Demographic and Clinical Correlates of Substance Abuse Comorbidity in Schizophrenia

Tapas K. Aich*1, Vinod K. Sinha2, Christoday R. J. Khess3, Shailja Singh4

ABSTRACT

Seventy patients of schizophrenia were divided into two groups based on the presence or absence of substance abusing history in them. Two groups were compared on various socio-demographic and clinical variables. Thirty-eight (54.3%) patients could be diagnosed as having comorbid alcohol/substance abuse/dependence. Seventeen (24.3%) of them were poly-substance abusers. Comorbid substance abusers were predominantly represented by positive syndrome while non-abusers by negative syndrome. In contrast to the report by the most western researchers, most patients in the present study with a diagnosis of substance abusing schizophrenia were married. Similar study from a developing country is rare in the existing literature.

Key Words: Schizophrenia, Substance abuse, Comorbidity.

Recent years have attracted considerable interest in the dual problem of schizophrenia and substance abuse (Selzer et al., 1993; Smith et al., 1994; Turner et al., 1997; Buckley, 1998). High rates of substance abuse comorbidity in schizophrenia have consistently been found in clinical samples (Drake et al., 1989; Dixon et al., 1991) as well as in epidemiologic surveys (Regier et al., 1990; Fowler et al., 1998). Older studies (Mueser et al., 1990) reported that substance abusing schizophrenia patients tend to be young males of low socio-economic status with history of fewer previous hospitalisations. These patients also have greater likelihood of family history of drug abuse (Tsuang et al., 1982). Some studies found an association between substance abuse and positive psychotic symptoms (Pulver et al., 1989), whereas others reported no such association (Dixon et al., 1990; Drake et al., 1989).

In the field of comorbidity research in relation to schizophrenia population, only few studies have been reported from India till date. Dube and Handa (1971) conducted a general population study in which 13.69% of schizophrenia patients were found to be using drugs. Trivedi and Sethi (1978) reported 16.5% schizophrenia patients were abusing drugs, mainly alcohol and cannabis. Goswami (1996) reported substance-abusing group had significantly less symptoms than non-substance abusing schizophrenics on global psychopathology and positive symptoms following a cross-sectional comparative study between 22 substance abusing and 22 non-abusing schizophrenia patients. His sample constituted of both in- and out-patient schizophrenia populations. Aim of the present study was to find out the prevalence of substance abuse comorbidity in hospitalised schizophrenia population, and to compare patients of schizophrenia with and without substance abuse history on various demographic and clinical variables.

Material and Method

The study was conducted at the Central Institute of Psychiatry, Kanke, Ranchi, India. We interviewed all the consecutive male patients, admitted between 1st March 1998 and 30th September 1998, who had a diagnosis of schizophrenia. During the study period a total number of 88 patients were screened, of which 70 patients who fulfilled the DSM-IIIR criteria for schizophrenia, and who gave the consent to participate, were taken up for the study. Total sample was divided into 2 groups based on the presence or absence of alcohol or drug abuse/dependence as defined by DSM-IIIR criteria. Thus the study population comprised of patients with a diagnosis of schizophrenia and comorbid drug or alcohol abuse/dependence (SAS group) and the control population comprised of schizophrenia patients with no drug or alcohol abuse history (NSAS group). In the present study, substance/alcohol abusers/dependents were considered as a single group. This simplification is useful for the purpose of analysis and is based on the international trend in the comorbidity research. Inclusion Criteria being male patients with a DSM-IIIR diagnosis.

1Assistant Professor of Psychiatry, Universal College of Medical Sciences, Bhairahawa, Nepal.
2Associate Professor of Psychiatry
3Professor of Psychiatry
4Lecturer in Clinical Psychology

*Correspondence : Dr. Tapas Kumar Aich, C/o Dr. Sanjay Gupta 52, Betiahata (South), Near Premchand Park Gorakhpur-273001, UP
e-mail: aichtapas@rediffmail.com, tapas_dr@yahoo.co.in
of schizophrenia in the age range of 18-45 years. **Exclusion Criteria** were the evidence of organicity either from history, clinical examination or laboratory examination, patients who did not give consent to participate in the study, and any comorbid major psychiatric disorder or mental retardation. **Assessment tools** used were ‘Structured Clinical Interview Schedule for DSM-III-R’ (SCID-P. Spitzer et al., 1987) and ‘Positive and Negative Syndrome Scale’ (PANSS, Kay et al., 1987).

