



## PREVALENCE AND PATTERN OF ALCOHOL USE IN RURAL POPULATION OF MADHYA PRADESH

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### ABSTRACT

**Introduction:** Many epidemiological studies have been carried out in different parts of India but only few studies taken place regarding substance use in the central region. It is one of the few studies which have included all age groups, door to door survey method, uniform diagnostic criteria and tools.

**Methods:** This study was conducted in 500 families of 32 villages with total sample of 2706 subjects in Indore district. MINI-6 or MINI kid was administered as diagnostic tool. The study conducted during the period from December 2014 to August 2015.

**Results:** Among 2706 people, alcohol dependence was prevalent in 133 males and five females and alcohol abuse was prevalent in 79 males and three females. The prevalence for alcohol dependence was 51/1000 and for substance dependence (non-alcohol), it was 97/1000.

**Conclusion:** From the current study it can be suggested that the prevalence of substance use disorders is increasing among rural population due to various factors. There were more number of cases among those who were low educated, those occupied in unskilled jobs like daily wage laborers, commonly in males, more cases in the age group of 40-59 years and those who were married.

**KEYWORDS :** Substance use disorders, Prevalence, rural, epidemiological study, Indore

### INTRODUCTION

Humans have been enjoying alcoholic beverages since prehistoric times. Alcohol has been celebrated in the Vedic hymns, Shaivism, Buddhism, Tantra, streams of Catholicism, and many indigenous animist and tribal traditions that celebrate alcohol in moderation. The ancient Indian texts of Charaka and Sushruta (around AD 300) make distinctions between normal and excessive drinking. These texts and scriptures also identified the harmful effects of drinking (Isaac 1998).<sup>1</sup> Alcohol was referred to as an evil, yet 'glamorized and accepted' by certain classes.<sup>2</sup>

Alcohol is attributed to nearly 3.2% of all deaths and results in a loss of 4% of total DALYs (58 million).<sup>3</sup> The impact of Alcohol use is huge on all demographic variables like age, race, gender, religion, region etc. So, there are many socio-cultural and behavioral aspects of alcohol use in Indian population. There is a marked variation in alcohol use prevalence in different states of India. Nearly 30-35% of adult men and 5% of adult women consume alcohol (male to female ratio 6:1). In India, age at first use of the alcohol has reduced from 28 years during the 1980 to 17 years in 2007.<sup>4</sup>

In many developed or even developing countries of the world, about 75% of people reside in urban areas. In India, however, according to the 2011 census, 68.7% of the population are still rural.<sup>5,6</sup> Traditional Indian values have degraded after globalization in last decade of 20<sup>th</sup> century in India and there is vast change in living pattern and family structure of Indian people. Things have also changed due to impact of electronic and social media. These changes have reached up to rural areas also.

According to the national household survey-2, the current one month period use for alcohol, cannabis and opiates were 21.4%, 3%, and 0.7%, respectively. Most drug users concomitantly used alcohol (80%).<sup>7</sup>

Data on alcohol use is required from different regions in the country as the likelihood of regional disparity in substance use is high. National level prevalence has been calculated for many substances of abuse, but regional variations are quite evident.

The present study was undertaken to scale the extent of the problem and bring in attention from the health policy makers and service providers. Providing accurate data about the prevalence of alcohol use in the rural community of Madhya Pradesh would help to justify the allocation of resources and planning of health services. It is equally necessary to contribute to the scientific community by sharing the finding from relatively new setting for epidemiological research.

### MATERIAL AND METHODS

The present study was part of the larger study: "prevalence and pattern of psychiatric disorders in rural population". It was a cross-sectional study undertaken in 32 villages under four community health centers of Indore district in Madhya Pradesh state of India, carried out in 2706 people of 500 families. So, about 128 families per block or 16 families per village were taken. The survey was completed over a period of nine months. The sample population taken was exclusively rural inhabitants (by residence and occupation) in Indore district. The study was conducted under the guidance of department of psychiatry, M.G.M. Medical College, Indore (M.P.). An exploratory, door to door epidemiological study was undertaken. For the purpose of the study, a team was constituted, which included a psychiatrist, psychiatry resident, three trained social workers. The entire team visited every 16th house in each village. A formal introduction of the individuals in the team and objectives of the study were given. A general examination (included: weight, height, pallor: present/absent, and blood pressure) was done.

