

Psychiatric symptoms among clients seeking treatment for drug dependence

Intake data from the National Treatment Outcome Research Study

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Background Many people with substance use disorders are vulnerable to other psychiatric disorders and present to addiction treatment services with comorbid psychiatric symptoms.

Aims To describe the prevalence of recent psychiatric treatment and current psychiatric symptoms and explore links between substance misuse, personal/social functioning and symptom severity.

Method Subjects were 1075 adults recruited to the National Treatment Outcome Research Study (NTORS), of whom 90% were opiate-dependent. Psychiatric symptoms at intake were recorded using sub-scales from the Brief Symptom Inventory.

Results Recent psychiatric treatment was reported by one in five subjects. Psychiatric symptom levels were high and females had elevated scores on all scales. Symptoms were elevated among opiate users who were also frequent users of benzodiazepines, alcohol and, in particular, stimulants. Gender, physical health, drug dependence and personal relationship problems were more powerful predictors of psychiatric symptoms than substance use.

Conclusions Addictions service providers should be vigilant to psychiatric problems among their clients at intake to treatment. Psychiatric symptoms are more closely linked to polydrug use than to opiate use in this population.

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Substance use disorders covary with other psychiatric disorders. Comorbidity is prevalent for substance use and dependence and for anxiety, affective, antisocial and other personality disorders (e.g. Regier *et al*, 1990; Kessler *et al*, 1994; Farrell *et al*, 1998). Clinical studies suggest that half of opioid- and cocaine-dependent individuals report lifetime depression, whereas one-third have depressed mood at intake to addiction treatment (Rounsaville *et al*, 1982; Kleinman *et al*, 1990). Improvement in psychological well-being and functioning is an important treatment goal for people with drug dependence (Task Force to Review Services for Drug Misusers, 1996), but the nature and course of psychiatric symptoms and disorders remain under-researched. In 1995, the National Treatment Outcome Research Study (NTORS) of problem drug users in the United Kingdom was established (Gossop *et al*, 1998a). In this report, clinical interview data from NTORS subjects on entry to treatment are used to describe the prevalence of recent psychiatric treatment and current psychiatric symptoms and to explore links between substance use, personal/social functioning and psychiatric symptoms.

METHOD

Sample

The nature of the NTORS cohort and the treatment agencies from which they were recruited have been described in a previous report (Gossop *et al*, 1998b) and a short description is provided here. The cohort comprised 1075 adult dependent drug users who were recruited to the study at intake to treatment. The composition of the cohort was as follows: 122 people from eight inpatient units; 286 from 15 rehabilitation units; 458 from 16 methadone maintenance clinics; and 209 from 15 methadone reduction programmes. The agencies were

selected to be representative of the main national treatment modalities in the UK. For the purpose of the present analysis, subjects entering the residential and community treatment settings studied by NTORS were combined into a single cohort.

Measures

Baseline intake data were gathered using a multi-dimensional client assessment interview administered by participating clinical personnel at each agency. The interview took 45–60 minutes to administer and contained several standardised instruments in addition to measures developed specifically for the study. A medical treatment history for the past 24 months was discussed and recorded. This included the number and duration of addiction treatments and general medical and psychiatric treatment episodes. Interviewers probed the responses of the clients to clarify the nature of the primary presenting disorder for each treatment episode.

