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RITA M. CONDREN, JOHN O'CONNOR AND ROY BROWNE

# Prevalence and patterns of substance misuse in schizophrenia

A catchment area case-control study

## AIMS AND METHOD

To identify the prevalence and patterns of substance misuse in patients with schizophrenia in a catchment population in Dublin, and to compare this with that of a control group from general practice. Ninety-nine patients and 75 controls were interviewed using a semi-structured technique. Urine samples were obtained from all patients and controls were analysed for illicit substances.

## RESULTS

Prevalence of illicit substance and alcohol misuse was similar among patients (illicit substances, 45%; alcohol, 33%) and controls (illicit substances, 43%; alcohol, 25%). Patterns of substance misuse were similar, apart from ecstasy, which was used more commonly by controls. Discrepancies were found between histories of drug use and urinalysis.

## CLINICAL IMPLICATIONS

Illicit substance misuse in patients with schizophrenia may mirror usage in the general population, rates of misuse reflecting cultural factors rather than illness and patterns of misuse reflecting geographical variations in the availability of drugs. A combination of screening methods is more effective than the use of a single source of information.

Comorbid psychotic illness and substance misuse has been the subject of increasing research and concern, mainly in the USA and more recently in Europe. Substance misuse has been reported to be the most prevalent comorbid condition associated with schizophrenia (Boyd et al, 1984; Regier et al, 1990). The Epidemiological Catchment Area (ECA) study revealed a life-time prevalence of 47% for substance misuse in patients with schizophrenia, of which 33.7% met criteria for an alcohol

disorder and 27.5% for another drug misuse disorder (Regier et al, 1990). Patients with schizophrenia were 4.6 times more likely to have drug or alcohol problems than the general population. A number of investigators in Europe have found differing prevalence rates of comorbid psychotic illness and substance misuse, all less than that found in the ECA study (Bernadt & Murray, 1986; Soyka et al, 1993; Duke et al, 1994; Hambrecht & Hafner, 1996; Menezes et al, 1996). The widely differing reported



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prevalence rates may be owing to a number of variables including definitions, location and treatment setting (El-Guebaly, 1990). Researchers in Europe have not attempted to compare the rate of substance misuse in their patient cohort with a group of normal controls, and therefore the reported "high prevalence rates" of substance misuse in their patient populations may in fact reflect the prevalence rate in the general population. Consequently, conclusions regarding the reasons why patients with schizophrenia misuse drugs may be less relevant because they may do so for the same reasons as those without psychiatric illness.

Among the possible motivations for substance misuse among patients with schizophrenia, it has been argued that they tend to 'self-medicate' their symptoms by preferentially using certain types of substances (Khantzian, 1985). Schneier & Siris (1987), in a review of the literature, suggest that hallucinogens, stimulants and cannabis are used preferentially and that alcohol, hypnotics and opiates are used less frequently. However, other authors claim that alcohol use is far more common (Drake et al, 1990; Cuffel et al, 1993). Cuffel et al (1993), in their analysis of 231 patients with schizophrenia, found that 54% of the sample were not substance misusers, 31% misused primarily alcohol and cannabis and 14% were polysubstance misusers. It may be that geographical variation in the availability of illicit drugs accounts for much of the discrepancy between studies (Smith & Hucker, 1994). Only the assessment of the use of specific classes of substances by patients with schizophrenia can address this question. The aim of this study was to investigate the prevalence of substance misuse among a representative sample of patients with schizophrenia in a catchment area in Dublin, to compare it with that of a matched control group and to examine patterns of substance use among the two groups.

### The study

One hundred patients with an ICD-10 (World Health Organization, 1992) diagnosis of schizophrenia who were seen consecutively in an out-patient clinic of a psychiatric

hospital in South Dublin were asked to participate in the study. The hospital had a catchment population of 100 000 covering both suburban and inner-city areas. The patients' case notes were reviewed and the patients were interviewed using a semi-structured technique. Demographic and clinical details were obtained and patients were questioned using the European modification of the Addiction Severity Index (McLennan et al, 1980) to establish use of illicit substances and alcohol. Substance misuse was defined as use of illicit substances at least once monthly during a period of at least 1 year. Each patient was asked to supply a sample of urine before leaving the clinic. All urine samples were assessed for the presence of opiates, benzodiazepines, methadone, cannabis, amphetamines, cocaine and hallucinogens. Urinalysis was carried out within a short period of collection of the sample. All samples were analysed using proprietary analysis kits based on EMIT (enzyme multiplied immunoassay test) techniques. Presence or absence of the tested substances was recorded on the basis of cut-off points used within the drug treatment services for the catchment area from which patients were recruited.

