophreniform disorder	0	0	0	0.0	—	0.0	0.0	—
Affective disorder	35	24.0	18	2.6	9.2	20.9	3.4	6.1
Manic episode (bipolar)	16	11.0	1	0.1	110.0	7.5	0.2	37.5
Major depressive episode	24	16.4	1	0.1	164.0	15.5	3.1	5.0
Dysthymia	8	5.5	16	2.3	2.4	—	—	—
Anxiety disorder	21	14.4	4	0.6	24.0	13.9	3.3	4.2
Panic disorder	16	10.9	1	0.1	109.0	5.3	0.4	13.3
Generalized anxiety disorder	7	4.8	0	0.0	—	10.6	3.0	3.5
Phobia	—	—	4	0.6	—	—	—	—
Cognitive Impairment	13	8.9	21	3.0^e	3.0	3.4	0.7	4.9
Substance use disorder	108	74.0	79	11.4	6.5	31.2	11.5	2.7
Alcohol abuse	6	4.1	65	9.4	0.4	—	—	—
Alcohol dependence	98	67.1	11	1.6	41.9	6.5	27.1	7.9
Drug abuse	0	0	2	0.3	—	—	—	—
Drug dependence	15	10.3	1	0.1	103.0	25.7	10.1	5.0
Any DIS/DSM-III axis I diagnosis	118	80.8^d	139	20.1	4.0	—	—	—
Antisocial personality disorder (symptoms specific for homeless people missing) ^c	4	2.7	—	—	—	17.4	0.8	21.8

NOTE: DIS code 2–5 used, exclusion criteria not used; also, dashes mean not assessed or calculated

^aDSM-III diagnoses for total sample (males and females) including phobias, obsessive-compulsive disorders and somatization disorder

^bFrom Koegel et al. 1988

^cThe following three symptoms were not considered in the assessment of the antisocial personality disorder: (1) frequent job change during the past 5 years; (2) unemployment lasting 6 months or

longer during the past 5 years, not justified by illness; (3) homelessness during at least 1 month. All persons who met the criteria for antisocial personality disorder also had a diagnosis on DSM-III Axis I

^dIncludes cognitive impairment, manic episode, major depressive episode, dysthymia, substance abuse (alcohol and drugs), schizophrenic disorders and anxiety disorders

^eMarked and severe cases only

ranging between 1.7 and 27.4, indicating that the overall prevalence and the prevalence of specific mental disorders was considerably higher for homeless individuals than for persons living in the community.

The 6-month prevalence rates for DSM-III mental disorders are shown in Table 4. Whereas the lifetime overall prevalence rate (any DIS/DSM-III axis I diagnosis listed in Table 4) was 94.5% for homeless males in Munich, the 6-month prevalence was 80.8%. Overall, the same picture emerges for the 6-month prevalence as compared with the lifetime prevalence rates for homeless males in Munich. The most prevalent main diagnostic groups were substance use disorders (74.0%), affective disorders (24.0%), anxiety disorders (14.4%), schizophrenia (9.6%), and marked or severe cognitive impairment [8.9%, as measured by the Mini Mental State Exam (MMSE) score ≤ 23 points].

Comparing homeless males in Munich with homeless individuals in Los Angeles, very similar rates were obtained for major depressive episode (16.4 vs 15.5%), schizophrenia (9.6 vs 11.5%), and drug abuse/dependence (10.3 vs 10.1%). Whereas lifetime rates for generalized anxiety disorder were the same, the 6-month prevalence rate was higher for homeless individuals in Los Angeles (10.6%) as compared with homeless males in Munich (4.8%). Higher 6-month prevalence rates were observed for homeless males in Munich as compared with homeless individuals in Los Angeles for the following diagnostic groups: manic episode (11.0 vs 7.5%), panic disorders

(10.9 vs 5.3%) and, most of all, for alcohol abuse/dependence (71.2 vs 27.1%). In accordance with the lifetime data, the 6-month prevalence for the only axis II disorder (antisocial personality disorder, modified) was considerably higher for homeless individuals in Los Angeles (17.4%) and for homeless males in Munich (2.7%).

