

Psychiatric Disorders in Substance-Abusing Adolescent Inpatients: A Pilot Study

R. JEREMY A. STOWELL, M.D., F.A.P.A., AND TODD W. ESTROFF, M.D.

Abstract. In a pilot study of 226 adolescents entering inpatient treatment because of a primary substance use disorder, 82% met *DSM-III-R* criteria for an Axis I psychiatric disorder. Of this population, 74% had two or more psychiatric disorders. Mood disorders were found in 61%, conduct disorders in 54%, and anxiety disorders in 43%. Substance induced organic mental disorders were found in 16%. The data argue strongly for the simultaneous evaluation of both substance use and psychiatric disorders in this type of adolescent population. The pilot study also demonstrates the relative frequency of dually diagnosed subgroups. The authors propose that the dual diagnosis subgrouping may have specific treatment implications involving a combined psychiatric and substance abuse treatment approach. *J. Am. Acad. Child Adolesc. Psychiatry*, 1992, 31, 6:1036-1040. **Key Words:** adolescent, inpatient, substance abuse, dual diagnosis.

Evaluation and treatment of inpatient substance-abusing adolescents traditionally has emphasized either the clinical profile associated with substance use disorders or the clinical profile associated with psychiatric disorders. Frequently, minimal psychiatric evaluation and treatment occurs on inpatient adolescent substance abuse treatment units. Similarly, inpatient units oriented primarily to the treatment of psychiatric disorders often pay little attention to the nature and extent of adolescents' substance abuse.

A growing body of research data documents the coexistence of psychoactive substance use disorders and psychiatric disorders in the same patient (Bukstein et al., 1989; Demilio, 1989; Kashani et al., 1985; Kosten and Kleber, 1988; Mirin et al., 1988). Recent data from the National Institute of Mental Health Epidemiologic Catchment Area Program have shown that several psychiatric disorders that begin in late adolescence or young adult life increase the risk of later substance abuse (Christie et al., 1988). In that study, the risk for subsequent drug use disorders doubled for patients who had an earlier depressive or anxiety disorder. Newcombe et al. (1986) found that elevated scores on certain depressive symptom factors predicted later drug use among the adolescents studied. Major depression almost always preceded alcohol abuse (Deykin et al., 1987) among 424 college students, supporting the concept that depression may be a significant risk factor for subsequent substance abuse in adolescents and young adults.

Self-assessment data from 2,911 adolescent chemical dependency patients (Hoffmann, 1990; Harrison and Hoffmann, 1987) revealed 18% reported a suicide attempt and 38% reported frequent suicidal thoughts; 50% reported frequent sleep problems, fatigue, and lack of energy. Lifetime

anxiety/panic attacks were reported in 43% of the patients. Additionally, 37% of this substance abusing population experienced physical abuse and 22% reported sexual abuse. The median age of chemical use in this population began for alcohol by age 12, for marijuana by age 13, and for other chemicals by age 14.

Studies of adults entering chemical dependence treatment programs document 30 to 90% rates of associated primary or secondary psychiatric disorders (Allen and Frances, 1986; Lettieri and Ledford, 1981; Mirin et al., 1984; Rounsville et al., 1982; Rounsville and Kleber, 1984). In a McLean Hospital study (Mirin et al., 1988) of 160 adults presenting for treatment of primary substance abuse, approximately 40% met *DSM-III-R* criteria for some form of Axis I psychiatric disorder, exclusive of alcohol and drug dependence. Almost 30% were diagnosed as having some form of concurrent affective disorder. Conversely, 50% of adult psychiatric inpatients indicated recent alcohol or drug use problems before their hospital admission (Heckimon et al., 1968; McLellan et al., 1978, 1980).

Clinical observations have shown that alcohol and drug abuse can mimic and interact with all mental illnesses (Rounsville and Kleber, 1984; Woody et al., 1984). Analysis of lifetime prevalence of mental illnesses and alcohol and other drug abuse disorders, as shown in the National Institute of Mental Health Epidemiologic Catchment Area Study (Regier et al., 1988), revealed comorbidity rates of 28% among patients with a primary mental disorder diagnosis. Among those with an alcohol abuse diagnosis, there was a 45% comorbidity of mental disorders, and among those with a primary drug abuse diagnosis, 71% later developed a mental disorder. Another study (Ross et al., 1988) of 501 adult patients seeking assistance at different levels of care at an addiction research and treatment facility demonstrated that 78% had a Diagnostic Interview Schedule (DIS) lifetime psychiatric disorder in addition to a substance use disorder; 65% of the entire sample had multiple (3.5 on average) current DIS psychiatric diagnoses.

