Substance use and schizophrenia: effects on symptoms, social functioning and service use

ROCH CANTWELL on behalf of the SCOTTISH COMORBIDITY STUDY GROUP

Background  Studies examining the effects of substance use in patients with schizophrenia have produced conflicting results.

Aims  To examine the effects of comorbid substance use on symptoms, social functioning and service use in patients with schizophrenia.

Method  Patients (n=316) with and without substance use problems from three centres participating in the Scottish Comorbidity Study were compared, using research interviews and case note review, on measures of symptoms, social functioning and service use.

Results  Patients with substance use problems were younger, more likely to be male and had shorter duration of illness. They had more police contact and increased self-reported needs, but otherwise showed few differences when compared with those without such problems.

Conclusions  The presence of problem substance use had only modest impact on service use, symptoms or social functioning for this group of patients with schizophrenia. This has important implications for service development to meet the perceived needs of this group.

Declaration of interest  None. This study was supported by the Chief Scientist Office for Scotland.

Research in North America suggests that the co-occurrence of substance misuse and severe mental illness is common, and has a range of adverse effects on course of illness, service use and outcome (Drake et al., 1991). Similar evidence has emerged from studies in the UK in which patients with psychosis who had substance use problems spent more days in hospital compared with patients who did not (Menezes et al., 1996) and were more likely to report offending or hostile behaviour (Scott et al., 1998). Others report less negative consequences, suggesting little adverse impact of substance use on symptoms, course of illness or service use (Zisook et al., 1992; Warner et al., 1994). Such conflicting results make it difficult to estimate the level of need of this group (who comprise at least a quarter to a third of patients with schizophrenia in most populations surveyed). The bulk of evidence comes from North America, where substance use patterns and service provision may differ. Many evaluations have involved only a few participants, and cohorts have frequently consisted of selected samples. To examine the consequences of substance use in a representative UK sample, we compared people with problem substance use with others taking part in a large study examining the prevalence, pattern and consequences of substance use among patients with schizophrenia in three areas of Scotland.

METHOD

Participants  Participants were drawn from three sites: Nithsdale, a rural area in south-west Scotland (population 57 000); west Glasgow, an inner-city area with high levels of deprivation (population 53 000); and a suburban area of Aberdeen (population 32 000). In Nithsdale and Glasgow participants were drawn from defined geographical areas; in Aberdeen, they were identified through five associated general practices (representative of suburban Aberdeen) which made up the catchment area of one community mental health team. Including three sites had the advantage of obtaining representative urban and rural populations. All patients with schizophrenia aged at least 16 years, who were known to primary or secondary care services, were included. Social services and voluntary services were also approached to complete identification. This ‘key informant’ method has been described by McCreadie (1982). Case notes were examined and only those with a consensus diagnosis of schizophrenia (after discussion with a senior investigator), based on the ICD-10 research diagnostic criteria (World Health Organization, 1993), were included. In addition, the Operational Checklist for Psychiatric Disorders (OPCRIT) (McGuffin et al., 1991) was completed and computer-generated research diagnoses obtained for all participants.

This study formed part of a wider investigation into the prevalence of substance misuse among patients with schizophrenia in three areas of Scotland when compared with locally recruited controls. Details of prevalence rates in comparison with controls may be found in the paper by McCreadie et al. (2002). Ethical approval was obtained from the relevant local ethics committees and all participants gave informed, written consent before inclusion.