The Structured Clinical Interview Schedule for DSM-III-R (SCID) is a semi-structured interview schedule for making the major axis-I and axis-II diagnoses. The PANSS was developed, as a more rigorously operationalised method for evaluating positive, negative and other symptom dimensions in schizophrenia. A series of studies provided enough evidence of suitable psychometric properties of the PANSS for typological and dimensional assessment of distinct syndromes in schizophrenia (Kay et al., 1988). Good to excellent reliabilities were found on all scale scores and most items of the PANSS (Bell et al., 1992).

**Assessment Technique**

At the time of the admission, we interviewed patient’s relatives to gather information about the index episode, as well as about the previous episodes of psychiatric illnesses, if any. Information regarding the history of substance abuse or dependence was also gathered from relatives and close friends. Necessary socio-demographic, illness and treatment variables were recorded in a specially designed clinical datasheet.

Each of the patients who satisfied the inclusion criteria was interviewed within 48 hours of the admission to the hospital. Interview was conducted using SCID-P, for confirming the diagnosis of schizophrenia and drug or alcohol abuse/dependence, if any. Severity of psychopathology was assessed by using PANSS. Patients were classified as “positive subtype” if they scored three or more moderate ratings on the positive scale but fewer than three moderate ratings on the negative scale. Patients were classified as “negative subtype” if they exhibit the opposite pattern; i.e., at least three moderate ratings on the negative scale but fewer than three moderate ratings on the positive scale. Patients who score at least three moderate ratings on both the scales were regarded as “mixed type”. Routine blood and biochemical investigations and special investigations, as and when needed, were done to rule out the possibility of organic schizophrenia like disorders.

**Statistical Analysis**

Besides descriptive statistics, ‘t’ test was applied for the continuous data and ‘Chi-square’ test was performed to the categorical data.

**Results**

Thirty-eight (54.3%) patients had a history of substance abuse/dependence, whereas rest 32 (45.7%) were not abusing any drugs prior to the onset or during the period of illness. Nine (12.8%) patients were abusing or dependent on cannabis, 3 (4.3%) on alcohol, 9 (12.8%) on nicotine and 17 (24.3%) patients were polysubstance abusers/dependents.

When we tried to see the types of substances abused by the ‘schizophrenia patients with polysubstance abuser’ group we found that six patients were 2 drugs abusers; rest 11 patients were abusing 3 or more drugs/alcohol simultaneously. Thus, we got a revised picture of individual drug/alcohol abuse by the substance abusing schizophrenia population (Table 1)

| Psychoactive Substances | SAS N=38 % | Total Sample N=70 % |
|-------------------------|------------|---------------------|
| Cannabis                | 23 60.5    | 23 32.8             |
| Alcohol                 | 16 42.1    | 16 22.8             |
| Nicotine                | 23 60.5    | 23 32.8             |
| Opioid                  | 2 5.3      | 2 2.8               |

SAS : Substance Abusing Schizophrenics

Nicotine abusers include all forms of nicotine abusers, esp. bidi, cigarette and khaini preparations.

When the entire sample population was divided according to standard schizophrenia subtypes we got 29 paranoid, 8 catatonic, 5 disorganized, 13 undifferentiated and 4 cases of residual schizophrenia. Further dividing them into substance abusing and non-abusing groups did not reveal any significant differences. However, when they were divided according to clinical subtypes we got some interesting findings (Table 3).
The sample of 70 schizophrenia patients compares favourably with other similar studies done in this field (Peralta et al., 1990; Dixon et al., 1991; Rosenthal et al., 1994; Kovasznay et al., 1997). Amongst 70 schizophrenia patients, 38 (54.3%) patients had a history of substance abuse/dependence, whereas rest 32 (45.7%) were not.

