Comorbid non-alcohol substance misuse among people with schizophrenia

Epidemiological study in central London

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Background Few epidemiological studies have assessed the extent and nature of comorbid non-alcohol substance misuse in people with schizophrenia in the community in the UK.

Aims To study the extent and nature of comorbid non-alcohol substance misuse in people with schizophrenia in central London.

Method Subjects were identified in an epidemiological census survey of South Westminster. Standardised assessment of each subject included demographic data, ratings of mental state and movement disorder and questioning about drug and alcohol misuse.

Results Individuals with schizophrenia or related psychoses were identified (n=352) and 57 (16%) reported a lifetime history of non-alcohol substance misuse. Age and gender were the main variables relevant to the extent and pattern of misuse. Self-reported non-alcohol substance misuse showed no significant relationship with a range of outcome measures.

Conclusions The high proportion of subjects reporting non-alcohol substance misuse is comparable with figures from the USA. The reports of lifetime misuse most commonly referred to cannabis, psychostimulants, LSD, opiates and anticholinergics. Misuse was concentrated in those younger than 36 years and was reported more often by males.

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In people with schizophrenia, the misuse of illicit drugs and alcohol is associated with increased positive symptoms, a greater risk of depression and suicide, increased rates of admission to hospital and poorer social and occupational outcomes (Drake *et al*, 1989; Pristach & Smith, 1990; Linszen *et al*, 1994). Despite these associations, there is a paucity of information available on the epidemiology of comorbid non-alcohol substance misuse in schizophrenia. The Epidemiologic Catchment Area (ECA) study in the USA (Regier *et al*, 1990) found increased lifetime rates of substance misuse among people with schizophrenia compared with healthy controls. However, patterns of illicit drug use in the USA may be very different from those in the UK (Smith & Hucker, 1994). Attempts to document misuse of a broad range of drugs among those with severe mental illness in the British Isles (Menezes *et al*, 1996; Condren *et al*, 2001) have been limited to patients in contact with psychiatric services in metropolitan settings. We report a large, epidemiological study of non-alcohol substance misuse among a cohort of 352 people suffering from schizophrenia and related psychoses in a central London catchment area.

METHOD

This study formed part of a comprehensive census survey of patients with a severe chronic mental illness on 1 March 1990 (Duke *et al*, 1994). The target area of South Westminster, in inner London, has a higher concentration of poor-quality residential housing and direct-access hostels. The survey attempted to trace all patients with schizophrenia, schizoaffective or paranoid psychosis living in permanent or temporary accommodation in the postal direct of SW1. Included were patients of no fixed abode, those currently in hospital and those in contact with area-based community services, including primary care. Patients and key informants were interviewed as described below. This comprehensive method of detecting those suffering from schizophrenia within a targeted area has been used in studies in Nithsdale and Camden (McCreadie, 1982; Harvey *et al*, 1996).

Questionnaire and interview schedules

A detailed questionnaire and case-note review provided demographic data, history of onset and course of illness, and ICD–9 (World Health Organization, 1978) and Feighner criteria for schizophrenia (Feighner *et al*, 1972). Substance misuse was assessed using the Substance Use Rating Scale, patient version (SURSp; Duke *et al*, 1994). The SURSp contains ten questions derived from the Severity of Alcohol Dependence Questionnaire (Stockwell *et al*, 1983). It elicits information about the use of legal drugs such as nicotine and caffeine, before proceeding to detailed questioning about the onset of use, maximum ever use and current use of illicit drugs. Direct questions are asked about the use of cannabis, opiates, sedatives, stimulants such as cocaine, crack cocaine, amphetamines and ecstasy, and hallucinogens. Mental state was assessed using the Manchester Scale (Krawiecka *et al*, 1977). Movement disorders were assessed using the Tardive Dyskinesia Scale (TDS; Barnes & Trauer, 1982), the Abnormal Involuntary Movement Scale (AIMS; Guy, 1976), the modified Extrapyramidal Side-Effects Rating Scale (EPSE; Simpson & Angus, 1970) and the Barnes Akathisia Rating Scale (BARS; Barnes, 1989).

