Substance Use and Abuse in First-Episode Psychosis: Prevalence Before and After Early Intervention

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Despite the high prevalence of substance abuse among first-episode psychosis (FEP) populations, few studies examine whether early intervention (EI) improves substance abuse. Objective: To examine the prevalence and pattern of substance use and abuse among an FEP sample over 12 months. Methods: All the participants were diagnosed with a first episode of a schizophrenia spectrum disorder. The participants were followed prospectively. The prevalence rates of substance use and abuse from this sample were compared before and after 12 months of EI services and were compared with rates observed in a sample from the general population. Results: A total of 200 participants (80.0% males; mean age 24 years) entered the study: 183 participants completed all the assessments at baseline, 131 participants completed all the assessments at 12 months. At baseline, the findings showed similar prevalence rates between the FEP sample and the general sample for lifetime cannabis use (60% vs 55%, respectively) and hazardous alcohol use (26% vs 21%) but significantly different prevalence rates for lifetime hallucinogen (29% vs 15%; \( P < .001 \)) and cocaine use (20% vs 14%; \( P < .001 \)). At 12 months, the prevalence rates for drug abuse (\( P < .01 \)), hazardous alcohol use (\( P < .01 \)), and concurrent drug abuse and hazardous alcohol use (\( P < .05 \)) were significantly lower than at baseline. Conclusion: Substance use and abuse decreased significantly after 12 months of EI services; EI services may be able to detect and to reduce substance use among FEP patients before it becomes a more serious disorder.

Key words: schizophreniform/cannabis/hallucinogens/ alcohol

Introduction

Substance abuse, which includes alcohol and street drugs, is common among first-episode psychosis (FEP) patients, but the prevalence of cannabis abuse is particularly high. Estimates of the prevalence of cannabis abuse among patients with FEP range from 13.0%¹ to 75.0%.² Cannabis is the most commonly abused substance among younger people with FEP.³ In contrast, alcohol is the most commonly abused substance among older people with chronic schizophrenia.³

Cannabis abuse among youth experiencing a first episode of psychosis appears to have negative implications for prognosis and relapse. Patients with FEP who abused cannabis and other substances, compared with nonabusers,⁴ have been reported to benefit less from early intervention (EI) services designed to treat FEP. Participants with comorbid substance abuse and FEP had significantly higher hospital admission rates than FEP participants who did not abuse substances.⁵ Among FEP populations, cannabis abuse is associated with a higher incidence of aggression among males.⁶ Cannabis abuse has also been implicated as a risk factor for psychosis.²,⁷,⁸ Epidemiological studies have shown an earlier age of onset of psychosis among regular cannabis users. Furthermore, epidemiological studies have also shown that adolescents who use cannabis on a weekly basis,
compared with nonusers, show a greater risk of developing acute psychosis 3 or more years later.\textsuperscript{7,9–12}

Compared with cannabis abuse, studies examining the prevalence of alcohol, hallucinogen, and cocaine abuse among patients with FEP remain relatively rare. Most FEP studies fail to separate the prevalence rates for hallucinogen vs cocaine abuse and do not compare the prevalence rates found among FEP populations to those found in the general population. One study reported a baseline prevalence rate of 14.6\% for alcohol abuse in a clinic sample of adolescent-onset FEP patients,\textsuperscript{13} but the prevalence rate was higher for other substances of abuse, at 32.1\%. The proportion of patients meeting criteria for cannabis vs hallucinogen abuse was not reported. A more recent study\textsuperscript{8} found that 27.0\% of a clinic sample of FEP patients met criteria for problem drinking and that 30.0\% of the same sample met criteria for lifetime use of hallucinogens. Many of the individuals with FEP who abuse cannabis also abuse other substances, such as alcohol or amphetamines.\textsuperscript{14} Therefore, poly-substance abuse may contribute to poor prognosis among individuals with FEP.