Drug and alcohol use, physical health, psychiatric symptoms and personal/social functioning were assessed for the 90 days before intake. The intake assessment focused on self-reported frequency of taking heroin, methadone (prescribed and illicit), illicit benzodiazepines, cocaine base (crack), cocaine hydrochloride and amphetamines, using the Maudsley Addiction Profile (MAP; Marsden *et al*, 1998). The five-item Severity of Dependence Scale (SDS; Gossop *et al*, 1995) was used to assess the severity of self-reported dependence on the main problem substance. Physical health symptoms were recorded using a 49-item check-list from the Opiate Treatment Index (Darke *et al*, 1991). The severity of relationship, housing and legal problems was recorded using five-point self-rating scales (0–4) adapted from the Addiction Severity Index (McLellen *et al*, 1992). In the context of a research-oriented multi-dimensional client intake assessment, it was not feasible to undertake a formal psychiatric screening evaluation to determine lifetime and current diagnoses. Psychiatric symptoms were assessed using four sub-scales from the Brief Symptom Inventory (BSI); labelled anxiety, depression, paranoid ideation and psychoticism (Derogatis, 1993). We note that these symptom severity measures do not imply or diagnose functional nervous and psychotic psychiatric disorders. Substance

dependence diagnoses were assigned by the authors based on data gathered from clients' intake interviews.

Statistical methods

In order to examine the nature of observed links between substance use and psychiatric symptoms, cluster analysis was performed and cluster profiles were described using χ^2 and one-way analysis of variance. Predictors of psychiatric symptom severity were sought using multiple linear regression with backward elimination of covariates. Multivariate analysis of variance was used to assess links between the four psychiatric symptom sub-scales and polydrug use patterns.

RESULTS

Sample characteristics

The majority of clients entering treatment in NTORS agencies were men (74%, $n=796$) and 91% ($n=977$) identified their ethnic group as White-UK. The average age of the subjects was 29.3 years (range=16–58 years, $s.d.=6.7$). Rates of substance use during the three months prior to intake were as follows: heroin (87%), illicit methadone (49%), benzodiazepines (54%), stimulants (59%), and alcohol consumption above recommended sensible limits (28%). Urine samples were collected from a sample of 501 clients. The concordance between urinalysis and self-reported use of heroin, cocaine and amphetamines averaged 93% across these three drugs. Polydrug use was prevalent: 55% ($n=590$) were regular users of two or more illicit drugs recorded using the MAP before treatment intake. Dependence diagnoses and ICD-10 categories (World Health Organization, 1992) were assigned to the following substances: opiates (90.3%, $n=971$; ICD-10 category F11.2), cocaine (10.0%, $n=108$; ICD-10 category F14.2), amphetamines (6.2%, $n=67$; ICD-10 category F15.2) and benzodiazepines (22.2%, $n=239$; ICD-10 category F13.2).

Previous psychiatric treatment

In the two years before intake to treatment, 215 clients (20%) had received treatment for a psychiatric disorder other than drug or alcohol dependence. Ten per cent ($n=112$) had received in-patient psychiatric hospital treatment in this period, and 14% of the clients ($n=151$) had received

out-patient hospital treatment for a mental health problem from a community mental health team or general practitioner. A small group of clients reported separate treatment episodes in both in-patient and community settings ($n=48$; 4.5%). Forty-two per cent of these subjects were female. Clients who had received treatment from a community mental health or general practitioner reported attending an average of 18.4 ($s.d.=30.3$) appointments during their treatment contact. Clients who had received in-patient psychiatric treatment reported an average of 1.7 admissions and a total average duration of treatment of 28.4 days ($s.d.=37.4$) in the past 24 months.

Psychiatric symptoms

The internal reliability of each of the four sub-scales from the BSI among the NTORS cohort was satisfactory (anxiety, $\alpha=0.87$; depression, $\alpha=0.85$; paranoia, $\alpha=0.70$; psychoticism, $\alpha=0.73$). Score means of each sub-scale used were higher than published BSI norms for adult psychiatric patients (Derogatis, 1993), being some 1.5 times higher for depressive and paranoid-type symptoms and 1.3 times higher for the anxiety and psychoticism measures. High levels of severity were reported on the suicidal ideation item within the depression sub-scale. Twenty-nine per cent of the cohort reported having suicidal thoughts during the three months before intake to treatment ($n=307$); some 16.7% of men and 25.4% of women experienced the two highest severity categories on this measure ($\chi^2_{(1)}=10.26$; $P=0.001$). Overall, female subjects reported higher symptoms across all psychiatric symptom scales. With a cut-off taken at one standard deviation above the cohort mean, women had elevated levels of symptoms across all sub-scales. The reporting rates, odds ratios (ORs) and 95% confidence intervals (CIs) for women and men are as follows: anxiety (32.3% *v.* 17.5%, OR=2.25, 95% CI=1.65–3.07); depression (29.7% *v.* 14.9%, OR=2.41, 95% CI=1.74–3.35); paranoia (26.9% *v.* 17.1%, OR=1.78, 95% CI=1.28–2.47); and psychoticism (33.3% *v.* 19.6%, OR=2.05, 95% CI=1.51–2.79).