A total of 2706 subjects of all age groups who gave written informed consent were included in the study. For subjects <16 years, informed consent was taken from their parents. After obtaining the informed consent, the subject was interviewed in a place where he/she felt comfortable. Privacy and anonymity were ensured.

There were neither a biological sample drained nor a drug trial performed on the given study population. But, due to socio cultural acceptability of the questioning and any vulnerability of the study population, ethical considerations were given high emphasis. The study protocol was approved by institutional scientific and ethical committee of M.G.M. Medical College, Indore.

The current study is undertaken using semi-structured data entry form for socio-demographic profile of subjects, General Health questionnaire-12<sup>8,9</sup> for screening of cases and MINI 6,<sup>10</sup> a reliable and valid instrument for accurate diagnosis which has been used worldwide for prevalence study. Details were obtained during structured interview about type, duration, amount and daily pattern. They were advised for consultation to de-addiction center in the study institute and no pharmacotherapy given at the time of interview. The whole data was collected and entered in the SPSS version 16 software and was analyzed using appropriate statistical analysis.

### RESULTS

This was a cross sectional descriptive study from 32 villages under four community health centers in Indore district of Madhya Pradesh, carried out in 2706 people of 500 families. Mean age of study sample was found to be 33.4 years. Males (1411, 52%) were more than females 1295 (48%), among which 55.5% were married while 38.5% were unmarried and 5% were widowed.

About 45% people were belonged to middle socio-economic status. 31% of study population was illiterate while about 27% were studied only up to primary level. Most of them (53.4%) were residing in joint families followed by nuclear families (31%). Occupation-wise, about 18% of study population was self-employed, 16% were unemployed and about 16% were laborers. There were 26% students and 22% housewives in the study sample (Table 1). A medical diagnosis was present in 12.7% of study population at the time of interview. The common medical illnesses found were hypertension, diabetes, asthma, CAD, rheumatoid arthritis.

**Table 1: Socio-demographic characteristics**

<b>Age</b>		
1-16	840	30.9%
17-39	982	36.4%
40-59	618	22.8%
>60 years	266	9.8%
<b>Gender</b>		
Male	1411	52.1%
Female	1295	47.9%
<b>marital status</b>		
Unmarried	1041	38.5%
Married	1503	55.5%
Separated/Divorced	24	0.9%
Widowed	138	5.1%
<b>income group</b>		
Rs.1000 and below	35	1.3%
Rs.1000-5000	356	13.2%
Rs.5000-10000	1235	45.6%
Above Rs.10000	1080	39.9%
<b>Education</b>		
Illiterate	841	31.1%
Up to primary	740	27.3%
6-8 std.	541	20%
9-12 std.	500	18.5%
Graduate	84	3.1%
<b>Occupation</b>		
Unemployed	425	15.7%
Self-employed	483	17.8%
Unskilled	445	16.3%
Skilled	53	2%
Student	703	26.1%
Housewife	597	22.1%
<b>Family type</b>		
Nuclear	837	30.9%
Extended	417	15.4%
Joint	1445	53.4%
Living alone	7	0.3%

**Table 2: alcohol use according to age and sex distribution**

Diagnosis	Gender	Age distribution				Total
		1-16	17-39	40-59	>60	
Substance dependence (Alcohol)	Male	0	47	62	24	133
	Female	0	2	3	0	5
	<b>Total</b>	<b>0</b>	<b>49 (35.5%)</b>	<b>65 (47.1%)</b>	<b>24 (17.4%)</b>	<b>138 (100%)</b>
Substance abuse (Alcohol)	Male	2	61	53	6	122
	Female	0	2	3	1	6
	<b>Total</b>	<b>2 (1.5%)</b>	<b>63 (49.2%)</b>	<b>56 (43.7%)</b>	<b>7 (5.4%)</b>	<b>128 (100%)</b>

Out of total population, 133 (4.9%) males and five (0.18%) females were alcohol dependent and 122 (4.5%) males and six (0.2%) females were categorized under alcohol abuse. Alcohol dependence was most common in 40-59 years age group and alcohol abuse most commonly found in 17-39 years age group. (Table 2).