Despite the high prevalence of substance abuse among individuals with FEP, studies are rare that compare the lifetime prevalence rates of cannabis, alcohol, hallucinogen, or cocaine use among persons with FEP from clinic populations with age-matched controls from the general population. Lifetime use of substances acknowledges that an individual has used or tried that substance, whereas \textit{Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)}, abuse criteria require that an individual has experienced adverse consequences as a result of his/her substance use, such as failures at work or school, as well as problems with interpersonal or social functioning.\textsuperscript{15} \textit{DSM-IV} substance dependence refers to the presence of tolerance, withdrawal, or continued use despite multiple episodes of substance-related problems\textsuperscript{15} that lead to clinically significant impairment. Although EI services have the potential to detect hazardous substance use, not all the patients who use substances with psychoactive properties will meet \textit{DSM-IV} criteria for substance abuse, and yet, the high comorbidity between psychosis and substance abuse suggests that many of these patients will develop substance abuse at a later stage.

How does one recognize those patients with FEP at risk of becoming substance abusers? More studies are needed for comparing the prevalence and patterns of substance use in patients with FEP to the general population. Such information will allow one to gauge the extent of the problem and to develop clinical guidelines and policies on how to help patients manage their use. Knowledge about this area is particularly important for cannabis use, which appears to be prominent among patients with FEP.\textsuperscript{16} The present study describes the use and abuse of substances among patients who present for treatment at EI services. The substances that were examined in this study included alcohol, cannabis, hallucinogens, cocaine, and stimulants. The main objectives were as follows:

1. To assess the prevalence and demographic correlates of substance use and abuse in a clinic sample of patients treated at 4 EI services in Ontario, Canada.
2. To compare the prevalence rates of substance use and abuse in patients with those of a sample from the general population.
3. To assess changes in the prevalence and scope of substance abuse before and after 12 months of EI services.

\textbf{Methods}

This report was based upon a prospective multisite study of outcomes for people experiencing a first episode of psychosis from 4 EI services in Ontario, Canada. The research staff assessed participants at baseline, at admission to the EI service, and again after 12 months. Interrater reliability was established for all the scales at a meeting attended by research staff from all 4 sites. The study was approved by the Research Ethics Board at each program’s institution. All the participants provided informed consent prior to enrollment.

The participants were surveyed to compare the prevalence rates of substance use and abuse with those of a sample from the general population (see Canadian Addiction Survey Sample section) and to assess changes in the prevalence and scope of substance abuse before and after 12 months of EI services.

\textbf{Study Population}

Eligible patients were between the ages of 16 and 50 and were voluntary in- or outpatients at the time of enrollment. Participants who were in hospital on an involuntary basis at the time of enrollment were not invited to participate in the study until their status was changed to voluntary, due to ethical considerations. To be eligible, participants had a diagnosis of schizophrenia, schizoaffective disorder, delusional disorder, brief psychotic disorder, or psychotic disorder NOS at baseline and at 12 months based on the \textit{DSM-IV}.\textsuperscript{15} Diagnosis was confirmed using the Structured Clinical Interview for \textit{DSM-IV} Axis I Disorders (SCID).\textsuperscript{17} Each participant had experienced a “first episode of psychosis” defined as the first illness episode involving psychotic symptoms of at least 1 week duration in a patient who had received less than 1 month of antipsychotic medication treatment prior to clinic involvement. Patients who attended the 4 EI services during the enrollment period were screened for eligibility.

The study excluded participants who had experienced a remission of symptoms for greater than 3 months prior
to entry and participants who had received a primary diagnosis of mental retardation, developmental disorder, or psychosis due to a general medical condition. Patients were not included in this study who met criteria for a primary diagnosis of personality disorder or substance-induced psychosis, based on the SCID, because the focus of this study was comorbid substance abuse among patients with schizophrenia spectrum disorder. At baseline, it is often difficult to differentiate substance-induced psychosis from a schizophrenia spectrum disorder; however, none of the participants met criteria for substance-induced psychosis at 12 months.

Programs

EI services offer specialized care that addresses the phase of the individual’s development and the stage of his/her illness. Some EI programs, but not all, offer early detection strategies to reduce the duration of untreated psychosis.

