Epidemiology of alcohol consumption in an urban area of Kancheepuram district, Tamil Nadu

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ABSTRACT

Introduction: In India, the ever increasing production, promotion, distribution, and the easy availability and accessibility of alcohol together with the changing values in the society have resulted in alcohol consumption becoming one of the major public health problems. **Aims:** The study was undertaken to find out the prevalence of alcohol consumption and its epidemiological determinants in an urban area of Kancheepuram district, Tamil Nadu. **Methodology:** This descriptive cross-sectional study was done among adult males above 18 years of age in Anakaputhur area of Kancheepuram district, Tamil Nadu. Simple random sampling method was used to select the study participants to reach the required sample size of 400. Pretested structured questionnaire was used as study tool to collect data regarding alcohol consumption practices. Data were analyzed using SPSS version 22. **Results:** The prevalence of alcohol consumption among the study participants was found to be 39%. The major determinants of alcohol consumption which were found to be statistically significant were age less than 45 years, those belonging to a nuclear family, those who consume tobacco, consumption of alcohol by family members, those who did not receive advice regarding harmful effects of alcohol from family members, those having stigma of being a nondrinker among friends/peers and those having awareness of health problems caused due to alcohol consumption. **Conclusion:** This study shows that it is high time we change the approach of educating the public about the effects of alcohol consumption by intensive behavioral change continuum activities at a younger age group, coupled with encouraging refusal skills to overcome peer pressure.

Keywords: Alcoholic, dependence, drunkenness, social drinking

Introduction

Alcohol is a psychoactive substance with dependence-producing properties and is typically taken in the form of an alcoholic beverage. It is an ingredient found in beer, wine, brandy, whiskey, and rum in the form of ethanol or ethyl alcohol which on ingestion can lead to a state known as alcohol intoxication or drunkenness.[1] The commonly consumed alcoholic beverages in India include brewed alcoholic beverages (arrack, toddy) and Indian-made foreign liquor. (beer, brandy, whiskey, rum, and vodka).[2]

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In India, the prevalence of alcohol consumption among adults above 18 years of age was found to be 10% among males and 0.7% among females as per Sample Registration Survey 2014.[3] According to National Family Health Survey 2015-16 (NFHS – 4), the prevalence of alcohol consumption among adult males in Tamil Nadu was found to be 46.5%.[4] In India, alcohol-attributable fraction of all cause deaths was found to be 5.4%, and 62.9% of all the deaths due to liver cirrhosis were attributable to alcohol use.[5]

According to recent data published by World Health Organization, the total per capita consumption of alcohol by individuals above 15 years of age is 6.2 L of pure alcohol per year, which equals 13.5 g of pure alcohol per day. Nearly 5.1% of the global burden

of disease is attributable to alcohol consumption and it causes nearly 3.3 million deaths every year.[2]

Light to moderate consumption of alcohol for recreational purposes on social occasions may be considered normal and acceptable in many communities in the country. Added to this are the scientific evidences supporting that small quantities of alcohol consumption are good for the heart. But people are not aware that even occasional use can lead to alcohol intoxication leading to road traffic accidents and domestic accidents within household.[6]

The medical complications of alcohol use include gastritis, alcoholic liver disease, cardiomyopathy, anemia, and immunosuppression; it can increase the risk of oral and esophageal cancer and can cause various neurological complications such as Wernicke encephalopathy, blackouts, and dementia.[6]

The adverse effects of alcohol consumption will not only affect the person consuming alcohol but also the entire family and society to which he belongs to. Spouses of victims of chronic excessive alcohol use can become separated/divorced. Their children may become subjected to emotional changes and problems related to schooling.[6]

Apart from social problems, it can cause high degree of absenteeism, poor work efficiency and unpunctuality, loss of skill in performing tasks in skilled jobs, or occupational accidents while working with heavy machines which could permanently cripple a worker.[6]

The outpatient department of the urban health training center provides treatment to three to five patients reporting with signs and symptoms of excessive alcohol drinking. They were accompanied by their family members and they would complain about the drinking problem, requesting help to overcome the habit. The primary care physicians who attend these alcohol-dependent persons could do little other than offering counseling, symptomatic treatment, and referring them to other centers.

Since alcohol consumption and the laws governing it vary widely between states, the prevalence rates of alcohol consumption also vary widely between and also within states.[7,8] There is paucity of data regarding prevalence rates of alcohol consumption and its determinants in the study area. To understand the gravity of the social problem, this study was carried out to find out the prevalence of alcohol consumption and its epidemiological determinants in the field practice area in Anakaputhur, so as to identify the probable causes and determinants of this deep-rooted social malady.

