Original Article

Psychiatric Comorbidity and Physical Correlates in Alcohol-dependent Patients

Deepak Gauba, Pramod Thomas[1], Yatan P. S. Balhara[2], Smita N. Deshpande[3]

ABSTRACT

Aim: To examine the prevalence and pattern of comorbidity in alcohol dependence and its relationship with physical and laboratory findings. **Materials and Methods:** Eighty males with alcohol dependence were examined using the Hindi version of Diagnostic Interview for Genetic Studies, the International Classification of Disease-10th Edition Personality Disorder Examination, Alcohol Use Disorder Identification Test for alcohol use, global assessment of functioning, blood sampling electrocardiogram, and ultrasonogram. **Results:** Eighty-seven percent had a comorbid Axis I or an Axis II psychiatric disorder, over 78% had nicotine dependence, and 56% had comorbid Axis II disorder, antisocial personality being the most common. Gamma glutamyl transpeptidase levels were significantly associated with comorbidity. **Conclusions:** High comorbidity of Axis I psychiatric disorders was found among persons with alcohol dependence. Axis II disorders were also present.

Key words: *Alcohol dependence, physical correlates, psychiatric comorbidity*

INTRODUCTION

Over 3 billion people died of alcohol related causes as far back as 1993.[1] There are an estimated 62 million alcoholics in India.[2] For psychiatrists, the estimated 40–50% of alcohol-dependent persons who develop alcohol-induced clinical syndromes are of particular importance.[3]

Access this article online	
Website: www.ijpm.info	Quick Response Code
DOI: 10.4103/0253-7176.191397	

Patients with comorbid psychiatric disorders constitute the majority of alcohol-dependent populations presenting to de-addiction clinics.[4] Psychiatric comorbidity rates in alcohol-dependent persons range from 100% in psychiatric in-patient settings[5] to

How to cite this article: Gauba D, Thomas P, Balhara YP, Deshpande SN. Psychiatric comorbidity and physical correlates in alcohol-dependent patients. Indian J Psychol Med 2016;38:414-8.

Medical Officer In Charge, Yamuna Vihar, BSES Yamuna Power Ltd., [2]Department of Psychiatry and NDDTC, All India Institute of Medical Sciences, [3]Department of Psychiatry and De-addiction Services, Postgraduate Institute of Medical Education and Research, Dr. Ram Manohar Lohia Hospital, New Delhi, [1]Department of Biostatistics, Dr. SMCSI Medical College, Karakonam, Thiruvananthapuram, Kerala, India

Address for correspondence: Prof. Smita N. Deshpande
Department of Psychiatry and De-addiction Services, Room No. 7, PGIMER, Dr. Ram Manohar Lohia Hospital, Park Street, New Delhi - 110 001, India. E-mail: smitadeshp@gmail.com

47% in community samples.[9] Regardless of whether alcohol use and other psychiatric illness are primary or secondary or independent of each other, they become extensively intertwined over time.[6] The authors are not aware of Indian studies estimating the prevalence of psychiatric comorbidity in alcohol-dependent patients attending general hospital psychiatry units.[7-9]

The aim of the present study was to examine comorbidity in association with alcohol dependence, and to analyze the relationship of physical and laboratory findings with psychiatric comorbidity at a tertiary care general hospital psychiatry unit.

MATERIALS AND METHODS

The study was carried out at the Department of Psychiatry and De-addiction Services at the Postgraduate Institute of Medical Education and Research, Dr. Ram Manohar Lohia Hospital, Delhi, a tertiary care teaching, free government hospital in 2006–07. The first consenting subject (usually the first asked) fulfilling inclusion criteria was recruited and examined per day. To calculate sample size, the prevalence of psychiatric comorbidity in alcohol dependence was taken as 40%[10] and error in precision was taken to be 30%. Using the formula, $2\sqrt{pq}/n$ = prevalence × error/100, n was found to be 66.6. Thus, a minimum $n = 67$ was obtained. However eighty subjects were finally recruited.

Males presenting for the first time, diagnosed as alcohol dependence as per International Classification of Disease-10th Edition (ICD-10) Diagnostic Criteria for Research (World Health Organization, 1993) criteria,[11] between ages 18 and 60 years, willing to participate, and to provide informed consent were requested for participation. Those with serious physical/neurological conditions or any other brain dysfunction interfering with assessment, with mental retardation or co-existing substance abuse or dependence other than for nicotine were excluded. They were informed of the study by treating physicians, referred to the first author, and recruited after obtaining valid written informed consent.