The EI services in this study were located at 4 academic centers in Ontario, Canada: Toronto, London, Hamilton, and Ottawa. The First Episode Psychosis Program at the Centre for Addiction and Mental Health in Toronto is affiliated with the University of Toronto and consists of an outpatient clinic, an inpatient unit, and a Home Intervention Program. The First Episode Psychosis Program serves a population of 2.5 million people. The Prevention and Early Intervention Psychosis Program (PEPP) in London is affiliated with the University of Western Ontario and consists of an outpatient and inpatient unit and a Home Intervention Program. The First Episode Psychosis Program at McMaster University in Hamilton and consists of an outpatient clinic. The PEPP serves a population of approximately 400 000. When the study began, the Psychotic Disorders Clinic (PDC) at McMaster University, Hamilton Health Sciences, was affiliated with McMaster University in Hamilton and consisted of an outpatient clinic. The PDC provided services to people living in the western part of Hamilton, a population of approximately 200 000. The Ottawa First Episode Program is a program of the Ottawa Hospital and is affiliated with the University of Ottawa. The Ottawa program provides care to inpatients and outpatients. The program serves the Champlain District of Eastern Ontario with a catchment area of 1.2 million. Each program was a tertiary care center that accepted referrals from family physicians, emergency rooms, inpatient units, and in some cases self-referrals.

Researchers and clinicians from each of the 4 programs were founding members of the Ontario Working Group on Early Intervention in Psychosis, a network for supporting training, emerging best practice, and advocacy for EI. Although the care provided by each of the 4 programs was not standardized, the common key service components that were offered were based on the following EI principles:

- rapid service to avoid long delays in treatment,
- low-dosage antipsychotic medication,
- case management or care coordination,
- client psychoeducation about psychosis and substance abuse,
- family psychoeducation,
- services to support return to work or school.

All the programs had a mandate to treat and follow patients for 12 months or longer. None of the programs provided specialized addiction services, but all the programs offered phase-specific treatments based upon EI in psychosis principles, to patients who had comorbid substance abuse and a psychotic disorder.

Canadian Addiction Survey Sample

Lifetime substance use data for Canadians were drawn from the Canadian Addiction Survey (CAS). The purpose of this survey was to determine the prevalence of alcohol and street drug use among the Canadian population. This survey was conducted in 2003/2004 and was published in 2005. The design involved random-digit telephone dialing of households. A total of 13 909 individuals completed the telephone survey. The survey obtained a response rate of 47.0%.

The CAS stratified the population into subgroups based on age (15–17, 18–19, 20–24, 25–34, 35–44, 45–50). Because the CAS data included adults who were older than participants in the FEP sample, we excluded CAS data involving age categories not found in our sample.

The age-adjusted prevalence rate for use and abuse was estimated for each substance using the prevalence rate and the number of participants for each age category from the CAS. These age-adjusted prevalence rates were used in the comparisons between the FEP sample and the CAS sample in table 2.

Measures

Clinical and Sociodemographic Measures. The baseline diagnosis was drawn from the SCID. Baseline measures were also drawn from the Community Mental Health Evaluation Initiative (CMHEI) in Ontario (CMHEI Web site: http://www.ontario.cmha.ca/cmhei/index.asp). This tool collects information on hospitalizations, arrests within the previous 6 months, marital status, ethnicity, employment status, and other sociodemographic characteristics.

Alcohol Use and Abuse Measures. Lifetime rates of DSM-IV alcohol abuse and dependence were assessed at baseline only using the SCID.

Current hazardous alcohol use and heavy drinking were assessed using the Alcohol Use Disorders Identification Test (AUDIT). The AUDIT tracks drinking behaviors over the last year. The AUDIT scale assesses
hazardous alcohol use, using a 10-item self-report questionnaire with scores that range from a low of 0 to a high of 40. A score of 8 or more on the AUDIT indicates hazardous alcohol use and suggests alcohol abuse in a clinic sample.

The AUDIT was also used to classify participants into the group labeled “heavy drinking.” If participants consumed “5 drinks or more” in a day, then the participants met criteria for heavy drinking. Although smaller quantities of alcohol can lead to dysfunction and poor outcome among patients with psychiatric illness, the heavy drinking criterion was employed in this study to facilitate comparisons with the CAS. Heavy drinking indicates drinking amounts of alcohol above the “low-risk drinking” guidelines proposed by the Addiction Research Foundation (now called the Centre for Addiction and Mental Health) and the Canadian Centre on Substance Abuse. (The “heavy drinking” classification was modified from the CAS definition because the CAS defined heavy drinking as "5 or more" for males and "4 or more" for females, whereas the AUDIT provided only 2 categories: "3 to 4 drinks" and "5 or more.")