Methodology

Study design

This is a community-based cross-sectional descriptive study.

Study area and population

Anakaputhur is a municipality in Kancheepuram district of Tamil Nadu. It consists of 18 wards with a population of 48,050 (males: 24,158; females: 23,892).[9] The urban field practice area located in Anakaputhur is the study area. This study was carried out among the adult male population above 18 years of age and permanently residing in the study area.

Sample size

According to a previous study done by Lakshmi A *et al.* in 2014 in Chennai, the prevalence of alcohol consumption was found to be 42.65% among the study group.[10] This was taken as the reference value for sample size calculation for this study. The sample size was calculated using the formula, $N = Za^2pq/[L]^2$ using an allowable error of 12% of prevalence (margin of error) at 95% confidence interval (CI). Accounting 10% for nonresponse, the final sample size was calculated as 388 which was rounded off to 400 ($N = 400$).

Inclusion criteria

Any adult male above 18 years of age, residing in the study area for a minimum period of 1 year, and willing to participate in the study by giving informed consent voluntarily were included in the study.

Exclusion criteria

Males who were not willing to participate in the study, those below 18 years of age, and those who are chronically ill were excluded from the study.

Study period

The study was carried out between the period of July 2017 and December 2017.

Sampling method

As per the data available from the electoral roll of Anakaputhur (2017), there were 22,129 adult males above 18 years of age residing in the study area.[11] From among the 18 wards, 4 wards were chosen randomly by lottery method (wards 3, 8, 11, and 17). The names and address of the each of the adult males distributed among those four awards were given in the electoral roll.[11] The adult male population in each ward was numbered. From each ward, 100 adult males were chosen randomly using the Research Randomizer website to select the required sample size.[12]

The name and address of the person corresponding to the random number were noted and were visited for data collection. If the person corresponding to the random number did not give informed consent or absent, the next random number within the respective ward was chosen and the next person was selected and interviewed. Likewise, 400 adult males above 18 years of age who gave informed consent and willingly participated in the study were identified.

Study tool and data collection method

A semi-structured pretested questionnaire was used as the study tool for data collection for interviewing the study participants. Data collection was done by face-to-face interviews by the investigators from among the study participant in their respective homes. The questionnaire consisted of details regarding the sociodemographic characteristics, their alcohol consumption practices, drinking pattern, and various factors related to family and friends of the study participants.

Statistical analysis

Data entry was done and analyzed using SPSS version 22 (SPSS Inc., Chicago, IL, USA). The descriptive statistics were presented in frequency tables and graphs. Factors associated with the study variables were analyzed by calculating the strength of association by odds ratio (OR) and significance at 95% CI using Chi-square test and *P* value.

Ethical approval and informed consent

The study proposal was approved by the Institutional Ethical Committee of Sree Balaji Medical College and Hospital. Informed written consent in local language (Tamil) was obtained from all the study participants before administering the study questionnaire.

Results

This study conducted to identify the epidemiology of alcohol consumption among the 400 study participants gives very interesting findings which are described below using tables and figures.

Sociodemographic characteristics of the study participants

From this study, it was found that nearly 40.5% of the study group belonged to the age group of 31–45 years and 41.3% belonged to the lower middle class group. Among the study participants, the majority (67.3%) of them worked during the day shift, 67.3% were married, and 64.5% of them reported consumption of tobacco in some form [Table 1].

Prevalence of alcohol consumption among study participants

Nearly 35% of the study participants were found to be lifetime alcohol abstainers (those who have never consumed one or more drink of any type of alcohol in lifetime),[13] 39% of them were found to be current drinkers (those who consume one or more than one drink of any alcohol in the year preceding the study),[13] and 26% of them were found to be former drinkers (those who had consumed alcohol, but who did not consume one or more drink during the year preceding the study).[13] Thereby, the prevalence of alcohol consumption among the study participants was found to be 39% (current drinkers) [Figure 1].