Scores on the four BSI sub-scales were significantly inter-correlated (average $r=0.70$; range=0.62–0.78). For economy we first elected to analyse subject response as a composite symptom severity index (SSI) by summing the score weights (0–4) across

the 23 items (Derogatis, 1993). The SSI was internally reliable ($\alpha=0.93$) and the mean score was 6.9 ($s.d.=3.5$; range=0–15.7). The SSI was negatively skewed; just three subjects scored zero on the scale. Correlations between the frequency of substance use and the SSI were statistically significant but weak (opiates: $r=-0.07$, $P=0.021$; prescribed methadone: $r=-0.08$, $P=0.005$; stimulants: $r=0.14$, $P<0.001$; benzodiazepines: $r=0.14$, $P<0.001$; alcohol: $r=0.10$, $P<0.001$).

Substance use clusters

We hypothesised that there would be an indirect association between substance use and psychiatric symptoms, given the prevalence of polydrug use in the cohort and weak correlations between the SSI and individual substance use. To assess this, substance use profiles for the cohort were created via a cluster analysis of frequency of opiate use, prescribed methadone, stimulants (cocaine and amphetamines), benzodiazepines and alcohol. Standardised scores on these measures were analysed sequentially using a κ -means optimisation procedure. A four-cluster solution was chosen as optimal on the basis of clarity of interpretation, proximity between cluster centres and cluster size. Cluster size and cluster centres are shown in Table 1.

Subjects in each cluster were users of opiates to varying degrees (ranging from 45% to 97% of the days used in the past three months before intake). Cluster A represents the largest group within the cohort ($n=425$) and contains subjects whose substance use profile was primarily oriented towards frequent opiate use. The other three clusters contain subjects who were opiate users but were also frequent users of the other assessed substances. Cluster B ($n=265$) contains subjects who were using opiates less frequently than the first cluster, but were taking prescribed methadone on a frequent basis prior to entry to treatment. Cluster C ($n=123$) consists of subjects who were oriented towards stimulant use and whose frequency of using cocaine or amphetamines was, on average, some 2.4 standard deviations above the cohort mean. Lastly, cluster D ($n=262$) describes subjects who, in addition to heroin and frequent prescribed methadone use, were frequent users of alcohol and benzodiazepines, with their average frequency of use for these latter substances falling 1.0 and 0.9 standard deviations,

Table 1 Cluster analysis of pre-intake substance use (n=1075)

Cluster	Opiates	Prescribed methadone	Stimulants	Benzodiazepines	Alcohol
A (n=425)	0.6173	-0.7592	-0.3288	-0.2618	-0.3689
B (n=265)	-0.6670	0.6771	-0.3553	-0.5453	-0.2657
C (n=123)	-0.1828	-0.2261	2.4246	-0.0790	0.2657
D (n=262)	-0.2409	0.6528	-0.2455	1.0133	0.9068

respectively, above the cohort mean. These four subject clusters were not uniformly distributed across the two index treatment settings ($\chi^2_{[3]}=112.32$; $P<0.001$). Those in the primary opiate-dependent group were more likely to receive treatment in a community methadone programme (79.1%) and those in the opiate/methadone group were marginally more likely to enter treatment in this setting (56.2%). Those in the stimulant-oriented group were more likely to enter a residential programme (69.1%) and those in the benzodiazepine/alcohol poly-drug use group were marginally more likely to enter a community methadone programme (55.0%). The remaining analyses employed measures from the psychiatric symptoms and personal/social functioning intake assessment domains to investigate the characteristics of each subject cluster for substance use response (see Table 2).