All participants were assessed using a structured clinical interview to obtain full clinical details using the Hindi version of Diagnostic Interview for Genetic Studies (DIGS).[12,13] The ICD-10 International Personality Disorder Examination (ICD-10 IPDE) for personality disorders (PD),[11,14] Alcohol Use Disorder Identification Test (AUDIT) for alcohol use,[15] and global assessment of functioning (GAF) (present in DIGS) were applied. The DIGS and available medical records were discussed with at least one board certified; experienced psychiatrist in regular reliability meetings, and diagnosis was established. The first diagnostic category as per IPDE was taken for the sake of simplicity. All PDs were exclusive of each other, as per criteria of the IPDE.

Blood sample and electrocardiogram (ECG) were taken within 24 h of the first visit and ultrasonogram within 1 week. Data analysis was conducted using the SPSS version 16.0 (San Francisco, CA). Chi-square test was used for any association between psychiatric comorbidity, ECG, and ultrasonogram changes. Student's *t*-test was used for comparing cases with or without comorbidity on continuous variables (age at presentation, age at onset, age at first intoxication, age at daily drinking, age at dependence as per DIGS, AUDIT score, GAF score, and laboratory investigations). $P < 0.05$ was accepted as cut-off for significance.

RESULTS

A total of eighty participants (all males) were included with a mean age of 36.7 (standard deviation = 10.5), the large majority were educated (0–8 years: 20%, >9 years: 80%), married (77.5%), and resided in urban areas (65%), with nearly equal representation from nuclear (48.8%) or joint (47.5%) families. Nearly, one-fifth were unemployed and around 71.3% earned <Rs. 10,000/month.

The lifetime prevalence of complicated alcohol withdrawal state was 11.25% and alcohol-induced psychotic disorder was 11.25%. The mean AUDIT score was 28.41 (8.03) with a wide range of 8–40 [Table 1].

Overall, 69 participants (86.8%) had a comorbid psychiatric disorder, the most common being nicotine dependence (78.75%). A total of 45 patients (56.25%) had comorbid PD-antisocial (15.0%), paranoid (8.75%), and avoidant (7.5%). The least common were borderline (2.5%) and impulsive (2.5%). Lifetime prevalence among anxiety disorders was panic disorder (17.5%), generalized anxiety disorder (13.75%), phobic disorders (10%), and OCD (3.75%). Affective disorders were present in 28.75% of the participants and schizophrenia in 2.5%.

Mean GAF score during past month was 51.24 (15.25) with a range of 20–81 [Table 2]. There was no significant difference between those with or without comorbidity when age at presentation, age of attaining different alcohol milestones (age at first drink, first intoxication, daily drinking, and dependence), income, AUDIT and GAF scores, and lab markers (hemoglobin, mean corpuscular volume (MCV), fasting and postprandial blood sugar, bilirubin, alanine aminotransferase (ALT),

Table 1: Prevalence of psychiatric comorbidity

Comorbid psychiatric disorders	Prevalence (%)
Nicotine dependence	78.75
Personality disorder	
Antisocial/paranoid/avoidant/obsessive compulsive/ schizoid/histrionic/dependent/impulsive/borderline	15.0/8.75/7.5/6.25/ 5.0/5.0/3.75/2.5/2.5
Anxiety disorders	
Panic/generalized anxiety disorder/phobia/ obsessive compulsive disorder	17.5/13.8/10.0/3.8
Affective disorders	
Depressive episode/dysthymia/bipolar affective disorder/mania with or without psychotic symptoms	15/8.8/2.5/2.6
Mental and behavioral disorders due to alcohol use	
Alcohol-withdrawal state (either with convulsions or delirium)	11.25
Mental and behavioral disorders due to alcohol use	
Schizophrenia-like/predominantly depressive symptoms/predominantly delusional/predominantly hallucinatory/predominantly polymorphic/ predominantly manic symptoms	3.75/2.5/1.25/1.25/ 1.25/1.25
Schizophrenia	2.5