Table 1: Sociodemographic characteristics of the study participants		
Characteristics	Frequency (*n*=400)	Percentage
Age group (years)		
<30	104	26.0
31-45	162	40.5
46-60	94	23.5
>60	40	10.0
Education		
Illiterate	64	16.0
Primary	69	17.3
Secondary	29	7.3
Higher secondary	123	30.8
Graduate or above	115	28.8
Occupation		
Profession	52	13.0
Semi-profession	89	22.3
Clerical, shop owner	6	1.5
Skilled, semi-skilled worker	136	34.0
Unskilled worker	104	26.0
Unemployed	13	3.3
Socioeconomic status (BG Prasad Classification)		
Upper class	68	17.0
Upper middle class	104	26.0
Middle class	165	41.3
Lower middle class	63	15.7
Lower class	0	00.0
Shift of work		
Day shift	269	67.3
Night shift	34	08.5
Alternating	84	21.1
Not applicable	13	03.3
Marital status		
Married	269	67.3
Unmarried	96	24.0
Widower	29	7.3
Divorced/separated	6	1.5
Religion		
Hindu	255	63.8
Muslim	96	24.0
Christian	49	12.3
Type of family		
Nuclear	185	46.3
Joint	142	35.5
Three-generation	73	18.2
Ownership of the house		
Owned	234	58.5
Rented	166	41.5
History of tobacco use		
Yes	258	64.5
No	142	35.5

Attitude of the study participants toward alcohol consumption when their friends/peers consume alcoholic beverages

Participants were enquired about their attitude toward their friends/peers when they consume alcohol. Among the current

drinkers, 73.7% of them reported to have consumed an alcoholic beverage when their friends/peers consume alcohol. Among current nondrinkers, 35.7% of them reported to leave the place and 31.1% reported to have a nonalcoholic beverage with them [Figure 2].

Among the study participants, 33.3% reported that their father consumed alcohol, while 22% reported that their relatives (uncle or cousins, etc.) consumed alcohol and 19.3% reported that their siblings consumed alcohol [Figure 3].

Possible reason for not consuming alcohol/stopping alcohol consumption as told by current nondrinkers

Current nondrinkers were enquired about the possible reasons for not consuming or stopping alcohol consumption. Among them, 20.8% reported that they were not interested in consuming alcohol and 14.3% told that they did not consume alcohol as they were aware of its harmful effects [Figure 4].

Possible reason for consuming alcohol as told by current drinkers

The major reason given by the current drinkers to consume alcohol was body pain after work (35.9%). Social gatherings were another major reason for indulging in alcohol consumption (17.9%)

followed by compulsion by friends (14.1%) and mental stress due to increased workload (11.6%) [Figure 5].

Association between sociodemographic characteristics and alcohol consumption

Among sociodemographic factors of the study participants, the major determinants of alcohol consumption which were found to be statistically significant were age less than 45 years (OR: 1.187, CI: 1.16–2.82) and upper socioeconomic status and belonging to a nuclear family (OR: 1.652, CI: 1.1–2.4). Those who consume alcohol were at increased odds of consuming tobacco (OR: 1.885, CI: 1.21–2.91) and the association was found to be statistically significant [Table 2].

Association between alcohol consumption and factors influencing it

Among the study participants, 71.5% had any one member of the family (father, siblings, or relatives) consuming alcohol, and 55.5% of them received some form of advice regarding the harmful effects of alcohol consumption from the family members and 38.8% received the same from their school/college and 39% were aware of the health problems caused due to alcohol consumption.
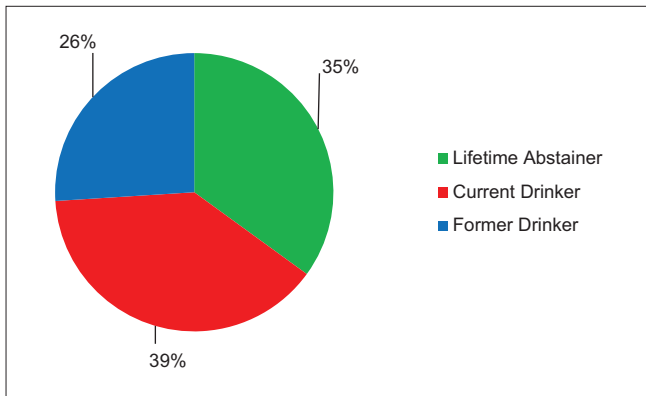

Figure 2: Attitude of the study participants toward alcohol consumption when their friends/peers consume alcoholic beverages

