



Research Article

EPIDEMIOLOGICAL FEATURES OF ALCOHOL USE IN A RURAL BLOCK OF NORTH INDIA: A POPULATION-BASED CROSS-SECTIONAL STUDY

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ABSTRACT

Background- Alcohol is a psychoactive substance with dependence-producing properties that has been widely used in many cultures for centuries. Alcohol consumption can have an impact not only on the incidence of diseases, injuries and other health conditions, but also on the course of disorders and their outcomes in individuals. Understanding the geographic distribution and consumption pattern of alcohol drinking, along with the determinants contributing to their use, is essential for developing targeted alcohol control policies. **Objectives-** The present study was conducted with the aim to assess the current pattern of alcohol use among adults in a rural area of Haryana.

Materials and methods- The study was conducted in Lakhanmajra block (rural) of Haryana, India, in year 2015-2016 among 1000 study subjects aged 15-64 years selected by systematic random sampling technique.

Results- The overall prevalence of current-alcohol use was 10.7% and the median number of average standard drinks was three. A higher prevalence of diabetes (12.1%) was found among subjects consuming alcohol as compared to non-alcoholics (8.8%).

Conclusion- Alcohol consumption has been identified as a detrimental health and social consequences factor. Policies in our country are not geared adequately toward addressing the issue. The study emphasizes the need of development of health programme related to alcohol consumption along with strengthening of existing policies.

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INTRODUCTION

Alcohol is a psychoactive substance with dependence-producing properties that has been widely used in many cultures for centuries. The World Health Organization has identified tobacco smoking and binge alcohol drinking as two of the leading risk factors for premature mortality worldwide [1,2] Alcohol consumption can have an impact not only on the incidence of diseases, injuries and other health conditions, but also on the course of disorders and their outcomes in individuals. Environmental factors such as economic development, culture, availability of alcohol and the level and effectiveness of alcohol policies are relevant factors in explaining differences and historical trends in alcohol consumption and related harm. The harmful use of alcohol is a component cause of more than 200 disease and injury conditions in individuals, most notably alcohol dependence, liver cirrhosis, cancers and injuries. In 2012, 139 million DALYs (disability-adjusted life years), or 5.1% of the global burden of disease and injury, were attributable to alcohol consumption. It has been estimated that nearly 3.3 million people die each year due to harmful use of alcohol. [3] Major health related harms among drinkers include neuropsychiatric

disorders, gastrointestinal disorders like liver cirrhosis and pancreatitis and cancer of the mouth, nasopharynx, other pharynx and oropharynx, laryngeal cancer, oesophageal cancer, colon and rectum cancer, liver cancer and female breast cancer apart from intentional/unintentional injuries, cardiovascular diseases, diabetes mellitus, fetal alcohol syndrome and damage to the immune system of body.

There are three main direct mechanisms of harm caused by alcohol consumption in an individual [4,5,6] These three mechanisms are:

- toxic effects on organs and tissues;
- intoxication, leading to impairment of physical coordination, consciousness, cognition, perception, affect or behaviour;
- dependence, whereby the drinker's self-control over his or her drinking behaviour is impaired.

Alcohol-related harm is determined by the volume of alcohol consumed, the pattern of drinking, and, on rare occasions, the quality of alcohol consumed. [7,8,9] There are certain factors affecting alcohol consumption and alcohol-related harm which may be age, gender, familial risk factors, socioeconomic status, economic development, cultural factors apart from alcohol control and regulations. Lower-income groups are more affected by the social and health consequences of alcohol

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because they often lack quality health care and are less protected by functional family or community networks.

Worldwide consumption of alcohol in 2010 was equal to 6.2 litres of pure alcohol consumed per person aged 15 years or older, which translates into 13.5 grams of pure alcohol per day. In India total alcohol per capita (15+) consumption among drinkers only (in litres of pure alcohol) was 32.1 litres among males and 10.6 litres among females (average 28.7 litres). Prevalence of alcohol use disorders and alcohol dependence in India was 2.6% and 2.1% respectively.^[3]

Considering the health and social consequences of harmful use of alcohol, the World Health Organization has been actively framing programmes and policies in this regard. Global monitoring framework for the prevention and control of noncommunicable diseases (NCDs)^[10] has a target of least 10% relative reduction in the harmful use of alcohol, as appropriate, within the national context. Global Information System on Alcohol and Health (GISAH) has been built since 1997 by the WHO Department of Mental Health and Substance Abuse whose main purpose of GISAH is to serve WHO Member States and governmental and nongovernmental organizations by making alcohol related health data available which can help to analyse the state of the health situation related to alcohol in a particular country.^[11]