Assessment  All participants were interviewed by research nurses, who used sections 11 and 12 of the Schedules for Clinical Assessment in Neuropsychiatry (SCAN) (World Health Organization, 1994) to identify ‘lifetime’ (i.e. any time preceding the year up to interview) and ‘past year’ drug and alcohol use. The three research nurses were trained in the use of this instrument and reliability was checked by reviewing recorded interviews at several points throughout the study. Basic demographic details, including age, gender, ethnicity and social deprivation, were obtained. Social deprivation was determined from the participants’ postcode, using the Carstairs Deprivation Index (Carstairs & Morris, 1990). Service use was estimated by recording contacts with primary care staff, community mental health team members, out-patient services, depot clinics, general hospitals, accident
and emergency departments, police and
other (e.g. voluntary) services within the
past year. Number of psychiatric admis-
sions, days spent in hospital and use of
the Mental Health Act over the preceding
2 years were also recorded. Social function-
ing was assessed using the Global Assess-
ment Scale (GAS; Endicott et al, 1976), in
addition to information on marital status,
living arrangements and employment. The
Camberwell Assessment of Need (CAN; Slade et al, 1999) was used to gauge subject-
ive and keyworker-reported needs (both
met and unmet). In addition, all partici-
pants were interviewed by research psychia-
trists, who administered the Positive and
Negative Symptom Scale (PANSS; Kay et al, 1987) to assess current symptom sever-
ity. Regular reliability checks, by reviewing
recorded assessments, were also carried out
for this instrument throughout the study
period.

For the purposes of this study, partici-
pants were identified as having problem
use if they met ICD–10 research criteria
for harmful use or dependence. Based on
the SCAN interview, participants were
further divided into those with problem
use in the past year and those with lifetime
use. Although it might be hypothesised that
recent use is more likely to influence symp-
toms, social functioning and service use.
Although it might be hypothesised that
use in the past year and those with lifetime
use were divided into those with problem
drug and/or alcohol use (hereafter referred
to as problem substance use) in the
past year and 141 (45%) at some time
before that. When combined, 64 (20%) had
problem drug use and/or alcohol use (hereafter referred to as problem substance use) in the
past year and 141 (45%) at some time
before that. Further details of substance
use in this sample (including exact numbers
with harmful use and with dependence)
have been published separately (McCreadie
et al, 2002).

Analysis
Chi-squared tests for categorical data and
t-tests for continuous variables were used
for univariate analyses. As there were mul-
tiple comparisons, only differences at the
1% level were regarded as significant.

RESULTS
Prevalence of problem substance
use
Of the 446 patients who were identified,
130 (29%) either refused consent or were
untraceable. Non-participants did not
differ from the remainder in age, gender
distribution, duration of illness, deprivation
scores or OPCRIT diagnoses. Among the 316 participants, 22 (7%) reported
problem drug use in the past year and 66
(21%) at some time before that.

Cannabis was the most commonly used
drug, followed by opioids for current users
and stimulants for lifetime users. Regarding
alcohol, 49 (16%) reported problem use
in the past year and 122 (39%) in the time
before that. When combined, 64 (20%) had
problem drug and/or alcohol use (hereafter

Table I  Characteristics of participants reporting past-year problem substance use v. no problem substance use: gender, age, social deprivation, illness duration and age at onset

<table>
<thead>
<tr>
<th></th>
<th>Problem use (n=64)</th>
<th>No problem use (n=252)</th>
<th>Comparison statistics (99% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (n=316)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males (n)</td>
<td>52</td>
<td>145</td>
<td>$\chi^2=12.2, d.f.=1, P&lt;0.001, OR=3.2 (1.3 to 7.8)$</td>
</tr>
<tr>
<td>Females (n)</td>
<td>12</td>
<td>107</td>
<td></td>
</tr>
<tr>
<td>Age, years (n=316)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d.)</td>
<td>38.2 (9.3)</td>
<td>47.1 (14.4)</td>
<td></td>
</tr>
<tr>
<td>Deprivation category (n=312)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most affluent (n)</td>
<td>11</td>
<td>46</td>
<td>$\chi^2=7.29, d.f.=2, P=0.028$</td>
</tr>
<tr>
<td>Middle (n)</td>
<td>32</td>
<td>158</td>
<td></td>
</tr>
<tr>
<td>Most deprived (n)</td>
<td>21</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>Illness duration, years (n=296)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d.)</td>
<td>11.5 (7.8)</td>
<td>19.7 (13.1)</td>
<td></td>
</tr>
<tr>
<td>Age at onset, years (n=296)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (s.d.)</td>
<td>26.3 (7.4)</td>
<td>27.2 (9.3)</td>
<td></td>
</tr>
</tbody>
</table>

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Demographic findings
Comparisons of participants who were
problem users and those who were not, in
terms of gender, age, ethnicity, social depre-

