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Original Research Article

Alcohol use, harmful use of alcohol and probable dependence among residents of a selected fishermen community in South India: A community based cross-sectional analytical study

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ABSTRACT

Background: Alcohol use is prevalent among fisherman community. In this regard, a community based survey was conducted among adults in the fisherman community of Puducherry a) to determine prevalence of alcohol use, harmful use and probable dependence b) to assess the factors associated with alcohol use and harmful use of alcohol.
Methods: A community based cross-sectional analytical study was conducted in a selected coastal commune Panchayat of Puducherry, South India during April, 2016 to March, 2017. The named streets were selected as the clusters. In each of the selected street first seven houses on the right hand side were enrolled. A semi structured questionnaire was used to collect details regarding socio-demographic variables and WHO AUDIT tool was used to detect the harmful use and probable dependence. Data was entered in Microsoft Excel and analyzed using Stata 12 software. The association between the individual's characteristics and alcohol use, harmful use of alcohol were assessed using generalized linear models with poisson distribution and log link function.
Results: The prevalence of alcohol use was 152 (61.5%, 95% CI- 55.4%-67.5%), 63 (25.5%, 95% CI- 20.4%-31.2%) had harmful use of alcohol and 20 (8.1%, 95% CI- 5.2%-12.0%) had probable dependence to alcohol. The multivariate regression showed that age between 31 to 59 years and tobacco use (1.7 (95% CI- 1.4-2.0)) were independently associated with alcohol use. The multivariate regression showed that being illiterate (2.1 (95% CI- 1.2-3.6)), being graduate (3.2 (95% CI- 1.5-6.6)), currently married (2.2 (95% CI-1.1-5.0)), tobacco use (1.4 (95% CI-1.1-1.9)) and family history (1.4 (95% CI- 1.1-1.9)) were independently associated with alcohol use.
Conclusions: The present study showed very high prevalence of alcohol use and harmful use of alcohol in coastal villages. Stringent regulatory approaches and effective health education approaches were much needed for the control of alcohol use and harmful use of alcohol.

Keywords: Alcohol, Harmful use, Dependence, Substance abuse, Fishermen

INTRODUCTION

Alcoholism is a social evil, and alcohol related morbidities and incidents even though significantly alarming, are almost neglected by primary care physicians and policy makers. According to World Health Organization (WHO) – global burden of disease update, around 125 million peoples were affected

worldwide by alcohol use disorders, 40.5 million peoples were moderately and severely disabled due to alcohol dependence and problem use and 19.9 million years lost due to disability due to alcohol use disorders.[1] The 2015 WHO fact sheet shows that 3.3 million deaths i.e. 5.9% of all deaths were due to harmful use of alcohol.[2]

Alcoholism is one of the leading causes of death and disability in India.[1] In India, the estimated numbers of alcohol users in 2005 were 62.5 million, with 17.4% of them (10.6 million) being dependent users and 20-30% of hospital admissions are due to alcohol-related problems.[3]

An Indian union territory named Pondicherry has high prevalence of alcoholism, where the cost of alcohol were much cheaper compared to the neighboring states.[4] Alcoholism is very much prevalent (63.4% to 88.3%) among fisherman community and needs exploration to find out cause, nature and effect of such dependence which often leads to disruption of normal socio-economic-physical health.[5-7] Hence the study was designed with an objective to find out prevalence of alcohol dependence and associated factors among fisherman community residing in rural Pondicherry.

METHODS

Study design and setting

A community based cross-sectional analytical study was conducted among the adult residents of the coastal villages of Puducherry, South India during April, 2016 to March, 2017. Puducherry is a union territory with four districts namely Puducherry, Mahe, Karaikal and Yanam. The district of Puducherry is located on the shores of Bay of Bengal in the East coast of South India.

The current study was conducted in the selected coastal commune Panchayat of Puducherry. Commune Panchayat is the administrative blocks consisting of approximately 50,000 population. The Ariyankuppam commune panchayat selected for the study harbors nine big coastal villages. Majority of the people in these coastal villages were dependent on the fishing for their livelihood.

Study population, sample size and sampling

All the individuals aged above eighteen years of age were eligible for the study. In order to cover whole of the commune panchayat and to reduce the travel during the conduct of the study, cluster sampling was used. The named streets in the commune panchayat were selected as the clusters (primary sampling units) for the study.

The minimum sample size was calculated to be 200 adults. The sample size was calculated with assumed prevalence of alcohol use to be 50%, relative precision of 15%, fixed cluster size of seven, ICC of 0.02 and 95% confidence limit. To ensure recruitment of 200 participants, 29 (200/7) clusters needed to be included in the study. However, we decided to include thirty clusters from the selected area.

