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• When treating individuals with psychosis and substance abuse, inquire about reasons for using substances, and target components of treatment toward resolving those reasons

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# Perceived Reasons for and Consequences of Substance Abuse Among Patients With Psychosis

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**Background:** Substance use is a common comorbidity with psychotic illnesses. Although several theories exist to explain this link, individual reasons for use may differ. The aim of this study was to evaluate patient perceptions of the reasons for and consequences of their substance use in patients with psychosis and compare them with those of an age-, sex-, and tobacco use-matched control sample without psychosis.

*Method:* Consecutively admitted patients were divided into 2 groups, those who had substance dependence without psychosis (n = 32), admitted in our addiction unit, and those who had psychotic illness with substance dependence, admitted in our inpatient psychosis unit and referred to as the *dual-diagnosis group* (n = 62). Patients were administered the Schedules for Clinical Assessment in Neuropsychiatry for *ICD-10* Diagnostic Criteria for Research to confirm schizophrenia, bipolar affective disorder, and substance dependence diagnoses and were asked open-ended questions to evaluate the perceived reasons for and consequences of their substance use. The study was conducted from July to September 2006.

**Results:** There were significant differences between the 2 groups in reasons for maintenance and relapse of both cannabis use and alcohol use, the 2 most common substances. While the substance dependence without psychosis group attributed both maintenance and relapse to external factors such as nature of work, social milieu, or peer pressure, the dual-diagnosis group attributed them to internal factors such as enhancement of positive mood and alleviation of withdrawal effects.

**Conclusions:** Individuals with psychosis have greater vulnerability to internal factors, which may maintain substance use. Targeting perceived internal factors may play a useful role in management and possibly identification and prevention of psychosis in vulnerable individuals in the future.

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**S** ubstance use is an increasingly burgeoning problem that affects the course and outcome of psychotic illnesses.<sup>1-3</sup> A substantial portion (15%–60%) of patients with psychosis have been found to use psychoactive drugs.<sup>4-6</sup> The Epidemiologic Catchment Area study, the largest study in this area, revealed a lifetime prevalence of 47% for substance misuse in patients with schizophrenia, of which 33.7% met criteria for an alcohol disorder and 27.5% for another drug misuse disorder, and also revealed a 56% prevalence of substance use disorder in bipolar illness.<sup>7</sup> However, little is known about the clinical epidemiology of and reasons for use in psychiatric patients. Such information may be clinically useful and help in the formulation of multimodal treatment plans for such dual-diagnosis patients.<sup>2</sup>

## **CLINICAL POINTS**

- Substance use maintenance in psychosis may be due to attempts to cope with negative moods, to feel energetic or feel good, and to reduce withdrawal or to get high.
- Reasons for substance dependence differ between patients with and without psychosis, with those who have psychosis perhaps having greater internal vulnerabilities.
- Testing the beliefs provided by patients for using substances or providing individuals with alternative ways to achieve these effects can be an important component of treatment.

Although several hypotheses have been put forward to explain the relationship between psychosis and substance use,<sup>8,9</sup> 3 theories are most widely accepted. The first hypothesizes that substance abuse may increase the risk of schizophrenia, at least in vulnerable individuals<sup>10,11</sup>; the self-medication hypothesis suggests that patients use drugs to alleviate the symptoms of psychosis or the debilitating side effects caused by antipsychotic medications, such as extrapyramidal<sup>12</sup>; and, finally, others believe that the association could be merely coincidental, with reasons comparable to those of the general population.<sup>13</sup>

Our study attempted to evaluate these hypotheses by exploring the reasons for substance use in patients with psychosis and comparing them with the reasons for substance use in a group without psychosis. We used retrospectively gathered data to conduct a multidimensional comparison of perceived reasons for substance use between patients with psychosis and those without. We believed that comparisons between these 2 groups could help in identifying differences, if any, that may explain the high comorbidity of substance use disorder in patients with psychosis and therefore help in formulating specific treatment strategies. The aims of this study were to (1) determine substances of dependence in dual-diagnosis patients, (2) compare psychotic and nonpsychotic patients on clinical and sociodemographic variables, and (3) obtain data from patients on the perceived reasons for and consequences of their own substance use.

# METHOD

## Participants

The study was conducted from July to September 2006. Following ethical approval of the study protocol by the Institutional Review Board of the Central Institute of Psychiatry, Ranchi, India, consecutively admitted patients who had a dual-clinical diagnosis of schizophrenia or bipolar illness with substance dependence were enrolled in the study. After admission, potential subjects identified by clinic staff were screened before entry into the study. The subjects were required to meet the following criteria: probable clinical diagnosis of schizophrenia/bipolar affective disorder and substance dependence; absence of mental retardation, other comorbidity, organic brain disease or brain injury, and acute psychotic symptoms; and likely ability to tolerate an extended interview.