Controls were recruited from two general practices from within the same catchment area. Patients and controls were matched for age and gender. Control recruitment was carried out by one of the authors (R.C.) in the practices at the same surgery time on consecutive weeks, when 85 consecutive patients in the waiting area were asked if they would participate in the study. Those with a past psychiatric history were excluded. The same interview technique was carried out for the control population and all were requested to provide a urine sample.

Data were collated using SPSS for Windows version 6 (Norusis, 1993). All continuous variables were tested using independent *t*-testing. Discrete variables were compared using Pearson  $\chi^2$  testing. Matched discrete data were compared using McNemar testing, and unmatched interval data were compared using Mann-Whitney *U*-testing.

**Table 1. Prevalence of substances used by patients and controls based on history**

Substance	Cases: positive history n (%)	Controls: positive history n (%)	$\chi^2$	d.f.	P
Cannabis	42 (42)	30 (40)	0.10	1	0.75
Alcohol (> 21 units)	33 (33)	19 (25)	1.3	1	0.25
Hallucinogens	15 (15)	10 (13)	0.12	1	0.74
Amphetamines	13 (13)	9 (12)	0.05	1	0.82
Benzodiazepines	12 (12)	10 (13)	0.06	1	0.81
Cocaine	11 (11)	11 (15)	0.49	1	0.48
Heroin	7 (7)	9 (12)	1.24	1	0.27
Ecstasy	4 (4)	15 (20)	11.2	1	0.0008
Methadone	3 (3)	7 (9)	3.13	1	0.08
Analgesics	2 (2)	4 (5)	1.4	1	0.24
Multi-substance use	18 (18)	8 (11)	1.9	1	0.17



## Findings

### The sample

A total of 99 patients with schizophrenia and 75 controls were included in the study. One patient and 10 controls refused to participate. There was no significant difference between the mean age of cases (45.2 years) and controls (41.6 years) ( $T=1.65$ ,  $P=0.1$ ). Gender differences existed between the case and control populations, with 60 male cases (61%) and 35 male controls (47%); however, differences were not statistically significant ( $\chi^2=33$ , d.f.=1,  $P=0.08$ ). There was no significant difference between cases and controls as regards social class of origin ( $Z=-0.43$ ,  $P=0.67$ ).

### History of substance misuse in cases and controls

Comparing cases to controls as regards a history of substance misuse (excluding alcohol below a threshold of 21 units/week), 45 (45%) patients gave a past history of misuse compared to 32 (43%) controls ( $\chi^2=0.13$ , d.f.=1,  $P=0.71$ ). Comparison as regards use in the previous 30 days showed that 5 (5%) patients gave a positive history compared to 3 (4%) controls ( $\chi^2=0.10$ , d.f.=1,  $P=0.74$ ). Of the patients, 33% gave a history of alcohol use exceeding 21 units per week, against 25% of controls ( $P=0.25$ ). The prevalence of use of various substances by patients and controls is shown in Table 1. No significant differences exist between the substances used by both patients and controls, except for the use of ecstasy, which was more common among controls.