### Table: 2

Comparison between Substance Abusing Schizophrenics (SAS) and Non-Substance Abusing Schizophrenics (NSAS) across various Socio-Demographic and clinical variables:

| Variable                        | SAS N=38 | NSAS N=32 | Total (%) | t/χ² value | p |
|---------------------------------|----------|-----------|-----------|------------|---|
| 1. Age (in yr.):               |          |           |           | t=0.64  | 0.5 |
| mean (SD)                       | 31.5 (5.9) | 30.5 (7.7) |           |           |    |
| 2. Education (in yr.):         |          |           |           | t=0.78  | 0.4 |
| mean (SD)                       | 8.8 (4.1) | 9.6 (4.6) |           |           |    |
| 3. SES:                        |          |           |           |            |    |
| Lower                           | 11       | 6         | 17 (24.2%)| χ²=0.98  | 0.3 |
| Middle & above                  | 27       | 26        | 53 (75.8) |           |    |
| 4. Habitat                      |          |           |           |            |    |
| Rural                           | 26       | 14        | 40 (57.1%)| χ²=4.3   | 0.04|
| Urban                           | 12       | 18        | 30 (42.9%)|           |    |
| 5. Marital Status:             |          |           |           |            |    |
| Married                         | 29       | 14        | 43 (61.4%)| χ²=7.78  | <0.01*|
| Single                          | 9        | 18        | 27 (38.6%)|           |    |
| 6. Occupation                   |          |           |           |            |    |
| Unemployed                      | 13       | 17        | 30 (42.9%)| χ²=2.53  | 0.1 |
| Employed                        | 25       | 15        | 40 (57.1%)|           |    |
| 7. Religion                     |          |           |           |            |    |
| Hindu                           | 33       | 23        | 56 (80%)  | χ²=2.43  | 0.1 |
| Others                          | 5        | 9         | 14 (20%)  |           |    |
| 8. Age of onset (in yr.):      |          |           |           | t=0.7    | 0.4 |
| Mean (SD)                       | 25.5 (5.6) | 24.3 (7.3) |           |           |    |
| 9. Present episode (in yr.):   |          |           |           | t=1.1    | 0.3 |
| Mean (SD)                       | 3.6 (4.2) | 4.8 (4.7) |           |           |    |
| 10. Stay in hospital (in days):|          |           |           | t=1.3    | 0.2 |
| Mean (SD)                       | 41.7 (17.4) | 47.5 (19.2) |           |           |    |
| 11. Past history:              |          |           |           | χ²=0.04  | 0.8 |
|Absent                          | 27       | 22        | 49 (70%)  |           |    |
|Present                         | 11       | 10        | 21 (30%)  |           |    |
| 12. F.H. of Schizophrenia      |          |           |           | Fisher’s  | 0.1 |
|Absent                          | 33       | 31        | 64 (91.4%)| one tail test | |
|Present                         | 5        | 1         | 6 (8.6%)  |           |    |
| 13. F.H. of subs. abuse        |          |           |           | Fisher’s  | 0.2 |
|Absent                          | 32       | 32        | 64 (91.4%)| one tail test | |
|Present                         | 6        | 0         | 6 (8.6%)  |           |    |

* Significant at 0.01 level

SAS : Substance Abusing Schizophrenics
NSAS : Non-Substance Abusing Schizophrenics
F.H. : Family History

**Discussion**

The sample of 70 schizophrenia patients compares favourably with other similar studies done in this field (Peralta et al., 1990; Dixon et al., 1991; Rosenthal et al., 1994; Kovasznay et al., 1997). Amongst 70 schizophrenia patients, 38 (54.3%) patients had a history of substance abuse/dependence, whereas rest 32 (45.7%) were not.
abusing any drugs prior to the onset or during the period of illness. This is comparable to the data available from different epidemiological as well as clinical studies. ECA study (Regier et al., 1990) reported a lifetime prevalence of substance abuse in 47% of the schizophrenia population. Dixon et al. (1991) reported 48%; Lehman et al. (1994) reported 54%, Kovaszny et al. (1997) reported 43.8%, Fowler et al. (1998) reported 59.8% and Canton-Graae et al. (2001) reported 48.3% comorbid substance abuse in their respective schizophrenia population.

