

Prevalence of substance misuse in first-episode psychosis

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Background Reports suggest a high prevalence of substance misuse in psychotic disorders but few studies examine comorbidity at onset of psychosis.

Aims To identify the prevalence and pattern of substance use and misuse in first-episode psychosis, and relationships with diagnosis, mode of presentation and demographic variables.

Method Consensus diagnoses for 168 subjects presenting with first-episode psychosis were made using ICD–10 diagnostic criteria. Information on substance use and misuse was obtained from multiple sources. We examined associations between substance misuse, diagnosis and demographic factors.

Results Criteria for drug use, drug misuse or alcohol misuse were met by 37% of the sample. One-year prevalence rates were 19.5% (drug misuse) and 11.7% (alcohol misuse). Thirteen subjects (8.4%) received a primary diagnosis of substance-related psychotic disorder; a significant increase compared with an earlier cohort from the same catchment area. Drug misuse was associated with younger age of onset of psychosis, male gender and non-African–Caribbean ethnicity.

Conclusions This study confirms high rates of substance misuse at onset of psychosis. There is evidence for an increase in diagnosis of substance-related psychotic disorders over time. Those most at risk of substance misuse are young males.

Declaration of interest Funding provided by Trent Regional Health Authority.

Substance misuse in functional psychosis is common (Regier *et al*, 1990; Selzer & Lieberman, 1993) and may be increasing over time (Cuffel, 1992). Use is associated with greater severity of symptoms and poorer prognosis (Drake & Wallach, 1989; Cuffel *et al*, 1994; Linszen *et al*, 1994). Most existing studies draw subjects from populations with varying durations of illness (Duke *et al*, 1994; Menezes *et al*, 1996). Those that focus on first-episode psychosis are almost exclusively North American. Rates for substance misuse in these cohorts have ranged between 20 and 30% (Strakowski *et al*, 1993; Hambrecht & Hafner, 1996). We aimed to identify the prevalence and pattern of substance use and misuse in first-episode psychosis and relationships with diagnosis, mode of presentation and other demographic variables. We hypothesised that substance misuse would be associated with male gender and earlier age at onset of psychosis, and a more acute and behaviourally disturbed onset. We anticipated an increase in substance-related psychotic disorders compared with previous research that used similar methodology for case ascertainment.

METHOD

Over a 24-month period (1992–1994) all patients aged 16–64 years presenting for the first time with psychotic symptoms to the psychiatric services in Nottingham were identified using the World Health Organization (WHO) psychosis screen (Jablensky *et al*, 1992). All potential points of contact with secondary psychiatric services were regularly surveyed and potential cases screened and included in the study if entry criteria were met. Substance misuse was not an exclusion criterion, but subjects were excluded if their conditions met the criteria for intoxication or withdrawal states. Further details of study design and entry criteria are provided elsewhere (Brewin *et al*,

1997). One hundred and sixty-eight cases of psychosis met the inclusion criteria and were entered in the study. Subjects were interviewed using the Schedules for Clinical Assessment in Neuropsychiatry (SCAN; World Health Organization, 1994). Where it was not possible to carry out a direct interview with the patient, the Item Group Checklist (IGC) was completed according to SCAN rules, using case notes and any other information available for the patient. If consented to, in each case an interview with an informant using a modified version of the Personal and Psychiatric History Schedule (PPHS; Jablensky *et al*, 1992) was also carried out. This included a schedule for coding substance use and misuse. Ratings were performed by a team of four senior registrars trained in use of the SCAN. Diagnostic meetings with either G.H. or I.M. ascribed diagnoses according to the ICD–10 (World Health Organization, 1993). Pre-study reliability was established for the SCAN and elements of the PPHS, including the substance use and misuse codings, using joint interviews and video- and audio-tape recordings of interviews with subjects and informants (Brewin *et al*, 1997).

A diagnosis of substance use or misuse was made using information obtained from the SCAN and/or PPHS. Drug use was defined as use of illicit substances at least once monthly in the preceding year. Drug misuse was defined as daily use for a period of at least 2 weeks over the preceding year. Alcohol misuse was defined as daily use for a period of at least 2 weeks in the preceding year associated with evidence of significant psychological or social harm, or dependence.

