

# Epidemiological Study of Alcohol Related Mental Health Problems in the Rural Population of a Dry District of Central India

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**Abstract:Context:** Hazardous drinking leads to increased morbidity and mortality and has a major impact on the social aspects of life. There has been rapid increase in per capita consumption, and overall tax collected is now almost one fifth of the total revenue collected by the state governments. Despite the ban on production, sale, purchase, and consumption of liquor in the Wardha district, alcohol continues to be freely available and sold illegally. Despite legislation being in place the morbidity related to alcohol has been prevalent in this district. **Aims and objectives:** This study was aimed at finding out the epidemiology of Alcohol related mental Health problems in the rural community (DeoliTaluka) of a dry district (Wardha). **Setting and Design:** The survey was conducted in the DeoliTahsil of Wardha District of Central India. The survey technique involved interviewing the subjects who abuse alcohol and have withdrawal symptoms in the household setting. **Methods and Material:** All the participants were screened using CAGE questionnaire and TWEAK

questionnaire. The participants who were identified as having AUD were assessed in the community for psychiatric symptoms. These participants were then subjected to SADQ, BPRS, and BARS. **Statistical analysis used:** The data collected from these interviews was subjected to analysis using the SPSS version 22. **Results:** 1427 had a history of alcohol consumption and withdrawal symptoms. Majority of the participants were males and were between 30-39 years of age. As per the BPRS assessment found the participants to have somatic complaints, anxiety symptoms, depressed mood, guilt feelings, tension and emotional withdrawal. Grandiose delusions were also significantly high in the evaluations. In response to the SADQ, more than 90% of the participants admitted that - (a) they have difficulty in getting the thought of drink out of their minds (b) drinking is more important than their next meal (c) they know that they won't be able to stop drinking once they start (d) morning after a heavy drinking session they need drink to get themselves going. Lastly as per the BARS questionnaire, majority of patients had problem of dyscontrol of substance use, experienced occupational dysfunction, and general ill health and decreased sexual intercourse frequency. **Conclusions:** The study shows that Alcohol consumption is associated with psychosocial problems and that despite prohibition on manufacture, sale and consumption of alcohol, there is a need for strict enforcement of prohibition.

## INTRODUCTION

India is a multi-party, federal, secular, democratic republic & has 28 states and 8 union territories; and traditionally been considered a "dry or abstinent culture" in relation to alcohol consumption. Mahatma Gandhi the hero & leader of India's freedom struggle and father of nation campaigned against liquor production and sales and recognized prohibition as one of the main tasks before the country.

Alcohol use disorders (AUDs) represent a spectrum of health conditions ranging from consumption of hazardous levels of alcohol (which may pose a risk to health and social welfare) to alcohol dependence. The low- and middle-income countries have a higher burden of pathological conditions attributable to AUDs than in high-income countries. [1]

While alcohol has been consumed in many societies since times immemorial, over the past recent years, changes in drinking patterns have been observed worldwide, which have shown a higher rate of consumption and heavy episodic drinking among young people and excess consumption is seen in the general population. [2]

Hazardous drinking not only leads to increased morbidity and mortality but also has a major impact on the social aspects of life along with a severing effect on family, marriage and children. The individual may get caught in a vicious cycle of reduced productivity, absenteeism from work and financial crisis. It may also lead domestic violence, road traffic accidents and injuries related to it, mental disorders of both psychotic and neurotic kinds, unsafe and provocative sexual behaviour, and nutritional and health problems. [3, 4]

Hazardous drinking is a pattern of alcohol consumption which raises the risk of harmful consequences for the user or others around them.[3] Despite the absence of a full-blown alcohol dependence syndrome, this problem drinking is of public health importance because of increased morbidity and lost productivity.

Harmful use of alcohol refers to pattern of alcohol consumption which is harmful to mental, physical and social health. The social consequences like domestic violence are often included among the harms caused by alcohol. [3, 4]

Alcohol dependence is a cluster of behavioural, cognitive and physiological symptoms that may develop after repeated alcohol use. [4] Typically, these include a strong craving or desire to consume alcohol, loss of control regarding its use; persistent drinking in spite of harmful consequences, prioritizing drinking over other obligations and work, increased tolerance to alcohol, and a physical withdrawal reaction on discontinuing alcohol use.