When this study began, there were no instruments available that had specific reliability and validity data for detecting substance abuse in an FEP population. However, the Drug Abuse Screening Test (DAST) (see below) and the AUDIT have been used in studies that have assessed substance abuse in FEP populations. The AUDIT has also been used in a schizophrenia sample. The AUDIT has shown good sensitivity and specificity for screening risky drinking behavior among individuals with psychiatric disorder.

Drug Use and Abuse. The prevalence rates of lifetime cannabis, hallucinogen, cocaine, and stimulant use were assessed using the SCID. The SCID asks "have you ever used or tried?" a particular drug. The SCID Drug Abuse category assesses all forms of nonalcoholic substance use within a 12-month period based on DSM-IV criteria embedded in the SCID interview.

Drug abuse was also assessed using the DAST. The DAST explores harmful drug use, using a 20-item self-report questionnaire with scores that range from a low of 0 to a high of 20. A score of 6 or more on the DAST indicates drug abuse. The DAST tracks drug-taking behavior prior to coming to the clinic at baseline. At 12 months, the DAST tracks the consequences of drug use during the previous 12 months.

The DAST has shown good validity, internal consistency (alpha = 0.92), and test-retest reliability (r < 0.70) in the assessment of drug abuse among the seriously mentally ill. The DAST has shown good sensitivity and specificity for screening drug abuse among individuals with psychiatric disorder. The DAST has a sensitivity of 0.72 and a specificity of 0.77 for identifying cannabis and cocaine abuse in a seriously mentally ill population.

Concurrent Drug Abusers and Hazardous Alcohol Users. A "combined disorders" group was created based on drug abuse (DAST ≥ 6) and hazardous alcohol use (AUDIT ≥ 8) to categorize those individuals who abused both alcohol and drugs.

(a) Measures at baseline

1. The CMHEI was used to assess sociodemographic characteristics, arrests, and involuntary hospitalizations within the previous 6 months.
2. The AUDIT and DAST were used to determine the prevalence of heavy drinking, hazardous alcohol use, drug abuse, and concurrent drug abuse and hazardous alcohol use.
3. The SCID was used to assess lifetime substance use and to assess DSM-IV lifetime alcohol abuse and dependence, as well as drug abuse within a 12-month period.

(b) Outcome measures tracked over 12 months

The following measures were used to track outcomes between baseline and 12 months:

1. The AUDIT and DAST yielded the prevalence of heavy drinking, hazardous alcohol use, drug abuse, and concurrent drug abuse and hazardous alcohol use within the last year.
2. Arrests and involuntary hospitalizations measured by the CMHEI assessment tool.

Data Analyses

Data were analyzed using the Statistical Package for Social Sciences, version 14.0. Fisher exact test was used to assess the significance of contrasts in proportions related to differences in substance use and abuse between the FEP and the CAS samples. The Fisher exact test was also used to assess significant differences in the proportions of involuntary hospitalizations and arrests for substance abusers vs nonabusers. The McNemar test was used to compare baseline and 12-month prevalence rates of drug abuse, hazardous alcohol use, heavy drinking, and the combined disorders for the FEP sample. Associations involving gender, age, and type of substance use were examined using chi-square or Fisher exact test. All P values presented are 2 tailed and were considered statistically significant if P < .05.

Results

The study enrollment was conducted between November 2001 and November 2003. A total of 335 patients were assessed for eligibility: of these, 296 patients were eligible and 262 were approached. Sixty-two of the patients...
approached refused to participate, leaving 200 patients who consented. At baseline, complete data were available on the various measures of substance use and abuse for 183 of the participants. A total of 153 participants completed the study at 12 months, but there were 2 participants who were excluded because their diagnosis changed from a schizophrenia spectrum diagnosis to bipolar illness at 12 months. Therefore, 151 or 75% of the original sample completed the study. Up to 20 participants had some missing data on some of the substance abuse scales at 12 months. Therefore, complete data were available for a minimum of 131 participants or 65% of the original sample at the 12-month follow-up point.

At baseline, there were no significant differences between those participants who completed the study and those participants who dropped out (which included the individuals with incomplete data sets for substance use and abuse) in terms of key outcome variables such as gender, mean age, highest education achieved, employment status, ethnicity, or diagnosis (classified as schizophrenia vs all other schizophrenia spectrum disorders to avoid cells less than 5 for statistical purposes).