**Table 3: Pattern of alcohol use**

Type	Alcohol	No. (%)
	Desi	127 (47.7%)
	beer	35 (13%)
	Whisky	49 (18.4%)
	Wine/rum/vodka	13 (4.8%)
	Mixed	42 (15.8%)
	<b>Total</b>	<b>266</b>

<b>Duration</b>	< 1 year	9 (3.4%)
	1-5 Years	23 (8.6%)
	5-10 Years	55 (20.6%)
	>10 Years	179 (67.4%)
	<b>Total</b>	<b>266</b>
<b>Frequency</b>	Everyday	114 (42.8%)
	3-4 Times a week	38 (14.3%)
	1-2 times a week	92 (34.6%)
	1-2 times a month	22 (8.3%)
	<b>Total</b>	<b>266</b>

**Type of Substance:** There were Total 266 people having diagnosis of alcohol dependence (138) and alcohol abuse (128) as shown in table 5. Among the total users, most consumed hard alcoholic drinks like desi (47.7%) and whisky (18.4%). Beer was mostly consumed among young population. In population consuming desi variety, about 1% was also consuming illegal variety. 15.8% people were consuming more than one type of alcohol frequently (Table 3).

**Frequency of use:** Nearly 43% of users consumed alcohol almost every day. 14.3% users were consuming alcohol 3-4 times a week while about one-third consuming 1-2 times a week. About 8% were consuming once or twice a month (Table 3).

**Duration:** Nearly two-thirds (67.4%) of the users were long-term users (for more than ten years) and 20.6% were using alcohol since 5-10 years. About 8.6% and 3.4% were using alcohol since 1-5 years and less than one year respectively (Table 3).

**Table 4: Alcohol use and various socioeconomic indicators**

	Substance dependence (Alcohol)	Substance abuse (Alcohol)
<b>Income</b>		
1000 and below	2 (1.4%)	4 (3.1%)
1000-5000	30 (21.7%)	26 (20.3%)
5000-10000	68 (49.3%)	52 (40.6%)
Above 10000	38 (27.6%)	46 (36%)
<b>Total</b>	<b>138 (100%)</b>	<b>128 (100%)</b>
<b>Education</b>		
Illiterate	47 (34%)	15 (11.7%)
Up-to primary	51 (37%)	40 (31.2%)
5-8 std.	23 (16.7%)	18 (14%)
9-12	16 (11.6%)	51 (39.8%)
Graduate	1 (0.7%)	4 (3.1%)
<b>Total</b>	<b>138 (100%)</b>	<b>128 (100%)</b>
<b>Occupation</b>		
Unemployed	25 (18.1%)	21 (16.4%)
Self-employed	53 (38.4%)	31 (24.2%)
Unskilled	53 (38.4%)	21 (16.4%)
Skilled	7 (5%)	6 (4.7%)
Student	0 (0%)	0 (0%)
Housewife	0 (0%)	3 (2.3%)
<b>Total</b>	<b>138 (100%)</b>	<b>128 (100%)</b>
<b>Marital status</b>		
Unmarried	4 (2.9%)	16 (12.5%)
Married	123 (89.1%)	103 (80.4%)
Widowed	11 (7.9%)	7 (5.5%)
divorced	0 (0%)	2 (1.6%)
<b>Total</b>	<b>138 (100%)</b>	<b>128 (100%)</b>

**DISCUSSION**

The present study was set in rural area of Indore district of Madhya Pradesh. This is the only community-based survey carried out on the rural population of Madhya Pradesh which has covered various major and minor psychiatric disorders including substance use. So, there was no study to compare our data directly.