NCDs killed 38 million people in the world constituted 65% of the global burden of death. Alcohol has been a significant risk factor towards the development of NCDs.^[12] Understanding the geographic distribution and consumption pattern of alcohol drinking, along with the determinants contributing to their use, is essential for developing targeted alcohol control policies.^[13] The present study was conducted with the aim to assess the current pattern of alcohol use among adults in a rural area of Haryana.

MATERIAL AND METHODS

The analysis is based on data collected from a cross sectional survey of diabetes mellitus type 2 disease and its risk factors which was carried out in Lakhnamajra block (rural) of Haryana, India, in year September 2015 to August 2016. The study subjects were selected by systematic random sampling technique. These subjects were interviewed using a pretested proforma after obtaining their consent. A total of 1000 subjects were taken for the study purpose assuming the prevalence of Diabetes mellitus of 9.1%.^[14] Equal number of participants of both sexes were selected and further divided into age groups 15-24, 25-34, 35-44, 45-54 and 55-64.

Inclusion Criteria

Inclusion criteria were persons aged between 15 to 64 years; and known case of type II diabetes mellitus.

Exclusion Criteria

Exclusion criteria was those who were not willing to participate, known case of type I diabetes mellitus, pregnant women, migrants (those who stayed in the area for less than six months) and bed ridden patients those who were unable to participate in the study.

Current Drinkers: were defined as those who consumed one or more than one drink of any alcohol in the year preceding the survey.

Former Drinker: Those who have consumed alcohol but those who did not consume one or more drink during the year preceding the survey.

Lifetime Abstainer: Those who have never consumed one or more drink of any type of alcohol in lifetime.

High Risk Drinker (Binge Drinker): Those who drink more than 5 (for women 4) standard drinks on any single day.

Standard drink was: defined as any standard drink with net alcohol content of 10 gm ethanol. One standard drink is equivalent to consuming one standard bottle of regular beer (285 ml), one single measure of spirits (30 ml) or one medium size glass of wine (120 ml).

Ethical clearance was obtained from Institutional ethical committee of Pt. BDS University of Health Sciences Rohtak. Data were collected on parameters related to tobacco use, alcoholism, diet, physical activity, blood pressure, waist circumference, body mass index, and diabetes mellitus. The definitions used for various parameters were as per the WHO STEPS guidelines.^[6-8] Permission to conduct the study was obtained from institutional ethics committee.

Collected data were entered in the MS Excel spreadsheet, coded appropriately and later cleaned for any possible errors. Analysis was carried out using SPSS (Statistical Package for Social Studies) for Windows version 20.0. Categorical data were presented as percentages (%). Pearson's chi square test was used to evaluate differences between groups for categorized variables. Binary logistic regression analysis was done to evaluate factors significantly associated alcohol intake and risk factors.

Observations

The overall prevalence of ever-alcohol use was 14.5% and it was higher among males (28%) as compared to females (1%). (Table-1). The overall prevalence of current-alcohol use was 10.7%. It was 20.8% among males and negligible among females. (Table-2)

The median age for initiation of alcohol among study participants was 22 years, while the median age for starting alcohol use was lower among females than males. The median number of average standard drinks was three while it was more in males than female. The mean number of average drinks was 3.46. (Table-3)

Nearly one-third (35.5%) of current alcohol users drank less than once a month in a year while 9.3% drank almost daily (5-7days/week). (Table-4)

A higher prevalence of diabetes (12.1%) was found among subjects consuming alcohol as compared to non-alcoholics (8.8%). (Table-5)

On applying logistic regression analysis, it was observed that the association of current alcohol consumption with the abovementioned socio-demographic variables was found to be statistically significant in majority except educational status and socio economic status. Males were nearly 54times (aOR:54.356,CI:12.646-233.434,p=0.000) more likely to consume alcohol as compared to females. Alcohol consumption was likely to increase with the age of study subjects. Alcohol consumption was twice as likely among labourers and thrice among those engaged in business as compared to the reference category i.e. unemployed. (Table-6)

Table 1 Prevalence of ever-alcohol use among study participants by age groups & gender