Thirty clusters were randomly selected from the self-prepared sampling frame. In each of the selected street first seven houses on the right hand side were enrolled and all the eligible participants in the selected houses were included in the study. The same strategy was followed in all the thirty clusters.

Data variables and data tools

The data was collected during August 2016. The variables included in the study were age, education, occupation, marital status, residence, type of family, tobacco use, family history of alcohol use, reason for initiation, type of alcohol consumption, time of consumption and amount spent on alcohol. A semi structured questionnaire was used to collect details regarding the above mentioned variables. WHO AUDIT (Alcohol Use Disorder Identification Test) tool was used to detect the harmful use and probable dependence.[8] WHO AUDIT is a standardized 10 item questionnaire, scoring using 4 point Likert scale from 0 to 4. A score 0f 40 is the maximum for AUDIT scale, of which a score of eight or more than eight indicates harmful or hazardous drinking, a score of sixteen and more indicates severe alcohol related problems - whom needs counselling and monitoring and a score of more than twenty indicates probable alcohol dependence – who needs specialist referral.

Data analysis

The data entry was done in Microsoft Excel and analysis was carried out using Stata 12 software. The prevalence of the alcohol use and harmful use of alcohol was expressed as percentage with 95% confidence interval. The association between the individual's characteristics and alcohol use was assessed using Generalized Linear Models with Poisson distribution and log link function. Those variables with p value of <0.10 in the bivariate model were included for the multivariate Generalized Linear Models to assess the independent effect of individuals characteristics with alcohol use. As the prevalence of alcohol use was greater than 10% in the study population, prevalence ratio with 95% confidence interval was used to express the association in both bivariate and multivariate model. Similarly, characteristics associated with harmful use of alcohol were assessed using GLM models.

Ethical consideration

Written informed consent obtained before data collection as per ICMR guidelines. Subject confidentiality was maintained during and after information collection.

RESULTS

In total 247 adult males were included in the study. The mean (SD) age of the study participants was 42.2 (14.5). Of the 247 individuals included in the study, 47 (19%) were illiterates and 27 (10.9%) were graduates. Majority (66.4%) of the study participants were fisherman. Of the 247 participants, 193 (78.1%) were currently married and 226 (91.5%) were permanent residents of coastal villages. Of the total, 62 (25.1%) were current tobacco users and 54 (21.9%) reported at least one family member with history of alcohol use. The characteristics of study participants are shown in Table 1.

Table 1: Association of individual characteristics with alcohol use among adult men in coastal villages of Puducherry, South India.

Characteristics	Total, N (%)	Alcohol use, N (%)	Unadjusted RR (95% CI)	Adjusted RR (95% CI)
Age (in years)				
18-30	65 (26.3)	29 (44.6)	1	1
31-59	141 (57.1)	99 (70.2)	1.6 (1.2-2.1)	1.5 (1.1-2.0)
60 and above	41 (16.6)	24 (58.5)	1.3 (0.9-1.9)	1.3 (0.9-1.9)
Education				
Illiterate	47 (19.0)	30 (63.8)	1.2 (0.8-1.9)	1.0 (0.6-1.5)
1-7th std	83 (33.6)	59 (71.1)	1.4 (0.9-2.0)	0.9 (0.6-1.3)
8-12th std	90 (36.5)	49 (54.4)	1.1 (0.7-1.6)	0.9 (0.6-1.3)
Graduate and above	27 (10.9)	14 (51.9)	1	1
Occupation				
Fisherman	164 (66.4)	111 (67.7)	1.4 (1.1-1.7)	1.1 (0.9-1.5)
Others	83 (33.6)	41 (49.4)	1	1
Marital status				
Currently married	193 (78.1)	124 (64.3)	1.2 (0.9-1.6)	-
Others	54 (21.9)	28 (51.9)	1	
Residence				
Migrant	21 (8.5)	10 (47.6)	1	-
Permanent	226 (91.5)	142 (62.8)	1.3 (0.8-2.1)	
Type of family				
Nuclear	205 (83.0)	129 (62.9)	1.1 (0.9-1.5)	-
Joint	42 (17.0)	23 (54.8)	1	
Tobacco use				
Yes	62 (25.1)	55 (88.7)	1.7 (1.4-2.0)	1.7 (1.4-2.0)
No	185 (74.9)	97 (52.4)	1	1
Family history of alcohol use				
Yes	54 (21.9)	33 (61.1)	1	-
No	193 (78.1)	119 (61.7)	1.0 (0.8-1.3)	

Of the total, the prevalence of alcohol use was 152 (61.5%, 95% CI- 55.4%-67.5%). Of the total 247 individuals, 63 (25.5%, 95% CI- 20.4%-31.2%) had harmful use of alcohol and 20 (8.1%, 95% CI- 5.2%-12.0%) had probable dependence to alcohol. The prevalence of alcohol use, harmful use and probable dependence is shown in Figure 1.

