

## PREVALENCE OF ALCOHOLISM IN THE PUNJAB, PAKISTAN

WASEEM HAIDER AND M. ASLAM CHAUDHRY\*

*Department of Pathology, University of Health Sciences and Office of Surgeon Medico Legal\*, Lahore*

### ABSTRACT

*Alcoholism is a type of addiction, causing both physical and psychological dependence. It is a major social, economical and health problem. A total of 1560 cases of alcohol intake were studied at the office of Surgeon Medico legal Punjab. Most of them at the time of examination were showing visible clinical evidence of alcoholic intake. Victims were mostly males. Examination was conducted on the request of police. A wide range of symptoms of different duration was observed. Psychological element was also seen in some victims.*

### INTRODUCTION

Alcoholism is drinking alcoholic beverages at a level that interferes with physical health, mental health, and social, family, or job responsibilities.<sup>1</sup> It is a chronic disease that makes our body dependent on alcohol. One may be obsessed with alcohol and unable to control how much one needs to drink, even though drinking is causing serious problems with our relationships, health, work and finances.<sup>2</sup> It is divided into two categories i.e. alcohol abuse and alcohol dependence.

Alcohol abuse, means engaging in excessive drinking that causes health or social problems, but you aren't dependent on alcohol and haven't fully lost control over the use of alcohol. So, the alcohol abusers don't feel the same compulsion to drink and usually don't experience physical withdrawal symptoms when they don't drink.<sup>3</sup> Alcohol dependence – alcohol addiction – occurs gradually as drinking alcohol alters the balance of some chemicals in the brain. Alcohol also raises the levels of dopamine in the brain, which is associated with the pleasurable aspects of drinking alcohol. Excessive, long-term drinking can deplete or increase the levels of some of these chemicals, causing body to crave alcohol to restore good feelings or to avoid negative feelings.<sup>3</sup> In addition, there are other factors that can lead to excessive drinking contributing to the addiction process. These include certain genetic factors, stress, anxiety, depression and social factors.<sup>2</sup>

In the United States, a standard drink is any drink that contains 0.6 ounces (13.7 grams or 1.2 tablespoons) of pure alcohol. Generally, this amount of pure alcohol is found in 12-ounces of regular beer or wine cooler, 8-ounces of malt liquor, 5-ounces of wine, 1.5-ounces of 80-proof distilled spirits or liquor (e.g., gin, rum, vodka, whiskey).

Patterns of drinking alcohol are of two categories. Binge drinking; for women, 4 or more drinks during a single occasion. For men, 5 or more drinks

during a single occasion. Heavy drinking; for women, more than one drink per day on an average. For men, more than 2 drinks per day on an average. Excessive drinking includes heavy drinking, binge drinking or both. Most people who binge drink are not alcoholics or alcohol dependent.<sup>4</sup> According to the *Dietary Guidelines for Americans*, if you drink alcoholic beverages, do so in moderation, which is defined as no more than one drink per day for women and no more than 2 drinks per day for men.<sup>5,6</sup> Alcohol intake also carries some health risks described as immediate and long term. Excessive alcohol use has immediate effects that increase the risk of many harmful health conditions. These effects are most often the result of binge drinking and include unintentional injuries, including traffic injuries, falls, drownings, burns and unintentional firearm injuries.<sup>7</sup> Alcohol use is also associated with 2 out of 3 incidents of intimate partner violence.<sup>8</sup> Studies have also shown that alcohol is a leading factor in child maltreatment and neglect cases, and is the most frequent substance abused among such parents.<sup>9</sup> Risky sexual behaviours, including unprotected sex, sex with multiple partners, and increased risk of sexual assault. These behaviours can result in unintended pregnancy or sexually transmitted diseases.<sup>10,11</sup> Miscarriage and stillbirth among pregnant women, and a combination of physical and mental birth defects among children that last throughout life.<sup>12,13</sup> Alcohol poisoning, a medical emergency that results from high blood alcohol level suppress the central nervous system and can cause loss of consciousness, low blood pressure and body temperature, coma, respiratory depression, or even death.<sup>14</sup>