Age group (years)	Ever alcohol user		
	Male (n=500)	Female (n=500)	Total (N=1000)
15-24	21/100 (21)	1/100 (1)	22/200 (11)
25-34	28/100 (28)	1/100 (1)	29/200 (14.5)
35-44	24/100 (24)	0/100 (0)	24/200 (12)
45-54	34/100 (34)	2/100 (2)	36/200 (18)
55-64	33/100 (33)	1/100 (1)	34/200 (17)
Total	140/500 (28)	5/500 (1)	145/1000 (14.5)

(Figures in parentheses indicate percentage)

Table 2 Prevalence of current-alcohol use among study participants by age groups & gender

Age group (years)	Current alcohol users		
	Male (n=500)	Female (n=500)	Total (N=1000)
15-24	12/100 (12)	0/100 (0)	12/200 (6)
25-34	16/100 (16)	0/100 (0)	16/200 (8)
35-44	18/100 (18)	0/100 (0)	18/200 (9)
45-54	30/100 (30)	2/100 (2)	32/200 (16)
55-64	28/100 (28)	1/100 (1)	29/200 (14.5)
Total	104/500 (20.8)	3/500 (0.6)	107/1000 (10.7)

(Figures in parentheses indicate percentage)

Table 3 Age of initiation of alcohol and average standards drinks intake

Variables		MEAN± S.D	MEDIAN (IQR)
Age of initiation for alcohol (years)	Males	23.195 ± 4.407	22 (21-25)
	Females	19.50 ± 2.121	19.50 (18.0-19.5)
	Total	23.125 ± 4.399	22 (21-25)
Average standards drinks (on a drinking day) (N=107)	Males	3.23 ± 1.808	3 (2-4)
	Females	2.00 ± 0.000	2 (2-2)
	Total	3.4673 ± 1.506	3 (2-5)

Table 4 Frequency of alcohol intake among current alcohol users (n=107)

Frequency	Current alcohol users	Percent
5-7 days/week	10	9.3%
1-4 days/week	24	22.4%
1-3 days/month	35	32.7%
<Once/month in one year	38	35.5%
Total	107	100%

Table 5 Association of diabetes mellitus with alcohol consumption

Alcohol consumption	Non diabetic N (%)	Pre diabetic (IFG) N (%)	Diabetic N (%)	Total N (%)
Yes	88(82.2)	6(5.6)	13(12.1)	107(100)
No	746(83.5)	68(7.6)	79(8.8)	893(100)
Total	834(83.4)	74(7.4)	92(9.2)	1000(100)

Chi square value =1.673 df = 2 p =0.433

Table 6 Independent association of socio-demographic variables with alcohol

Variables	Current Alcohol consumption		p value
	Prevalence (%)	aOR(95% C.I.)	
Gender			
Female	2/500 (0.4)	Reference	
Male	105/500 (21)	54.356(12.646-233.434)	0.000
Age group (years)			
15-24	1/200 (0.5)	Reference	0.002
25-34	11/200 (5.5)	10.670(1.338-85.058)	0.025
35-44	20/200 (10.0)	15.655(1.935-125.501)	0.010
45-54	33/200 (16.5)	26.904(3.328-217.478)	0.002
55-64	42/200 (21)	37.525(4.509-305.511)	0.001
Educational status			
Illiterate	42/242 (17.4)	Reference	0.846
Primary	16/188 (8.5)	0.834(0.359-1.889)	0.664
Middle	14/176 (8.0)	0.671(0.283-1.589)	0.364
High School	27/308 (8.8)	0.692(0.317-1.513)	0.357

Graduate and above	8/86 (9.3)	0.912(0.263-3.165)	0.884
Occupation			
None	37/738 (5.0)	Reference	0.038
Labourer	21/52 (40.4)	2.412(1.121-5.191)	0.024
Business	11/34 (32.4)	2.755(1.078-7.041)	0.034
Cultivation	28/90 (31.1)	2.094(0.938-4.677)	0.071
Service	10/86 (11.6)	1.023(0.350-2.992)	0.966
Socio-economic status			
Upper middle	5/56 (8.9)	Reference	0.436
Middle	45/506 (8.9)	1.160(0.392-3.435)	0.789
Lower middle	42/380 (11.1)	1.286(0.389-4.254)	0.680
Lower	15/58 (25.9)	2.593(0.613-10.973)	0.195