The benzodiazepine/alcohol-oriented cluster contained subjects who were older than those in the other three groups. The opiate/stimulant cluster group and the opiate/benzodiazepine/alcohol-oriented groups were also more likely than the primary opiate-oriented groups to have had previous psychiatric treatment in the two years before admission (see Table 2). The 48 subjects who had received an episode of psychiatric treatment in both a hospital and a community setting had significantly higher SSI scores than the rest of the cohort (mean=9.7 and 6.9, respectively; $F_{[1,1071]}=33.20$; $P<0.001$). Both the stimulant-oriented and benzodiazepine/alcohol-oriented subjects reported more severe psychiatric symptoms than the other two groups. The methadone- and stimulant-oriented groups tended to report higher levels of physical health symptoms. There were no statistically

significant differences in relationship, housing or legal problems.

Predictors of psychiatric symptoms

A multiple regression analysis was conducted between the SSI and the following covariates: subject gender; the four cluster groups; SDS; physical health symptoms; and relationship, housing and legal problems. Table 3 shows the univariate correlations between the substance use covariates and psychiatric health symptoms and standardised regression coefficients (β). Some 37% of the variance in SSI was predicted ($r=0.61$). The most important predictors of psychiatric symptoms were: the severity of physical health symptoms ($\beta=0.44$; $P<0.001$); the severity of dependence for the main problem substance ($\beta=0.15$; $P<0.001$); subject gender ($\beta=0.12$; $P<0.001$); and previous psychiatric treatment ($\beta=0.12$; $P<0.001$). These predictors all exerted stronger associations with psychiatric symptoms than the substance use clusters.

Finally, we assessed the pattern of scores on each of the sub-scales from the SSI (anxiety, depression, paranoia and psychoticism) across the substance use clusters via multivariate analysis of variance. With the use of Wilk's criterion, the combined dependent variables (symptom scores) were significantly different across the cluster groups ($F=6.04$, $P<0.001$).

Table 2 Substance use profiles with mean scores (standard deviations) on psychological health and personal social functioning measures (n=1075)

Domain	Measure	Primary opiates (n=425)	Opiates+methadone (n=265)	Opiates+stimulants (n=23)	Benzodiazepines/alcohol (n=262)	Critical values	P ²
Psychiatric health	Symptom severity index	6.4 (3.3) ^{a,b}	6.4 (3.4) ^{c,d}	8.2 (3.6) ^{a,c}	7.4 (3.5) ^{b,d}	$F=12.23$	<0.001
Personal/demographic	Gender (coded 1=female; %)	24.7	27.2	30.1	24.8	$\chi^2=1.82$	0.611
	Mean age	28.10 (6.3) ^a	29.3 (6.2) ^b	29.2 (7.3) ^c	31.3 (6.8) ^{a,b,c}	$F=13.30$	<0.001
Substance use ¹	Previous psychiatric treatment (%)	16.5	15.1	30.1	26.0	$\chi^2=20.91$	<0.001
	Opiates	96.9 (10.1)	44.9 (39.9)	62.5 (37.2)	59.0 (41.0)	$r^2=0.31$	
	Prescribed methadone	8.03 (20.50)	74.30 (39.6)	32.6 (43.5)	73.2 (40.6)	$r^2=0.45$	
	Stimulants	8.0 (13.4)	7.1 (13.2)	91.3 (14.2)	10.7 (17.0)	$r^2=0.77$	
	Benzodiazepines	17.5 (29.7)	6.4 (14.2)	25.0 (37.5)	67.6 (42.6)	$r^2=0.35$	
	Alcohol	12.3 (21.0)	10.3 (15.3)	34.5 (40.3)	56.8 (41.8)	$r^2=0.31$	
Physical health	Dependence	11.1 (2.8)	9.9 (3.1)	11.1 (2.9) ^b	10.2 (3.2) ^a	$F=10.55$	<0.001
	Symptoms	16.8 (8.0) ^{a,b}	20.3 (8.7) ^{a,d}	19.9 (8.7) ^{b,c}	15.6 (8.1) ^{c,d}	$F=15.01$	<0.001
Social functioning	Relationship problems	0.9 (1.2)	0.7 (1.2)	1.1 (1.3)	0.9 (1.3)	$F=2.98$	0.031
	Housing instability	0.2 (0.5)	0.2 (0.4)	0.2 (0.5)	0.3 (0.6)	$F=2.13$	0.094
	Legal problems	0.9 (1.2)	0.7 (1.2)	1.1 (1.3)	0.9 (1.3)	$F=2.83$	0.037