Figure 1: Prevalence of alcohol consumption among study participants
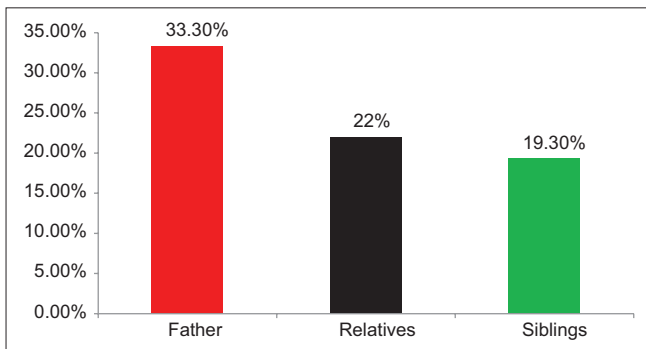
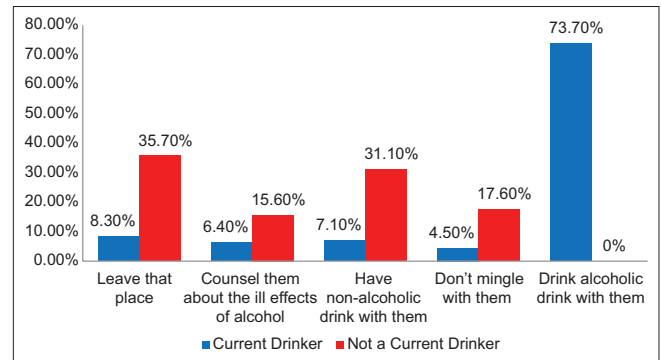**Figure 3:** Drinking habits of family members of the study participants
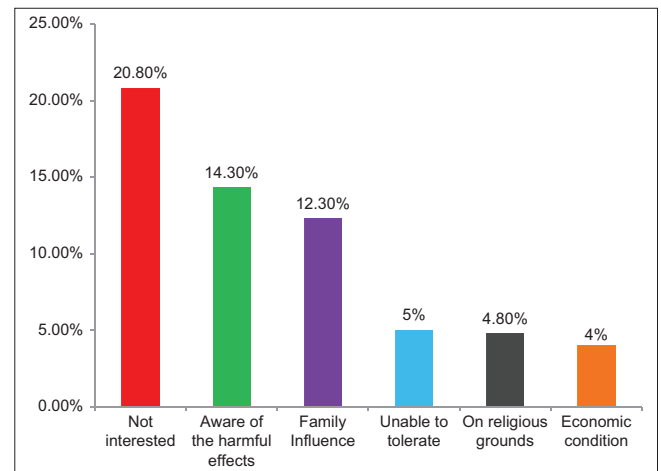

Figure 4: Possible reason for not consuming alcohol/stopping alcohol consumption as told by current nondrinkers (*n* = 244)

Table 2: Association between sociodemographic characteristics and alcohol consumption								
Characteristics	Total (*n*=400)		Current drinkers (*n*=156)		Chi-square	*P*	OR	95% CI
	n	Percentage	*n*	Percentage				
Age group (years)								
<45	266	66.5	116	43.6	7.090	0.008*	1.187	1.16-2.82
>45	134	33.5	40	29.9				
Education								
Illiterate	64	16.0	27	42.2	0.325	0.568	1.171	0.68-2.01
Literate	336	84.0	129	38.4				
Occupation								
Unemployed/unskilled workers	117	29.3	44	37.6	0.135	0.713	0.920	0.59-1.43
Employed/semi-skilled/skilled/professionals	283	70.7	112	39.6				
Socioeconomic status (BG Prasad Classification)								
Upper class/upper middle class	172	43.0	76	44.2	3.411	0.065	1.465	0.97-2.19
Middle class/lower middle class/lower class	228	57.0	80	35.1				
Shift of work								
Night shift/alternating/unemployed	131	32.7	54	41.2	0.404	0.525	1.148	0.75-1.75
Day shift	269	67.3	102	37.9				
Marital status								
Unmarried/widower/divorced/separated	131	32.7	49	37.4	0.208	0.648	0.905	0.58-1.39
Married	269	67.3	107	39.8				
Type of family								
Nuclear	185	46.3	84	45.4	7.804	0.015*	1.652	1.1-2.4
Joint/three-generation	215	53.7	72	33.5				
Ownership of the house								
Owned	234	58.5	91	38.9	0.003	0.957	0.989	0.65-1.48
Rented	166	41.5	65	39.2				
History of tobacco use								
Yes	258	64.5	114	44.2	8.216	0.004*	1.885	1.21-2.91
No	142	35.5	42	29.6				