DISCUSSION

In our study, the overall prevalence of ever alcohol use was found to be 14.5% and it was higher among males (28.0%) as compared to females (1.0%). The overall prevalence of current alcohol use was 10.7% and it was higher among males (20.8%) as compared to females (0.6%). Thakur et al (2016)^[15] in their study from Punjab reported that the current alcohol users among 18-44 years and 45-69 years were 13.6% and 17.6%. With regards to sex distribution, 27.4% of males and 0.3% of females were currently using alcohol. Priyanka et al^[16] from Kerala found that the prevalence of current alcohol users as 36.2% (males-66.2% and females-6%) while the prevalence of ever alcohol users was 55% (males-82.6% and females-27.5%).

The difference in prevalence with regards to gender could be attributed to alcohol being socially unacceptable among females as against the overindulgence by males in this unhealthy practice, accompanied by peer pressure among younger age groups, cultural practices and social functions like marriages or festivals. The difference in prevalence among various age groups may be attributed to financial independence and work place culture.

Our study found a higher prevalence of diabetes among alcoholics (12.1%) as compared to non-alcoholics (8.8%). Opposite findings were seen in the pre diabetics where higher prevalence (7.6%) was found in non alcoholics as compare to alcoholics (5.6%). The difference was not statistically significant (p value=0.433). Tripathy et al (2013)^[17] and Majgiet al (2012)^[18] in their studies found that the prevalence of diabetes among alcoholic and non-alcoholic subjects was 13.3% and 4.7% respectively while among non-alcoholics was 11.2% and 4.7% respectively. These results were also not significant. There could be a possibility could be of recall bias for quantification of consumption, as the present study was cross sectional study. Whereas Deepthi et al (2013)^[19] observed that 12.9% of the diabetics were consuming alcohol and this association was found to be statistically significant (p value <0.05).

The median age for initiation of alcohol use was lower among females (19.5 years) than males (22 years). Basu et al (2013)^[20] reported that the mean age of initiation of alcohol consumption among current alcohol users was 18 years. Devi et al (2014)^[21] in their study from Hyderabad reported that 19.5% of the study subjects were alcohol users and the consumption of alcohol was more males than females. The median age of start of alcohol consumption was 18 years in males which is lower in comparison to our study.

The median number of average standard drinks was 3 while it was more in males than female. The mean number of average drinks was 3.46 (males- 3.2, females-2). 35.5% of current

alcohol users drank less than a month in a year while 9.3% drank almost daily (5-7days/week). Thakur et al (2016)^[15] reported that the mean number of standard drinks among males was 2.4 while among females was 1.7 which is lower in comparison to our study. Priyanka et al (2014)^[16] reported the prevalence of binge drinkers (≥ 5 standard drinks for male and ≥ 4 standard drinks for female in one occasion at least once during past 30 days) as 13.4% among males.

Strengths and Limitations

The present study is one of the few population based studies conducted regarding epidemiological features of alcohol use in this rural block of Haryana which would help in establishing baseline database needed to monitor trends in alcohol consumption pattern and also provide evidence for evolving strategies and interventions in the community. This would help in predicting the future burden of NCDs in our area. Studying socio epidemiology of diabetes among adults would help in decreasing the manifestation and severity of this NCD which would in turn very cost effective and would help the community to live a better life as a whole as far as possible.

However, our study had a few limitations. This study was restricted to a single block of Haryana state due to limitation of time and logistic constraints. Our study was a cross-sectional in nature, the follow-up of study participants could not be done so the possibility of subjects developing NCD risk factors in coming months could not be determined. The information was collected through interview technique so the possibility of recall bias and information concealment on the sensitive issues should be considered despite the sincere efforts by the researcher to ensure anonymity and confidentiality of the shared information.

CONCLUSION

India currently faces an uncertain future in relation to the potential burden that NCDs may impose upon the country. Alcohol consumption has been identified as a detrimental health and social consequences factor. Policies in our country are not geared adequately toward addressing this issue as India does not have any dedicated national health programme for alcohol consumption. The study emphasizes upon the need of development of national health programme for regulation and restriction of alcohol consumption along with rural orientation in the policies/programmes. There is a need of strengthening existing alcohol related policies like ban on sale of alcohol to minors or ban on drinking in public places. Identifying ways and means of reaching out to the poor/unprivileged communities will be critical to the success of reduction of harmful alcohol consumption.

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