Note that means on the same row analysed via *F* test and sharing the same superscript letter are significantly differently via *post hoc* test (Sheffé, $P<0.05$).

1. Per cent of the days used within 90 days before intake for all substances.

2. Overall $\alpha=0.038$; $\alpha=1-[1-0.003]^{13}<0.05$.

Table 3 Standard multiple regression of psychological symptoms on personal/social measures and substance use profiles ($n=1075$; $F_{(10,1064)}=63.4$, $P<0.001$; $R^2=0.37$; $R=0.61$)

Covariates	Correlations with dependent variable	β
Gender (coded 1=female)	0.18***	0.12***
Previous psychiatric treatment	0.23***	0.12***
Cluster A	-0.10*** ¹	0.00 ²
Cluster B	0.07*	0.07*
Cluster C	0.14***	0.07*
Cluster D	0.08**	0.06*
Physical health problems	0.54***	0.44***
Severity of dependence	0.26***	0.15***
Relationship problems	0.16***	0.11***
Housing problems	0.12***	0.06*
Legal problems	0.15***	0.06*

* $P<0.05$; ** $P<0.01$; *** $P<0.001$.

1. Bivariate correlation of membership of being in cluster A with a symptom severity index.

2. Clusters B (methadone-oriented), C (stimulant-oriented) and D (benzodiazepine- and alcohol-oriented) are contrasted against cluster A (primary opiate-oriented) in the model.

Univariate F tests indicated that subjects in stimulant-oriented and benzodiazepine/alcohol-oriented clusters (clusters C and D) had highest scores for anxiety ($F=13.44$, $P<0.001$). Subjects in the stimulant-oriented cluster reported the highest overall distress levels on the anxiety measure. For depressive symptoms, subjects in the opiate/methadone group (cluster B) had lower levels of depressive symptoms than other subjects ($F=13.44$, $P<0.001$). On both the paranoid and psychotic symptoms, subjects in the stimulant and benzodiazepine/alcohol groups had higher scores than the opiate-oriented groups. Here, again, subjects in the stimulant-oriented group had the highest overall symptom levels on the paranoia and psychoticism measures ($F=7.04$ and $F=11.03$, respectively; $P<0.001$).

DISCUSSION

Psychiatric symptom levels at intake to specialist addiction treatment were high for many subjects in NTORS. Suicidal ideation as measured by an item from the depression sub-scale of the BSI was marked, particularly among women, and these clients also reported higher levels of symptom distress on all four BSI sub-scales. A sizeable minority of subjects had received previous recent treatment for psychiatric health disorders. Those with prior psychiatric treatment experience reported more severe psychiatric symptoms at intake to their index addiction treatment, with the highest overall levels reported by those clients who had received

psychiatric treatment in both in-patient hospital and out-patient community settings. The finding that one in five subjects had received treatment for a psychiatric health problem is consistent with previous reports showing that substance users with psychiatric problems appear to have relatively high contact with health care services (Alterman *et al*, 1993).