The 6-month prevalence rates for homeless individuals (Munich as well as Los Angeles) were considerably higher than for the community samples in Upper Bavaria (UBS) and in Los Angeles (LAECA). The risk-ratio quotients for different disorders ranged from 2.0 to 164.0 indicating strikingly higher prevalence rates for homeless people as compared with individuals in the community. No 6-month prevalence data was available for the Munich Follow-up Study (MFS). The overall 6-month prevalence rate (any DIS/DSM-III axis I diagnosis listed in Table 4) was four times higher for homeless males in Munich than for males in the Upper Bavarian community sample.

Data on psychiatric comorbidity of DSM-III mental disorders for homeless males in Munich is shown in Table 5. Only 19.2% had no DSM-III mental disorder in the 6 months preceding the interview (lifetime 5.5%). Of all homeless individuals interviewed, 45.9% had one 6-month diagnosis only (lifetime 41.1%); 23.3% had two diagnoses (lifetime 29.4%); 8.2% had three diagnoses (lifetime 18.5%); 3.4% (lifetime 5.5%) had four diagnoses. Thus, psychiatric comorbidity was very high for homeless males in Munich. The majority of homeless individuals

Table 5 Psychiatric comorbidity of DSM-III mental disorders for homeless men in Munich ($n = 146$)

	Lifetime		Six months	
	<i>N</i>	%	<i>N</i>	%
No diagnosis	8	5.5	28	19.2
One diagnosis only	60	41.1	67	45.9
Substance use disorder	57	39.0	60	41.1
Affective disorder	2	1.4	3	2.1
Anxiety disorder	1	0.7	1	0.7
Schizophrenia	0	0.0	2	1.4
Cognitive impairment	0	0.0	1	0.7
Two diagnoses	43	29.4	34	23.3
Substance use disorder/affective disorder	26	17.8	15	10.3
Substance use disorder/anxiety disorder	6	4.1	6	4.1
Substance use disorder/schizophrenia	5	3.4	2	1.4
Other combinations	6	4.1	11	7.5
Three diagnoses	27	18.5	12	8.2
Substance use disorder/affective disorder/anxiety disorder	16	11.0	6	4.1
Substance use disorder/affective disorder/schizophrenia	5	3.4	3	2.1
Other combinations	6	4.1	3	2.1
Four diagnoses	8	5.5	5	3.4
Substance use disorder/affective disorder/anxiety disorder/schizophrenia	5	3.4	3	2.1
Substance use disorder/affective disorder/anxiety disorder/Cognitive impairment	2	1.4	2	1.4
Other combinations	1	0.7	0	0.0
Total	146	100.0	146	100.0

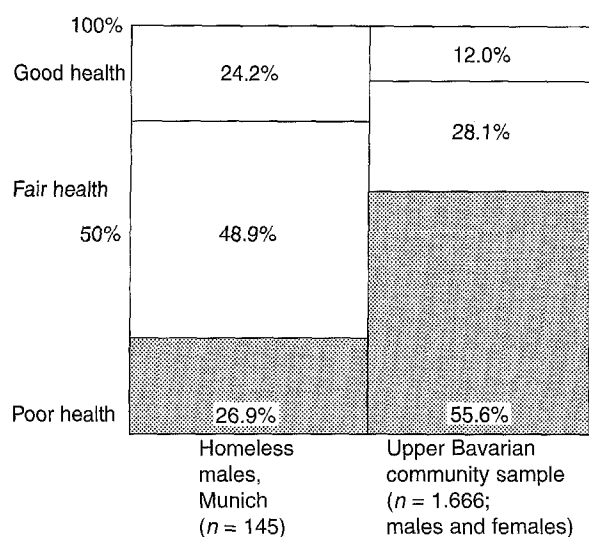


Fig. 1 Subjective rating of one's own health (in percentage of sample). (From Fichter 1990)

with two or more diagnoses had a combination of substance use disorder (mainly alcoholism) and affective disorder or anxiety disorder or schizophrenia. Of 146 homeless males, 51 (34.9%) had two or more psychiatric diagnoses for the 6 months preceding the interview (lifetime 78 of 146 = 53.4%). Of the 51 persons with a 6-month psychiatric comorbidity, only 3 had no substance use disorder (lifetime only one person).