At present, there is a paucity of literature examining the comorbidity of substance abuse and other psychiatric disorders in adolescents (Bukstein et al., 1989). For substance abusing adolescents entering inpatient treatment, it is important to know the incidence as well as type of comorbid

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Dr. Stowell is Medical Director, Adolescent Program, Tidewater Psychiatric Institute, Virginia Beach, Va. and Dr. Estroff is Medical Director of Psychiatric Services, Riverwoods at S.R.M.C., Riverdale, GA.

Reprint requests to Dr. Stowell, 621 Lynnhaven Parkway #366, Virginia Beach, VA 23452, or Dr. Estroff, Riverwoods at S.R.M.C., 11 Southwest Upper Riverdale Road, P.O. Box 328, Riverdale, GA 30274.

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psychiatric disorders. Meyer (1986) has outlined possible relationships between addictive disorders and coexisting psychopathology. Psychopathology may serve as a risk factor for addictive disorders and may also modify the course of the addictive disorder in terms of its repetition, symptom picture, and response to treatment. Conversely, psychiatric symptoms can develop during the course of an addictive disorder or can emerge as a consequence of sustained substance abuse. In other cases, mental disorders and psychoactive substance use disorders may be unrelated in a significant way or may originate from a common vulnerability.

Given the limited reported data on dually diagnosed adolescent inpatients, there is a need to establish a specific psychiatric disorder profile of adolescents with substance use disorders. This pilot study was undertaken to help delineate such a profile.

Methods

The subjects were 226 consecutive inpatient adolescents (138 males and 88 females) who voluntarily entered acute inpatient treatment for primary psychoactive substance abuse problems at one of two private psychiatric facilities. Between June 1987 and July 1989, the mean age of these adolescents was 15.9 years and the age range was 12.2 to 18.4. The average length of stay was 34 days. The Cleveland Admission Criteria for adolescents (Hoffman et al., 1987) were used. Adolescents in this study all met treatment level V, medically supervised inpatient treatment, or level VI, medically managed inpatient treatment, admission criteria.

Each patient was interviewed prospectively at the time of admission by a psychiatrist (R.J.A.S.) who is examination certified (American Society of Addiction Medicine) in addiction medicine and Board certified in general psychiatry and adolescent psychiatry. Diagnoses were made using *DSM-III-R* criteria for both substance use and psychiatric disorders. Psychological testing administered 2 to 3 weeks after admission consisted of the Wechsler Intelligence Scales for Children-Revised, Wide Range Achievement Test-Revised, and Bender-Gestalt Visual-Motor Test. All diagnoses were made at the fourth week of the hospitalization using an extended semistructured psychiatric interview instrument based on the Schedule of Affective Disorders and Schizophrenia in School-Age Children, Present Episode (K-SADS) (Puig-Antich and Orvaschel, 1987) and the Substance Use Disorders Diagnostic Schedule (Harrison & Hoffmann). The interviewing psychiatrist received training in the administration and interpretation of K-SADS at the University of Pittsburgh Department of Child Psychiatry. Observed urine drug screen samples were obtained within 8 hours of admission. The radioimmunoassay method of drug detection was used with confirmation for positive samples by gas chromatograph/mass spectrometry. Parental data were collected through a clinical interview; no specific instrument was used. The study was approved by the Human Investigation Committee of the Norfolk and Portsmouth Psychiatric Centers before its initiation. All the above testing was performed at no additional cost to the patients.

TABLE 1. *Psychiatric Discharge Diagnosis of 226 Substance Abusing Adolescents (138 Males, 88 Females)*

Axis I <i>DSM-III-R</i> Psychiatric Diagnosis (Primary and Secondary)	% ^a
Total Axis I Disorders	82
I. Mood disorders	61
A. Major depression	18
B. Dysthymia	34
C. Major depression and dysthymia	12
D. Bipolar disorder	9
II. Conduct disorder	54
III. Anxiety disorders	43
A. Generalized anxiety disorder	25
B. Posttraumatic stress disorder	19
C. Phobias	12
D. Obsessive compulsive disorder	4
E. Panic disorder	3
IV. Oppositional defiant disorder	35
V. Identity disorder	21
VI. Organic mental disorder (substance induced)	16
VII. Adjustment disorders	12
VIII. Attention-deficit hyperactivity disorder	8
IX. Intermittent explosive disorder	6
X. Eating disorders	4
XI. Schizophrenia	3

^a Multiple diagnoses were given to many subjects. Therefore, the percentage total is greater than 100.