Statistical analysis

The data were analysed using SPSS, version 9.0 (SPSS Inc, Chicago, IL). Between subgroups, comparisons were made using the χ^2 test or Fisher's exact test. All probabilities quoted for t-tests are two-tailed.

RESULTS

Characteristics of the sample

A total of 352 individuals were identified: 183 men, 160 women and 9 individuals with missing data, with a mean age of 50.3 years. Complete demographic and diagnostic data were available for 337 (90%) (see Table 1). A total of 297 (84%) individuals were interviewed directly. For 84 (24%) patients, no information could be obtained about

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Table 1 Demographic characteristics and diagnoses of South Westminster sample

	Total	Male	Female
Age group (*n*, %)	*n*=337	*n*=181	*n*=156
18–35 years	82 (24.3%)	53 (29.3%)	29 (18.6%)
36–55 years	127 (37.7%)	78 (43.1%)	49 (31.4%)
Over 55 years	128 (38%)	50 (27.6%)	78 (50%)
Ethnic group (*n*, %)	*n*=343	*n*=183	*n*=160
Caucasian	265 (77.3%)	139 (76.0%)	126 (78.7%)
Black Caribbean or African	33 (9.6%)	20 (10.9%)	13 (8.1%)
Asian	12 (3.5%)	9 (4.9%)	3 (1.9%)
Other	13 (3.8%)	6 (3.3%)	7 (4.4%)
Missing	20 (5.8%)	9 (4.9%)	11 (6.9%)
Primary diagnosis by ICD–9 (*n*, %)	*n*=288	*n*=160	*n*=128
Schizophrenia	223 (77.4%)	134 (83.7%)	89 (69.6%)
Schizoaffective disorder	20 (6.9%)	5 (3.1%)	15 (11.7%)
Paranoid psychosis	15 (5.2%)	6 (3.8%)	9 (7.0%)
Possible schizophrenia[1]	19 (6.7%)	10 (6.3%)	9 (7.0%)
Other	8 (2.8%)	3 (1.8%)	5 (3.9%)
Missing	3 (1.0%)	2 (1.3%)	1 (0.8%)

1. Subjects for whom a full diagnostic interview could not be obtained, but whose living circumstances and mental state strongly suggested this diagnosis.

non-alcohol substance misuse, principally because they refused to be interviewed. These patients did not differ from the remainder of the sample in terms of ethnic group, age, gender, residential status, diagnosis or occupational status.

Diagnosis

Of the total sample, including 49 patients (14%) in long-stay psychiatric hospitals, 223 (63%) had received a primary diagnosis of schizophrenia according to ICD–9. Only 142 (40%) fulfilled the Feighner criteria for definite schizophrenia.

Rates of non-alcohol substance misuse on self-report

Overall, 57 patients gave a lifetime history of misuse of substances other than alcohol. This was 21.5% of the 265 patients for whom adequate information was available. There was no significant statistical association between self-report of non-alcohol substance misuse and a diagnosis of schizophrenia by Feighner criteria as opposed to other diagnoses made according to ICD–9. The frequencies of reported lifetime non-alcohol substance misuse are shown in Table 2. Almost all patients admitting to past non-alcohol substance misuse had tried more than one of the listed substances. Only 13 patients admitted to current non-alcohol substance misuse, that is, illicit use of a drug in the previous month. In 12 cases this was cannabis misuse and in one case benzodiazepine misuse. No further statistical analysis was judged appropriate for this small number of patients. The remainder of the analysis refers to lifetime self-reported history of non-alcohol substance misuse, defined by a clear statement on questioning that a substance had knowingly been taken for a non-medical purpose.