Chronic major mental illness

In accordance with Koegel et al. (1988), we defined chronic major mental illness as follows:

1. Included are homeless individuals with a lifetime diagnosis of schizophrenia with the exception of those who did not experience schizophrenic symptoms in the 3 years preceding the interview ($n = 1$).
2. All persons with an affective disorder were included except those who (a) reported a single episode only, (b) those whose episodes did not meet DIS severity criteria, (c) had not experienced an episode in the 3 years preceding the interview and (d) those who had only dysthymia.
3. Chronic substance abuse was defined to include individuals with a lifetime diagnosis of substance abuse or dependence with the exception of those whose substance abuse or dependence has been of less than 1-year duration and those who had experienced no substance abuse/dependence during the 3 years preceding the interview. According to this definition, 24.7% of the homeless males in Munich had chronic major mental illness (chronic affective or chronic schizophrenic disorders). Nearly all of these (22.6% of the total sample) also showed chronic substance abuse or dependence. An additional 63.7% of the sample were chronic substance users with no affective or schizophrenic disorders, whereas 11.6% showed no evidence of a chronic mental disorder as defined above.

Considering the high psychiatric morbidity among homeless males in Munich, it could be expected that they rate their health as poor, poorer than the more well-to-do (and mentally more healthy) people in the community. The reverse appears to be true as shown in Fig. 1. Whereas only 26.9% of the homeless males in Munich rate their own health as poor, 55.6% of the community sample in Upper Bavaria does so. These data indicate a discrepancy between the actual (mental) health and the subjective perception and rating of it. It seems that, despite their poor mental and somatic health, homeless males showed more indifference to their fates than a random sample of people in three communities in Upper Bavaria.

Service utilization

Table 6 shows data on the use of medical and other services by homeless males in Munich. Of the homeless males in Munich (81.2% of the homeless females) 50.3% had at least one inpatient treatment because of mental problems (lifetime) or substance use. Homeless females had a much higher use of the following inpatient facilities: psychiatric hospital, general hospital and drug addiction

Table 6 Use of medical and other services

	Homeless men ($n = 146$)	
	<i>N</i>	%
Inpatient treatment: percentage of sample with at least one inpatient treatment because of mental or substance use problems (lifetime; multiple answers possible; $N = 145$)		
General hospital	50	34.5
Psychiatric hospital	40	27.6
Alcoholism rehabilitation hospital	17	11.7
Drug addiction rehabilitation hospital	4	2.8
Social rehabilitation	13	9.0
Other	7	4.9
Total	73	50.3
Use of inpatient psychiatric services (lifetime)		
Never	106	72.6
Once	27	18.5
2–5 times	9	6.2
6–10 times	1	0.7
> 10 times	3	2.0
Total	146	100.0
Percentage of sample with at least one outpatient visit or contact (lifetime; multiple answers possible)		
Psychiatrist	23	15.8
Other physician	43	29.5
Counselling for drug problems	15	10.3
Counselling for alcohol problems	23	15.8
Self-help group	22	15.1
Priest	26	17.8
Confidant (friend)	43	29.5
Social worker	62	42.5
Other	12	8.3

rehabilitation hospital. The use of inpatient services did not differ between males and females concerning the use of inpatient alcoholism rehabilitation programs. In line with the general trend in medicine and psychiatry, females also used outpatient facilities more frequently and talked more frequently about their mental problems with a confidant.

Discussion

Many studies published on the issue of mental illness in homeless individuals have serious methodological shortcomings, because they lack epidemiologically appropriate sampling strategies and reliable methods for case identification. Very many studies on the issue assessed selected samples of convenience such as persons using shelters or free meal services. Abdul-Hamid et al. (1993) concluded in their critical review that studies are needed which address needs for particular services, which use rigorous sampling methods and concise and consistent definitions of homelessness. Because there is usually no way of counting or registering all individuals of a homeless population, procedures must be employed which lead to a good estimation of the number, distribution and composition of the homeless population in a certain geographical area.