Results

The rates of Axis I psychiatric disorders in this population was 82% (Table 1). Two or more psychiatric diagnoses were found in 71% of the 226 adolescents. All of the adolescents met the criteria for substance abuse of one or more classes of psychoactive substances. Eighty-one percent qualified for the diagnosis of psychoactive substance dependence, which consisted predominantly of alcohol and marijuana dependence (Table 2). Most of the adolescents were dependent on two or more drugs of abuse (Table 3). The mean age of onset of use of the two major drugs of abuse were as follows: alcohol, 12.5 years old and marijuana, 13.4 years old. This

TABLE 2. *Substance Use Disorders in 226 Inpatients on Adolescent Substance Abuse Program (138 males, 88 females)*

Drug	Abuse or Dependence (%) ^a	Dependence (%) ^a
Any drugs	100	81
Nicotine	—	78
Alcohol	64	41
Marijuana	59	39
Cocaine	11	9
Stimulants	10	7
Hallucinogens	8	3
Inhalants	6	3
Tranquilizers	3	1
Barbiturates/sedatives	2	2
Opiates	1	1

^a More than one diagnosis was given to many study subjects. Therefore, the percentage total is greater than 100.

TABLE 3. Drug Dependence Frequencies^a in 226 Inpatients on Substance Abuse Program

Number of Drugs	Patients (%)
One drug	14
Two drugs	34
Three drugs	23
Four or more drugs	10
Abuse only	19
Total	100

^a Excludes tobacco.

drug abuse was preceded by the use of cigarettes. In 68% of the sample, interview data from both adolescents and their parents revealed that conduct disordered behavior and symptoms of depression preceded regular use of alcohol or other drugs of abuse.

The specific discharge psychiatric diagnoses of the adolescents who were originally admitted for their substance abuse problems were dominated by mood, conduct, anxiety, and oppositional defiant disorders (Table 1).

Organic mental disorders (Table 4) were present in 16% of the adolescents who abused certain psychoactive substances, especially alcohol, marijuana, LSD, and PCP, either alone or in combination. Psychological testing (Bender Gestalt and WISC-R) demonstrated they had a mild dementia that was not preexisting. The substance abuse appeared to cause impairment in short- and long-term memory, abstract thinking, and judgment. The interview data also showed marked impairment in school and social relationships. Substance induced delusional disorder and/or hallucinosis occurred infrequently but was present in a small percentage of patients. Half the adolescents who had alcohol intoxication and/or withdrawal symptoms required active detoxification from alcohol.

Admission urine drug screens were positive in 52% of the 226 adolescents. A positive urine screen for marijuana was found in 86% of patients who admitted their use and in 8% of the adolescents in the study who denied use. Similarly, cocaine was positive in 7% of the adolescents who admitted cocaine use and in only 3% of the adolescents who denied its use.

It is not clear whether certain substance abuse disorders predispose to the development of a specific group of psychiatric disorders or vice versa. To examine this question, the frequency of specific psychiatric and substance use disorder combinations is presented in Table 5. No significant patterns

were found. Depressive, anxiety, and conduct disorders frequently were associated with both alcohol and marijuana abuse, as is true for the overall sample.

Discussion

The findings of this pilot study show a high incidence of coexisting psychiatric disorders in adolescents originally admitted for inpatient evaluation and treatment of their substance abuse problems. The initial hypothesis was that one of three adolescents admitted to the substance abuse program would have a coexisting psychiatric disorder. The finding of 71% of the substance abusing adolescents with at least two psychiatric disorders was unexpected and served to underscore the pervasive psychopathology in this population. One of a number of questions that arose was whether the psychopathology was antecedent or secondary to the substance abuse or vice versa. The findings showed that a constellation of depression, anxiety, and conduct disturbed behavior preceded the regular use of alcohol or illicit drugs in 68% of the sample. This suggests that antecedent psychopathology was a risk factor for the development of substance abuse.

Alternatively, substance abuse appeared to exacerbate the psychiatric symptoms in almost all cases. For example, with regard to the depressive disorder subgroup (52%), there appeared to be multiple possible external contributing factors such as physical abuse, sexual abuse, learning disabilities, parental substance abuse, parental separation or divorce, unplanned pregnancy, and the death of a family member or close friend. Substance abuse characteristically became more pronounced during the time after such stressors and appeared to exacerbate the preexisting depressive symptoms.

The data concerning whether psychopathology preceded substance abuse or vice versa were based on self-report. This retrospective method is often unreliable and would be more accurate if prospective data could be practically and ethically collected.

Specific dual diagnosis subgroups, as represented in Table 5, reveal a high, but nonspecific, frequency of conduct, depressive, and anxiety disorders associated with a specific drug such as alcohol or marijuana, with a range of 26–45%. If specific combinations of dual diagnosis categories can be clearly defined, it is possible that more precise treatments could be designed to treat those populations.