Age

Having a lifetime history of non-alcohol substance misuse on self-report was significantly associated with being less than 36 years of age. For those completing the substance misuse questionnaire, 57% of those aged 35 years or younger admitted to non-alcohol substance misuse, compared with 9% of those over 35 years (Pearson's χ^2=65.437, 1 d.f., $P<0.0001$). The only drugs misused with anything approaching the same frequency in the older age group as in the younger were the anticholinergics (7% of those over 35 years and 10% of those aged 35 or under). The remainder of the analysis focuses on those aged 35 years or younger at assessment and for whom detailed drug histories were available (67 out of 82 patients; 82% of those aged 35 years or less).

Table 2 Self-report of lifetime non-alcohol substance misuse for South Westminster sample (*n*=265)

Substance	Number (%) reporting use (both gender, all ages)	Mean age (and range) of all users (years)	Proportion of those aged under 36 years		
			Male (*n*=45)	Female (*n*=22)	Both (*n*=67)
Cannabis	51 (18.9%)	32.9 (19–58)	27 (60%)	8 (36.4%)	35 (52.2%)
Stimulants (cocaine, crack, amphetamines)	23 (8.7%)	34.3 (20–70)	10 (22.2%)	6 (27.3%)	16 (23.9%)
Ecstasy	2 (0.8%)	24.0 (23–25)	2 (4.4%)	0 (0%)	2 (2.9%)
LSD	21 (8.0%)	34.4 (23–44)	9 (20%)	5 (22.7%)	14 (20.9%)
PCP	1 (0.4%)	30.0 (30)	1 (2.2%)	0 (0%)	1 (1.5%)
Opiates	14 (5.3%)	34.1 (20–58)	5 (11.1%)	3 (13.6%)	8 (11.9%)
Sedatives	7 (2.7%)	37.3 (27–46)	2 (4.4%)	2 (9.1%)	4 (6%)
Other drugs (including solvents)	2 (0.8%)	34.5 (25–44)	1 (2.2%)	0 (0%)	1 (1.4%)
Anticholinergics	19 (7.2%)	44.6 (25–66)	6 (12.8%)	1 (4.5%)	7 (10.4%)

LSD, lysergic acid diethylamide; PCP, polychlorophenol.

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Gender and ethnic origin

Ethnic origin was determined by self-report. The most common ethnic groups were White (61%) and African–Caribbean and Black African (31%). Asian and other ethnic groups accounted for only 1.5% and 3% of the total sample, respectively. Data were missing on two subjects (3%). However, the numbers of individuals from each ethnic grouping were considered too small to permit a meaningful statistical analysis of the relationship between ethnic origin and self-report of lifetime non-alcohol substance misuse. When all ethnic groups were considered together, men (64%) were more likely than women (41%) to report lifetime non-alcohol substance misuse (Pearson's χ^2=11.47, 1 d.f., P=0.001).

Table 2 shows that, in descending order of frequency, subjects reported lifetime misuse of cannabis, psychostimulants, LSD (lysergic acid diethylamide), opiates, anticholinergics, sedatives, ecstasy, PCP (polychlorophenol) and solvents. This rank order was preserved across different age groups and between genders, with minor variations. In the under-35-year age group, women reported lower rates of cannabis misuse than men. Women were slightly less likely to report anticholinergic misuse and slightly more likely to report misuse of benzodiazepines. The small numbers of female subjects reporting any substance misuse prohibited adequate statistical comparison for these substances.

Relationship between non-alcohol substance misuse, age of onset of illness and outcome variables

Just under half (48%) had misused substances other than alcohol before their first psychiatric presentation. Only 18 out of 34 in current contact with psychiatric staff reported disclosing their non-alcohol substance misuse. No significant association was found between giving a history of lifetime non-alcohol substance misuse and age of onset of illness (defined as age of first contact with health professionals because of psychiatric symptoms). Further, no association was found between reported lifetime history of non-alcohol substance misuse and number of admissions to hospital, number of compulsory admissions, accommodation in temporary housing, employment status or marital status.