As regard the long-term health risks, over a period of time excessive alcohol use can lead to the development of chronic diseases, neurological impairments and social problems. These include: Neurological problems (dementia, stroke and neuro-

pathy).<sup>15,16</sup> Cardiovascular problems (myocardial infarction, cardiomyopathy, atrial fibrillation and hypertension),<sup>17</sup> psychiatric problems (depression, anxiety, and suicide),<sup>18</sup> Social problems (unemployment, lost productivity, and family problems),<sup>19,20</sup> cancer of the mouth, throat, oesophagus, liver, colon, and breast.<sup>21</sup> Liver diseases (alcoholic hepatitis, cirrhosis,<sup>22</sup> worsening of liver function and interference with medications used to treat this condition),<sup>23</sup> and other gastrointestinal problems (pancreatitis and gastritis).<sup>24,25</sup>

There are approximately 79,000 deaths attributable to excessive alcohol use each year in the United States.<sup>26</sup> This makes excessive alcohol use the 3<sup>rd</sup> leading lifestyle-related cause of death for the nation.<sup>27</sup> In the single year 2005, there were over 1.6 million hospitalizations and over 4 million emergency room visits for alcohol-related conditions.<sup>28</sup>

Alcohol is a generic name of ethanol produced by the fermentation of many food stuffs – most commonly barley, hops and grapes. It produces intoxication because of its depressive effects on various areas of brain. It is highly soluble in water and is absorbed much less in fat. Liver metabolises about 90% whereas 5% is breathed out through lungs. People on alcohol dependence, need increased amount of alcohol to achieve intoxication or the desired effect. Approximately 20% of ethanol is absorbed from the stomach and 80% from small intestine. Consequently the longer it remains in the stomach, the slower it will be absorbed and lower will be the peak in the blood alcohol concentration (BAC). Many drugs compete metabolically with alcohol for the microsomal oxidizing pathways of the liver.<sup>29</sup> Hence assessment of the hepatic functions should be a priority.<sup>30</sup> The effects of the alcohol intoxication are greatly influenced by individual variations among users. Some may become intoxicated at much lower BAC level than is shown.<sup>31</sup>

## MATERIALS AND METHODS

The purpose of the study was to evaluate cases of alcohol intake, in a Muslim country where alcohol is prohibited by law for Muslims. These cases were examined from medico-legal point of view keeping in view their age, sex, occupation, religion, positive clinical signs and associated injuries. Their status were determined based upon the carefully taken history and the evidence of alcohol in blood and urine.

The study was conducted on the original data made available from the office of Surgeon Medico Legal, Punjab for a period from 10.01.1998 to 31.12.2002. A total of 1560 cases were brought by police for medicolegal examination under Punjab

prohibition (enforcement of hadud) rules 1979. The relevant history was obtained from the victims, their accompanying relatives and police personals and all police personals and all the details were mentioned on the medico legal form. As the blood alcohol concentration (BAG) remains the definitive standard for assessing intoxication hence blood samples were drawn and sent to the office of Chemical Examiner, Punjab. The values are expressed in milligram / deciliter, the legal intoxication level varies but it is 80 – 100 mg/dl (17.4 mmol/l – 21.7 mmol/l).

**Blood Samples:** The skin was washed with soap and water and 5 cc of blood was collected, in it 5 mg of sodium fluoride and 15 mg of potassium oxalate were used as preservative.

**Urine samples:** They were collected in large chemically cleaned, sterilized and screw capped bottle. Usually the second sample is taken and 30 mg of phenyl mercuric nitrate used as preservative.

**Parameters:** The parameters studied included age, sex, occupation, authority, religion, background – rural or urban, was he / she hand-cuffed, clinical signs, orientation, associated injuries, clinical opinion and the report of alcohol concentration from chemical examiner.

## RESULTS

A total of 1560 subjects were received and examined at the office of surgeon medico-legal Punjab. Among these 1560 cases, (all referred by police authority) 98.26% (n=1533) were males and only 1.74% (n=27) were females. A large majority of cases i.e. 92.88% (n=1449) were between the ages of 16 and 45 years (Table 1). As regard their occupation 45.32% (n=707) were labourers, and 22.82% (n=356) were in business (Table 2). The large majority i.e. 92.89% (n=1450) were muslims. Most of the cases were from urban setup 91.00% (n=1160); the others came from the rural areas around cities. The clinical signs noted included alcoholic smell from the mouth in 90.67% (n=1416); slurred speech in 78.65% (n=1217); congested eyes in