The Table 1 shows results of the univariate and multivariate generalized linear regression to assess the factors associated with alcohol use. On univariate analysis age, education status, occupation status and tobacco use were associated with alcohol use. The same variables were included in the multivariate generalized linear model. The multivariate regression showed that age between 31 to 59 years (1.5 (95% CI-1.1-2.0)) and tobacco use (1.7 (95% CI- 1.4-2.0)) were independently associated with alcohol use.

The Table 2 shows results of the univariate and multivariate generalized linear regression to assess the factors associated with harmful use among alcohol users. On univariate analysis education status, occupation status, marital status, tobacco use and family history of alcohol users were associated with harmful use of alcohol. The same variables were included in the multivariate generalized linear model. The multivariate regression showed that being illiterate (2.1 (95% CI- 1.2-3.6)), being graduate (3.2 (95% CI- 1.5-6.6)), currently married (2.2 (95% CI-1.1-5.0)), tobacco use (1.4 (95% CI- 1.1-1.9)) and family history (1.4 (95% CI- 1.1-1.9)) were independently associated with alcohol use.

Table 2: Association of individual characteristics with harmful use of alcohol among those with alcohol use in coastal villages of Puducherry, South India.

Characteristics	Total, N (%)	Harmful use, n (%)	Unadjusted PR (95% CI)	Adjusted PR (95% CI)
Age (in years)				
18-30	29	12 (41.4)	1	1
31-59	99	57 (57.6)	1.4 (0.9-2.2)	0.9 (0.6-1.5)
60 and above	24	14 (58.3)	1.4 (0.8-2.4)	0.8 (0.4-1.5)
Education				
Illiterate	30	21 (70.0)	2.3 (1.4-3.7)	2.1 (1.2-3.6)
1-7th std	59	38 (64.4)	2.1 (1.3-3.3)	1.5 (09-2.5)
8-12th std	49	15 (30.6)	1	1
Graduate and above	14	9 (64.3)	2.1 (1.2-3.7)	3.2 (1.5-6.6)
Occupation				
Fisherman	111	68 (61.3)	1.7 (1.1-2.6)	1.4 (0.8-2.3)
Others	41	15 (36.6)	1	1
Marital status				
Currently married	124	73 (58.9)	1.6 (1.0-2.7)	2.2 (1.1-5.0)
Others	28	10 (35.7)	1	1
Residence				
Migrant	10	4 (40.0)	1	-
Permanent	142	79 (55.6)	1.4 (0.6-3.0)	
Type of family				
Nuclear	129	68 (52.7)	1	-
Joint	23	15 (65.2)	1.2 (0.9-1.7)	
Tobacco use				
Yes	55	38 (69.1)	1.5 (1.1-2.0)	1.4 (1.1-1.9)
No	97	45 (46.4)	1	1
Family history of alcohol use				
Yes	33	24 (72.7)	1.5 (1.1-1.9)	1.4 (1.1-1.9)
No	119	59 (49.6)	1	1

Table 3: Pattern of alcohol use among those with alcohol use in coastal villages of Puducherry, South India, N=152.

Pattern	Frequency, (%)
Age of initiation	
Within 18 years	27 (17.7)
18-25	72 (47.4)
26 and above	53 (34.9)
Reason for initiation	
Curiosity	27 (17.7)
Peer pressure	85 (55.9)
Stress relieve	37 (24.4)
Others	3 (2.0)
Type of alcohol	
Arrack	22 (14.5)
Beer	53 (34.9)
Hard liquor	54 (35.5)
Mixed	19 (12.5)
Others	4 (2.6)
Time of consumption	
Morning	6 (3.9)
Daytime	12 (7.9)
Night	67 (44.1)
Anytime	67 (44.1)
Amount spend each month on alcohol (in rupees)	
Less than 1000	113 (74.3)
1001 - 2500	19 (12.5)
2501 - 5000	20 (13.2)

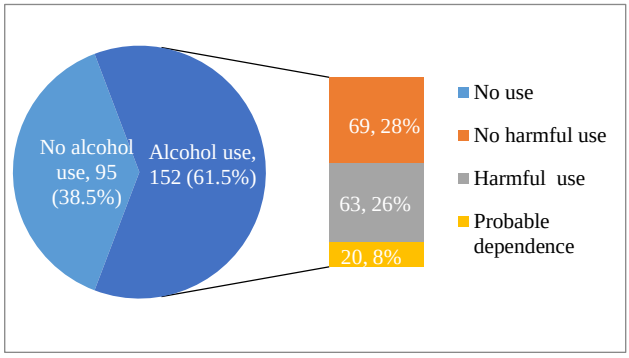

Figure 1: Alcohol use, harmful alcohol use and probable dependence among adult men in coastal villages of Puducherry, South India, N=247.

