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Original Research Article

A community study of alcohol consumption in a rural area of South India

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ABSTRACT

Background: Alcohol is reaping a socio-psychological cost from the lesser educated and poor of Kerala. Its prevalence varies from 33-50%, with the age of initiation decreasing recently. The type of liquor and the manner, in which it is consumed, make it a risk factor for many health hazards. This study aimed to find out the age at onset of the habit and the potential side effects in a rural population of Thiruvalla, Kerala, India.
Methods: A house to house survey of adult males was carried out using the alcohol use disorders identification test (AUDIT) questionnaire in Thiruvalla, Kerala. The age at initiation and potential health effects of the habit was inquired and the drinkers were grouped into 3 based on dose and frequency of drinking, in addition to the teetotalers.
Results: The sample studied was heavily dominated by the middle income, pre-university males. Prevalence of problem drinking was 12.8% across the age groups with the highest drinking prevalence in the age group under 40. AUDIT subscore adequately revealed the amount of drinking and extent of addiction. About 3/4th to 2/3rd regular drinkers suffered from adverse effects of drinking in the past. Only less than a third of occasional drinkers had these associated histories. Higher degrees of drinking were associated with lower incomes. Age at initiation influenced the extent of present drinking and the occurrence of adverse events.
Conclusions: The study points to the necessity of delaying the age of initiation of drinking among youngsters in Kerala.

Keywords: Alcohol, AUDIT, Community study, Kerala

INTRODUCTION

Alcohol abuse is defined as a "maladaptive pattern of alcohol use indicated by continued use, despite a persistent or recurrent social, occupational, psychological, or physical problem that was caused or exacerbated by alcohol use or by its recurrent use in physically hazardous situations".[1,2]

In southern India, the prevalence of current alcohol use is said to vary between 33% and 50% depending on probably education and poverty.[3] Notably, Kerala state in South India is reported to consume up to 8.3 liters of alcohol per annum which seems higher compared to other Indian states, probably due to easy access to Indian made foreign liquor (IMFL), high production of home brews

(Toddy made from the locally abundant coconut trees), and low social stigma associated with alcohol use not withstanding a legislative ban on Arrack (locally brewed alcohol).[1]

Past drinking pattern of alcohol in Kerala has been documented elsewhere as follows.[4] In 2006, the maximum prevalence of drinking was in the age group between 21-30 years followed by 31-40 years. Towards the extremes of age, the prevalence tapered. Above 51 years of age, the prevalence was as low as 3%. But now the statistics are changing rapidly. Younger persons have begun to drink and the percentage of those who are aged below 21 years taking to drinks has increased from 2% to more than 14% in the past 15 years.[5] The "average age of initiation" of Keralites has been reported to have dropped from 19 years to 13 years in the past 20 years.

A study from Germany had reported that respondents who initiated regular alcohol use at younger ages had a significantly increased probability of experiencing dependency symptoms some time in their life than those who initiated use at older ages.[6] This study had used the simple CAGE questionnaire to evaluate dependency characteristics. In the backdrop of reported lowering in age of initiation of alcohol use in the state of Kerala, we decided to attempt a deeper analysis using an adapted version of the more detailed alcohol use disorders and at-risk drinking (AUDIT) score.[7] The objectives were to ascertain the morbidity and social costs associated with the use of alcohol, to investigate the association between alcohol drinking and chronic diseases and to investigate the influence of age at first use on the risk of persistent alcohol use disorders.

METHODS

Thiruvalla is a Taluk (sub district) located in Pathanamthitta district in the state of Kerala in Indian union. Thiruvalla is also known for its vibrant Non Resident Indian (NRI) community in addition to the bevy of richer families who own cash crop plantations. Thiruvalla enjoys a high literacy rate of the order of 89-91%. 250 men from about 100 families of Kumbanad area of Thiruvalla, Kerala were to be the subjects of the study. House visits were carried out on holidays and weekends to select the subjects of the study.

The major issue in Pathanamthitta in general and Thiruvalla in particular has been the migration of men of the productive age-group outside the state or the country in search of jobs and better opportunities. Men were also not available in the houses when most surveys were conducted necessitating the sample to become semi-purposive. Pathanamthitta also has a relatively worse male-female ratio in the whole of the state of Kerala adding another deterrent to an effective sample size of men. The sampling plan thus failed to reach the required number of 250 males from 100 houses as most of the men of the households were outside India.

After explaining the purpose of the study and obtaining their consent, the men were questioned by the trained investigator using a structured proforma during the period between May - July 2011. The basic demographic variables including their occupation and education were collected. The age of onset of drinking was also ascertained and the general life history was outlined from that point onwards. Age at first drink of alcohol was defined as follows: "Not counting sips, how old were you the very first time you had a drink of beer, wine, or liquor?." Any illnesses, accidents or conditions which possibly resulted from alcohol use were recorded in the proforma along with the year of occurrence or onset. All these episodes were captured in the proforma.