In the present study we used refined methods of sampling and standardized diagnostic instruments in order to obtain reliable and replicable results. Its design has been inspired significantly by the study by Koegel et al. (1988) assessing the prevalence of mental disorders among homeless individuals in the inner city of Los Angeles. Because our study on homeless individuals in the city of Munich and the study by Koegel et al. (1988) in Los Angeles used practically the same methods for sampling and case identification, results are directly comparable.

One major finding of the present study is that the prevalence of mental illness among homeless males in Munich was very high; the 6-month prevalence rate of DSM-III mental disorders (any DIS/DSM-III axis I diagnosis listed in Tables 3 and 4) was 80.8% and the lifetime prevalence rates were 94.5%. The most frequent specific DSM-III mental disorders were alcohol abuse/dependence (6-month rate 71.2%, lifetime rate 91.1%) affective disorders (6-month rate 24.0%, lifetime rate 41.8%), anxiety disorders (6-month rate 14.4%, lifetime rate 22.6%), drug abuse/dependence (6-month rate 10.3%, lifetime rate 17.8%), and schizophrenia (6-month rate 9.6%, lifetime rate 12.4%). Especially the high rates for alcohol dependence (6-month rate 67.1%, lifetime rate 82.9%) and the manic episode/bipolar disorder (6-month rate 11.0%, lifetime rate 31.5%) deserve mentioning. Germany is among the countries with the highest per capita alcohol use per year and alcohol is easily accessible and less expensive than in many other countries. This can be seen as a main explanation for the very high rates of alcohol dependence for homeless males in Munich. High rates for alcohol abuse/dependence (but not quite as high) were seen

among male community residents in the Upper Bavarian sample. The concurrence of substance use problems and other mental health problems constitutes a big challenge for designing appropriate treatment facilities for those affected (Koegel and Burnam 1988; Smith et al. 1993). In our Munich homeless sample most persons with an affective disorder, anxiety disorder or schizophrenia also had a diagnosis of substance use disorder (mainly alcohol dependence). According to the findings by Koegel et al. (1988), presence of a dual psychiatric diagnosis such as schizophrenia and substance abuse constitutes a major risk to remain homeless or to become homeless again.

In comparison to 32 homeless females in Munich (Greifenhagen et al., in preparation) homeless males in Munich were older at the time of assessment and the time of the first onset of homelessness, showed longer periods of unemployment, more frequently had slept outdoors and less frequently had contact with a family member, whereas prevalence rates for mental disorders were even a bit higher for homeless females.

According to their own report, the onset of a mental disorder occurred largely before the first episode of homelessness, less frequently at the same time and only in a smaller proportion was homelessness considered to have occurred before the onset of a mental disorder. In interpreting this data the retrospective assessment must, however, be taken into account. Sullivan et al. (1995) have recently reported on the sequencing of homelessness and the onset of mental illness among the mentally ill homeless from the longitudinal "Course of Homelessness Study" and concluded that regardless of the presence or absence of mental illness, homeless persons shared childhood histories of social disadvantage, poverty, family disruption and abuse. Among the mentally ill homeless, one third became homeless prior to becoming ill and were characterized by the highest likelihood of minority status and childhood in impoverishment and disruption. Two thirds of the mentally ill homeless had become homeless after the onset of mental illness. This group came from relatively more privileged backgrounds, were more likely to be diagnosed as schizophrenic or bipolar, and had an especially high prevalence of comorbid substance abuse.

Although there are considerably more homeless mentally ill men than women, the prevalence rate of schizophrenia has been reported to be higher among homeless women than homeless men in Sydney, Australia (Virgona et al. 1993). According to North and Smith (1993) most homeless women in their sample had young children in their custody and were – as in our study – younger than homeless men, more likely to be members of a minority group and more often dependent on welfare; homeless women had been homeless for a shorter period of time, had spent more time in shelter locations and had less frequent histories of substance abuse, incarceration and felony conviction. The group of homeless women assessed, however, was heterogeneous and solitary women (without children in their custody), were more likely to be white and had been homeless longer and more frequently had a history of alcoholism and schizophrenia.