In the current study, 98/1000 of population was found to be alcohol users in which 94/1000 were males and about 4/1000 were females and 51/1000 people were alcohol dependent. According to The United Nations office on drugs and crime (UNODC) and the Ministry of Social Justice and Empowerment, Government of India report (2004), prevalence for alcohol use disorders was 60/1000 in which 17% were dependent user." Murthy et al. (2010) reviewed various studies on

substance use and stated that the alcohol 'use/abuse' prevalence in different regions varied from 59/1000 to 370/1000; 'alcohol addiction' or 'alcoholism' or 'chronic alcoholism' from 1/1000 to 34.5/1000.<sup>12</sup>

Meena *et al* reported that 10.34% of the total population was dependent on alcohol.<sup>13</sup> In contrast; Ghulam *et al* reported a higher figure of 20.5% of substance dependence in the survey carried out on urban population of Madhya Pradesh.<sup>14</sup> In another survey undertaken in Punjab, Lal and Singh (1978) reported that 11% of the users were alcohol dependent.<sup>15</sup> Chavan *et al* in the prevalence study of alcohol and drug dependence in rural population of Chandigarh showed that 6.88% of patients fulfilled dependence criteria.<sup>16</sup> In the current study, 5.1% patients were at dependent level. So, the current study have lower number of people with alcohol dependence, when compared with these studies.

In our study, male outnumbered female population. In the study by Chavan *et al.*, no female reported use of any substance.<sup>16</sup> In earlier surveys conducted in different parts of India, similar findings had been documented by Lal and Singh.<sup>17</sup> Ghulam *et al.* highlighted that gender is an important factor in drug taking behavior. Females constituted 10.9% of the total sample of users in the survey undertaken by Ghulam *et al.*<sup>14</sup> In our survey, 4.1% of alcohol users were females.

The range of age distribution in our survey was all age groups (1 year and above) with mean age of 41.1 years. Majority of subjects were in age group of 17-39 years (36.4%) followed by 1-16 years age group (30.9%).

Juyal *et al.* conducted a cross-sectional study among 1094 patients in a district of Uttarakhand. Most of the patients with substance abuse (23.12%) were using single substance. Among single substance users, alcohol was the most common substance used with 26.5% ever users and 19.0% current users. Second most common substance was tobacco (6.52% ever users and 3.54% current users).<sup>18</sup> About 15% of all users have at least one medical diagnosis (table 4) that may or may not be attributed to their chronic substance intake. Kadri *et al.* in a study of socio-demographic profile of substance abusers attending a de-addiction centre in Ahmadabad city found that alcohol was most commonly used as 70.2% were addicted to it followed by brown sugar (13.8%).<sup>19</sup> Lal and Singh also reported higher consumption of alcohol (25.55%) in the rural area of Punjab.<sup>15</sup> In the current study, alcohol was second most common substance used (9.8% current users) while tobacco was most common substance used (15.9%).

In a study by Mahi *et al.*, among lower socioeconomic status people, alcohol and tobacco were the most common substance used while among higher socioeconomic status people, opioids especially raw opium and smack are most common type of dependence. 10.2% of total substance dependent persons were found in the middle class.<sup>20</sup> In this study, 25% of alcohol dependents belonged to 5000-10000 income group i.e. middle class (Table 4).

Lal and Singh in their survey in village Chhajlion drug abuse found that married (36.77%) and widowed persons (45%) were found to be more vulnerable to drug abuse.<sup>15</sup> Majority of the subjects in the current study were married i.e. 55.5% followed by unmarried (38.4%). And, so, mostly married persons were engaged in alcohol use (about 85% of total alcohol users) (Table 4).

Lal and Singh noticed that 28.72% of the illiterate persons were ever users while only 11.11% of graduates had ever used any substance in his life.<sup>15</sup> 55.9% of alcohol users in urban area of Rohtak city were illiterate.<sup>13</sup> Singh *et al* in Ghaziabad interviewed 725 drug abusers were. Most of the drug abusers were educated up to primary and secondary level (40.13 and 41.10% respectively).<sup>21</sup> Meena *et al* conducted a study in Rohtak, Haryana and revealed a prevalence rate of 19.78%. 42.41% of users were in the age group of 25-34 years. 44.1% were literate (up to high school).<sup>13</sup> In the current study, 34% of alcohol dependent persons were illiterate and 37% alcohol dependents were educated only up-to primary. After that, a reciprocal relationship found between the education level and dependence behavior. And so, only 0.7% graduates were found dependent on alcohol (Table 4). Similarly, about 33% of alcohol users in this study were laborers (unskilled and skilled workers). This clearly indicates the preventive role of education in substance using behavior (Table 4).

