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Original Research Article

A study to assess the pattern of alcohol and tobacco usage in the rural field practice area of a medical college in Tamil Nadu

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ABSTRACT

Background: Tobacco usage and alcohol consumption is a serious health issue to the society for ages. The consumption of alcohol and tobacco usage leads to medical and societal issues. An assessment of the pattern of tobacco usage and alcohol consumption in adult population is important to estimate the burden, and the risk factors associated with the same on the rural communities. There is a strong impact on the prevalence of NCDs by reduction in the usage of tobacco and alcohol products in the forthcoming decades.
Methods: A community based cross-sectional study was conducted in the rural field practice area of a medical college, using pre-validated, semi-structured questionnaire amongst 275 study participants a rural area. The adults aged 18 years and above who were currently using tobacco products and consuming alcohol were selected by simple random sampling using the tobacco assessment and AUDIT questionnaire for alcohol consumption.
Results: The results showed a significant association between all the socio-demographic variables (except for gender) in the usage of tobacco products; the study found higher literacy levels in using the products more frequently. The age distribution, family arrangement and socio-economic status were associated with alcohol consumption as well. In the multivariate regression the socio-economic class were associated with alcohol consumption.
Conclusions: The interventions should be targeted at the family and community level. There is a need for health education programs and de-addiction camps.

Keywords: AUDIT questionnaire, Global adult tobacco survey- GATS, Second hand smoke, Smoke-less tobacco, Tobacco assessment forms

INTRODUCTION

Tobacco usage and alcohol consumption is a serious economical setback to the society for ages. Social insecurity and familial disharmony have been the main drawbacks of its usage in the rural area. Today the second largest producer of tobacco in the world is the Indian subcontinent.[1] The World Health Organization estimates that 4.9 million deaths (8.8%) and 59.1 million disability-adjusted life years (DALYs) (4.1%) are attributable to tobacco use every year.[2] Cigarette smoking is the leading cause for premature death; smoking is the leading cause for cardiovascular deaths, different types of cancers and respiratory problems.[3] The constant exposure through second hand smoking (SHS) between the partners results in the causation of diseases, especially in children and pregnancy according to the Global adult tobacco survey (GATS). The smokeless tobacco (SLT) i.e. chewable form has got tobacco with sweeteners, flavourings, and scents which can be quite habitual.[4]

The chewable form of tobacco is in the form of strands, cakes, shreds and the snuff that comes in the dry or moist form and usually dipped between the lips or the cheek.[4] The smokeless tobacco can cause increased heart rate, blood pressure, altered lipid profile and cardiovascular

effects.[5] The smoking cessation using various strategies done at 30 years of age can reduce the mortality and increase the life expectancy in comparison to non-smokers.[6] The various types of tobacco used in India are smoking tobacco with cigarettes, beedi, hookah and cigar; chewable tobacco includes paan, gutka, quid, khaini, gul and snuff etc. All these forms are readily available even in the rural population.[7]

In the recent years, the nicotine replacement therapy (NRT) had been popular in the Europe. These are licensed for use mainly in the smoking cessation and smoking reduction. There smoking cessation clinics also had reduced the effects of smoking pattern and its usage.[8] There is a four-fold risk of NCD in the coming years through 2050. In India, the economic burden from mortality due to various forms of chronic diseases will rise. The prevalence of NCDs can be reduced by the control in the usage of tobacco products in the forthcoming decades.[9]

There are a plenty of chronic conditions when more of it is used and can lead to abuse liability and leads to societal concerns.[9] In India, 14% of population aged above 15 years smoke tobacco (24% of men and 3% of women).[10]

The GATS 2016-2017 survey in India, nearly 19.0% of men, 2.0% of women and 10.7% (99.5 million) adult population smoke tobacco. About 29.6% of men, 12.8% of women and 21.4% (199.4 million) adult population use smokeless tobacco. The second-hand smoke (SHS) was seen in 38.7% of adults who were exposed to second hand smoke at home.[11] In Tamil Nadu; 2009-2010, 16.2% of adults; 24.0% of males and 8.4% of females used some kind of tobacco. The smoking habits were observed in 9.6% of adults in which 19.1% were males and 0.1% was females. Around 8.1% of males used SLT (smokeless tobacco). About 9.9% of the individuals had experienced second-hand smoke (SHS) at home.[12]

The tobacco usage can be assessed by a wide range of screening techniques like the Fagerstorm test for nicotine dependence, Youths tobacco survey (YTS), global adult tobacco survey (GATS), and the tobacco assessment questionnaire.[13] Although, the GATS is a survey tool used by the World Health Organization in various countries with published online reports regularly.[14]