Analyses were performed using SPSS for Windows. The χ^2 test was employed for categorical data and *t*-test for continuous data. In addition, the relationship between candidate predictor variables and the dependent variable 'drug misuse' was explored using a logistic regression analysis. Predictor variables were chosen based on previous research findings suggesting associations between demographic factors or diagnosis and substance use. They included age at onset, gender, African–Caribbean ethnicity and diagnosis of schizophrenia.

RESULTS

Characteristics of the sample

One hundred and sixty-eight subjects met the criteria for first-contact psychotic disorders. Face-to-face interviews were achieved for 71% of the sample. For the

remainder, data were coded according to SCAN rules for the IGC based on information from case notes and informants. No data on substance misuse were available for 14 of the 168 cases. No significant differences were found for age, gender or ethnicity when those with missing data were compared with the rest of the cohort. Table 1 shows the breakdown of cases by diagnosis, age, ethnicity and gender.

Substance use and misuse

Alcohol misuse was present in 18 subjects (11.7%; 95% CI=7.4–18.5) and drug misuse in 30 subjects (19.5%; 95% CI=14.6–25.9). If those with drug use alone are added to these two groups, a total of 57 patients (37%; 95% CI=28.5–48) received one, or a combination, of these three diagnoses (alcohol misuse, drug misuse and/or drug use). In over 60% of cases, information from both SCAN and PPHS met the criteria for substance use or misuse. For the remainder, criteria were met either in subject (SCAN) or informant (PPHS) ratings. Agreement between SCAN and PPHS information achieved kappa value of 0.897 ($z=19.93$, $P<0.0001$).

Thirteen subjects (8.4%) received a primary diagnosis of substance-related psychotic disorder (F1x.5, 12 cases; F1x.7, 1 case) (Table 1). Substances used or misused by this group were alcohol alone in two cases, cannabis (two cases) and multiple substances (nine cases). In the sample overall, cannabis was the most commonly misused substance, followed by alcohol (Table 2). Although use of other substances was not uncommon, misuse as defined by our criteria was rare.

When those using substances were compared with those not using, the substance users were significantly more likely to be male ($\chi^2=15.35$, $P<0.0001$) and of younger age ($t=-6.63$, $P<0.001$, 95% CI= -11.875 to -6.418). These differences were present across all diagnostic subgroups, and significantly younger age at onset remained when males alone were examined. No significant differences were found between groups with respect to ethnicity (9/29 African–Caribbean users *v.* 48/125 non-African–Caribbean users), perception of dangerousness by family, or mode of onset, although there was a trend for substance users to have a shorter duration of symptoms before presentation (21.1 *v.* 39.6 weeks; $\chi^2=3.21$, $P=0.073$). When misusers were compared with non-misusers, no significant differences were found with respect to mode of onset. However, misusers were less likely to be of African–Caribbean ethnicity (2/29 African–Caribbean *v.* 40/125 non-African–Caribbean $\chi^2=7.48$, $P<0.007$; OR 0.16, 95% CI 0.02–0.73) or to have a diagnosis of affective disorder ($\chi^2=6.65$, $P<0.01$; OR 0.25, 95% CI 0.07–0.82). There was also a trend for the families of substance misusers to perceive them as more dangerous ($\chi^2=3.67$, $P=0.055$; OR 2.31, 95% CI 0.89–6.04).

Logistic regression

The variables of age at onset, gender, diagnosis of schizophrenia and African–Caribbean ethnicity were entered into a logistic regression model using a stepwise forward entry method. When the dependent variable was ‘drug misuse’, the final model included a younger age at onset,

male gender and non-African–Caribbean ethnicity ($\chi^2=31.632$, 3 d.f., $P<0.0001$).

Comparison with DOSMD study

An earlier cohort had been assembled in Nottingham as part of the WHO Determinants of Outcome of Severe Mental Disorder Ten-Country Study (DOSMD; Jablensky *et al.*, 1992). Both groups were obtained using similar methodology and the DOSMD sample was re-rated (I.M., G.H., Peter Mason (see Acknowledgements)) using ICD–10 diagnostic criteria. Re-diagnosis was made blind to original diagnoses and course of illness, and the new population adjusted for catchment area, enabling direct comparison between cohorts (Brewin *et al.*, 1997). Only one subject received a diagnosis of substance-related psychosis in the original cohort compared with ten from the adjusted new sample, giving an unadjusted rate ratio for substance-related psychosis of 9.67 (exact binomial 95% CI=1.4–419.6). This represents a significant and substantial increase in the rate in the 1992–1994 study compared with that of 1978–1980 study.