In the study by Mahi *et al.*, majority of alcohol (44.68%) were taking

alcohol from last 6-10 years, while tobacco users majority from last 11-15 years.<sup>20</sup> In the current study also, two-thirds (67.4%) were using alcohol for more than 10 years and one-third drank at least once a week.

So, mostly illiterate or educated up to primary std., young married males, doing a job involving hard physical labor with low socio-economic status were involved; preferring to consume heavy alcoholic drinks like arrack on a daily or nearly daily basis. These results are also in accordance with Girish *et al.*<sup>22</sup>

The patterns of alcohol use our research are deleterious to health, social and psychological well-being, which is also in agreement with various other studies undertaken in India and other parts of the world. The underlying causes are quiet obvious like, easy and unrestricted availability of liquor, unawareness about physical and mental health consequences due to alcohol and other substances, the paucity of appropriate medical intervention, certain cultures and customs permitting alcohol use and inefficient alcohol regulation policies. Rural India is going through a transition, where the joint-family values are replacing with nuclear family trends and associated economic enterprises are collapsing and people are moving away from traditional professions.

There is significant migration in search of livelihood due to ever shrinking size of the agricultural land holdings. In addition to relocation stress, a break from those communities and the social network that controls alcohol abuse is interrupted. Also, improvements in irrigation and industrialization of agriculture has created surplus wealth and removed the need for few previously agricultural people to work with their own hands.

Instant money for these people and also for the land holders in areas near big cities where prices of real estate have sky rocketed has resulted in youngsters who do not know how to handle their newfound wealth and are prone to addiction.

In India, the economic returns from alcohol override public health issues with the situation being one of "gaining less and losing more": the total excise revenue from alcohol from the country during 2004 was lesser than the out of pocket expense consequent to alcohol use (214 million INR v/s 244 million INR).<sup>23</sup> In addition, the process of globalization has influenced both the supply side and the demand side of alcohol. While GATT (General Agreement on Trade and Tariff) had succeeded in reducing tariff, thereby making alcohol cheaper.<sup>24</sup>

Also, the efforts to ban alcohol in some states in India have not resulted in desired outcome. Instead, it enhanced illegal supply and production of alcohol which did more harm to the society.

Global evidence indicates restricting supply with respect to age, number of drinks, context of use contribute to reducing harm from alcohol use; stricter enforcement of legislations pertaining to drinking and driving, interpersonal violence, density of retail vendors reduce the demand and acute consequences of alcohol use.<sup>25</sup>

In conclusion, the present study is the first study which has looked at patterns of use in the given geographic settings of Madhya Pradesh and has highlighted the emerging problems. This epidemiological study has provided valuable information regarding the magnitude of alcohol use across the rural area of Madhya Pradesh. This data on drug use patterns has facilitated us to highlight the nature of substance abuse, and its major public health impact.

This study also point out the issue of inadequate number of well-trained physicians in rural areas with required knowledge on de-addiction. Appropriate availability of competent health professionals and this awareness to family of addicts can result in much needed treatment, counseling and support required for anyone wanting to quit alcohol addiction.

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## REFERENCES

1. Isaac MK. Contemporary trends of alcoholism in India, In: Grant M, International Centre for Alcohol Policies, eds. Alcohol and Emerging Markets: Patterns, Problems and Responses. Ann Arbor: Taylor & Francis, 1998:145-176.