Patients were excluded if they did not give written informed consent or had a Mini-Mental State Examination<sup>14</sup> score of less than 24. The total sample consisted of 100 dual-diagnosis subjects, of whom 91 agreed to participate in the extended interview. A control sample who had diagnoses of substance dependence only and was matched for age, sex, and tobacco use (with the Fagerström Test for Nicotine Dependence<sup>15</sup>) (n = 49; 1 dropped out) was chosen from consecutive admissions at the Centre for Addiction Psychiatry. The numbers differ for the groups because the inpatient unit for psychosis is larger (beds = 300) than the addiction unit (beds = 40). All subjects interviewed were also male because the Deaddiction Center in the institute caters mainly to male patients, with very rare female admissions; hence, female subjects were not included.

## Procedures

Potential subjects were taken from consecutive admissions among those who agreed to be interviewed and were currently in remission (Brief Psychiatric Rating Scale-16 item [BPRS]<sup>16</sup> score of less than 16). They were then introduced to the interviewer (S.S.), who was blind to the diagnosis and status of patients. The primary investigator then explained the nature of the research project and sought the potential subjects' written informed consent. Patients who were well enough to participate in the study (BPRS score of less than 16) were administered the relevant sections of the Schedules for Clinical Assessment in Neuropsychiatry<sup>17</sup> for ICD-10 Diagnostic Criteria for Research<sup>18</sup> by the trained rater (S.S.) to confirm earlier diagnoses of schizophrenia/bipolar affective disorder and substance dependence. The structured interview used in the study also collected relevant clinical and demographic data. Because structured questionnaires may limit responses of participants, subjects were asked open-ended questions about their "reasons for initiation, maintenance, and

Variables	Substance Dependence Only (n=49)	Dual-Diagnosis (n=91)	$t/\chi^2$	P Value
Age, mean ± SD, y	33.9±10.2	$32.7 \pm 7.5$	0.801	.424
Education, mean $\pm$ SD, y	$11.6 \pm 3.8$	$9.9 \pm 4.4$	2.277	.024*
Annual income (rupees), mean $\pm$ SD	$9,158.2 \pm 6,406.6$	7,350.4±6,791.7	2.221	.028*
Marital status, n (%)				
Unmarried	16 (32.7)	38 (41.8)	1.114	.363
Married	33 (67.3)	53 (58.2)		
Occupation, n (%)				
Professional	22 (44.9)	24 (26.4)	6.802	.033*
Skilled	13 (26.5)	43 (47.3)		
Unemployed	14 (28.6)	24 (26.4)		
No. of substances used, mean $\pm$ SD	$1.4 \pm 0.5$	$1.7 \pm 0.7$	2.851	.005*
Substance dependence, n (%)				
Alcohol	39 (79.6)	75 (82.4)	0.168	.820
Cannabis	16 (32.7)	80 (87.9)	45.13	<.001*

relapse" for each category of substance they had used in order to obtain perceived reasons and consequences of substance use. Patients were asked, "What is the single most important reason you think that made you start/ continue/restart the substance?" and variations thereof. All participants were asked similar questions. Because the study was retrospective, questions were framed individually to trigger patients' recall using questions anchored to personal and impersonal or important social events and defining the technical terms.<sup>19</sup>

The answers given were noted verbatim and subsequently grouped (during data analysis) into 2 main categories: external loci factors and internal loci factors. External loci factors were defined as those in which the perceived cause was "nonself," and internal factors, as those in which the cause was "within self." More details of the division have been explained in another paper.<sup>20</sup>

Subjects were then asked about the "consequences of substance use" for each category of substance they had used, and these were subsequently grouped into 3 main categories: medical consequences, psychological consequences, and socio-occupational consequences.

Each interview took between 30 and 90 minutes to complete (mean time: 47 minutes). When subjects found the interview process too tiring and requested to terminate the interview before its completion, the interview was suspended but completed within 48 hours. At the end of the interview, urine toxicology was performed if clinically required. A history of substance use in first-degree relatives based on family history data obtained from the patients was also collected.

## **Statistical Analyses**

The data were statistically analyzed by means of *t* test for descriptive variables and the  $\chi^2$  test for categorical variables. The results were compared between the groups (substance dependence vs dualdiagnosis) for use of alcohol and cannabis, which emerged as the 2 most common substances used.