**Table 1:** Age of Victims.

Age Group	Number	Percentage
06 – 15	02	0.05%
16 – 25	664	42.56%
26 – 35	546	35.00%
36 – 45	239	15.32%
46 – 55	84	5.38%
56 – 65	24	1.54%
66 – 75	1560	100.00%

**Table 2:** Occupation of the Victims.

Occupation	Number	Percentage
House hold	12	0.77%
Labourers	707	45.32%
Farmers	78	5.00%
Business	356	22.82%
Service	240	15.38%
Un-employed	63	4.03%
Students	98	6.28%
Un-known	00.38%	6
Total	1560	100.00%

**Table 3:** Positive clinical signs.

Clinical signs	Number	Percentage
Smell	1416	90.67%
Speech Slurred	1227	78.65%
Eyes congested	1440	92.30%
Gait changes	1098	70.38%

**Table 4:** Chemical examiner's reports.

CE Report	Number	Percentage
Positive	888	56.92%
Negative	25	01.60%
Pending	647	41.48%
Total	1560	100.00%

92.30% (n=1440); gait changes 70.38% (n=1098). Orientation in time and space was lost in 17.50% (n=273) and were intact in 82.50% (n=1287) (Table 3). The associated injuries were minor in 3.5% (n=55) and the remaining over 96% (n=1505) had no evidence of injuries. The clinical examination based opinion was positive for alcohol in 84.04% (n=1311); and negative in 2.31% (n=36). The remaining 13.65% (n=213) were kept pending because either they did not return to collect medical reports or they disappeared soon after the examination. The reports from the chemical examiner (i.e. alcohol levels in blood / urine) were received for our record in 59% cases, and among them 56.92% (n=888) showed evidence of alcohol in their samples whereas in over 41% (n=647) we did not receive the reports (Table 4).

## DISCUSSION

Alcoholism is a disease and its incidence is rising. Alcohol abusers are "problem drinkers" but their dependents have more serious problems.<sup>32</sup> It is the most severe alcoholic disorder that develops over a period of years, following a consistent pattern. At

first a tolerance develops, then people may lose control over drinking followed by severe drinking behaviour and then prolonged binges of drinking with associated physical and mental complications.<sup>33</sup>

According to the present study having Muslims culture and civilization, the incidence as compared to the West is much less and males being 98.26% (n=1533) are the most common victims, with a common incidence in the middle age group i.e. about 93% (n=1449). The higher percentage 42.56% (n=664) of younger group brought for examination is because of their involvement in the evil for pleasure or company's sake in the beginning and later on became addict to it. The important aspect of our study is that police apprehended all the alcoholics and about 91% (n=1460) of the cases were from the rural areas. The labour class has the higher incidence of about 45.32% (n=707). The higher incidence in the labour class brought by police for examination is probably due to the nuisance created by them at public places, as compared to the people of higher social status having better tolerance and safer place to enjoy.

Clinically, the smell of alcoholic beverage in the breath is a definite sign of alcohol intake, further evidence is provided by the combination of all or most of the other signs e.g. excitement, abusive, changes in eyes, dryness of tongue or excessive salivation, slurred speech, memory loss or confusion, disturbed co-ordination, tremors of hand, staggering gait and sluggish reflexes. The common laboratory tests included blood and urine alcohol levels. However in developed countries on the spot breath analysers (Alco meter, intoximeter, drunk meter) are used for this purpose. Contrary to the alcoholism in the West, in our country mere presence of intoxicant in breath, stomach or blood stream irrespective of the amount is sufficient to prove the intake of alcohol, and for cognizance under the rule.

According to the Sec 5; of Pakistan prohibition (enforcement of Hadud) rules 1979; the nearest authorized medical officer should examine the person referred to him under article 12(1) of the order with respect to the presence of an intoxicant in his breath or in his stomach or in his blood stream. If the authorized medical officer can presume the taking or influence of the intoxicant from any of the above-mentioned symptoms or other after effects he may dispense with the aforesaid examination.

During the study we found that only 17.50% (n=273) of the victims were oriented in time and space whereas 82.50% (n=1287) were in a state of confusion, and 3.53% also had associated injuries. The most unfortunate feature was the pending of

results due to non-availability of blood and urine reports from the office of Chemical examiner Punjab. In about 42% (n=647) the cases such results were awaited, and despite the repeated reminders the reports were never received.