**Clinical and Demographic Characteristics of the Study Sample**

Table 1 shows that the sample at baseline was predominantly male, lived with their family of origin, and had a diagnosis of schizophrenia. Less than 40% were unemployed. The median duration of untreated psychosis for the total sample was 22.1 weeks with a mean of 60.6 and an SD of 111.2. The majority of the patients drank infrequently: 27.0% never drank and 37.0% drank monthly or less. Fewer patients reported drinking heavily: 18.2% drank 5 or more drinks in a typical drinking day.

**Prevalence and Demographic Correlates of Substance Use and Abuse at Baseline**

Table 2 shows that next to alcohol use, cannabis was the most prevalently used substance among the FEP sample at baseline. Current heavy drinking and hazardous alcohol use were more prevalent than alcohol abuse or dependence. There were no significant differences in the prevalence rates of drug abuse, hazardous alcohol use, heavy drinking, and concurrent drug abuse and hazardous alcohol use across the 4 sites. The participants who met criteria for drug abuse, hazardous alcohol use, heavy drinking, and the group concurrent for drug abuse and hazardous alcohol use were not significantly different from the total FEP sample in terms of demographic and clinical characteristics displayed in table 1.

Polysubstance use was common among the FEP sample. Almost half of the cannabis users (49.5%) from the FEP sample had also used other substances. Almost a quarter (24.0%) of the cannabis users had also used hallucinogens and cocaine. All hallucinogen or cocaine users had a lifetime use of other drugs, usually cannabis, with the exception of 1 participant who reported only using hallucinogens.

A greater proportion of males than females were drug abusers (42.7% males vs 20.5% females) (Fisher exact test, \( P = .015 \)) and hazardous alcohol users (30.0% males vs 12.8% females) (Fisher exact test, \( P = .039 \)). There were no significant gender differences for the group of participants meeting criteria for concurrent drug abuse and hazardous alcohol use.

A greater proportion of participants in the 18–24 age category were drug abusers (45.0% of drug abusers were

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**Table 1. Clinical and Demographic Characteristics of the Total First-Episode Psychosis Sample at Baseline**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Total Sample, First-Episode Psychosis (N = 200)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>156</td>
</tr>
<tr>
<td>Female</td>
<td>44</td>
</tr>
<tr>
<td>Age, y (by category)</td>
<td></td>
</tr>
<tr>
<td>15–17</td>
<td>12</td>
</tr>
<tr>
<td>18–24</td>
<td>117</td>
</tr>
<tr>
<td>25–34</td>
<td>51</td>
</tr>
<tr>
<td>35–50</td>
<td>20</td>
</tr>
<tr>
<td>Mean age, y (SD)</td>
<td>24.37 ± 6.652</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>16</td>
</tr>
<tr>
<td>Separated</td>
<td>7</td>
</tr>
<tr>
<td>Divorced</td>
<td>3</td>
</tr>
<tr>
<td>Single/never married</td>
<td>174</td>
</tr>
<tr>
<td>Highest education</td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>69</td>
</tr>
<tr>
<td>Completed high school</td>
<td>47</td>
</tr>
<tr>
<td>Some postsecondary</td>
<td>64</td>
</tr>
<tr>
<td>Graduated university</td>
<td>19</td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
</tr>
<tr>
<td>Full time</td>
<td>66</td>
</tr>
<tr>
<td>Part-time regular</td>
<td>42</td>
</tr>
<tr>
<td>Part-time casual</td>
<td>12</td>
</tr>
<tr>
<td>No job</td>
<td>73</td>
</tr>
<tr>
<td>DSM-IV diagnosis</td>
<td></td>
</tr>
<tr>
<td>Schizophrenia</td>
<td>95</td>
</tr>
<tr>
<td>Schizophreniform</td>
<td>34</td>
</tr>
<tr>
<td>Schizoaffective</td>
<td>20</td>
</tr>
<tr>
<td>Delusional disorder</td>
<td>7</td>
</tr>
<tr>
<td>Brief psychotic disorder</td>
<td>5</td>
</tr>
<tr>
<td>Psychosis NOS</td>
<td>37</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>121</td>
</tr>
<tr>
<td>Black</td>
<td>31</td>
</tr>
<tr>
<td>Asian</td>
<td>17</td>
</tr>
<tr>
<td>Other</td>
<td>28</td>
</tr>
</tbody>
</table>

*Note: DSM-IV, Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition.*
18–24 years of age; Fisher exact test, $P = .013$) compared with the other age categories combined (28.5.0% of drug abusers). There were no significant age-related differences for hazardous alcohol use, heavy drinking, or the group meeting criteria for concurrent drug abuse and hazardous alcohol use.