### RESULTS

Table 1 presents the clinical and sociodemographic data of all participants. There were no differences between the substance dependence and dual-diagnosis groups in either age or marital status. There was a significant difference noted in education and income, with substance dependence patients having higher education and income levels than dual-diagnosis subjects. Dual-diagnosis patients also used a significantly higher number of substances (1.7) than the substance dependence group (1.4). Although no significant difference was noted in alcohol dependence between the groups, a significant difference was noted in cannabis dependence, with 88% of subjects in the dualdiagnosis group having cannabis dependence compared to just 33% in the substance dependence group.

Table 2 presents the variables associated with alcohol use. No difference was seen in initiating factors for alcohol use between the 2 groups. There was, however, a significant difference noted in maintenance factors, with the majority in the substance dependence group (59%) attributing it to external factors (such as withdrawal features, social milieu, and peer pressure) and the majority in the dual-diagnosis group (80%) attributing it to internal factors (such as craving, enhancing positive mood, and alleviating negative mood). There were no significant differences noted in relapse factors between the groups.

When the consequences of alcohol use were analyzed, no differences were noted between the 2 groups in the physical, psychological, or socio-occupational domains. Alcohol dependence was noted in a significantly greater majority of first-degree relatives of dual-diagnosis subjects (89%) compared with substance dependence

	Substance Dependence	Dual-Diagnosis	?	DIL
Variable	Only (n = 39)	(n=75)	$t/\chi^2$	P Value
Initiating factors			0.001	1.000
Internal locus	10 (25.6)	19 (25.3)		
External locus	29 (74.4)	56 (74.7)		
Maintenance factors			17.54	<.001*
Internal locus	16 (41.0)	60 (80.0)		
External locus	23 (59.0)	15 (20.0)		
Relapse factors			1.944	.163
Internal locus	17 (43.6)	43 (57.3)		
External locus	22 (56.4)	32 (42.7)		
Consequences of alcohol use				
Physical	38 (97.4)	73 (97.3)	1.89	.348
Psychological	28 (71.8)	58 (79.5)	0.836	.360
Socio-occupational	14 (35.9)	17 (23.3)	2.019	.186
Mode of consumption			0.187	.693
Alone	24 (61.5)	43 (57.3)		
With peers	15 (38.5)	32 (42.7)		
Type of alcohol consumed			1.608	.448
Arrack/country liquor	29 (74.4)	54 (72.0)		
Spirits	10 (25.6)	21 (28.0)		
Use in first-degree relatives			7.168	.01*
Dependence	27 (69.2)	67 (89.3)		
None	7 (28.0)	5 (9.8)		
Age at initiation of alcohol use, mean $\pm$ SD, y	$17.1 \pm 6.6$	$17.7 \pm 4.9$	0.515	.608
Duration of alcohol use, mean ± SD, y	$17.4 \pm 11.5$	$13.3\pm9.7$	2.025	.045*
<sup>a</sup> Values expressed as n (%) unless otherwise no	oted.			

Table 2.	Variables	Associated	With Alco	hol Use in	Substance	Dependence	Patients	With a	and
Without	t Psvchosi	s <sup>a</sup>							

\*Significant (P<.05).

subjects (69%). Although ages at initiation of alcohol use did not differ, the duration of alcohol use differed significantly between the groups, with the substance dependence group having a longer duration (17 years) than the dual-diagnosis group (13 years).

Table 3 presents the variables associated with cannabis use. Significant differences were found in both maintenance and relapse factors between the groups. While the majority in the substance dependence group (81%) attributed external factors (such as nature of work, seeing others take cannabis, and peer pressure) as reasons for maintenance, the majority in the dualdiagnosis group (71%) attributed it to internal factors (such as craving, low self-esteem, and relieving negative feelings). Similarly, a majority of substance dependence subjects (87.5%) gave external factors as reasons for relapse, while a majority of dual-diagnosis subjects (52.5%) gave internal factors as reasons.

No significant differences were noted in the analysis of consequences of cannabis use in any of the 3 domains. Dual-diagnosis subjects (67.5%) were observed to use cannabis more often alone than with peers and to use it mainly in the form of ganja (80%). Although there was no difference in ages at initiation of cannabis use, the dual-diagnosis group had a significantly greater duration of cannabis use (12.9 years) when compared to the substance dependence group (5.7 years).

### DISCUSSION

Several studies have examined the clinical correlates and reasons for substance use in patients suffering from psychosis.<sup>21,22</sup> Many of these studies have focused on substance use in either schizophrenia<sup>21</sup> or affective psychoses.<sup>22</sup> The clinical and sociodemographic profile of participants in our sample is similar to those reported in these previous outpatient and community studies,<sup>21–25</sup> with cannabis used most frequently, followed by alcohol, and patients with psychosis using more substances than those without. Although substantial, most of the previous studies were limited by the absence of a wellmatched control group without psychosis. Our study attempts to bridge this gap by comparing substance dependence in patients with and without psychosis.