DISCUSSION

Methodology

Our results reveal a high prevalence of substance use and misuse in psychosis at first presentation to psychiatric services. Previous populations have usually been defined by first admission (Strakowski *et al.*, 1993; King *et al.*, 1994; Hambrecht & Hafner, 1996). It may be argued that such methodologies fail to reflect accurately the rates of comorbidity by excluding a particularly vulnerable group. In our sample, of the 154 subjects, 42 (27%) were not

Table 1 Breakdown of cohort ($n=154$) by diagnosis, gender, age and ethnicity

Diagnosis (ICD–10)	Total	Male	Female	Age	Ethnicity		
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	Mean (s.d.)	White	African–Caribbean	Other
Substance-related psychosis (F1x)	13 (8.4)	12 (7.8)	1 (0.6)	25.5 (7.3)	12	0	1
Schizophrenia (F20)	51 (33.1)	33 (21.4)	18 (11.7)	29.5 (9.8)	39	9	3
Delusional disorder (F22)	13 (8.4)	6 (3.9)	7 (4.5)	41.4 (16.5)	10	3	0
Acute psychosis (F23)	29 (18.8)	20 (13)	9 (5.8)	31.1 (10.4)	18	7	4
Schizoaffective disorder (F25)	5 (3.2)	2 (1.3)	3 (1.9)	29.8 (4.3)	5	0	0
Manic psychoses (F30, 31)	21 (13.6)	6 (3.9)	15 (9.7)	30.1 (11.6)	17	4	0
Depressive psychoses (F32, 33)	16 (10.4)	10 (6.5)	6 (3.9)	32.8 (13.8)	10	4	2
Other psychoses (F21, 24, 28, 29)	6 (3.9)	3 (1.9)	3 (1.9)	32.2 (12.6)	4	1	1
Total	154 (100)	92 (59.7)	62 (40.3)	31 (12)	115	28	11

Table 2 Substance misuse comorbidity

Diagnosis (ICD-10)	All misuse		Alcohol misuse	Cannabis misuse	Hallucinogen misuse	Stimulant misuse	Other misuse
	<i>n</i>	(% of diagnostic group)	(<i>n</i>)	(<i>n</i>)	(<i>n</i>)	(<i>n</i>)	(<i>n</i>)
Substance-related psychosis	13	(100)	4	9	0	3	0
Acute and transient psychosis	7	(24.1)	1	6	1	1	0
Schizophrenia	12	(23.5)	6	8	0	0	0
Affective disorder	7	(11.9)	4	5	0	0	0
Delusional disorder	2	(7.7)	2	0	0	0	0
Other psychoses	1	(16.7)	1	0	0	0	0
All diagnoses	42	(27.3)	18	28	1	3	0

admitted within the first month. Fifteen of these (9.7% of the total sample) were substance users.

There is ample evidence to suggest that relying solely on subjects' descriptions of substance use leads to under-diagnosis in similar populations (Wilkins *et al*, 1991; Shaner *et al*, 1993). Our study design combined subject and informant ratings, adding information from notes and workers involved in the patient's care where an informant was not available. Such combinations have been recommended as most accurate in assessment (Mueser *et al*, 1990). It is still possible that our restrictive criteria may have led to an under-diagnosis of comorbidity. Other measures in common use are not more reliable. Urinalysis, although a useful measure, only reflects drug use over the preceding 2–3 days for most substances and thus is unsuitable for validating reports of use over longer periods (Maisto *et al*, 1990). For alcohol, biochemical indices of liver damage are, in general, less-sensitive measures of misuse than structured interviews (Chick *et al*, 1993). Hair analysis was not available to us. In future this may provide a more accurate and reliable measure of use (Brewer, 1993).