The alcohol abuse across the world had caused 3 million deaths every year. Nearly 230 diseases have been associated with alcohol related disorders. In 2018, 6.2 litres of pure alcohol per person 15 years and above consumed the same and in that group, 26% were unaccountable. In India it is comparatively less at 5.5 litres[15]. Chronic alcoholism can lead to abnormal liver function test, blood indices and lipid profile leading to various chronic conditions. The blood alcohol level (BAC) of 100 mg/100 ml is considered legally intoxicated in most areas for the charge of driving offense.[16]

There are few questionnaires (screening tools) like the Michigan alcohol screening test (MAST), MAST-G geriatric version, CAGE-cut down, annoyed, guilty, and eye-opener, TWEAK- tolerance, worried, eye-opener, amnesia, K-cut down- for pregnant women, adolescent drinking index- ADI and the alcohol use identification disorder test (AUDIT).[17] The above-mentioned questionnaire has got different combinations of sensitivities and specificities respectively. The AUDIT questionnaire has got the highest sensitivity and specificity in the city and urban area than the rural areas in comparison. These tools have been helpful in identifying alcohol related disorders (chronic conditions) and even mental health problems including the withdrawal syndromes and alcohol dependency.[17]

The AUDIT questionnaire is finally consolidated with the following grades as low risk, medium risk, high risk and dependency.[18] The world report on alcohol and health status is available in the global status report on alcohol and health 2018, that represents the burden of alcohol consumptions and the economic effect on World Bank income groups.[18]

The consumption of alcohol and tobacco leads to medical, social and economic consequences. Hence; the assessment of pattern of tobacco usage and alcohol consumption in adult population is important to estimate the burden and the factors associated with the same on the rural communities. Aim and objective of the study was to study the pattern of alcohol and tobacco usage amongst the adult population in the rural field practice area of a medical college, Tiruchirappalli.

METHODS

A community based cross-sectional study was conducted in the rural field practice area of Trichy SRM Medical college hospital and research centre using the pre-validated, semi-structured questionnaire. After obtaining informed verbal consent the face-to-face interview was conducted using the tobacco assessment form (smoking pattern and quit options) and the AUDIT (alcohol use disorder identification test) form. Based on the prevalence of 40.7% for tobacco usage and 29.6% for alcohol from the previous study by Udayar et al, the sample size was calculated to be 275 by using the formula $(1.96)^2$ p × q/d^2 with an absolute precision of 5%.[19]

Inclusion criteria

Adults above 18 years of age who were currently using tobacco products and consuming alcohol.

Exclusion criteria

Those who were not willing to participate in the study. The study population who stopped using tobacco products and consumption of alcohol for the past one year.

The study period was between April and May 2022.The study was started after obtaining ethical clearance from the Institutional ethical committee. The study population was selected using simple random sampling technique from the rural field practice area of Trichy SRM Medical College Hospital and Research centre. After the data collection was done, the data was entered in Microsoft-Excel sheet and analyzed using SPSS software version 26.

RESULTS

In our study the highest number of the study population was in the 58-67 (20.7%) years age group. The male participants were 251 (91.3%) and 24 were females (8.7%). Amongst the study participants majority of them were graduates around 80 (29.1%), the rest were in secondary education in 72 (26.2%) and 70 (25.5%) had higher secondary education.

Table 1: Distribution of socio-demographic variables in the study population in rural area (n=275).

Age of the individuals	No. of individuals	Percentage
18-27 years	27	9.8
28-37 years	51	18.5
38-47 years	46	16.7
48-57 years	54	19.6
58-67 years	57	20.7
68-67 years	33	12.0
78-87 years	7	2.5
	275	100
Sex of the individual		
Male	251	91.3
Female	24	8.7
	275	100
Education		
Illiterate	41	14.9
Primary	3	1.1
Secondary	72	26.2
Higher Secondary	70	25.5
Graduate	80	29.1
Post graduate	9	3.3
	275	100
Occupation		
Profession	10	3.6
Semi-profession	49	17.8
Clerical/farmer/shopkeeper	169	61.5
Skilled	20	7.3
Semi-skilled	15	5.5
Unskilled	2	0.7
Unemployed	10	3.6
	275	100
Socio-economic status		
Class I	7	2.5
Class II	133	48.4
Class III	113	41.1
Class IV	20	7.3
Class V	2	0.7
	275	100
Family type		
Single	23	8.4
Nuclear	182	66.2
Joint	48	17.5
Extended	9	3.3
Generation families	13	4.7
	275	100

The main type of occupation was farming/shop keeping in 169 (61.5%) individuals and overall the majority of the socio-economic status belonged to class II modified BG Prasad scale. The nuclear type of family was seen in 182 (66.2%) of the study population (Table 1).