Relationship between substance use and psychiatric symptoms

A conditional rather than direct relationship between psychiatric symptoms and substance use is suggested by the study. For primary opiate-dependent clients with relatively low levels of polydrug use, pre-intake drug use does not correlate directly with psychiatric symptoms. Opiate use and psychiatric symptoms covary but only when opiate-dependent individuals report concurrent frequent stimulant or frequent benzodiazepine and alcohol use. These results are consistent with previous clinical reports of the psychiatric distress experienced by many opiate- and stimulant-dependent individuals (Swift *et al*, 1990; Darke *et al*, 1994). Our results stress the importance of assessing polydrug use patterns because NTORS subjects who were either frequent stimulant or benzodiazepine/alcohol users were likely to have severe anxiety, depression, paranoia and psychoticism symptoms compared with subjects who were oriented towards opiate use. In fact, depressive symptoms were relatively less severe among the opiate

users in receipt of a methadone prescription before intake.

Other more powerful predictors

Substance use aside, subjects with more severe physical health symptoms, those with more severe substance use dependence, those who had previous psychiatric treatment and those who reported higher levels of conflict in their personal relationships had more severe psychiatric symptoms. The close association between physical health and psychiatric symptoms has been observed in previous studies (Darke *et al*, 1994; Marsden *et al*, 1998). As Ward *et al* (1998) note, for many clients the decision to enter treatment may be influenced more by personal problems and distress than by heavy substance use.

Implications for services

These data illustrate the heterogeneity of treatment-seeking individuals in terms of their substance use profile. Recognition of the importance of understanding the links between substance use behaviour and psychiatric disorders and their implications for treatment services is now gaining momentum (Hall & Farrell, 1997; Johnson, 1997). The present study indicates that treatment service personnel should undertake a thorough assessment of cocaine, amphetamines, benzodiazepines and alcohol use. Opiate users with concurrent polydrug use may need special consideration and treatment planning (Strain *et al*, 1991). The importance of responding to psychiatric symptoms among female drug users entering addiction treatment should not be overlooked. People with addiction problems have an elevated risk of suicide (see Harris & Barraclough, 1997) and clients reporting suicidal ideation represent a priority group who may require an intensive initial treatment, particularly those with a history of suicide attempts. There is also value in conducting as thorough a psychiatric assessment as is practicable in the context of routine clinical practice. Such an assessment should attempt to trace the histories of substance use disorders and psychiatric disorders, and gauge their interaction and dynamics (Scott *et al*, 1998). An important objective should be to determine whether the symptoms exhibited by individuals reach clinically significant levels for specific disorders. We also suggest that the NTORS data imply that opportunities exist for improved coordination between addiction,

general medical and specialised mental health services. A structured care pathway approach may well be valuable in helping to organise and coordinate the timing of addiction, general medical and specialist psychiatric interventions in order to respond to client need.

Course of psychological symptoms

A critical issue for the NTORS study in this area concerns the course of psychiatric symptoms during and after treatment. Strain *et al* (1991) found that almost all depressive symptoms reported by clients entering methadone maintenance had ameliorated within the first week of treatment. An important further question to be addressed in subsequent reports concerns the extent, timing and course of change in psychiatric symptoms.

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CLINICAL IMPLICATIONS

- Specialist addiction treatment programmes should assess psychiatric symptoms and disorders and be vigilant to distress levels, particularly among female clients.
- Patterns of polydrug use, particularly concurrent stimulant, benzodiazepine and alcohol use, should be carefully assessed and managed because they are closely linked to psychiatric health symptoms in the opiate-dependent population.
- Clients reporting suicidal ideation represent a priority group who may require an initial intensive treatment contact, particularly those with a history of suicide attempts.

LIMITATIONS

- Psychiatric symptoms are based on self-report.
- Use of a single check-list instrument to assess psychiatric symptom severity.
- Detailed recent history data on psychiatric treatment were not collected.

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