There were discrepancies in the prevalence rates between the SCID diagnoses of abuse and the AUDIT and DAST measures of use and abuse. More specifically, more participants met criteria for heavy drinking and hazardous alcohol use than lifetime alcohol abuse or dependence. The participants who met criteria for heavy drinking or hazardous alcohol use were not for the most part the same participants who met criteria for lifetime dependence. Only 1 out of the 21 participants (3.1%) from table 2 who were "heavy drinkers" and only 2 out of the 48 (4.2%) participants from table 2 who were "hazardous alcohol users" met criteria for lifetime alcohol dependence. The measures used to assess heavy drinking and hazardous alcohol use vs lifetime alcohol abuse and lifetime dependence employed different reference points, more specifically, over a 12-month period for the AUDIT vs a lifetime for the SCID (table 2). Similar discrepancies in the prevalence rates were obtained for the DAST vs the SCID diagnoses of drug abuse (table 2).

**Comparison of Substance Use/Abuse in FEP Participants With the Canadian Sample (CAS)**

Table 2 shows similar rates for the prevalence of lifetime cannabis use, stimulant use, heavy drinking, and hazardous alcohol use between the FEP and the CAS samples. The only significant differences between the 2 samples were for lifetime hallucinogen and cocaine use. Cannabis was the most prevalent street drug for both the samples followed by hallucinogen use. When age was controlled by limiting the analysis to participants 18–24 years of age, the largest age-group in the FEP sample, the FEP sample still reported a similar prevalence of lifetime cannabis use (64.8%) compared with the Canadian sample (68.9%).

**Outcomes at 12 Months**

Table 3 shows that there were significant reductions in the prevalence of drug abuse, hazardous alcohol use, and concurrent drug abuse and hazardous alcohol use over the 12-month period, but there were no significant reductions in the proportion of participants meeting the criteria for heavy drinking.

Table 4 shows that the prevalence of arrests and involuntary hospitalizations associated with substance abuse...
The comparison groups were as follows:

1. drug abusers vs the participants who did not meet criteria for drug abuse,
2. concurrent drug and hazardous alcohol use group vs the participants who did not meet this criteria and,
3. hazardous alcohol users vs the participants who were not hazardous alcohol users.

At baseline, significantly more drug abusers were admitted on an involuntary basis and arrested than non–drug abusers. Similarly, significantly more concurrent drug abusers and hazardous alcohol users were admitted on an involuntary basis and arrested than non–drug abusers.

Table 3. Comparison of Drug Abuse, Heavy Drinking, Hazardous Alcohol Use, and Concurrent Drug Abuse and Hazardous Alcohol Use at Baseline and 12 Months

<table>
<thead>
<tr>
<th>Type of Substance Use/Abuse</th>
<th>Number of Participants at 12 mo</th>
<th>Baseline Users</th>
<th>12-Month Users</th>
<th>McNemar Test (P Value)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Drug abuse</td>
<td>131</td>
<td>42</td>
<td>32.1</td>
<td>22</td>
</tr>
<tr>
<td>Heavy drinking</td>
<td>134</td>
<td>21</td>
<td>15.7</td>
<td>18</td>
</tr>
<tr>
<td>Hazardous alcohol use</td>
<td>132</td>
<td>28</td>
<td>21.2</td>
<td>13</td>
</tr>
<tr>
<td>Concurrent drug abuse and hazardous alcohol use</td>
<td>135</td>
<td>15</td>
<td>11.1</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 4. Prevalence of Involuntary Hospitalizations and Arrests for Drug Abusers, Hazardous Alcohol Users, and Concurrent Drug Abusers and Hazardous Alcohol Users Compared With Those Who Do Not Meet Criteria for Relevant Group at Baseline and 12 Months