The current study revealed that 98 (35.6%) of the study participants were smoking cigarettes in which there were 91 (33.06%) males and 7 (2.54%) were females. In the beedi smoking there were 50 (18.2%) individuals out of which 44 (16%) were males and 6 (2.18%) were females. About 20 (7.3%) of them smoked cigars and 18 (6.54%) of them were males and 2 (0.72%) were female individuals. In around 5 (1.8%) study participants had mixed habits, 4 of them were males and 1 female. The smokeless tobacco (SLT) was used in the form of snuff in 6 (2.2%) of the individuals, chewable tobacco in 23 (4.4%) and mixed habits in 5 (1.8%) (Table 2).

Table 2: Distribution of tobacco usage pattern amongst the study population in rural area (n=275).

Type of Tobacco products	Number of individuals	Percentage
Cigarette	98	35.6
Cigar	20	7.3
Beedi	50	18.2
Snuff	6	2.2
Chewable tobacco	23	8.4
Nil	73	26.5
Mixed habits	5	1.8
Total	275	100

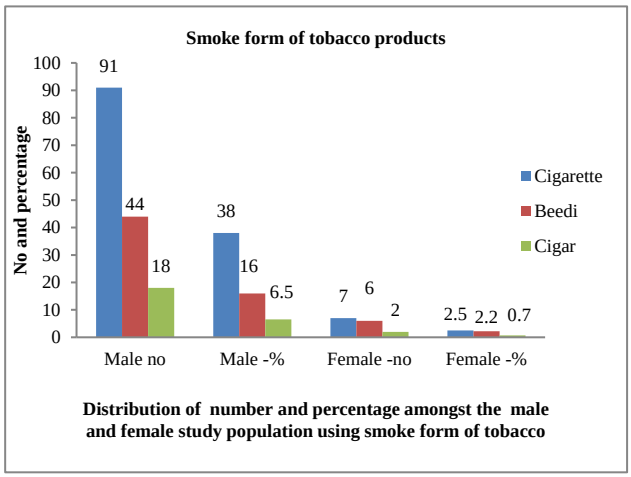

Figure 1: Distribution of smoking pattern in the form of smoking amongst the study population (n=275).

There were 94 (34.2%) study participants who were not smoking any form of tobacco. There were 133 (48.4%) study participants who smoked between 1-11 cigarettes/cigar/beedi in which 120 (43.63%) were males and 13 (4.72%) were females. Nearly 27 (9.8%) of them were not smoking every day (Table 3).

Table 3: Distribution of frequency of the smoking pattern amongst the study population in rural area (n=275).

No. of cigarettes/ cigars/beedi	Number of individuals	Percentage
None	94	34.2
Not everyday	27	9.8
1-11	133	48.4
11-21	17	6.2
21-31	4	1.5
>31	0	0
	275	100

Table 4: Distribution of average "alcohol consumption" amongst the study population in rural area (n=275).

Frequency of alcohol consumption	Number of individuals	Percentage
Never	56	20.4
<1 month	45	16.4
2-4/ month	42	15.3
2-3/week	79	28.7
>4/week	53	19.3
Total	275	100

In the present study around 65 (23.6%) of the study participants never thought of quitting in the last one year, nearly 30 (10.9%) of them thought twice in the last one year and 27 (9.8%) of them thought at least once in last year. In about 92 (33.5%) of them quitting was thought to be very important and 75 (27.3%) of them thought a little is quitting important. Around 45 (16.4%) thought of quitting in less than six months' time and 66 (24%) of the individuals wanted to quit smoking at some point during the last one year. In about 111 (40.4%) individuals were somewhat confident of quitting and only 36 (13.1%) were very confident in quitting.

In our study there were 101 (36.7%) individuals living with someone smoking at their home which forms a significant number, who had experienced second hand smoking during our study. In the tobacco quitting exercises there are two arms one is the not ready to quit and the other is the ready to quit. Among the not ready to quit nearly 231 (84%) were advised to quit smoking and around 177 (64.4%) were motivated to quit smoking. In the ready to quit arm about 101 (36.7%) were counseled regarding the barriers to quit.

In the AUDIT questionnaire survey we found in about 219 (79.6%) consumed alcohol. Out of which 200 (72.7%) were males and 19 (7%) were females. In nearly 79 (28.7%) consumed alcohol at least 2-3 times a week. In 53 (19.3%) consumed alcohol nearly 4 times a week. In about 45 (16.4%) consumed alcohol less than a month (Tables 4 and 5).

Table 5: Distribution of number of drinks consumed on an average day amongst the study population in rural area (n=275).