Table 2: Clinical variables and psychiatric comorbidity

Clinical variables	Mean (SD)		*t* (*P*)
	Comorbidity absent (*n*=11)	Comorbidity absent (*n*=69)	
Audit score	28.30 (9.02)	28.43 (7.95)	0.43 (0.967)
GAF score	51.30 (14.62)	51.23 (15.43)	0.14 (0.989)
Liver function			
Total bilirubin	0.77 (0.24)	0.74 (0.33)	0.351 (0.731)
AST	129.60 (99.05)	103.34 (92.14)	0.788 (0.447)
ALT	95.80 (64.67)	83.35 (68.51)	0.565 (0.583)
Alkaline	145.00 (60.80)	133.15 (55.89)	0.582 (0.572)
Phosphatase	73.60 (32.83)	104.00 (52.09)	2.511 (0.023)
GGT kidney function			
Blood urea	33.50 (9.81)	28.54 (9.75)	1.495 (0.161)
Serum creatinine	0.91 (0.26)	0.89 (0.25)	0.294 (0.774)
Serum uric acid	6.31 (1.57)	9.00 (1.99)	1.107 (0.272)
Hemogram MCV	92.97 (7.05)	92.91 (7.01)	0.023 (0.982)

GAF – Global assessment of functioning; AST – Aspartate aminotransferase; ALT – Alanine aminotransferase; GGT – Gamma glutamyl transpeptidase; MCV – Mean corpuscular volume; SD – Standard deviation

aspartate aminotransferase (AST), alkaline phosphatase, blood urea, serum creatinine, serum uric acid, ultrasonogram, and ECG) were compared. Gamma glutamyl transpeptidase (GGT) was the only marker ($P < 0.023$) that was shown to be significantly associated with psychiatric comorbidity.

DISCUSSION

The present study found high rates of PDs in a relatively stable Indian sample seeking treatment. Only males were included as few females seek free government treatment for alcohol or drug use.

Years of schooling and psychiatric comorbidity were neither correlated as opposed to Ross *et al*.,[3] nor was marital status. We did not find significant association between income and psychiatric comorbidity. Others reported lower socioeconomic status in patients with psychiatric comorbidity. One reported higher annual income in those with comorbid depression.[16-18]

Psychiatric comorbidity and age at first drink, age at first intoxication, age at daily drinking, and age at dependence were not significantly correlated as opposed to many previous reports.[10,16-26] Nicotine dependence expectedly topped the list of comorbidity, considering the prevalence, cheap, and easy availability of tobacco products in India.[24]

There were high rates of PDs, similar to studies by DeJong *et al.*[26] (78% alcoholic inpatients with at least one Axis II disorder; 28% only one, and 50% more than one PD) and Morgenstern *et al* (58%).[12]

Lifetime prevalence for anxiety disorders was 45%, comparable to hospital-based studies by Schneider *et al*.[21] and Bowen *et al*.[23] with lifetime prevalence of anxiety disorders of 42% and 43.8%, respectively.[24,33] The most common disorder was panic disorder (17.5% vs. 2–16%) in others[4,15,27,28,35,36] followed by generalized anxiety disorder (13.75%), phobic disorders (10%) similar to Powell *et al*.,[17] and obsessive compulsive disorders (3.75% vs. 2–12%) by others.[4,10,21,22,25,28]

Prevalence of lifetime diagnosis of affective disorders was 28.75%, the most common being depressive episode (15%) followed by dysthymia (8.75%), bipolar disorder (2.5%), mania (1.25%) and mania with psychotic symptoms (1.25%). Past hospital-based studies reported lifetime prevalence from 19% to 34%.[4,10,29] Kisore *et al*. from Lucknow, India, reported a prevalence of 30%.[28]

The prevalence of schizophrenia was 2.5%, comparable with Hesselbrock *et al.*,[24] Nurnberg *et al*.,[29] 2%, and Herz *et al*., 2.7%.[20] Others reported rates ranging from 0.8% to 8.0%.[4,10,21,22,25,28-30]

The prevalence of alcohol-withdrawal seizures and delirium tremens was 7.5% and 3.75%, respectively, as compared to 3–5% and 5%, respectively, from the literature.[31,32]

The mean values of fasting blood sugar, postprandial blood sugar, ALT, AST, GGT, serum uric acid, and MCV were significantly higher, comparable to others.[26,34,37-40] A statistically significant association was found between the psychiatric comorbidity and mean GGT value ($P = 0.023$) only. Significant changes were seen in ultrasonogram and ECG in 53.75% and 20% participants, respectively, but both were not associated

with psychiatric comorbidity. There was a significant association between GGT levels and AUDIT scores. However, no significant association between psychiatric comorbidity and AUDIT or GAF scores and between GGT and GAF scores was found. Reasons for this finding are uncertain although sample size may be an issue.