Despite India's reputation as a country with culture of abstinence and alcohol prohibition within its directive principles, more than half of all alcohol drinkers fall in category of hazardous drinking pattern. [5] Moreover there has been rapid increase in per capita consumption, age of initiation of drinking has come down, and overall tax collected is now almost one fifth of the total revenue collected by the state governments. In the midst of this scenario where a general ambivalence is seen in stemming the flow, certain parts of India including state of Gujarat, Bihar, few north-eastern states, Lakshadweep, Andaman & Nicobar Islands and Wardha district in state of Maharashtra continue to have the privilege of legal prohibition on manufacture, sales and distribution of alcohol. The legal age limit of drinking is 18-25 years in most Indian states.

There has been ban on production, sale, purchase, and consumption of liquor within geographical limits of Wardha since 1972 as it is intricately linked with Mahatma Gandhi. The legal drinking age limit is 30 years in the district of Wardha, the highest in the world [6]. However, alcohol continues to be freely available outside the premises of district and is often imported or even brewed and sold illegally. Despite legislation being in place the morbidity related to alcohol has been prevalent in this district [7]

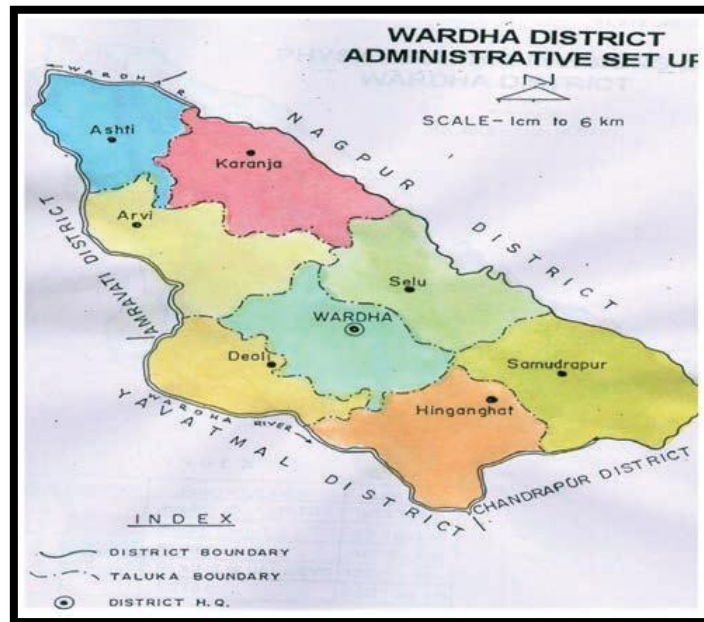
Beer and distilled spirits such as whisky, brandy, rum and gin which were brought to India by foreign colonialist & now produced in the country are referred to as "Indian Made Foreign Liquor" (IMFL) were rarely consumed in the study area. Country liquor is widely available all over the country and significantly cheaper than IMFL. Due to this illicitly distilled liquor, morbidity is on the rise. Changappal (1986) reported that on an average 200 people are killed in the country every year from liquor poisoning. [8]

Statistics on alcohol misuse are unreliable, estimates of the number of people, who misuse alcohol are not satisfactory, due to lack of agreement over definitions, difficulty in establishing harmful levels of intake, data collection at assessment, instruments used, and methodologies. These results also, cannot be generalized to areas where there is a legal prohibition on manufacturing, sale, possession, and consumption of alcohol.

This study was aimed at finding out the epidemiology of Alcohol related mental Health problems in the rural community (DeoliTaluka) of a dry district (Wardha).

## METHODOLOGY

The present survey was conducted in the DeoliTahsil of Wardha District of Central India, with a total population of 1, 59,877 from 104 villages. DeoliTaluka was selected because there is infrastructure of Anganwadi workers and AnganwadiSevikas.