When we separated the patients of schizophrenia into traditional paranoid, catatonic, disorganized and undifferentiated subtypes, two groups did not differ. But, when we compared them in the light of clinical ‘schizophrenic syndrome’ subtypes we got a significant (p<0.01) finding. It was seen that substance abusing schizophrenics were clustered in the positive syndrome group and that non-substance abuse schizophrenics clustered in the negative and mixed syndrome group (Table 3). Amongst 38 substance abusing schizophrenics (SAS) in the present study 24 (63.2%) met the criteria for positive syndrome, 7 (18.4%) for negative syndrome and another 7 (18.4%) for mixed syndrome. Available literature on this aspect of substance abusing schizophrenics is few till date. Rosenthal et al. (1994) reported 7 (24.1%) amongst his 29 substance abusing schizophrenics met the criteria for negative syndrome, five (16.7%) positive syndrome and 17 (58.6%) patients showed mixed syndrome. But they did not have any substance non-abusers for comparative study. Negreete et al. (1986) while studying a group of cannabis abusing schizophrenia patients reported a global increase in positive symptom score. But, Sevy et al. (1990) found no relationship between history of cocaine abuse (including mixed substance abuse) and global measures of positive, negative and general symptoms using PANSS.

Older studies reported certain socio-demographic predictors being differentially correlated with substance abuse in schizophrenia population. These are male sex, younger age, good premorbid adjustment, early age of first hospitalization, poor treatment compliance, high relapse rate, etc. On the contrary, recent studies with more rigorous inclusion and exclusion criteria did not reveal any significant difference between the two groups on most socio-demographic variables. Our findings also confirm to this notion. As revealed in Table 2, two groups did not differ on most demographic and clinical variables. Nevertheless, one significant finding (Table: 2) was that 76% of our SAS populations were married, whereas only 44% of NSAS patients were married. The difference was statistically significant (p<0.01). Western literature mostly report an opposite finding that majority of substance-abusing population were unmarried or separated/ divorced (Drake et al., 1989). The finding was even more interesting and difficult to explain, as there was no significant difference between the two groups in the mean age of onset of schizophrenia (25.5 years for the SAS and 24.3 years for the NSAS group).

In the present study, the prevalence of cannabis abuse/ dependence was 32.8%; alcohol 22.8%, nicotine 32.8%, and opioid 2.8% of the total sample population. Available literature reveals no consistent pattern of drug/alcohol abuse amongst patients of schizophrenia. Fowler et al. (1998) in his sample of schizophrenia patients found 48.4% abusing/ dependent on alcohol and 36.0% patients were abusing cannabis. Cuffel et al. (1993) reported that in a sample of 231 schizophrenia patients with substance abuse, 37% were abusing alcohol, 23% cannabis, 8% sedatives, 10% narcotics and 13% were abusing stimulant drugs. Goswami (1996) reported a high prevalence of opioid abusers (50%) in his sample population. Such variability probably indicates that availability, rather than the specific CNS effects of the drug, determine the choice of drugs in schizophrenia patients (‘environmental determinants’ of substance abuse, Dixon et al., 1990).

**Conclusion**

Substance abuse comorbidity in schizophrenia was observed to be a common phenomenon as 54.3% schizophrenia patients could be marked as having additional diagnosis of alcohol or other substance abuse/dependence. The two groups did not differ significantly when they were separated into traditional diagnostic sub-types of paranoid, catatonic, disorganized and undifferentiated schizophrenia. SAS group showed significantly high clustering of positive syndrome and NSAS group aggregated more towards negative syndrome domain. Contrary to the popular western notion, there was higher prevalence of married subjects in the SAS group. Finally, availability, rather than specific CNS effects, probably determines the choice of drug/drugs in patients of schizophrenia.

We envisage the following points as the limitations of the present study:

Assessment of substance abuse comorbidity was based on structured clinical interview (SCID) supplemented by the information obtained from relatives or close friends. Concurrent laboratory screening of blood and urine for drugs...
would have helped in confirmation of the diagnosis of substance abuse disorder. This would perhaps increase the prevalence of substance abuse disorder by eliminating under-reporting.

For the purpose of the present study, two or more substance abusers were grouped into the polysubstance abuser group; though according to DSM-IV three or more substance abusers should qualify as the polysubstance abusers.

References

American Psychiatric Association. (1987) Diagnostic and Statistical Manual of Mental Disorders, (3rd rev edn) (DSM-III-R), Washington, DC: American Psychiatric Association.

Bell MD, Milstein RM, Goulet JL, Lysaker PH, Cicchetti D. (1992) The Positive and Negative Syndrome Scale and the Brief Psychiatric Rating Scale: Reliability, comparability and predictive validity. Journal of Nervous and Mental Disease, 180: 723-728.

Buckley PF. (1998) Substance abuse in schizophrenia: A review. Journal of Clinical Psychiatry, 59[suppl 3]: 26-30.