<table>
<thead>
<tr>
<th>Substance Use/Abuse vs Nonabuse</th>
<th>Involuntary Hospitalizations at Baseline</th>
<th></th>
<th>Involuntary Hospitalizations at 12 mo</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>%</td>
<td>No</td>
<td>%</td>
</tr>
<tr>
<td>Drug abuser</td>
<td>30</td>
<td>57.7</td>
<td>22</td>
<td>42.3</td>
</tr>
<tr>
<td>Non–drug abuser</td>
<td>31</td>
<td>32.3</td>
<td>65</td>
<td>67.7</td>
</tr>
<tr>
<td>Hazardous alcohol user</td>
<td>21</td>
<td>56.7</td>
<td>16</td>
<td>43.2</td>
</tr>
<tr>
<td>Nonhazardous alcohol user</td>
<td>40</td>
<td>35.7</td>
<td>72</td>
<td>64.3</td>
</tr>
<tr>
<td>Concurrent drug abuse and hazardous alcohol user</td>
<td>17</td>
<td>74.0</td>
<td>6</td>
<td>26.0</td>
</tr>
<tr>
<td>Nonconcurrent</td>
<td>44</td>
<td>35.0</td>
<td>82</td>
<td>65.0</td>
</tr>
<tr>
<td>Total FEP sample</td>
<td>61</td>
<td>40.9</td>
<td>88</td>
<td>59.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substance Use/abuse vs nonabuse</th>
<th>Arrests at Baseline</th>
<th></th>
<th>Arrests at 12 mo</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>%</td>
<td>No</td>
<td>%</td>
</tr>
<tr>
<td>Drug abuser</td>
<td>10</td>
<td>19.6</td>
<td>41</td>
<td>80.4</td>
</tr>
<tr>
<td>Non–drug abuser</td>
<td>5</td>
<td>5.1</td>
<td>93</td>
<td>94.9</td>
</tr>
<tr>
<td>Hazardous alcohol user</td>
<td>6</td>
<td>15.8</td>
<td>32</td>
<td>84.2</td>
</tr>
<tr>
<td>Nonhazardous alcohol user</td>
<td>9</td>
<td>8.0</td>
<td>103</td>
<td>92</td>
</tr>
<tr>
<td>Concurrent drug abuse and hazardous alcohol user</td>
<td>6</td>
<td>26.1</td>
<td>17</td>
<td>73.9</td>
</tr>
<tr>
<td>Nonconcurrent</td>
<td>9</td>
<td>7.1</td>
<td>118</td>
<td>92.9</td>
</tr>
<tr>
<td>Total FEP sample</td>
<td>15</td>
<td>10.0</td>
<td>135</td>
<td>90</td>
</tr>
</tbody>
</table>

Note: FEP, first-episode psychosis.
admitted involuntarily and arrested in comparison to non-concurrent drug abusers and hazardous alcohol users. Significantly more hazardous alcohol users were admitted involuntarily, but not arrested, compared with nonhazardous alcohol users. At the 12-month follow-up, the prevalence rates for involuntary hospitalizations and arrests were no longer significantly greater among the drug abusers compared with the nonabusers with similar findings for the hazardous alcohol users and for the group meeting criteria for concurrent drug abuse and hazardous alcohol.

Before baseline, only 1 participant received alcohol or drug rehabilitation from a program outside of the EI services; after baseline, an additional participant took part in a drug rehabilitation program outside of EI services.

Discussion

The prevalence rates for lifetime alcohol and cannabis use among the FEP sample were similar to those of the Canadian population. A study by Barnes et al8 showed that the prevalence rate of lifetime cannabis use in a clinic sample of patients with FEP was 64.0%, which was consistent with the results of our study. However, other clinical studies report high prevalence rates of cannabis abuse among FEP participants in comparison to the general population, but these studies, which include the one by Barnes et al,8 do not compare the prevalence rates of lifetime cannabis use among FEP participants to controls from the same age-group.2,43

The higher prevalence rates for lifetime hallucinogen and cocaine use shown in our FEP sample compared with the general population warrants further scrutiny. Hallucinogen and cocaine use are considered to be risk factors for psychosis in vulnerable people. In healthy individuals, hallucinogen use produces a range of symptoms similar to schizophrenia.44 Hallucinogens also produce changes in the rodent brain believed to reflect changes found in schizophrenia.45 Hallucinogen use in vulnerable people may sensitize the neuronal systems to hallucinations.45 Cocaine can trigger brief psychotic episodes, which are more common among those cocaine users who have a familial loading for schizophrenia.46 Our findings are consistent with this evidence linking hallucinogen and cocaine use to psychosis and suggest that more studies are needed that focus upon hallucinogen and cocaine use in FEP.