Most of our patients were in their 30s and had been educated up to high school, a finding similar to other studies.<sup>21,22</sup> Subjects with substance dependence only, however, had higher mean incomes than the dual-diagnosis subjects. Although the prevalence of unemployment was similar in both groups, we believe, as we noted in our study, that patients with psychosis are often employed in underpaid or noncompetitive/ nonprofessional jobs resulting in lower mean incomes.<sup>26</sup> Even if patients with psychosis are well employed, we believe that they are severely disabled by their illness and have more off days than days of gainful employment.<sup>27</sup>

	Substance Dependence	Dual-Diagnosis		
Variable	Only $(n = 16)$	(n = 80)	$t/\chi^2$	P Value
Initiating factors			2.940	.134
Internal locus	5 (31.3)	11 (13.8)		
External locus	11 (68.8)	69 (86.3)		
Maintenance factors			15.68	<.001*
Internal locus	3 (18.8)	57 (71.3)		
External locus	13 (81.3)	23 (28.8)		
Relapse factors			8.593	.005*
Internal locus	2 (12.5)	42 (52.5)		
External locus	14 (87.5)	38 (47.5)		
Consequences of cannabis use				
Physical	16 (100.0)	77 (96.3)	0.619	1.000
Psychological	14 (87.5)	65 (81.3)	0.357	.729
Socio-occupational	5 (31.3)	22 (27.5)	0.093	.766
Mode of consumption			10.07	.004*
Alone	4 (25.0)	54 (67.5)		
With peers	12 (75.0)	26 (32.5)		
Type of cannabis consumed			38.40	<.001*
Bhang	16 (100.0)	16 (20.0)		
Ganja	0 (0)	64 (80.0)		
Use in first-degree relatives			0.080	1.000
Dependence	6 (37.5)	31 (41.3)		
None	10 (62.5)	44 (58.7)		
Age at initiation of cannabis use, mean $\pm$ SD, y	$20.9 \pm 9.0$	$17.8 \pm 5.4$	1.018	.067
Duration of cannabis use, mean $\pm$ SD, y	$5.7 \pm 4.4$	$12.9\pm8.6$	4.946	<.001*
<sup>a</sup> Values expressed as n (%) unless otherwise not $*$ Significant ( $P < 05$ )	ted.			

Table 3.	Variables.	Associated	With C	Cannabis	Use in	Substance	Dependence	Patients	With	and
Without	t Psychosis	S <sup>a</sup>					-			

Our study also found no significant difference in marital status between the 2 groups. This is surprising, because most Western studies have reported a differing marital status for patients with psychosis,<sup>28–30</sup> namely one of remaining single through either nonmarriage or separation. We believe that the cultural and traditional system in India, which ensures marriage for every individual as part of his/her duty and promotes the belief that a stable marriage may help cure mental illness, could account for such findings. Our findings have been corroborated by other studies from India, which have also noted high rates of marriage (up to 70%) in this population.<sup>31-34</sup> The relationship is complex, and the question of whether marital status is best seen as a cause or an effect of psychosis is still not well understood.

When the factors for initiation of alcohol and cannabis use were analyzed, no differences were observed. This is not surprising, because initiation is often dictated by external factors like easy availability, peer pressure, or emulation of role models, reasons that our subjects attributed and that have also been observed in other studies.<sup>35,36</sup> However, once initiated, alcohol and cannabis use have differing reasons for maintenance, as described by our subjects. Maintenance of alcohol dependence in substance dependence patients was dictated by external factors such as nature of work, social milieu, or peer pressure, a finding similar to our earlier study<sup>20</sup> and other addiction studies.<sup>35</sup> This is in comparison to the internal factors dictating alcohol dependence in patients with psychosis, such as withdrawal, low self-esteem, and elevating negative moods, a finding corroborated by several studies.<sup>37,38</sup> Similar findings can be observed for cannabis dependence, with substance dependence patients attributing it to external factors and dual-diagnosis patients attributing it to internal factors.<sup>39</sup> Therefore, regardless of the substance type, results indicate 3 main motives for substance use maintenance in patients with psychosis: (1) to cope with negative moods, "decrease depression," or "relax"<sup>21</sup>; (2) to feel energetic, improve low self-esteem, or "feel good"<sup>13,21</sup>; and (3) to reduce withdrawal, "get high," or achieve intoxication.<sup>21</sup>