A detailed inquiry was conducted into their alcohol consumption using the AUDIT questionnaire. The questions pertained in detail not only to the use of alcohol but also the dependence on the substance. All the individuals answering the question of consumption of alcohol in the last 12 months had to answer the adapted AUDIT questionnaire to assess the alcohol use disorder. The questionnaire consisted of 10 items as follows.

1. "How often do you have a drink containing alcohol?"
2. "How many drinks of alcohol do you have on a day when they are drinking?"
3. "Did you ever have 6 or more drinks on one occasion?"
4. "Have you, in the last one year, found not being able to stop drinking once you started?"
5. "Have you found, in the last one year, not being able to do what is expected of you because of drinking?"
6. "Have you found, in the last one year, needing a first drink in the morning to get yourself going after a heavy drinking session?"
7. "Have you, in the last one year, felt guilt or remorse feeling after drinking?"
8. "Have you, in the last one year, not been able to remember what happened in the previous night when they had been drinking?"
9. "Have you got yourself injured while drinking?"
10. "Has any relative, friend, health worker or doctor been concerned about your drinking or suggested you should cut down?"

For analytical purposes, participants were grouped based on the first two questions as follows: teetotallers (group 1); men consuming 1-160 ml (1-125 g) of ethanol per week (equivalent of up to two drinks per day) (group 2); men consuming 161-350 ml (126-275 g) of ethanol per week (equivalent of three to five drinks per day) (group 3); men consuming more than 350 ml (more than 275 g) of ethanol per week (equivalent of more than five drinks per day) (group 4). The questionnaire was then scored on the items 3 to 10 as the total number of affirmative responses.

The data were entered into suitable Excel worksheet and coded accordingly. The analysis was conducted using

'SPSS for windows' software. The categorical variables were tallied, presented as tables and percentages worked out wherever necessary. The data were also presented in the form of suitable graphs.

The comparison of the AUDIT scores (made from items 3-10) between individuals with problem drinking and those who did not drink was carried out using tests of significance of difference between means. Other problems faced by them were correlated using statistical tests such as chi-square and bivariate correlation. The p-value for ascertaining statistical significance was set at 0.05.

The study protocol and consent forms were reviewed and approved by the institutional ethics committee of the institute.

RESULTS

A house-to-house survey conducted in the Kumbanad area of Thiruvalla Taluk identified 199 males from more than 150 houses. The average income of the interviewed individuals ranged from a paltry 100 Indian Rupees (INR) (~US$ 2) per day to INR1.2 million (~US$ 20000) per year. 50% of the sampled individuals drew less than INR10000 (~US$ 200) per month as income. Only 6% were professionals. 13% of the men were graduates. 10.5% were diploma-holders or technically qualified. Remaining men were educated up to a maximum of pre-university level.

Prevalence of drinking among various age groups is shown in the Table 1. As is evident from the table, the maximum percentage of alcohol users (groups 2-4) were in the younger age groups. Only 38.3% of the young population were abstainers (group 1). Even the proportion of heavier drinkers (groups 3-4) was more among the younger population. More than half of the population of youngsters was consuming alcohol regularly at various intervals. The overall percentage came down with age. The population above the age of 60 years had the highest level of teetotallers or abstainers (86.5%).

Table 1: Prevalence of various grades of drinking among different age-intervals.

Age in Years	Group 1	Group 2	Group 3	Group 4
-40	18 (38.3)	22 (46.8)	1 (2.1)	6 (12.8)
41-50	30 (53.6)	17 (30.4)	5 (8.9)	4 (7.1)
51-60	31 (57.4)	16 (29.6)	4 (7.4)	3 (5.6)
60+	32 (86.5)	3 (8.1)	2 (5.4)	0 (0)

The AUDIT sub score from the items 3 to 10 demonstrated good correlation of the score with the degree of drinking (Figure 1). The sub score was higher than 4 if the person drank heavily and regularly. However, even the social drinkers in our sample felt guilty once in a while and they were also equally and strongly advised not to drink by wives and such.

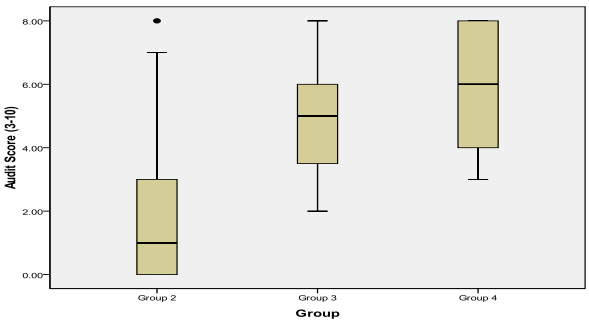

Figure 1: The distribution of AUDIT sub score among the different categories of drinkers.