2. Singh G, Lal B. Alcohol in India. *Indian Journal of Psychiatry* 1979; 21:39–45
3. The World health report 2002 – reducing risks, promoting healthy life. Geneva: World Health Organization; 2002.
4. Gururaj G, Pratima Murthy, Girish N & Benegal V. Alcohol related harm: Implications for public health and policy in India, Publication No. 73, NIMHANS, Bangalore, India 2011.
5. <http://www.censusindia.gov.in/vital statistics/srs/At a glance 2010.xls>
6. [http://www.censusindia.gov.in/2011provresults/data\\_files/India/ Final PPT 2011 chapter 4.pdf](http://www.censusindia.gov.in/2011provresults/data_files/India/ Final PPT 2011 chapter 4.pdf)
7. Ray R. National survey on extent, pattern and trends of drug abuse in India. Ministry of Social Justice and Empowerment, New Delhi: Government of India and United Nations Office on Drugs and Crime; 2004.
8. Aguado, J., Navarro, P., Esteve, L., & Ascaso, C. (2003). Confirmatory factorial analysis of GHQ-12 in puerperal women [Análisis factorial confirmatorio del General Health Questionnaire (GHQ-12) en puerperas].
9. IX Conferencia Española de Biometría, 1-3 Banks, M.H., Clegg, C.W., Jackson, P.R., Kemp, N.J., Stafford, E.M., & Wall, T.D. (1980). *Journal of Occupational Psychology*, 53, 187-194. Claes, R., & Fraccaroli, F. (2002). The General Health Questionnaire (GHQ-12): Factorial invariance in different language versions (GHQ-12)
10. USA: D. Sheehan, J. Janavs, K. Harnett, S. Sheehan, M. Sheehan, C. Gray. University of South Florida College of Medicine Tampa, USA EU: Y. Lecrubier, E. Weiller, T. Hergueta, C. Allgulander, N. Kadri, D. Baldwin, J. P. Lépine. Hôpital de la Salpêtrière – Paris, France. MINI INTERNATIONAL NEUROPSYCHIATRIC INTERVIEW. English Version 6.0.0
11. United Nations and Government of India. The extent, pattern and trends of drug abuse in India – National Survey – 2004, Office of Drugs and Crime, United Nations and Ministry of Social Justice and Empowerment, Government of India, New Delhi, 2004.
12. Prathima Murthy, N. Manjunatha, B.N. Subodh, Prabhat Kumar Chand and Vivek Benegal. Substance use and addiction research in India. *Indian J Psychiatry*. Jan 2010; 52(Supp11): S189-S199.
13. Meena, Khanna P, Vohra AK, Rajput R. Prevalence and pattern of alcohol and substance abuse in urban areas of Rohtak city. *Indian Journal of Psychiatry* 2002; 44(4): 348–352.
14. R. Ghulam, I Rahman, S. Naqvi, S R Gupta, An Epidemiological Study of Drug Abuse in Urban population of Madhya Pradesh: *Indian J. Psychiat.*, 1996, 38(3), 160-165.
15. Lal B, Singh G. Alcohol consumption in Punjab. *Indian Journal of Psychiatry*, 1978; 20(3): 212.
16. Chavan B, Arun P, Bhargava R, Singh GP. Prevalence of alcohol and drug dependence in rural and slum population of Chandigarh: A community survey. *Indian J Psychiatry*. 2007; 49:44–8.
17. Lal B, Singh G. Alcohol consumption in Punjab. *Indian Journal of Psychiatry*, 1978; 20(3): 212.
18. Juyal R et al. Substance use among inter-college students in district Dehradun. *Indian J Comm Med* 2006; 31(4): 252.
19. Kadri AM, Bhagyalaxmi A, Kedia G. A study of socio-demographic profile of substance abusers attending a deaddiction centre in Ahmedabad city. *Indian J Community Med* 2003; 28: 2.
20. Mahi et al. An epidemiological survey of alcohol and drug dependence in a village of district Sangrur, Punjab. *Delhi Psychiatry Journal* 2011; 14: (2)
21. Singh B, Singh V, Vij A. Sociodemographic profile of substance abusers attending a Deaddiction Centre in Ghaziabad. *Medico Legal Update an International Journal* 2006; 6(1): 13–15.
22. Girish, et al. alcohol use and implication for public health: patterns of use in four communities. *Indian Journal of Community Medicine / Vol 35 / Issue 2 / April 2010*.
23. Gururaj G, Girish N, Benegal V, Chandra V, Pandav R. Public health problems caused by harmful use of alcohol – Gaining less or losing more? Alcohol Control series 2, World Health Organisation. New Delhi: Regional Office for South East Asia; 2006.
24. Gururaj G, Girish N, Benegal V, Murthy P. Alcohol use and public health. The Indian perspective. NIMHANS in press.
25. Hawks D. Prevention of psychoactive substance use: A selected review of what works in the area of prevention. World Health Organization. 2002.