Of the 152 alcohol users, 27 (17.7%) initiated alcohol use before 18 years of age. Around 85 (55.9%) started using alcohol because of peer pressure. About 54 (35.5%) were using hard liquor and 53 (34.9%) were using beer. Of the

152 users, 67 (44.1%) were consuming alcohol anytime of the day and equal numbers were consuming only at the night. About 20 (13.2%) were spending 2500 to 5000 rupees per month for consuming alcohol. The pattern of alcohol use is shown in Table 3.

DISCUSSION

A community based cross-sectional study conducted in the coastal villages of Puducherry, South India showed that nearly six out of ten adult men were alcohol users. Also, almost one-fourth had harmful use of alcohol and one out ten had probable alcohol dependence. Being illiterate, currently married, tobacco use and family history of alcohol use were independently associated with harmful use among individuals with alcohol use. More than half of the alcohol users initiated alcohol use due to peer pressure and had initiated before 25 years of age.

The National Family Health Survey-3 had reported alcohol use of 43% among men in the neighboring state of Tamil Nadu.[9] As the current study was conducted in an area with relatively higher proportion of people involved in fishing, the prevalence may be higher than that reported in NFHS-3 conducted among general population. The Puducherry being a Union Territory has lower cost on all types of alcohol compared to Tamil Nadu. Also, the shops are more in numbers in Puducherry which makes alcohol more accessible. Whereas, in state of Tamil Nadu alcohol market are well regulated by the government. A study conducted in a coastal village of Puducherry had reported alcohol use among 79% of the fishermen.[10] The previous study was limited only to fishermen and hence might have had higher prevalence compared to the present study. This higher prevalence among fishermen (66.4%) was also seen in the current study. However, there was no independent association between the involvement in fishing and alcohol use.

In the current study harmful use of alcohol was found among 26% of the study participants. Among alcohol users, harmful alcohol use accounted for around 41.4%. A study conducted in rural Tamil Nadu had reported harmful use of alcohol to be as low as 7%.[11] A study conducted among fisherman in Uganda had 70% of the adults to be harmful alcohol users.[12] This high prevalence among the fisherman may be due to the fact that, being employed in the strenuous occupation might increase the risk of harmful alcohol use. However, in our study there was no independent relationship between the harmful alcohol use and occupation. There is need for further exploration to identify the relationship between fishing occupation and harmful use of alcohol.

As reported in the previous studies, even in the current study tobacco use and family history of alcohol use were independently associated with alcohol use.[10-13] Though previous studies have reported a relationship between education status and alcohol use, there was no such association in the current study.[11,13] However, illiterates and those who have graduated had higher chance of being harmful alcohol users. Peer pressure was reported to be the major cause for initiation of alcohol use and majority started alcohol use before age of 25 years. Similar findings have been reported in the previous studies. The easy accessibility and frail implementation of substance abuse legislation in the union territory might be the potential cause for early initiation of alcohol use.

The study has little strength. First, the study used valid and widely used AUDIT tool for assessing harmful alcohol use. Second, the probability sampling technique was used to select the clusters and whole of the commune panchayat (large area) was considered for sampling. Third, the study comprehensively assessed the harmful and probable dependence and also the patterns of alcohol use. The study has few limitations. First, the study sample was inadequate for assessing the factors associated with alcohol use and harmful use. Second, the alcohol use may be under-reported due to social desirability bias in reporting the same.

The study shows alarmingly high prevalence of alcohol use and more so with harmful use of alcohol in the study setting. There is need for strict implementation of the substance abuse legislation. Also, there is need for regulating the alcohol market by imposing higher taxes which eventually make the alcohol less affordable. These interventions have proven to be beneficial in delaying the early initiation of alcohol use. There is need for adolescent health education programmes which can address the issue of peer pressure in taking up the alcohol use. There is need for further studies to identify the potential occupational risk groups and develop strategies to minimize the burden of harmful alcohol use. There is need for community level screening and referral programmes to identify the individuals with harmful use or probable dependence to alcohol, so that the alcohol use disorders can be averted. The primary healthcare system need to be strengthened with trained manpower and resources to address the issues of alcohol use and harmful use of alcohol.

CONCLUSION

The present study showed very high prevalence of alcohol use and harmful use of alcohol in coastal villages of Puducherry and factors such as being illiterate, currently married, tobacco use and family history of alcohol use were independently associated with harmful use of alcohol. Early initiation of alcohol use in life and peer pressure as the most common reason for initiation was also alarming. Stringent regulatory approaches and effective health education approaches were much needed for the control of alcohol use and harmful use of alcohol.

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SSD conceived and designed the study. PV and KC designed the data extraction sheet, collected and entered data. PT and PV analyzed the data. PV and PT prepared the manuscript. SSD and KC critically reviewed the manuscript. All authors approved the final version.

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