325
Symptoms and social functioning

Symptoms were measured using sub-scale (positive, negative and general) and total scores from the PANSS. Higher scores on the general sub-scale (which includes anxiety and depression ratings) reached significance for the group with problem substance use (past year) but this difference disappeared in the total scores (Tables 3 and 4). On measures of social functioning, GAS scores were not significantly different, nor was there any difference in living arrangements or marital status. Those reporting problem use (both past year and lifetime) did, however, have a greater
Table 5  Comparison of needs of those reporting past-year problem substance use or no problem substance use, based on the Camberwell Assessment of Need scores (n = 316)

<table>
<thead>
<tr>
<th>Have needs?</th>
<th>Number of needs</th>
<th>Needs rating*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mean (s.d.)</td>
<td>mean (s.d.)</td>
</tr>
<tr>
<td>Problem substance use?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>62</td>
<td>4.8 (2.9)</td>
</tr>
<tr>
<td>No</td>
<td>225</td>
<td>3.3 (2.4)</td>
</tr>
</tbody>
</table>

χ² = 2.675, d.f. = 1, \( P = 0.102 \), OR = 3.7
99% CI 0.5–25.5

<table>
<thead>
<tr>
<th>Have needs?</th>
<th>Number of needs</th>
<th>Needs rating*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mean (s.d.)</td>
<td>mean (s.d.)</td>
</tr>
<tr>
<td>Problem substance use?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>128</td>
<td>4.2 (2.9)</td>
</tr>
<tr>
<td>No</td>
<td>159</td>
<td>3.2 (2.3)</td>
</tr>
</tbody>
</table>

χ² = 0.0, d.f. = 1, \( P = 1.0 \)
OR = 1.0
99% CI 0.4–2.7

1. Needs rating calculated on scores of 1 for a partially met need or 2 for an unmet need.

Table 6  Comparison of needs of those reporting ‘lifetime’ problem substance use or no problem substance use, based on the Camberwell Assessment of Need scores (n = 316)

<table>
<thead>
<tr>
<th>Have needs?</th>
<th>Number of needs</th>
<th>Needs rating*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mean (s.d.)</td>
<td>mean (s.d.)</td>
</tr>
<tr>
<td>Problem substance use?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>115</td>
<td>4.2 (2.9)</td>
</tr>
<tr>
<td>No</td>
<td>159</td>
<td>3.2 (2.3)</td>
</tr>
</tbody>
</table>

χ² = 0.0, d.f. = 1, \( P = 1.0 \)
OR = 1.0
99% CI 0.4–2.7

1. Needs rating calculated on scores of 1 for a partially met need, 2 for an unmet need.

self-reported number of needs and higher mean needs rating (combined scores for partially met or unmet need) (Tables 5 and 6).

Service use

With the exception of increased attendance at depot clinics (22.5% vs. 11.2%, \( P = 0.008 \); OR = 2.3, 95% CI 1.0–5.2) for lifetime problem substance users, and increased contact with psychiatrists (95.3% vs. 82.3%, \( P = 0.01 \), OR = 0.2, 95% CI 0.05–1.1) for past-year substance users, participants with problem drug or alcohol use were no more likely than those without substance use problems to have accessed primary care or to have had contact with other specific individuals in secondary care services (community psychiatric nursing, occupational therapy, psychology or social work) within the preceding year. Neither were they more likely to have attended general hospitals or accident and emergency departments. They did, however, have more police contact (past-year users 34.9%, \( P = 0.001 \), OR = 3.1, 95% CI 1.3 to 7.0; lifetime users 29% vs. 10.8%, \( P < 0.001 \), OR = 3.4, 95% CI 1.5 to 7.5). This reflected both greater reporting of crimes committed against the participants, and police contact for other reasons. Our method did not allow a further breakdown of these data. Numbers of admissions (past-year users 0.67 vs. 0.89, \( P = 0.259 \), 99% CI –0.6 to 0.16; lifetime users 0.85 vs. 0.6, \( P = 0.113 \), 99% CI –0.59 to 0.55), days admitted (past-year users 96.7 vs. 61.8, \( P = 0.211 \), 99% CI –19.9 to 89.8; lifetime users 78.3 vs. 98.5, \( P = 0.371 \), 99% CI –64.7 to 24.2) and detentions under the Mental Health Act (past-year users 0.2 vs. 0.32, \( P = 0.225 \), 99% CI –0.37 to 0.13; lifetime users 0.31 vs. 0.16, \( P = 0.066 \), 99% CI –0.58 to 0.34), all within the previous 2 years, also showed no significant difference.