Our findings suggest that there are more participants with FEP who engage in high-risk patterns of substance use than participants who meet criteria for DSM-IV abuse.30 The discrepancies between the SCID diagnoses of abuse and the various measures of use reflect the inherent differences in the criteria used to define abuse. The SCID diagnoses are based upon DSM-IV criteria and require evidence of clinically significant impairment. The AUDIT and the DAST, on the other hand, recognize hazardous patterns of substance use, which may or may not reflect clinically significant impairment.30 The results suggest that EI services have an effect on subthreshold cases in terms of DSM-IV criteria; the subthreshold cases would include those participants meeting criteria for drug abuse or hazardous alcohol use. Interestingly, the participants who were heavy drinkers did not respond to the EI treatment, but heavy drinking is strictly a reflection of quantity consumed. Clinical consequences may not be evident. Research is needed to determine whether more specific interventions, such as cognitive behavioral therapy or motivational interviewing,47 are effective for the heavy drinking group.

While involuntary hospitalizations and arrests decreased significantly among all the participants, the disparity between substance abusers and nonabusers observed at baseline diminished significantly at 12 months. Over the 12 months of treatment, the prevalence of substance abuse decreased significantly for all groups, with the exception of the group meeting criteria for heavy drinking. These findings provide some evidence for the effectiveness of EI services for substance abuse among FEP populations.

However, this evidence is preliminary. Although, the results of this study are generalizable to clinic samples of patients, the results may not be generalizable to the overall population of individuals with FEP because this study did not use an epidemiological sample. The study design has a number of key limitations: the design was not randomized with a control group; at 12 months the prevalence of substance abuse and dependence was not determined using the SCID; and the 12-month follow-up period was relatively short, given the long-term course of the illness and the long-term impact of substance abuse. Full data sets were available for only 65% of the sample. Our study failed to compare the prevalence rates of cannabis abuse among participants compared with the general population. Furthermore, our study did not assess the frequency of cannabis use (for example daily or weekly use)—an important omission in light of studies that suggest a causal relationship between weekly cannabis use in adolescence and the later development of psychosis.9–11,48

The CAS relied upon telephone interviews, a method which may tend to overrepresent individuals who are married or who have some postsecondary education training.30 The 2 very different methodologies used to collect data for our clinical sample (face-to-face interview) vs the CAS population sample (telephone survey) may have influenced the results for such a sensitive topic as alcohol or drug use. Although there are no studies that compare the effects of social desirability bias upon population survey interviews vs interviews conducted in a...
clinical context, comparisons of telephone vs face-to-face survey interviews do not consistently point to a bias arising from the survey method.\textsuperscript{49} We recognize the limitation in using the CAS database because of the low response rate (47.0\%). However, similar analyses were also undertaken with data derived from a different Canadian population survey (the Canadian Community Health Survey, version 1.2: Mental Health and Well-being\textsuperscript{50}), a survey that obtained a better response rate (77.0\%). The analyses from the Canadian Community Health Survey yielded similar findings on the few key comparisons that were possible using the present clinical sample (for example, 54.4\% lifetime cannabis use).

Despite these limitations, the results reported here are likely to add to our knowledge regarding the problem of substance abuse in FEP. To the best of our knowledge, there are currently no studies that have compared the prevalence rates of substance use from clinic samples of FEP patients with age-adjusted samples from the general population. Few studies have studied the effects of an EI service over time on substance use or abuse\textsuperscript{4,5,51} among participants with FEP. Only 1 randomized controlled trial has demonstrated effectiveness of EI services on substance abuse.\textsuperscript{25}

Substance abuse among patients with FEP may be more amenable to treatment than substance abuse among patients with more chronic forms of the disorder. EI services have the potential to detect hazardous substance use in a population vulnerable to addiction before their use leads to more serious impairment. Therefore, EI in psychosis warrants further research and is a promising therapeutic approach, not only for treating psychosis but also for detecting and reducing substance abuse among individuals experiencing a first episode of psychosis.

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References