### Use of urinalysis

To establish the validity of the information provided by participants, their history of exposure to substances over the previous 30 days was compared to the laboratory findings on urinalysis. Alcohol was not included in this comparison, in view of its rapid clearance from urine. The recent history of consumption and urine findings were compared using matched samples based on McNemar tests. There were no differences as regards amphetamine and cocaine histories and urine tests. However, testing for opiates revealed that seven of the total sample of 174 gave no history of opiate ingestion yet proved urine positive, while five cases with a positive history of use had negative testing results (binomial 2-tailed,  $P=0.02$ ). Similarly, 32 of the sample with no history of benzodiazepine use had benzodiazepines in their urine and 11 cases with a positive history of use were urine negative ( $\chi^2=5.9$ ,  $P=0.02$ ). Cannabis also showed differences between history and urine tests findings: 15 participants giving a history of use in the previous 30 days revealed no presence of cannabinoids in their urine. Looking at those with schizophrenia, the only difference between recent history and urine findings was in benzodiazepine testing, where 19 cases gave no history yet were urine positive and 9 cases with a positive history were urine negative. This forms 59% of the mismatched benzodiazepine tests

from the combined group of 174. Interestingly, no cases with schizophrenia were urine positive for cannabinoids without a history of recent use.

## Comments

The results of this study may not represent the true prevalence of substance misuse among our patient population because only patients attending the out-patient department were included. Thus, less compliant patients, who may be more likely to use illicit substances, may have been excluded. It must also be noted that the relatively modest sample size leaves this study open to the possibility of type II errors. In a sample this size a 10% difference between cases and controls is required to demonstrate a significant difference in terms of prevalence of usage of a substance. Only two sources of information were used to obtain the prevalence of substance misuse in our study: history and urinalysis. Those with schizophrenia tend to underreport their consumption of alcohol and illicit substances (Safer, 1987). A combination of methods has been reported as a more effective screening procedure than the use of a single source of information (Drake et al, 1993). Thorough history taking and blood or urine screens may detect substantial drug usage when drug taking had previously been denied (Smith & Hucker, 1994). Indeed, in our study the numbers of both patients and controls testing positive for substances, but with negative histories, supports this. The level of unmentioned benzodiazepine use in histories is suggestive of concealed usage, although patients will often discount hypnotics used occasionally when discussing drug use. Differences between history and urinalysis testing for opiates could be explained by the fact that many analgesics contain codeine, which tests positive as an opiate. The fact that no cases with schizophrenia were urine positive for cannabinoids without a history of recent use suggests that, in contrast to the general group, their cannabis usage is very regular.

It should be noted that toxicological screening may give misleading results because the duration of detectability is variable and substance use may be sporadic. If another source of information, such as collateral interviews with informants, had been used, the prevalence of substance misuse may have been found to be higher.

We did not examine the extent of usage of illicit substances in our study population, and therefore we cannot draw conclusions about whether our patient population uses these substances more extensively than controls. However, Drake et al (1989) have found that relatively small amounts of drinking predicts negative outcomes in schizophrenia and this may also be the case for illicit substances. Therefore, standard definitions of substance misuse may substantially underestimate the extent of the clinical problem.

The rate of alcohol misuse in our patient population is similar to that found in the ECA study (Regier et al, 1990), but higher than that found in UK studies (Bernadt & Murray, 1986; Duke et al, 1994). However, the rate of illicit substance misuse is higher than that found in other



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European studies (Soyka *et al*, 1993; Hambrecht & Hafner, 1996; Menezes *et al*, 1996), perhaps because of the broad definition of substance misuse used in this study. Research in this field is fraught with methodological problems, making comparisons between studies difficult.

The absence of data in many studies on the expected baseline prevalence of substance misuse in the general population obscure both the veracity and significance of 'high' rates of comorbidity. However, Osher & Drake (1996) have stated that the weight of evidence indicates that the rate of substance misuse disorders in people with severe mental illness is substantially higher than in the general population. The evidence that the rates of drug and alcohol misuse found among those with mental illness are substantially greater than those in the general population in North America, as found in the ECA study (Regier *et al*, 1990), may not apply to the Irish situation, where substance misuse in the general population may be equally prevalent.

Cannabis, hallucinogens and stimulants were among the most popular drugs of misuse by our patient population, concurring with Schneier & Siris' review (1987). However, they were also among the most popular drugs used by our controls, indicating that preferential drug use among patients with schizophrenia may simply reflect that of the general population, and conclusions regarding patients' reasons for their use may therefore be less relevant. The less common use of ecstasy by our patient population may be because of its association with dance (rave) events (Lishman, 1998), in which patients with schizophrenia may have less interest.

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