Making a diagnosis of substance-related psychosis is particularly difficult, given the need to differentiate from acute intoxication and other psychoses. Rigorous diagnostic procedures were supplemented by a three-year follow-up study, which demonstrates that 9/13 subjects retained their original diagnosis. Six further subjects who received initial other diagnoses were subsequently reclassified as having substance-related psychoses. Thus overall, at 3 years, 15 subjects had a longitudinal diagnosis of substance-related psychosis (Singh *et al*, 1998).

Although overall prevalence rates for substance misuse compare well with the small number of existing first-episode studies in this area, our findings suggest lower alcohol misuse. This most likely reflects the deliberately restrictive diagnostic criteria employed. Daily use over a period of at least two weeks, accompanied by evidence of impairment, was required to define alcohol misuse.

Demographic and diagnostic correlates

As in previous reports, substance use and misuse were significantly associated with younger age at first contact and male gender. This may simply mirror patterns of use throughout the general population. Such a high level of comorbidity does suggest that rates of substance misuse are significantly higher than those in the general population, although this hypothesis could not be tested without the recruitment of a suitable comparison cohort. Claims have been made for a 'bringing forward' of the age of onset of schizophrenia in substance users (Breakey *et al*, 1974). Our findings that significant differences in age at onset remained when only male subjects with schizophrenia were examined lend some support to this hypothesis. It is more difficult to explain adequately the finding of decreased substance misuse, despite similar rates of use, among African-Caribbeans. Given our restrictive definitions of misuse, it is unlikely that differing perceptions of the presence of misuse among subjects and their relatives influenced self-reports, although this cannot be ruled out entirely. The increased incidence of psychosis among African-Caribbeans has been documented widely and replicated in this cohort

(Harrison *et al*, 1997). The reasons for this finding remain unclear, and our results provide no evidence that culturally sanctioned substance use might be a contributory factor.

Subjects with affective disorders were significantly less likely to be substance misusers. This is most likely explained by the higher prevalence of substance misuse among younger males, irrespective of diagnosis. It differs from the finding by Strakowski *et al* (1993) that substance abuse/dependence was significantly more common in affective than in 'schizophrenic spectrum disorders' (25.3 *v.* 0% for alcohol abuse/dependence; 16 *v.* 10% for unspecified drug abuse/dependence). However, numbers of subjects in their schizophrenia group were very low.

Mode of onset

Our hypothesis of differences in the mode of presentation to psychiatric services among substance users was not confirmed. This had been suggested by previous reports of associations between dual diagnosis and violent behaviour, increased emergency presentations and greater severity of psychotic symptoms. We did, however, find a trend towards family perception of greater dangerousness for substance misusers and for shorter times between first symptom and first contact for substance users.

Comparison with DOSMD study

We found evidence of increasing prevalence of substance-related psychotic disorders over time, consistent with there having been a secular trend, although we cannot comment on prevalence in the intervening period. Blind re-rating of the original sample makes it unlikely that changes in diagnostic habits account for this increase,

although information gleaned on substance misuse in ICD-10 is more comprehensive than that for ICD-9. Nevertheless, it is possible that the increasing availability and acceptability of substance use in society may influence the willingness of subjects and relatives to acknowledge use. Others have also put forward evidence for an increase in comorbidity over time (Cuffel, 1992).

This study did not examine aetiological factors for substance use in psychosis. However, our finding of high rates of use and misuse at onset of psychosis suggests that treatment factors alone – such as medication side-effects – are not sufficient explanatory variables. Other reasons for use may include social drift in the prodromal stages of illness, symptom relief and use to counteract social isolation and boredom engendered by illness. Substance use may of course also increase risk of psychosis.

ACKNOWLEDGEMENTS

We thank Dr Peter Mason for help with patient assessments and re-diagnosis of the original DOSMD cohort, and Professor John Cooper for allowing access to the original data.

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CLINICAL IMPLICATIONS

- High rates of substance misuse are present at onset of psychosis.
- There is evidence for an increase in diagnosis of substance-related psychotic disorders over time.
- Those most at risk of substance misuse are young males.

LIMITATIONS

- No comparison cohort was included to determine rates of substance use and misuse in the local population.
- Information gathered on substance use using the SCAN was more comprehensive than PSE-generated data from the earlier DOSMD study.
- Hair analysis may have increased the reliability of data on substance use.

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(First received 9 October 1998, accepted 16 October 1998)