It is **concluded** that alcohol is a drug of addiction and is responsible for many socio-economic problems, crimes, morbidity and mortality. It is contributory factor in many deaths. However in Pakistan, being a Muslim state prohibition law have been imposed to curb its use, in an effort to reduce the magnitude of the problem, but this has brought about its own complications. The relevant sections of the law in relation to drinking, drunkenness, possession of liquor, sale, illicit distillation, misuse of toxic preparation are in practice, but despite of best efforts alcohol intake cases do occur.

Evaluation of an intoxicated patient should be carried out with a meticulous care, repetitive examinations and a quantitative assessment of intoxication wherever possible. The victim should be carefully screened for comorbidities of chronic drinking, such as liver disease and infection. Interventions and referrals to promote sobriety should be readily available, and discharge planning should include the assurance of a safe and monitored home setting. Only 15% of people with alcohol dependence seek treatment for this disease but majority start drinking again after treatment. Therefore it is important to maintain support systems in order to cope with any slips and ensure that they don't turn into a dependence again.

#### ACKNOWLEDGEMENT

The authors would like to thank all the District medico-legal officers of the Punjab, for assistance during this project.

#### REFERENCES

- Christo ballas. Psychiatrist, Hospital of the University of Pennsylvania, Philadelphia. Alcoholism. Search Medline plus. June 2<sup>nd</sup> 2008.
- CNN.com. October 26, 2008.
- Alcoholism. Mayo Foundation for medical education and research. Mayo 2008. [Mayoclinic\\_com.mht](http://www.mayoclinic.com/mht).
- Dawson D.A., Grant B.F, Li T.K. Quantifying the risks associated with exceeding recommended drinking limits. *Alcohol Clin. Exp. Res.* 2005; 29: 902-908.
- United States department of Health and Human Services. In: Dietary guidelines for Americans. Chapter 9 – Alcoholic beverages. Washington DC: US government printing office, 2005: P. 43-46.
- [http://www.health.gov/DIETARYGUIDELINES/dg\\_a2005/document/html](http://www.health.gov/DIETARYGUIDELINES/dg_a2005/document/html).
- Smith G.S., Branas C.C., Miller T.R. Fatal nontraffic injuries involving alcohol: a metaanalysis. *Ann of Emer Med.*, 1999; 33 (6): 659-668.
- Greenfield L.A. Alcohol and crime: An analysis of national data on the prevalence of alcohol involvement in crime. Report prepared for the Assistant Attorney General's National Symposium on Alcohol Abuse and Crime. Washington. DC: U.S. Department of Justice, 1998. Available at: <http://www.ojp.usdoj.Gov/bjs/pub/pdf/ac.pdf> (PDF). Accessed dMarch 31, 2008.
- The National Center on Addition and Substance Abuse at Columbia University, 1999. No safe haven: Children of substance-substance-abusing parents. Available at: [http://www.casacolumbia.org/Absolutenm/articlefiles/No\\_Safe\\_Haven\\_1\\_11\\_99.pdi\\*](http://www.casacolumbia.org/Absolutenm/articlefiles/No_Safe_Haven_1_11_99.pdi*) (PDF). Accessed March 31, 2008.
- Naimi T.S., Lipscomb L.E., Brewer R.D., Colley B.G. Binge drinking in the preconception period and the risk of unintended pregnancy: Implications for women and their children. *Pediatrics* 2003; 111 (5): 1136-1141.
- Wechsler H., Davenport A., Dowdall G., Moeykens B., Castillo S. Health and behavioral consequences of binge drinking in college. *JAMA* 1994; 272 (21): 1672-1677.
- Kesmodel U., Wisborg K., Olsen S.F., Henriksen T.B., Sechler N.J. Moderate alcohol intake in pregnancy and the risk of spontaneous abortion. *Alcohol and Alcoholism* 2002; 37 (1): 87-92.
- American Academy of Pediatrics. Committee on Substance Abuse and Committee on Children with Disabilities 2000. Fetal alcohol syndrome and alcohol-related neurodevelopmental disorders. *Pediatrics* 2000; 106: 358-361.
- Sanap M., Chapman M.J. Severe ethanol poisoning: a case report and brief review. *Crit. Care Resusc* 2003; 5 (2): 106-108.
- Corrao G., Rubbiati L., Zambon A., Arico S. Alcohol-attributable and alcohol-preventable mortality in Italy. A balance in 1983 and 1996. *European* 2002; 12: 214-223.
- Corrao G., Bagnardi V., Zambon A. La Vecchia C. A meta-analysis of alcohol consumption and the risk of 15 diseases. *Prev. Med.* 2004; 38: 613-619.
- Rehm J., Gmel G., Seppä C.T., Trevisan M. Alcohol-related morbidity and mortality. *Alcohol Health* 2003; 27 (1): 39-51.
- Castaneda R., Sussman N., Westreich L., Levy R., O'Malley M. A review of the effects of moderate alcohol intake on the treatment of anxiety and mood disorders. *J. Clin. Psychiatry* 1996; 57 (5): 207-212.
- Booth B.M., Feng W. The impact of drinking and drinking consequences on short-term employment outcomes in at-risk drinkers in six southern states. *J. Behavioral Health Services and Research* 2002; 29 (2): 157-166.
- Leonard K.E., Rothbard J.C. Alcohol and the marriage effect. *J. Stud. Alcohol. Suppl.* 1999; 13: 139-146.