This study although a cross-sectional study focused on participants from an outpatient department of a tertiary care hospital catering to Delhi and surrounding areas. It was conducted with sufficient sample size; structured interview schedules supplemented with clinical history were used. The reliability of the assessments was ensured by regular reliability meetings with a senior psychiatrist.

As we included male treatment seekers who were likely to be more ill, an inherent selection bias was unavoidable. Many subjects were not motivated and were brought to hospital unwillingly by relatives. Combinations of biomarkers improve the detection of physical comorbidity in alcohol-dependent persons.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

REFERENCES

1. World Development Report 1993. p. 88. Available from: https://openknowledge.worldbank.org/handle/10986/5976. [Last accessed on 2016 Apr 25].
2. Schuckit MA. Alcohol related disorders. In: Sadock BJ, Sadock VA, editors. Kaplan and Sadock's Comprehensive Textbook of Psychiatry. 8th ed. Philadelphia: Lippincott Williams and Wilkins; 2005.
3. Ross HE, Glaser FB, Germanson T. The prevalence of psychiatric disorders in patients with alcohol and other drug problems. Arch Gen Psychiatry 1988;45:1023-31.
4. Tyndel M. Psychiatric study of one thousand alcoholic patients. Can Psychiatr Assoc J 1974;19:21-4.
5. McCabe D, Holmwood C. Comorbidity in general practice: The provision of care for people working with coexisting mental health problems and substance use by general practitioners. Common Wealth Department of Health and Ageing;2003. Available from: http://www.health.gov.au/pubhlth/publicat/document/comorbid_gp.pdf. [Last accessed on 2016 Apr 22].
6. Channabasavanna SM, Ray R, Kaliaperumal VG. Patterns and problems of non alcoholic drug dependence in Karnataka. Bangalore: Dept. of Health and Family Welfare; 1986.
7. Mohan D, Sharma HK. International review series: Alcohol and alcohol problems research 6. India. Br J Addict 1985;80:351-5.
8. Kumar S, Desai NG, Kapoor V. Depression in alcohol dependence syndrome. 44th Annual National Conference of Indian Psychiatric Society, Delhi; 1992.
9. Driessen M, Veltrup C, Wetterling T, John U, Dilling H. Axis I and axis II comorbidity in alcohol dependence and the two types of alcoholism. Alcohol Clin Exp Res 1998;22:77-86.
10. World Health Organization. The ICD-10 Classification of Mental and Behavioural Disorders Diagnostic Criteria for Research. Geneva: World Health Organization; 1993.
11. Deshpande SN, Mathur MN, Das SK, Bhatia T, Sharma S, Nimgaonkar VL. A Hindi version of the diagnostic interview for genetic studies. Schizophr Bull 1998;24:489-93.
12. Morgenstern J, Langenbucher J, Labouvie E, Miller KJ. The comorbidity of alcoholism and personality disorders in a clinical population: Prevalence rates and relation to alcohol typology variables. J Abnorm Psychol 1997;106:74-84.
13. Loranger AW, Sartorius N, Andreoli A, Berger P, Buchheim P, Channabasavanna SM, *et al.* The international personality disorder examination. The World Health Organization/alcohol, drug abuse, and mental health administration international pilot study of personality disorders. Arch Gen Psychiatry 1994;51:215-24.
14. Saunders JB, Aasland OG, Babor TF, de la Fuente JR, Grant M. Development of the alcohol use disorders identification test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption – II. Addiction 1993;88:791-804.
15. Grant BF, Hasin DS, Dawson DA. The relationship between DSM-IV alcohol use disorders and DSM-IV major depression: Examination of the primary-secondary distinction in a general population sample. J Affect Disord 1996;38:113-28.
16. Brown SA, Inaba RK, Gillin JC, Schuckit MA, Stewart MA, Irwin MR. Alcoholism and affective disorder: Clinical course of depressive symptoms. Am J Psychiatry 1995;152:45-52.
17. Powell BJ, Penick EC, Nickel EJ, Liskow BI, Riesenmy KD, Campion SL, *et al.* Outcomes of co-morbid alcoholic men: A 1-year follow-up. Alcohol Clin Exp Res 1992;16:131-8.
18. Schuckit MA, Tipp JE, Bucholz KK, Nurnberger JI Jr., Hesselbrock VM, Crowe RR, *et al.* The life-time rates of three major mood disorders and four major anxiety disorders in alcoholics and controls. Addiction 1997;92:1289-304.
19. Meyer RE. Prospects for a rational pharmacotherapy of alcoholism. J Clin Psychiatry 1989;50:403-12.
20. Herz LR, Volicer L, D'Angelo N, Gadish D. Additional psychiatric illness by diagnostic interview schedule in male alcoholics. Compr Psychiatry 1990;31:72-9.
21. Schneider U, Altmann A, Baumann M, Bernzen J, Bertz B, Bimber U, *et al.* Comorbid anxiety and affective disorder in alcohol-dependent patients seeking treatment: The first multicentre study in Germany. Alcohol Alcohol 2001;36:219-23.
22. Manjunatha N, Saddichha S, Sinha BN, Khess CR, Isaac MK. Chronology of alcohol dependence: Implications in prevention. Indian J Community Med 2008;33:233-7.
23. GATS. Global Adult Tobacco Survey. New Delhi: Ministry of Health and Family Welfare; 2010.
24. Hesselbrock MN, Meyer RE, Keener JJ. Psychopathology in hospitalized alcoholics. Arch Gen Psychiatry 1985;42:1050-5.
25. Koivisto H, Hietala J, Anttila P, Parkkila S, Niemelä O. Long-term ethanol consumption and macrocytosis: Diagnostic and pathogenic implications. J Lab Clin Med 2006;147:191-6.
26. DeJong CA, van den Brink W, Harteveld FM, van der Wielen EG. Personality disorders in alcoholics and drug addicts. Compr Psychiatry 1993;34:87-94.
27. Powell BJ, Penick EC, Othmer E, Bingham SF, Rice AS. Prevalence of additional psychiatric syndromes among male alcoholics. J Clin Psychiatry 1982;43:404-7.
28. Kisore P, Lal N, Trivedi JK, Dalal PK, Aga VM. A study