Map of Wardha district showing 8 Tahsil (Taluka)

The survey technique involved interviewing the subjects who abuse alcohol and have withdrawal symptoms in the household setting. Maximum privacy and physical distancing protocols were ensured while conducting the interviews. The interviewers were the Anganwadi workers, psychiatric social workers and psychologists. Before the study was launched, these workers were given training to identify regular use, harmful use, and dependence pattern of alcohol consumption. The training was given in PanchayatSamiti, Deoli.

All the participants were screened using CAGE questionnaire (**C**ut down, **A**nnoyance, **G**uilt feeling, **E**ye-opener) and TWEAK questionnaire (**T**olerance, **W**orry, **E**ye-opener, **A**mnesia, **K**ut down). This helped in identifying persons with possible Alcohol Use Disorder.

CAGE questionnaire was first presented verbally in Australia in 1970 by its authors Ewing and Rouse. The tool, however, gained popularity in 1984. [9] The tool has been widely used ever since in clinical settings to screen for alcohol use disorder.

TWEAK questionnaire was designed by Russel and Bigler in 1979. The test is scored out of 7 points. Positive responses to tolerance and worry are scored 2 points each, whereas positive responses to other questions are scored at 1 point each. [10]

After the screening process, the participants who were identified as probably having AUD and fulfilled the additional inclusion criteria were assessed in the community at his/her home for psychiatric symptoms. The participant had to be between 20-60 years of age and fulfilled the criteria for Alcohol Dependence Syndrome as per ICD-10. In addition to this, the participant must not have a history of head injury, epilepsy, emergence of psychiatric symptoms prior to consumption of alcohol consumption, and physical illnesses independent of alcohol use. The list of names for these participants, who were willing to participate in the study, was provided by Anganwadi workers or Anganwadi Sevikas.

These participants were then subjected to SADQ (Severity Alcohol Dependence Questionnaire), BPRS (Brief Psychiatric Rating Scale), and BARS (Brief Addiction Rating Scale).

SADQ (Severity Alcohol Dependence Questionnaire) consists of 20 questions. [11]

Brief Psychiatric Rating Scale was developed by Overall and Gorham, and is a 7-point Likert scale, used to rapidly assess change in the condition of the patient, at the same time identifying major symptom domains. [12]

Brief Addiction Rating Scale is a 10-part questionnaire that is used to quantify the severity of selected areas of health and social issues in patients of substance use disorders. The information is collected from all the available sources. It is rated based on symptom severity over the past 1 month. Questions 1-9 are rated on the basis of number of days the symptom is present, whereas 10<sup>th</sup> question is scored on the basis of occasions of sexual activity. [13]

The data collected from these interviews was collected, pooled, and was subjected to analysis using the SPSS version 22. The data is presented using charts and tables.

## RESULTS

The data was collected in 17 months period following clearance from the Institutional Ethics Committee.

The data was collected from 104 villages of Deolitaluka, Wardha district. Out of these 104 villages, 98 villages were inhabited, while remaining 6 villages were empty villages.

A total of 1,59,877 residents of Deolitaluka were screened in the initial round. However, out of these 1,59,877 residents, only 1,29,249 could be screened using CAGE and TWEAK questionnaires, as others were either not present for the interview or did not consent to participate.

Out of these 1,29,249 participants, 1427 had a history of alcohol consumption and withdrawal symptoms. However, 223 of these participants scored <2 on CAGE questionnaire, and hence were not included in the further analysis. So, the final number of participants included in this study is 1204.

Majority of the participants were males and were between 30-39 years of age. The age and gender distribution of these participants is given in table 1.