OR: Odds ratio; CI: Confidence interval, *P<0.05 statistically significant at 95% confidence interval
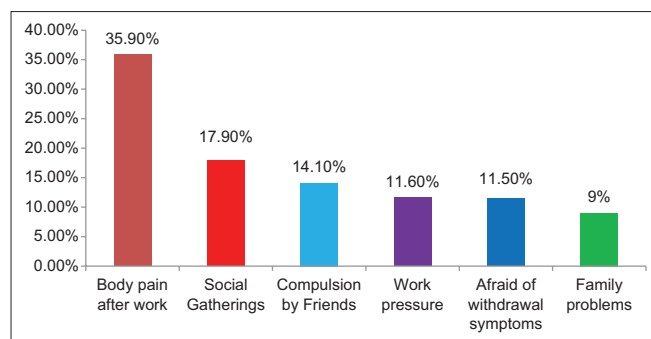

Figure 5: Possible reason for consuming alcohol as told by the current drinkers (*n* = 156)

The factors that were found to have a statistical significant association with alcohol consumption were consumption of alcohol by any of their family members (OR: 3.43, CI: 2.05–5.74), receiving advice regarding harmful effects of alcohol consumption from their family members (OR: 1.616, CI: 1.07–2.42), and awareness of health problems caused due to alcohol consumption (OR: 7.020, CI: 3.3–14.6). It was found that those who consume alcohol were at 17 times increased odds of being uncomfortable to say to their friends/peers that they do not consume alcohol (OR: 17.94, CI: 8.2–38.9) and the association was also found to be statistically significant [Table 3].

Discussion

Alcohol consumption is becoming a major health problem worldwide and it is becoming a social trend among this generation, to indulge in alcohol consumption practices without any specific reasons, unaware of the consequences. This leads to increased morbidity and mortality among them, as a result of various adverse effects caused due to consumption of alcoholic beverages. This study done to find out the prevalence of alcohol consumption and its epidemiological determinants among urban adult population residing in Anakaputhur area of Kancheepuram district yielded interesting results which are discussed below.

In this study, the prevalence of alcohol consumption among urban adult population was found to be 39% (current drinkers). Almost similar results were obtained in a study done by Lakshmi *et al.* and D'Costa *et al.* where the prevalence of alcohol consumption was found to be 42.65% and 44.5%, respectively.[10,14] The prevalence of alcohol consumption was found to be comparatively lower in the studies conducted by Kumar *et al.* (16.8%), Rathod *et al.* (23.8%), and Vidhukumar *et al.* (23.8%).[15-17]

Significantly higher prevalence of alcohol consumption was found in studies done by Ghosh *et al.* (65.8%) and Chethana

Characteristics	Total		Current drinkers		Chi-square	P	OR	95% CI
	n	Percentage	n	Percentage				
Do any of your family members consume alcohol?								
Yes	286	71.5	133	46.5	23.74	0.000*	3.43	2.05-5.74
No	114	28.5	23	20.2				
Anyone in the family advised about the ill effects of alcohol?								
Yes	177	44.5	80	45.2	5.401	0.020*	1.616	1.07-2.42
No	222	55.5	75	33.8				
Have you been taught in school/college about the harmful effects of alcohol?								
No/not applicable	221	55.2	89	40.3	0.336	0.562	1.127	0.75-1.69
Yes	179	44.8	67	37.4				
Did you witness anybody's life getting spoilt due to alcohol consumption?								
Yes	212	53.0	79	37.3	0.571	0.450	0.856	0.57-1.28
No	188	47.0	77	41				
Are you comfortable to say to friends/peers that you don't consume alcohol?								
Yes	67	16.8	59	88.1	81.423	0.000*	17.94	8.2-38.9
No	333	83.3	97	29.1				
Awareness of health problems caused due to alcohol consumption								
Yes	46	11.5	36	78.3	33.67	0.000*	7.020	3.3-14.6
No	354	88.5	120	33.9				

OR: Odds ratio; CI: Confidence interval, *P<0.05 statistically significant at 95% confidence interval

et al. (49.2%).[18,19] The outcomes of these studies show that alcohol consumption was found to be as low as 16.8% and as high as 65.8% among various population groups. These variations may be attributed to the fact that the laws governing alcohol consumption vary between states within the country and also the heterogeneity in the sociodemographic characteristics of the study population among various study groups would have played an important role in variation in the results.

It was found from this study that most of the study participants (66.5%) were below the age group of 45 years. Among them, nearly 43.6% of them were found to be current drinkers. Statistically significant association was found between age less than 45 years and alcohol consumption. This shows that the burden of alcohol consumption is more pronounced in the younger generation as opposed to the elderly.