Cantor-Graae E, Nordström LG, McNeil TF. (2001) Substance abuse in schizophrenia: a review of the literature and a study of correlates in Sweden. Schizophrenia Research, 48: 69-82.

Cuffel BJ, Heithoff KA & Lawson W. (1993) Correlates of patterns of substance abuse among patients with schizophrenia. Hospital and Community Psychiatry, 182: 342-48.

Dixon L, Haas G, Weiden P, et al. (1990) Acute effects of drug abuse in schizophrenic patients: Clinical observations and patients’ self-reports. Schizophrenia Bulletin, 16(1): 69-79.

Drake RE, Osher FC, Wallach MA. (1989) Alcohol use and abuse in schizophrenia: A prospective community study. Journal of Nervous and Mental Disease, 177(7): 408-14.

Dube KC, Handa SK. (1971) Drug use in health and mental illness in an Indian population. British Journal of Psychiatry, 118: 345-6.

Fowler IL, Carr VJ, Carter NT, Lewin TJ. (1998) Patterns of current and lifetime substance use in schizophrenia. Schizophrenia Bulletin, 24(3): 443-55.

Goswami S. (1996) MD thesis (Unpublished) submitted to Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh, India.

Kay SR, Fiszbein A, Opler LA. (1987) The positive and negative syndrome scale (PANSS) for schizophrenia. Schizophrenia Bulletin, 13: 261-76.

Kay SR, Opler LA, Lindemayer JP. (1988) Reliability and validity of the positive and negative syndrome scale for schizophrenia. Psychiatry Research, 23: 99-110.

Kovasznay B, Fleisicher J, Tannenberg-Karan M, et al. (1997) Substance use disorder and the early course of illness in schizophrenia and affective psychosis. Schizophrenia Bulletin, 23(2): 195-201.

Lehman AF, Myers CP, Corty E, et al. (1994) Prevalence and patterns of "dual diagnosis" among psychiatric patients. Comprehensive Psychiatry, 35(2): 106-12.

Mueser KT, Yarnold PR, Levinson DF, et al. (1990) Prevalence of substance abuse in schizophrenia: Demographic and clinical correlates. Schizophrenia Bulletin, 16(1) 31-56.

Negreete JC, Knapp WP, Douglas DE, et al. (1986) Cannabis affects the severity of schizophrenic symptoms: Results of a clinical survey. Psychological Medicine, 16: 515-20.

Peralta V & Cuesta MJ. (1992) Influence of cannabis abuse on schizophrenic psychopathology. Acta Psychiatrica Scandinavica, 85: 127-30.

Pulver AE, Wolyniec PS, Wagner MG, et al. (1989) An epidemiological investigation of alcohol-dependent schizophrenics. Acta Psychiatrica Scandinavica, 603-12.

Regier DA, Farmer ME, Rae DS et al. (1990) Comorbidity of mental disorders with alcohol and other drug abuse: results from the epidemiologic catchment area (ECA) study. Journal of American Medical Association, 264: 2511-18.

Rosenthal RN, Hellerstein DJ, Miner CR. (1994) Positive and negative syndrome typology in schizophrenic patients with psychoactive substance use disorders. Comprehensive Psychiatry, 35(2): 91-8.

Selzer JA, Liberman JA. (1993) Schizophrenia and substance abuse. Psychiatric Clinics of North America, 16: 401-412.

Sevy S, Kay SR, Opler LA, et al. (1990) Significance of cocaine history in schizophrenia. Journal of Nervous and Mental Disease, 178: 642-648.

Smith J, Hucker S. (1994) Schizophrenia and substance abuse. British Journal of Psychiatry, 165: 13-21.

Spitzer RL, Williams JWB, Gibbon M, et al. (1990) Structured Clinical Interview for DSM III-R. Washington, DC: American Psychiatric Association.

Trivedi JK, Sethi BB. (1978) Drug abuse in psychiatric patients. Indian Journal of Psychiatry, 1: 345-8.

Tsuang MT, Simpson JC, Kronfol Z. (1982) Subtypes of drug abuse with psychosis: Demographic characteristics, clinical features and family history. Archives of General Psychiatry, 39:141-47.

Turner WM, Tsuang MT. (1997) Impact of substance abuse on the course and outcome of schizophrenia. Schizophrenia Bulletin, 16(1): 87-95.