In conjunction with the use of alcohol, the subjects also reported associated illnesses and accidents. The percentage of such adverse events was more among the heavier drinkers than the occasional or less heavy drinkers (Table 2). There were 11 road accident reports. Two (plus a suspect) cases of heart attacks were revealed; as were that of one chest pain and another of heartburn. One case of cirrhosis (plus 2 suspects) and another of gall stones and one of hepatitis were reported. Some cases of gastritis and vomiting were also reported. There could also be one case of delirium tremens (DT) as per history.

Table 2: Present status of drinking among the study subjects with adverse events associated with drinking.

Category	Adversely affected
Group 2 (N = 58)	17 (29.3)
Group 3 (N = 11)	8 (72.2%)
Group 4 (N = 12)	8 (66.6%)

In the group 2, a higher income per month was seen in the people who reported adverse events. Lower levels of income were associated with higher amount of drinking in presence of adverse events (Table 3).

Table 3: Average income levels correlated with severity of drinking and adverse effects.

Annual income in INR (US$)	Group 2 (N = 58)	Group 3 (N = 11)	Group 4 (N = 12)
Adverse effects present	119706 (~1931)	49150 (~793)	12021 (~194)
No adverse effects till date	114498 (~1847)	50500 (~815)	61666 (~995)

*1 USD ~= 62 INR.

Age of the subject was not important in the occurrence of the side-effects. But, when the age at drinking for the first time (other than tasting) was considered, it was found that adverse effects group had a significantly lower age of initiation (Figure 2). The first time use of alcohol was

also positively associated with the degree of present alcohol use (Figure 3).

The heavier drinkers had their initiation around 20 years or earlier. The present teetotallers among the ever drinkers (Group 1) had initiated the habit towards 25 years of age. As the current status of drinking increased from that up to two drinks per day (Group 2) to more than five drinks per day (Group 4), the average age at initiation dropped nearer 20 years of age.

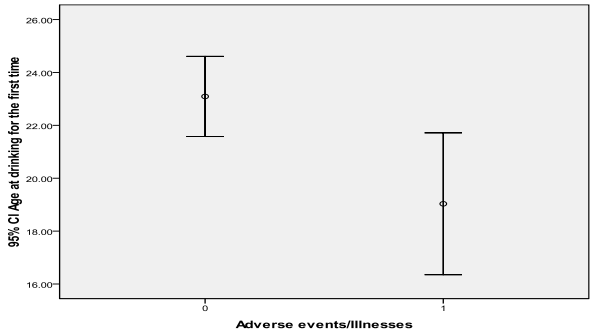

Figure 2: Age at initiation of drinking versus illnesses/adverse events due to drinking.

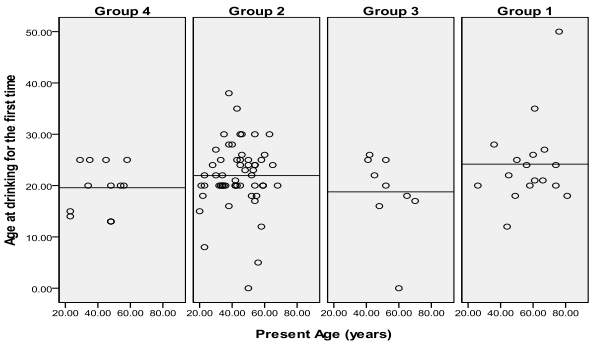

Figure 3: Mean age at initiation of drinking according to the severity of drinking among men.

DISCUSSION

Alcohol in a variety of forms has been available with every one of human civilizations and ethnic groups. Cultural differences influence alcohol drinking habits. The global burden of alcoholism is set to increase in most parts of the world other than those areas where the habit is strictly a taboo. Alcohol is a commodity which forms part of the state budgets in many places so much so that local governments turn a blind eye to health aspects of this menace. The pattern of drinking in India has changed from occasional or at times ritualistic use to habitual social use. Large or nationally representative epidemiological studies on alcohol consumption have not been conducted in India due to resource constraints. A limited number of studies have been conducted on smaller groups in different regions of India.[2,3]

Alcohol abuse can be found among most age groups, predominantly in men. The volume of consumption as well as the patterns of drinking, especially the irregular heavy drinking, has been shown to determine the burden of disease. It has been observed that not unlike heart disease and obesity, alcohol disorders are also, to some extent, a disorder of developed societies. Whether these are related or independent to each other have to be proven in community studies.

Community studies are always preferred to estimate the amount of alcoholism which often hides under the shroud of social drinking.[5] Binge drinking in the name of social celebrations shall never feature in a hospital study of alcoholism. Road traffic accidents also would not be reported as cases of alcoholism from hospital records. A community study is useful in bringing out these additional manifestations of alcohol abuse in the community.