Relationship between non-alcohol substance misuse, psychiatric symptoms and movement disorders

No significant association was found between reporting a history of lifetime non-alcohol substance misuse and the presence or absence of positive symptoms, negative symptoms or disorganisation symptoms derived from the Manchester Scale, for either gender. However, among men (but not women) under the age of 36 years there was a positive association between giving a lifetime history of non-alcohol substance misuse and having definite parkinsonism (defined as a score of 2 or more on one item of the EPSE, P=0.001; Pearson's χ^2=10.499, 1 d.f.). In this subgroup, there was no significant association between a lifetime history of non-alcohol substance misuse and the presence of akathisia (a score of two or more on the global item of the BARS, P=0.072; Pearson's χ^2=3.246, 1 d.f.) or anxiety (a score of two or more on the Manchester Scale item for anxiety, P=0.053; Fisher's exact test). Furthermore, no relationship was found between lifetime non-alcohol substance misuse and the presence or absence of tardive dyskinesia (as rated either on the AIMS or TDS) or depression (Manchester Scale).

Concurrent alcohol and non-alcohol substance misuse

The results of the alcohol questionnaire have been presented in detail elsewhere (Duke *et al*, 1994). Reporting alcohol misuse was associated with giving a positive non-alcohol substance misuse history (Pearson's χ^2=18.847, 1 d.f., P=0.0001). Only five subjects (four White males and one White female) gave a history of alcohol misuse without additional lifetime drug use. However, 20 of the non-alcohol substance-misusing group reported no alcohol problems. Adding the five individuals who admitted misusing alcohol but not drugs to the 'lifetime substance misuse positive' category made no significant difference to the majority of the findings listed above. In men, the addition of such cases reduced the statistical significance of the association between self-reported lifetime substance misuse and akathisia and anxiety. Inclusion of those misusing alcohol increased the association of lifetime substance misuse with depression (as defined by a Manchester Scale item score of 2 or more) but the finding was not statistically significant (χ^2 test; P=0.095). No new findings resulted among women.

Anticholinergic drug misuse

Anticholinergic drug misuse (defined as deliberately taking more of an anticholinergic drug than was prescribed in order to experience psychotropic effects) was spread more evenly across the age groups than the misuse of illegal drugs. It was associated with lifetime history of non-alcohol substance misuse in those aged 36 years or older, but not in those younger.

DISCUSSION

According to their own reports, misuse of substances other than alcohol is common among people with schizophrenia living in the community in inner London. In line with more recent findings (Salyers & Mueser, 2001), such use was concentrated in those aged less than 36 years and was reported more often by males. There was little evidence of a link between self-reported non-alcohol substance misuse and the age of onset, symptoms or outcome variables.

Self-reported non-alcohol substance misuse in young males was significantly associated with the presence of parkinsonian symptoms. One possible explanation is that the dysphoric experience of parkinsonism may have prompted patients to misuse substances to gain some relief, in line with the self-medication hypothesis of substance misuse (Schneier & Siris, 1987; Krystal *et al*, 1999). However, our findings provide, at best, only weak support for a self-medication hypothesis, and more recent studies have failed to provide supportive evidence for such a notion (Salyer & Mueser, 2001). Given that the non-alcohol substance misuse reported by those with schizophrenia may simply reflect usage in the general population, the reasons for taking drugs also may be similar (Condren *et al*, 2001).

General limitations of the questionnaire method

Studies of populations without mental illness, comparing questionnaire findings with the results of biological tests such as urine and hair analysis, indicate that questionnaires substantially underestimate rates of recent use of certain illicit drugs, notably amphetamines, cocaine and opioids (Mieczkowski, 1991; Condren *et al*, 2001). This

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Table 3 Self-reports of current or recent stimulant misuse in questionnaire-based surveys of people with schizophrenia or psychotic disorders