Table 1: Age and Gender distribution of participants

Age in Years	Sex		Total No. (%)
	Male No. (%)	Female No. (%)	
20 – 29	193 (16.02)	0 (0.0)	193 (16.0)
30 – 39	426 (35.38)	0 (0.0)	426(35.4)
40 – 49	373 (30.99)	1 (0.083)	374(31.1)
50 – 60	209 (17.36)	2 (0.166)	211(17.5)
<b>Total</b>	<b>1201(99.76)</b>	<b>3 (0.25)</b>	<b>1204</b>

On assessing these participants using BPRS, 94.5% were found to have somatic concern, 88.3% had anxiety symptoms, depressed mood was found in 85.2%, 83.1% reported guilt feelings of varying intensity, 82.1% reported tension or stress, 73.1% reported emotional withdrawal. Grandiose ideas were seen in 72.9%, Conceptual disorganization was seen in 65.7%, 44.9% reported hostility outside of interview situation and 30.3% showed hostility secondary to delusions/overvalued ideas. Around 36% showed hallucinatory behavior, 40.9% reported mannerisms and posturing. Around 56.6% participants reported motor retardation and 12.7% reported uncooperativeness. These findings can be seen in Figure

Figure 1: BPRS scores

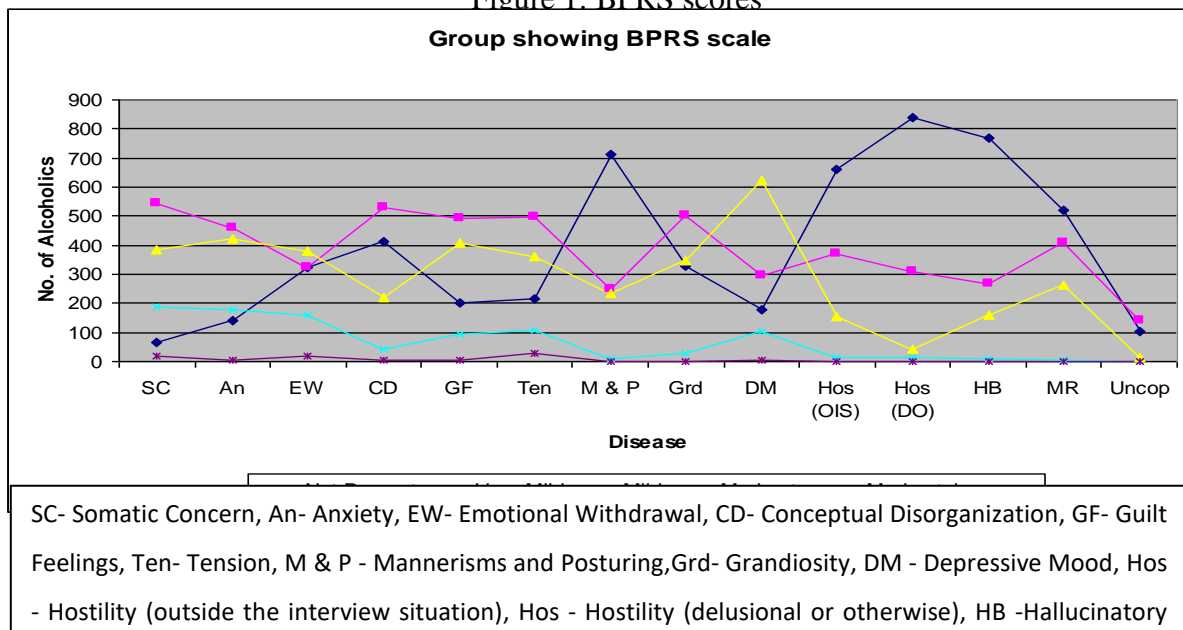


Table 2 shows the presence of symptom for alcohol dependence present in the participants as seen on SADQ questionnaire. It shows that more than 90% of the participants admitted that - (a) they have difficulty in getting the thought of drink out of their minds (b)drinking is more

important than their next meal (c) they know that they won't be able to stop drinking once they start (d) morning after a heavy drinking session they need drink to get themselves going.