Relapse factors in alcohol dependence did not differ significantly between the 2 groups. However, significant differences were noted for cannabis dependence. Most substance dependence patients again attributed it to external factors such as seeing others take it, taking it after eating/drinking, and taking it with other substances, <sup>13,40-43</sup> while the dual-diagnosis patients attributed it to internal factors such as need for concentration, enhancement of positive mood, and alleviation of withdrawal effects. These findings suggest that the course and pattern of dependence differs between patients with and without psychosis, with the former group being especially vulnerable to the neuromodulating effects of cannabis and alcohol.<sup>42-44</sup> This is especially concerning because psychic dependence is stronger and develops faster for "elevating" drugs like cannabis than for "depressing" drugs like alcohol,45 and in individuals vulnerable to

psychosis, cannabis use may precipitate psychosis,<sup>46</sup> lending credence to the common vulnerability model.<sup>10,11</sup>

We also observed that dual-diagnosis patients tended to use cannabis more often alone and used ganja more than bhang (*bhang* is a preparation from the leaves and flowers [buds] of the female cannabis plant that is consumed in the Indian subcontinent as a beverage, while ganja is the Indian name for marijuana, usually consumed by smoking in specially designed pipes). We believe that the factors of internal loci for maintenance and relapse, as detailed above, may be responsible for the solitary drug-taking behavior. Further, the higher concentrations of  $\Delta^9$  tetrahydrocannabinol in ganja than in bhang may play an etiologic role in causing psychosis in vulnerable individuals. A stronger family history of alcohol dependence than cannabis dependence was also noted, pointing to the role of genetic mechanisms for alcohol dependence.<sup>47</sup> We also observed that although cannabis use was initiated at similar ages, the durations differed between the groups. Since the clinical histories of the subjects with cannabis dependence pointed to earlier admissions, we believe that patients with substance dependence came to clinical attention earlier than patients who developed psychosis. This suggests that the prodrome of psychosis may often be confused with that of cannabis intoxication, leading to delayed referrals. An early psychosis program that specifically identifies vulnerable individuals and refers them for treatment would go a long way toward reducing the incidence of psychosis.

In analyzing the perceived consequences of substance use, we observed that medical, psychological, and socio-occupational consequences of both alcohol and cannabis use were perceived equally by both groups. This is in contrast to other studies from India that have noted socio-occupational consequences to be the most important factor in substance disorder patients.<sup>35,48,49</sup>

The finding that patients with psychosis differed significantly from patients with only substance dependence in their reasons for substance use, especially cannabis, suggests that perhaps patients with psychosis have greater vulnerabilities to internal factors than those with only substance dependence<sup>50</sup> and varying expectations that substance use will improve their mood or increase self-esteem. Using substances to cope with factors of internal loci such as to deal with unpleasant affect or to enhance positive mood is linked with increased use and substance use problems such as increased risk for dependence. The reasons given by these individuals are obviously important perceived benefits and beliefs that maintain their alcohol and cannabis use. Therefore, Spencer and colleagues have suggested that "testing these beliefs or providing individuals with alternative ways to achieve these effects is an important component of treatment."51(p243)

This provides validation for cognitive-behavioral treatments that address motives for substance use.

There are a few limitations to our study. The relatively small sample size and inclusion of only men may limit the generalizability of our findings. We believe that our open-ended questions may have attracted some bias in answering the questions. There is also the question of recall bias; however, we believe this was minimized by framing questions to trigger recall using questions anchored to personal and impersonal or important social events.

# CONCLUSION

To conclude, patients with psychosis differed significantly from patients without psychosis in their substance dependence patterns. Internal factors dictated maintenance and relapse in patients with psychosis. Targeting of these perceived factors may play a useful role in management and possibly identification and prevention of psychosis in vulnerable individuals in the future. Mental health services should identify patients with psychosis who use alcohol, cannabis, and other drugs and discuss with them the impact of such use on their disorder. Multimodal treatment plans will play an important role in the management of such individuals.

Disclosure of off-label usage: The authors have determined that, to the best of their knowledge, no investigational information about pharmaceutical agents that is outside US Food and Drug Administration-approved labeling has been presented in this article. Author affiliations: Department of Psychiatry, National Institute of Mental Health and Neurosciences (NIMHANS), Bangalore, India (Dr Saddichha); Departments of Psychiatry (Dr Prakash) and Addiction Psychiatry (Dr Khess), Central Institute of Psychiatry, Ranchi, India; and Crisis Resolution and Home Treatment, University Hospital of North Tees, Cleveland, United Kingdom (Dr Sinha). Financial disclosure: Drs Saddichha, Prakash, Sinha, and Khess have

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