Source	Subjects	*n*	Rates of stimulant misuse
Dixon *et al* (1991), USA	Consecutive admissions	83	6% (self-report)
Soyka *et al* (1993), USA	Consecutive admissions	183	20% (self-report)
Shaner *et al* (1993), USA	Consecutive admissions	100	16% (self-report)
			31% (positive urine test)[1]
Cuffel *et al* (1993), USA	Epidemiological sample (ECA)	231	14% (all drugs other than alcohol and cannabis)
De Quardo *et al* (1994), USA	Consecutive admissions	67	4.5% (cocaine, self-report)
			3% (other stimulants, self-report)
McPhillips *et al* (1996), UK	Epidemiological follow-up	36	14% (amphetamines, self-report)
			26% (positive hair test)[1]
Menezes *et al* (1996), UK	Patients in contact with services	171	13% (amphetamines, self-report)
Mueser *et al* (2000)	Hospitalised patients	173	9.8% (cocaine, self-report)
			3.5% (amphetamines, self-report)
Condren *et al* (2001), Ireland	Consecutive out-patients	99	13% (amphetamines, self-report)
			11% (cocaine, self-report)

ECA, Epidemiologic Catchment Area study.
1. The table demonstrates the relatively low rates of self-report of stimulant misuse among people with schizophrenia. As with non-psychiatric populations, where questionnaire methods are supported with biological tests, there is evidence of substantial underreporting (Mieczkowski *et al*, 1991; Shaner *et al*, 1993; McPhillips *et al*, 1996).

may be because the interviewees see these drugs as being highly illegal or socially stigmatising, or because they fear the possible consequences of disclosure. We therefore believe that our results represent an underestimate, particularly of rates of recent stimulant and opiate misuse. In particular, the finding that only 13 people admitted to recent non-alcohol substance misuse is unconvincing, given the frequency of self-reports of lifetime use and the results of other studies using biological methods of assessment to support questionnaires (see Table 3). As in the general population (Cook *et al*, 1995), those with mental illness may selectively underreport recent misuse of some illegal drugs to their families, to health professionals and to researchers.

Limitations of the SURSp

The information gathered on non-alcohol substance misuse using the SURSp was limited to the maximum lifetime use of each substance and the amount of each drug used in the preceding month, and omitted any assessment of drug dependency. The underlying assumption was that, in the presence of a severe mental illness, the use of comparatively small amounts of an illegal drug may have serious consequences for the mental state of the user (Drake *et al*, 1989). In this study, the numbers of people admitting to recent misuse of any particular substance were too small to allow separate analysis. This was unfortunate, because consequences of misuse of these various substances, with their distinct pharmacological effects, would be expected to differ considerably.

Comparison of findings with those of other studies

Previous studies of stimulant misuse among people with schizophrenia are summarised in Table 3. Only one, the ECA, is an epidemiological study. The remainder are studies of selected groups such as clinic attenders and in-patients. Our study shows findings broadly comparable with those of the only other UK study, that of Menezes *et al* (1996), which used the same screening questionnaire but studied people with a broader range of diagnoses. The overall rate of substance misuse was higher in that study, although the sample was an average of 8 years younger (mean age=42.3 years) than our own sample, and our findings suggest a marked propensity for misuse of substances other than alcohol in younger patients. Further, their study was of patients known to services, who may have been more symptomatic as a consequence of their substance misuse.

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CLINICAL IMPLICATIONS

- The proportion of patients in the community with severe mental illness reporting lifetime non-alcohol substance misuse is high, particularly among those younger than 36 years of age, over half of whom have used cannabis and a quarter of whom have used psychostimulants.
- Selective underreporting of the recent misuse of some substances may occur, even where confidentiality is guaranteed. Co-informants such as keyworkers are often unaware of the misuse of illicit drugs by those with severe mental illnesses.
- More focused research on the impact and extent of non-alcohol substance misuse on patients with severe mental illness is required. Biological tests such as urine assay or hair testing are recommended to supplement questionnaires in identifying suitable cases for future study.

LIMITATIONS

- The results relate to a catchment area population in inner London, and may not be generalised with confidence to suburban or rural areas.
- It is likely that the self-report questionnaire method used yielded an underestimate of recent non-alcohol substance misuse.
- The census method yields a cross-sectional picture of substance misuse in a particular place at a particular time. Longitudinal studies are required to assess whether non-alcohol substance misuse persists over time and the long-term impact of such use.

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