The proportion of current drinkers was found to be highest in the upper socioeconomic class (54.4%) and lower class (53%). This may be due to the fact that those who belong to the upper class tend to consume alcohol as a habit or a recreation and those who belong to the lower classes consume alcohol to overcome stress and body pain after a hard day's work. Similar results were found in a study done by Kumar *et al.*[15]

From this study, it was found that the most common reason for alcohol consumption as told by the current consumers of alcohol was body pain after work (35.9%), followed by social gatherings (17.9%) and compulsion by friends (14.1%). In a study done by Ramanan and Singh, the common reason for alcohol intake was pain/tiredness (51.2%) followed by fun/desire to taste (44.4%).[20] In a study done by Sathish *et al.,* the most common reason was friend's influence (45.5%) and social parties (22.8%).[21] It can be concluded that body pain after work

and friends/peer influence on alcohol consumption are the two of the major determinants for alcohol consumption.

It was found that 45.4% of the participants who belonged to a nuclear family were current drinkers and they were more at the odds to indulge in alcohol consumption when compared with those who belonged to a joint/three-generation family. There was statistically significant association found between family type and alcohol consumption. In a study done by Dasgupta *et al.*, alcohol consumers were found to be more among nuclear families compared with joint families.[22] This may have been due to the absence of supervision of the elder family members. In a study by Ramanan and Singh, alcohol consumers were more in joint families.[20] This may have been due to more like-minded alcohol consumers among family members.

Tobacco use in any form was found to be high among the study population (64.5%). Among tobacco users, nearly 44.2% of them were found to be current drinkers, and the association between them was also found to be statistically significant. Similar results were obtained in a study done by Anand and Roy and Kumar *et al.*[15,23] This could lead to increased morbidity among them as they are exposed to hazards of both tobacco consumption and alcohol consumption.

From this study, it was found that nearly 71.5% of the study participants had any one of their family members consuming alcohol and this association was found to be statistically significant. Similar results were obtained in a study done by Sathish *et al.*, Mahanta *et al.*, and Chaudhary *et al.*, where alcohol consumption among family members influenced alcohol consumption among their children.[21,24,25] This shows that those who had any of their family members consuming alcohol were more prone to indulge themselves in alcohol consumption practices later.

Nearly 88.1% of those who were uncomfortable to say to public/friends that they do not consume alcohol were found to be current alcohol consumers and this association was found to be statistically significant. This shows that the "stigma" of being a nondrinker plays an important role and becomes a major determinant for the person to indulge in alcohol consumption practices later.

It was found that 78.3% of those who were not aware of the health problems caused due to alcohol consumption were found to be current consumers of alcohol, and this association was found to be statistically significant. In a study done by Geshi *et al.,* it was concluded that awareness of alcohol-related problems plays major role in the drinking pattern and drinking behavior of alcohol users.[26]

The study outcome shows that about 39% of the study participants consume alcoholic beverages. The factors influencing this higher percentage of alcohol consumption were found to be more among adults and those belonging to a nuclear family and also are influenced by consumption of alcohol by family members. Peer pressure is also a contributing factor encouraging alcohol consumption among youngsters.

Conclusion

From this study, it was found that nearly 39% of the study participants were found to be current consumers of alcoholic beverages. This highlights the importance of not only health education and awareness creation but also behavioral modification which needs to be created about the harmful effects of alcohol consumption. Youngsters need to be empowered with refusal skills before their first contact so that they can deal with and overcome peer pressure. Social consumption of alcoholic beverage in celebrations and parties has to be reduced and healthy ways of recreation and socialization have to be promoted.

Primary care and family physicians can play a major role in prevention, management, and rehabilitation of persons suffering from alcohol–related problems. They are the first contact of the patients with healthcare system and their role is of vital importance as they can identify and treat alcohol-related symptoms early before it has affected their personal or professional life. They can help in the reintegration of alcohol-dependent persons with family and society. They can motivate and encourage them to reform themselves by developing healthy habits.

Primary care and family physicians can diagnose any coexisting psychosocial problems (depression, stress, anxiety) if any, and provide counseling and referrals if necessary. They can also educate the people about the hazards of alcohol consumption through creating a network of intensive information education and communication and behaviour change continuum activities.

The current alcohol policies in our country and state are not only inadequate but also harmful to the vulnerable public. Alternative approaches have to be explored to reduce alcohol consumption.

Conflicts of interest

There are no conflicts of interest.

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