21. Baan R., Straif K., Grosse Y., Secretan B. et al. On behalf of the WHO International Agency for Research on Cancer Monograph Working Group. Carcinogenicity of alcoholic beverages. *Lancet Oncol.* 2007; 8: 292-293.
22. Heron M., Deaths: Leading Cause for 2004. National Vital Statistics Report, Volume 56, No. 5, November 20, 2007. Hyattsville, MD: Centers for Disease Control and Prevention, National Center for Health Statistics. Available at: [http://www.cdc.gov/nchs/data/nysr/nysr56/nysr56\\_05.pdf](http://www.cdc.gov/nchs/data/nysr/nysr56/nysr56_05.pdf) (PDF). Accessed March 28, 2008.
23. Schiff E.R. Hepatitis C and alcohol. *Hepatology* 1997; 26 (Suppl 1): 39S-42S.
24. Leshner S.D.H., Lee Y.T.M. Acute pancreatitis in a military hospital. *Military Med.* 1989; 154 (11): 559-564.
25. Kelly J.P., Kaufman D.W., Koff R.S., Laszlo A., Wilholm B.E., Shpiro S. Alcohol consumption and the risk of major upper gastrointestinal bleeding. *Am. J. Gastroenterol.* 1995; 90 (7): 1058-1064.
26. Centers for Disease Control and Prevention (CDC). Alcohol-Related Disease Impact (ARDI). Atlanta. (GA: CDC. Available at: <http://www.cdc.gov/alcohol/ardi.htm>. Accessed March 28, 2008.
27. Mokdad A.H., Marks J.S., Stroop D.F., Gerberding J.L. Actual causes of death in the United States 2000. *JAMA* 2004; 291 (10): 1238-1245.
28. Chen C.M., Yi H. Trends in alcohol-related morbidity among short-stay community hospital discharges. United States, 1979-2005. Bethesda M.D.: National Institutes of Health, National Institute on Alcohol Abuse and Alcoholism. NIAAA Surveillance Report # 80, 2007. Available at: <http://pubs.niaaa.nih.gov/publications/surveillance80/HDS05.pdf> (PDF). Accessed March 28, 2008.
29. Marco C.A., Kelen G.D. Acute Intoxication. *Emer. Med. Clin. North. Amer.*, 1990; (4): 731-48.
30. Sands B.F., Knapp C.M., Ciarulo D.A. Interaction of Alcohol with therapeutic drugs and drugs of abuse. In: Kranzler H.R. ed. *The pharmacology of alcohol abuse*. New York: Springer Verlag, 1995: 475-505.
31. Bailey, William J. *Drug use in American Society*. 3rd Ed, Minneapolis; Burgess 1993.
32. Goldman L., Ausiello D. *Cecil Textbook of Medicine*. 22nd ed. Philadelphia, Pa: WB Saunders; 2004 79-80.
33. Pettinati H.M., O'Brien C.P., Rabinowitz A.R., Wortman S.P., Oslin D.W., Kampman K.M., Dackis C.A. The status of naltrexone in the treatment of alcohol dependence: specific effects on heavy drinking. *J. Clin. Psychopharmacol.* 2006; 26: 610-625.