DISCUSSION

An editorial in the BMJ (Weaver et al., 1999) has called for research to underpin policy and services for patients with comorbidity in the UK. Existing research points to a high prevalence of substance use among patients with severe mental illness (Regier et al., 1990; Menezes et al., 1996) and there has been presumed to be a consequent adverse effect on symptoms and outcome. Although we did find some increased service use (police, psychiatrist and depot clinic contact), the increased police contact cannot necessarily be ascribed to more behavioural disturbance, and explanations for increased depot clinic attendance may include a different clinical approach to non-compliance. We also found a greater number of self-reported needs (either met or unmet) in people who were problem users. The most striking finding from this study, however, is the minimal effect of problem substance use on symptoms, service use or social functioning. This contrasts with the body of evidence from North America. Linsen et al. (1994) found increased severity of symptoms and relapse. More-frequent hospital admission was reported by Drake et al. (1989) and Swofford et al. (1996). Other findings included greater use of emergency services, increased homelessness, and greater propensity for violent behaviour and suicidality. It has also been suggested that substance misuse comorbidity represents a significant cost to health services (Dickey & Azeni, 1996). One report from an inner-London catchment area, however, did not find an association between non-alcohol substance misuse and admission to hospital (Duke et al., 2001).

Methodological issues

One possible explanation for our finding is that those identified but not interviewed were more likely to be substance users. Although we cannot entirely rule this out, no difference emerged on any of the demographic and clinical factors that we were able to ascertain. Although the rates for problem drug use in the past year in our sample are a little lower than those reported in other UK studies (e.g. Menezes et al., 1996), the participants in the latter tended to be urban-based and younger. Underreporting could also have led to our finding of lack of difference. Our method of case finding was detailed and comprehensive, and corroborative hair and urine analyses in a subsample did not reveal recent use in those who denied it. When all other factors (such as age, geographical setting and diagnosis) are taken into account, the proportion of patients who were problem substance users is unlikely to differ
greatly in our sample from those in other recent UK studies (Menezes et al, 1996; Brown, 1998).

**Reasons for the lack of difference**

Are there other possible explanations for the lack of difference in this sample? Although most studies of chronically ill populations have found a detrimental effect of substance use, in many the participants were drawn from hospitalised, urban samples. Our patients were predominantly community-based, and came from a mix of urban and rural settings. Their level of problem substance use and any associated consequences may therefore more accurately reflect patterns throughout the UK. Similar lack of effect in a community sample was reported by Zisook et al (1992). Warnet et al (1994), who also found little adverse consequences of substance use, suggest another explanation – that the finding of poorer outcome for patients with comorbid substance misuse might be mediated through non-compliance with treatment. They suggest that assertive community support might minimise this effect and thus any adverse consequences. We could not assess compliance, but all three areas in this study have well-developed community mental health teams and easy access to support for patients. Last, it has been suggested that patients with schizophrenia who are substance misusers might be a more able group at onset (Arndt et al, 1992) and that those with the most severe forms of illness are too disabled to engage in drug-seeking activity. Our study design could not test this hypothesis.

**Relevance of our findings**

These results should be interpreted with caution. They do not suggest that problem substance use in itself is of no consequence to this group. By definition, these people have suffered through this misuse. As has been previously noted, we cannot predict what level of functioning of such patients might have had if they were not substance users (Zisook et al, 1992), and there remains an onus on general psychiatry and specialist addiction services to address their needs. What this paper does add is the interpretation that, in a sample that is older and more representative of urban and rural populations than samples in other UK studies, problem substance use may inflict less-severe damage than previously suspected.

**ACKNOWLEDGEMENTS**


**REFERENCES**


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