When comparing prevalences between the sample of homeless males in Munich and homeless individuals in Los Angeles, it must be kept in mind that the Los Angeles sample contains males and females, whereas our Munich sample described herein contains males only. Unfortunately, it was not possible to conduct new calculations of the Los Angeles data. Because the percentage of female subjects in the Los Angeles sample was fairly low, it does, however, make sense to compare the data of the two studies especially because the same case identification was used. A comparison leads to the following conclusions: In both studies all DIS/DSM-III disorders assessed were substantially higher than in household or community samples in Germany (MFS) or Los Angeles (LAECA). Approximately the same prevalence rates were obtained for both homeless samples for major depressive episode, generalized anxiety disorder (lifetime) and schizophrenia. Homeless males in Munich showed higher prevalence rates for manic episode, panic disorder, and most of all, for alcohol abuse/dependence. On the other hand, homeless individuals in Los Angeles showed higher rates for antisocial personality disorder, drug abuse/dependence (lifetime) and dysthymia. Possible reasons for explaining the differences are easy accessibility of alcohol in Germany for the high alcoholism rate, differences in sample composition (the Los Angeles sample also contained females) and methodological artefacts.

In order to come to a conclusion as to whether or not specific mental disorders are more prevalent among homeless individuals, a comparison with community/household samples is needed. We have presented data from three community studies, which all supply DSM-III diagnoses for representative samples in Germany or the United States. Ideally, a community study using the same methods for case identification should have been conducted at the same time parallel to the assessments of homeless individuals in Munich. Because this was not possible for several reasons, we chose the three community studies, to which we had direct access, for comparison. Some limitations in comparing these three community samples with our Munich homeless sample must be mentioned:

1. The MFS sample of males is small and can only give rough estimates for the prevalence of selected specific mental disorders in the general population; the sample was compiled first in 1974 and may thus not be representative for the population in 1989, when the homeless persons were assessed in Munich; also, the DIS version II (not version III, as in our Munich homeless sample) was used.
2. The data from the Upper Bavarian Study (UBS) is based on a rural sample; the prevalence of mental disorders has been shown to be somewhat lower in rural as compared with urban samples (Blazer et al. 1985); in order to enhance comparability, we have calculated the prevalence data for males only for the MFS and the UBS for the present comparisons.
3. The Los Angeles ECA Study is adjusted for age, gender and ethnic background to the Los Angeles, but not the Munich, homeless sample.

In all three community samples used for comparison (MFS, UBS and LAECA) prevalence rates for specific mental disorders were, however, so much lower than in the Munich homeless sample as well as the Los Angeles homeless sample. Therefore, the main conclusion appears justified that 6-month and lifetime prevalence rates for DSM-III mental disorders – especially for substance use disorders, affective disorders, anxiety disorders and schizophrenia – are much higher than in the community. In this regard our findings are consistent with other homeless/community comparisons, which generally concluded that the prevalence of mental illness among homeless individuals is higher than in the general population (Crystal and Goldstein 1984; Rossi et al. 1987; Roth and Bean 1986; Morse and Calsyn 1986; Scott 1993; Susser et al. 1989; Herrman et al. 1989; Gelberg et al. 1988; Fischer and Breakey 1987, 1991; Turner et al. 1992).