of comorbidity in psychoactive substance dependence patients. Indian J Psychiatry 1994;36:133-7.
29. Nurnberg HG, Rifkin A, Doddi S. A systematic assessment of the comorbidity of DSM-III-R personality disorders in alcoholic outpatients. Compr Psychiatry 1993;34:447-54.
30. Kay J, Tasman A. Substance abuse: Alcohol use disorders. Essentials of Psychiatry. Hoboken: John Wiley and Sons Ltd.; 2006.
31. Drake RE, Osher FC, Wallach MA. Alcohol use and abuse in schizophrenia. A prospective community study. J Nerv Ment Dis 1989;177:408-14.
32. Helzer JE, Pryzbeck TR. The co-occurrence of alcoholism with other psychiatric disorders in the general population and its impact on treatment. Journal of Studies on Alcohol 1988;49:219-24.
33. Bowen RC, Cipywnyk D, D'Arcy C, Keegan D. Alcoholism, anxiety disorders, and agoraphobia. Alcohol Clin Exp Res 1984;8:48-50.
34. Menezes PR, Johnson S, Thornicroft G, Marshall J, Prosser D, Bebbington P, *et al*. Drug and alcohol problems among individuals with severe mental illness in south London. Br J Psychiatry 1996;168:612-9.
35. Spak L, Spak F, Allebeck P. Alcoholism and depression in a Swedish female population: Co-morbidity and risk factors. Acta Psychiatr Scand 2000;102:44-51.
36. Killeen TK, Brady KT, Gold PB, Tyson C, Simpson KN. Comparison of self-report versus agency records of service utilization in a community sample of individuals with alcohol use disorders. Drug Alcohol Depend 2004;73:141-7.
37. Mundle G, Ackermann K, Mann K. Biological markers as indicators for relapse in alcohol-dependent patients. Addict Biol 1999;4:209-14.
38. Savage DG, Ogundipe A, Allen RH, Stabler SP, Lindenbaum J. Etiology and diagnostic evaluation of macrocytosis. Am J Med Sci 2000;319:343-52.
39. Fauci AS, Kasper DL, Longo DL, Braunwald E, Hauser SL, Jameson JL, *et al*. Harrison's Principles of Internal Medicine. 17th ed. New York: The McGraw-Hill Companies; 2008.
40. Litten RZ, Allen JP, Fertig JB. Gamma-glutamyltranspeptidase and carbohydrate deficient transferrin: Alternative measures of excessive alcohol consumption. Alcohol Clin Exp Res 1995;19:1541-6.