Table 2: Score on SADQ questionnaire

Item No.	Absent No. (%)	Present				Total
		Total No. (%)	Some time	Often	Nearly always	
1	107 (8.88)	1097 (91.12)	164	146	787	1204
2	120 (9.96)	1084 (90.04)	436	177	471	1204
3	535 (44.4)	669 (55.6)	520	96	53	1204
4	159 (13.2)	1045 (86.8)	464	374	207	1204
5	106 (8.8)	1098 (91.2)	553	390	155	1204
6	206 (17.10)	998 (82.90)	547	324	127	1204
7	135 (11.21)	1069 (88.79)	438	324	307	1204
8	93 (7.72)	1111 (92.28)	511	468	132	1204
9	171 (14.2)	1033 (85.8)	618	381	34	1204
10	100 (8.3)	1104 (91.7)	502	437	165	1204
11	287 (23.83)	917 (76.17)	434	187	296	1204
12	509 (42.27)	695 (57.73)	425	124	146	1204
13	725 (60.21)	479 (39.79)	253	177	49	1204
14	706 (58.64)	498 (41.36)	120	362	16	1204
15	<b>225 (18.68)</b>	<b>979 (81.32)</b>	<b>363</b>	<b>519</b>	<b>97</b>	<b>1204</b>

As seen on BARS questionnaire, majority of patients had problem of dyscontrol of substance use, experienced occupational dysfunction, and general ill health and decreased sexual intercourse frequency. However, most of them denied of having social and legal problems and psychiatric illness. These findings can be seen on Table 3.



Table 3: Response to BARS questionnaire

SN	BARS	Days							
		0	1	2	3	4	5	6	Total
1	Dyscontrol of Substance Use	356	405	139	97	33	18	156	1204
2	Family role Dysfunction	763	264	70	22	8	3	74	1204
3	Occupation Dysfunction	481	511	105	25	15	4	63	1204
4	Social problems	1050	99	28	11	2	2	12	1204
5	Legal Problems	1136	28	11	1	0	0	28	1204
6	Financial Problems	582	351	155	33	11	3	69	1204
7	General ill-health	440	293	146	67	20	5	233	1204
8	Psychiatric illness	1081	61	24	6	2	2	28	1204
9	Neuropsychiatric syndromes	913	130	88	34	5	2	32	1204
10	Sexual intercourse occasion	167	82	438	55	164	181	117	1204

## DISCUSSION

Wardha district is a dry district due to Gandhi ashram, where Gandhiji stayed for more than 14 years. He was strong supporter of prohibition.

We in our study found that of the 1427 patients with alcohol dependence 1423 (99.7%) were male and 4 (0.3%) were female, predominantly belonging to the middle age group of 30-39 years [509 (35.7%)].

Total 1427 participants with alcohol use disorder were screened out of which 1204 (84.4%) were included in the study as they had  $\geq 2$  positive responses with CAGE criteria and included 3 (0.2%) females and 1201 (98.8%) males.

As per the ICD-10 classification we found that 21 (1.7%) were currently abstinent, 37 (3.1%) were currently abstinent but in a protected environment, 2 (0.2%) were currently on a clinically supervised maintenance or replacement regime, 2 (0.2%) were currently abstinent but receiving treatment with aversive or blocking drug, 216 (17.9%) were currently using the substance (active dependence), 512 (42.5%) were continuous users and 414 (34.4%) were episodic users.

Of the 1204 participants with alcohol use disorder, 1201 (99.8%) were male and 3 (0.2%) were female. Among them, more participants with alcohol use disorder were in the age group of 30-39 years i.e. 426 (35.5%).



In this study, psychiatric symptoms were rated by Brief Psychiatric Rating Scale (BPRS). Somatic concern was found in 1137 (94.4%) participants with alcohol use disorder of which 187 (15.5%) had moderate, 20 (1.7%) had moderately severe somatic concern and rest had very mild & mild somatic concern.

In the study of Bang and Bang et al (1991) found that the main ill effects associated with liquor as reported by the people were “chronic abdominal pain, loss of appetite, vomiting including vomiting of blood, swelling of feet and abdomen, jaundice, progressive weakness, impotence, family disruption, mental derangement and death”. [14]

Anxiety of varying degree was found in 1063 (88.3%) participants with alcohol use disorder. Of these 1063 (88.3%) participants with alcohol use disorder, 176 (14.6%) had moderate anxiety, 3 (0.2%) had moderately severe anxiety.