One of the most complex psychiatric diagnostic subgroups was the 16% who manifested organic mental disorders. Initially, it was difficult to separate the organic mood and organic anxiety disturbances from other mental disorders with these symptoms. Additionally, among the 11% of this subgroup with mild dementia, sorting out how much of this impairment stemmed from chronic substance abuse versus primary depression was often not possible. All of the adolescents in this subgroup had chronically (> 2 years) abused marijuana. One speculation, based on studies showing memory impairment in cannabis abusers, was that chronic marijuana abuse contributed to the overall memory impairment (Schwartz et al., 1989; Wert and Raulin, 1986).

A central question of this pilot study was whether the

TABLE 4. Organic Mental Disorders in 226 Inpatients in Adolescent Substance Abuse Program

	% ^a
Organic mental disorders	16
Intoxication and/or withdrawal, alcohol	10
Withdrawal requiring detoxification	5
Delusional and/or hallucinosis, substance induced	5
Dementia, substance induced	11

^a More than one organic mental disorder diagnosis was made in some subjects. Therefore, the percentages total more than 16.

TABLE 5. Specific Combinations of Psychiatric and Substance Use Disorders

Psychiatric Disorder		Substance Use Disorder	% ^a
Conduct	and	Marijuana	45
Conduct	and	Alcohol	39
Depressive	and	Alcohol	38
Depressive	and	Marijuana	34
Anxiety	and	Alcohol	30
Anxiety	and	Marijuana	26
Conduct	and	Cocaine	10
Conduct	and	Stimulant	9
Depressive	and	Cocaine	8
Depressive	and	Stimulant	8
Organic	and	Marijuana	8

^a More than one dual diagnosis category was possible. Therefore, the percentage total is greater than 100.

psychiatric clinical interview reliably categorizes these patients into diagnostic subgroups. Griffin et al. (1987) as well as Ford et al. (1989) found only low to moderate concordance of the clinical (*DSM-III-R*) and the DIS diagnoses among patients in a "dual diagnoses" treatment program. The study reported by Griffin et al. (1987) involved adult drug dependent patients, whereas the study by Ford et al. (1989) involved adults hospitalized primarily for mental illness. Both studies outline the need for further development and testing of reliable diagnostic instruments to identify patients with specific dual diagnoses involving mental illness and substance abuse. They suggest that a combination of clinical assessment augmented by structured data collection would lead to greater reliability and validity. The previously cited adult studies have somewhat limited application to adolescents because additional diagnostic uncertainty is inherent when attempting to diagnose an adolescent sample. The use of the Schedule for Affective Disorders and Schizophrenia in School-Age Children, Present Episode and Epidemiologic version (K-SADS-P, K-SADS-E) or an equivalent instrument would provide this type of structured data collection for the psychiatric diagnostic categories. Additionally, such structured follow-up interview data collection obtained at 6-month intervals for at least 2 years would provide valuable information as to the longitudinal course of the disorders found during hospitalization.

The pilot study did not obtain data on the existence of substance use disorders or psychiatric disorders among family members of these adolescents. The need for this is underscored by the family pedigree data as outlined by Mirin et al. (1988). The data showed that among first-degree relatives of 160 adult substance abusers approximately 30% met *DSM-III-R* criteria for at least one Axis I psychiatric diagnosis during their lifetime. Additionally, regarding concurrent substance abuse among family members, there is a strong correlation between drug use by teenagers and drug use by older family members (Gfoerger, 1987). In another study, Akiskal et al. (1985) found that substance abuse with minor mood swings progressed to criteria for bipolar disorder in 39% of the juvenile offspring or siblings of adult bipolar patients. Bukstein et al. (1989) suggest family studies may

help substance abusing adolescents to better understand the genetics of comorbidity and to help understand the relationships between substance abuse and the coexisting psychiatric disorders.

One shortcoming of this study is the lack of a formal control group, which limits the conclusions that can be reached. Another limitation is that this is not a longitudinal study and relies heavily on data from a brief cross section of time (approximately a month) rather than a longer period of months or several years. Clearly, a longitudinal, prospective study would provide more meaningful data. Two other limitations of this study relate to the bias (Berkson's) where it was probable that adolescents referred to an inpatient setting would have more likelihood of multiple diagnostic problems than a sample at a lesser level of care. In addition, a single observer was used to make the psychiatric diagnoses. The use of multiple observers in future studies would be indicated.

Conclusions

This pilot study found a high rate of multiple psychiatric disorders in adolescents who entered inpatient treatment because of primary substance use disorders. A major implication of this finding is the need for simultaneous evaluation of both the substance abuse and psychiatric disorders in this adolescent population. This finding, coupled with further research in this area, can have important therapeutic implications.

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