The societal cost of alcohol abuse is also better brought out when the subjects are not ill and in sound mind to assess their own habitual aberration. The only problem with household surveys to find alcoholism is the availability of men in the houses. National household survey reported the current one-month-period use of alcohol as 21.4%. There are all kinds of users of alcohol. One-time, occasional, regular, hazardous and harmful users are all part of spectrum of alcoholics in any community. Problematic drinkers make up about 5% of alcoholics. About 6-10% is regular users in addition to these numbers. A good 25-74% is teetotalers, depending on the society under study.

It must appear that Kerala leads in terms of alcohol use among the various states of India. The consumption pattern of 8.3 litres per person per year is much larger than the average 1.7 litres of South-East Asia and is closer to the usage pattern of Europe.[8] Habitual drinking of alcohol was estimated to be 12.6% according to this study. The highest prevalence of problem drinking was among the age-group of less than 40 years. Most of the regular drinkers in this group were problem (binge) drinkers with a prevalence of 12.8% which seems higher than the national estimates. Regular drinking was the least among the older age groups and that too of moderate nature. All this statistics is in agreement with the findings of Johnson JE.[3]

Studies done elsewhere in India have pointed out the social status of alcoholics. Thiruvalla being one of the richest pockets of Kerala, one would have expected alcoholism to not affect the society at large. However, it was found that even the lowest paid casual labourer resorted to the habit at the cost of their livelihood. As pointed out by Benegal et al of NIMHANS, most of these workers tend to spend their entire earnings or more on the habit of alcoholism.[9] Their typical claim was that when they drank, "there was no limit", indicating binge drinking. The only purpose was to get drunk.

The income level of those alcoholics who were suffering from adverse effects of alcohol was the lowest when analysed. This shows either that the drunkards among the low socio-economic status fall prey to diseases or that the habit makes them poorer in the long run. This was a unique finding of the study in a rich community like Thiruvalla. This could be related to the early onset of habit of drinking in recent years. The early habituation prevents the person from attaining his life goals and hence the low income levels. Some of the high income individuals are not quite highly educated. They are in business and earn multiples of lakhs of rupees and hence were found to lead a comfortable life which predilicted them to the misuse of alcohol.

Questionnaires are only as honest as the person claims his answers to be. The alcoholics notoriously understate their level of drinking thereby necessitating other tools for detection of their habituation. The withdrawal symptoms are not classical as thought to be. The form of drinking also possibly affects this state of affairs. Our survey did not target any particular socio-economic group and hence could have all these confounders altering the findings. However it is hoped that the findings which emerged from the study could serve as an eye-opener for the region. The initiation of drinking, the intensity of drinking, medical conditions brought about by the habit and also the accidents which resulted from the drinking behavior could be estimated and hence would be a pointer to the extent to which the poison has penetrated a civil society such as Kerala.

This study was specifically used to find the relevance of AUDIT Score and found that the drinking habit was well brought out by the questions in general. The false positive items were the ones dealing with guilty feeling after drinking and advice from relatives not to drink. Both these questions elicited some enthusiastic responses from casual drinkers because even a single drink would cause guilt in them and also the wives would try to curtail the habit even at this level (Figure 1). This pointed to a cultural difference in the approach even to social drinking in this part of the world. The overall sub-score of the questionnaire of items 3 to 10 fitted well with the regular drinking habits.

The study, of course, could not have included those alcoholics who succumbed to diseases or accidents before the survey itself. However, the number of accidents suffered by self-admission by the respondents was striking. 11 reported accidents out of 83 alcohol users were alarming. The alcohol map of India has already brought out a connection between alcohol use in Kerala and increasing accident rates.[10] There were diseases potentially related to alcohol among the drinking population. Only their self-reporting was available for the diagnosis. There were cardiac illnesses, liver diseases, gastro-intestinal disorders to mention a few. The adverse events were the highest among the high-dose drinkers. The dose-response effect was quite well-evident.

The findings do not augur well for a developing community which is quite prosperous. The family background of drinking could very well induce the adolescent population to experiment more and more and thus the habit could affect the future generation as well. A well-thought out risk stratified approach is needed to curb this menace from a literate society like Kerala. A strong political will and a suitable health awareness drive among the adolescents could be a starting step towards a prosperous state well in line with the nickname "God's own country" assigned to Kerala. Lifestyle diseases are on the rise in the state of Kerala. One of the lifestyle factors is alcoholism and again some disturbing parallels are drawn, converging on the state of Kerala. A study done in Thiruvananthapuram (capital of Kerala) brought out the connection between the high suicide rates in the state and alcoholism as a risk factor.[11] This fact must serve as an eye opener for the state government which uses the profit from alcohol sales as a major source of revenue.

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