There are differences in the health care systems between Germany and California. Because the reduction in hospital beds in psychiatry has been less drastic over the past decades in Germany (Lamb 1993), and because of a relatively good health care and welfare system in Germany, which (in theory) is open for homeless individuals, it could be assumed that the proportion of the mentally ill among all homeless individuals would be smaller in Germany than in Los Angeles, because they receive better care. Our data show that the prevalence of mental illness, and thus the proportion of mentally ill homeless among all homeless individuals, was higher in Munich than in Los Angeles. In the United States where poor people lack the kind of health care and welfare resources offered in Germany, poverty is probably the main factor in explaining homelessness. The increase in unemployment and poverty deriving from unemployment in Germany in recent years makes plain that homelessness has become more apparent and of more political concern quite recently. The question remains unanswered as to why – different from the United States – health care resources in Germany are not used for those homeless individuals who need medical or psychiatric treatment to the extent that they should. A possible explanation, at least in part, could be that the most prevalent psychiatric disorders among Munich homeless men (alcohol abuse/dependence, substance abuse/dependence, manic episodes and schizophrenia) are frequently associated with a lack of motivation for treatment or an inability to make use of the services offered. Our data and those of others point to the necessity of creating more effective concepts for the treatment of mental disorders in homeless individuals. The discrepancy between high prevalence rates of mental (and other) illness and relatively low service use points to weaknesses in our present systems for health and social care for homeless individuals in Germany. A larger number of (Anglo-American) studies has pointed out that the present services for the homeless are ill-equipped to deal with the complexity of problems of homeless individuals. This is especially true for homeless persons with multimorbid and chronic conditions (Koegel and Burnam 1988), and when there are additional severe social, financial or other problems as well. It has been

stressed in the literature that there is a need for services specialized for homeless individuals and that programmes should contain many more *outreach* components (Nordentoft 1994; Harris et al. 1994; Scott 1993). In comparison with treated schizophrenics, homeless schizophrenics have been shown to have more positive symptoms, a higher rate of concurrent diagnosis of substance abuse and higher rates of antisocial personality disorder (Caton et al. 1994). Recently, North and Smith (1993) reported low mental health service utilization by homeless individuals independent of health insurance status.

There are several limitations of our study on homeless males in Munich. The sample size of homeless males in Munich assessed ($n = 146$) is larger than in many other studies, but is too small for a further breakdown of some of the results. Also, although the majority of the shelters and free meal service institutions cooperated in the study, some did not. Finally, it is not known how many homeless males were in a prison or in a hospital at the time of assessment, and these persons may possibly differ concerning the prevalence of mental illness from those assessed, which would reduce the representativeness of the sample. This is the first study in Germany attempting to assess a representative sample of homeless males in a big city. However, if homeless males in hospitals or prisons differ from our sample, they would be likely to have a higher, rather than lower, prevalence of mental illness. Considering the very high prevalence rates which we found in our sample, this sampling bias – if it exists – can hardly be strong. Currently, we are conducting a larger and longitudinal study on the prevalence and course of mental disorders among homeless individuals in Munich within the Munich public health research divisions. Results of this study will give complimentary data on this issue.

Only very few homeless individuals in Munich mentioned problems in food supply. At the time of assessment and presently there appear to be no severe shortages in food or clothing. Homeless males seem to have a quite lonely life with only few and superficial contacts to family members or other persons; they feel insecure and threatened, and have major problems in finding more prominent housing.

In some publications the hypothesis has been advocated that mental illness causes homelessness. The finding of the "Cause of Homelessness Study" (Sullivan et al. 1995) that the onset of mental illness preceded homelessness in two thirds of the mentally ill homeless at first glance seems to support this notion. However, in the same study it has been reported that the origins of homelessness may be found in disruptive childhood experiences, predating both the onset of homelessness and mental illness. The "mental illness causes homelessness hypothesis" does not explain why one third became homeless prior to becoming mentally ill, and it seems too narrowminded, neglecting other possible causes of a complex process. Morse (1992) has discussed six levels of social organization in the causation of homelessness: cultural, institutional, community, organizational, group and individual level. Within the institutional level economic factors

(such as unemployment), housing, social assistance, mental health policy, policy towards alcohol and other psychotropic substances, and the criminal justice system should be seen in context when issues of causation are discussed. In order to tackle the complex problem of mental and medical illness in homeless individuals, an interdisciplinary, multilevel concept and approach is needed. Such a sophisticated approach will not only help to improve health status, but may also increase the chances of becoming more respected members of the society. In designing future programs for (mentally ill) homeless individuals (Linn and Gelberg 1989; Schutt and Garret 1992; Robertson and Greenblatt 1992; Katz et al. 1993) a better understanding of the complex process and development of mental illness and homelessness, and the interactions, will be very helpful.

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