However similar studies carried out by Allan (1995), reported anxiety to be prevalent in 33%. [15] Schuckit & Hesselbrock in 1994 concluded that life time prevalence of panic disorder is higher among those with alcohol use disorder. [16]

Emotional withdrawal was found in 880 (73.1%) participants with alcohol use disorder of which 158 (13.1%) had moderate and 17 (1.4%) had moderately severe emotional withdrawal and rest had very mild and mild emotional withdrawal.

Conceptual disorganization was found in 791 (65.7%) participants with alcohol use disorder of which 42 (3.5%) had moderate, 3 (0.2%) had moderately severe conceptual disorganization and rest had very mild and mild conceptual disorganization.

Guilt feelings was found in 1001 (83.1%) participants with alcohol use disorder of which 95 (7.9%) had moderate, 3 (0.2%) had moderately severe guilt feelings and rest had very mild and mild guilt feelings.

Tension was found in 988 (82.1%) participants with alcohol use disorder of which 107 (8.9%) had moderate, 26 (2.2%) had moderately severe tension and rest had very mild and mild tension.

Mannerisms and posturing was found in 493 (40.9%) participants with alcohol use disorder of which 10 (0.8%) had moderate mannerisms and posturing and rest had very mild and mild mannerisms and posturing.

Grandiosity was found in 878 (72.9%) participants with alcohol use disorder of which 27 (2.2%) had moderate, 1 (0.1%) had moderately severely grandiosity and rest had very mild and mild grandiosity.

Depressive mood was found in 1026 (85.2%) participants with alcohol use disorder of which 102 (8.5%) had moderate, 6 (0.5%) had moderately severely depressive mood and rest had very mild and mild depressive mood.

O'Sullivan et al, (1983) found that, depression is more common in women drinkers, in problem drinkers who have a positive family history of alcohol problem, an earlier onset of heavy drinking, are divorced or are of lower social status. [17]

Hostility (outside the interview situation) was found in 541 (44.9%) participants with alcohol use disorder of which 14 (1.2%) had moderate, 1 (0.1%) had moderately severe hostility and rest had very mild and mild hostility.

Hostility (Delusional or otherwise) was found in 365 (30.3%) participants with alcohol use disorder of which 14 (1.2%) had moderate, 1 (0.1%) had moderately severe hostility and rest had very mild and mild hostility.

Hallucinatory behavior was found in 437 (36.3%) participants with alcohol use disorder of which 8 (0.7%) had moderate hallucinatory behavior and rest had very mild and mild hallucinatory behavior.

Motor retardation was found in 682 (56.6%) participants with alcohol use disorder of which 7 (0.6%) had moderate, 2 (0.2%) had moderately severe motor retardation and rest had very mild and mild motor retardation.

Although most of the participants with alcohol use disorder cooperated whole heartedly for the study, only 153 (12.7%) participants with alcohol use disorder were uncooperative.

Wardha District is a dry district. There is prohibition on alcohol. We faced initial resistance when we went to interview villages. They were suspicious about the whole process of identification, administration of instruments, but gradually the team was able to overcome initial teething problems. There were good numbers of patients having psychiatric symptoms related to harmful use of alcohol.

About 2% subjects were “currently abstinent”. Only 4% subjects were under treatment. Approximately 90% subjects were still using alcohol.

## **CONCLUSION**

This study fulfils its aim of quantifying the various psychiatric symptoms in those with alcohol use disorder of the catchment area. The study shows that Alcohol consumption brings with it, vast array of psychosocial problems which have negative impact on many spheres of person’s life. This study also found that although there is prohibition on manufacture, sale and consumption of alcohol in the catchment area studied, there is a dire need for strict enforcement of prohibition to curb the menace of alcohol from the society.

**Funding:** The project was funded by International Health Division Ministry of Health and Family Welfare, Govt. of India through W.H.O.

## **CONFLICT OF INTEREST:**

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

**Informed consent:** Informed consent was compulsorily obtained from all individual participants before inclusion in the study.

## **Ethical approval for study protocol /study design /Methodology:**

The study was granted approval by the Institute Ethics Committee.

**Contribution:** This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

## **ACKNOWLEDGEMENT:**

We are thankful to WHO for providing funding to conduct this community work.

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