No. of drinks on a typical day	Number of individuals	Percentage
1-2 drinks	118	42.9
3-4 drinks	56	20.4
5-6 drinks	48	17.5
7-9 drinks	5	1.8
10 drinks	4	1.5
More than 10 drinks	1	0.4
Nil	43	15.6
Total	275	100

The alcohol drinking characteristics of the study population were as shown in Table 6.

The combined alcohol consumption and tobacco usage was seen in 157 (57.09%) individuals with 141 (51.3%) males and 16 (5.8%). The combined smoke form of tobacco and alcohol consumption was seen in 135 (49%) in which males were 122 (44.4%) and females were 13 (4.7%). In the present study about 30 individuals were illiterate, nearly 100 with primary, secondary or higher education and 52 individuals either with graduation or post-graduation distributed amongst the frequency of tobacco usage. There were only 18 female study participants with increased tobacco usage frequency pattern and were educated.

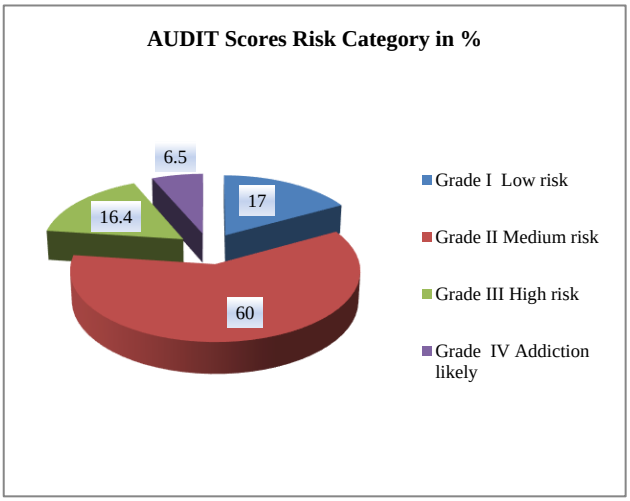

Figure 2: Distribution of AUDIT scores amongst the study population (n=275).

Table 6: Distribution of drinking characteristics amongst the study population in rural area using AUDIT questionnaire (n=275).

Characteristics type	Frequency of drinking											
	Never		<Month		Monthly		Weekly		Daily/ almost daily		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Six or more drinks on single occasion (last year)	205	74.5	51	18.5	9	3.3	7	2.5	3	1.1	275	100
Not able to stop drinking once started (last year)	159	57.8	67	24.4	21	7.6	17	6.2	11	4.0	275	100
Failed to do what is expected (last year)	185	67.3	53	19.3	9	3.3	18	6.5	10	3.6	275	100
First drink in the morning after heavy drinking session (last year)	226	82.2	25	9.1	14	5.1	3	1.1	7	2.5	275	100
Guilt or remorse after drinking (last year)	86	31.3	47	17.1	23	8.4	60	21.8	59	21.5	275	100
Unable to remember the night before because of the drinking (last year)	143	52	45	16.4	33	12	27	9.8	27	9.8	275	100

Association of socio-demographic variables with type of tobacco, frequency of tobacco usage and AUDIT scores amongst the study population:

In the present study, the age distribution, education, occupation, socio-economic status and family type were associated with various types of tobacco usage. Amongst the socio-demographic variables the educational status had significant association with frequency of tobacco usage since p value was less than 0.05 (Table 7).

In the AUDIT questionnaire the age, socio-economic status and the arrangement of the family types were associated with AUDIT scores since p value is less than 0.05. After adjusting for the confounders by applying the multi-nominal regression the socioeconomic status class I, II and III were significantly associated with the AUDIT scores with a p value of less than 0.05 at 95% CI (Table 8).

Table 7: Association between type of tobacco products usage, frequency of usage with the socio-demographic variables (n=275).

Socio-demographic variables (SD)	Total no. of tobacco usage (n=202)	Type of tobacco products and SD variables (chi-square test)	Frequency pattern of tobacco usage and SD variables (chi-square test)
Age (years)			
18-27	18	P value = 0.021*	P value = 0.124
28-37	38		
38-47	36		
48-57	31		
58-67	44		
68-77	30		
78-87	5		
Sex			
Male	181	P value = 0.161	P value = 0.808
Female	21		
Education			
Illiterate	39	P value = 0.000*	P value = 0.047*
Primary	56		
Secondary	20		
Higher secondary	33		
Graduate	48		
Post graduate	6		
Occupation			
Profession	30	P value = 0.000*	P value = 0.608
Semi-profession	123		
Clerical/farmer/ shopkeeper	17		
Skilled	13		
Semi-skilled	2		
Unemployed	8		
Socio-economic status			
Class I	7	P value = 0.013*	P value = 0.053
Class II	92		
Class III	84		
Class IV	17		
Class V	2		
Family type			
Single	16	P value = 0.000*	P value = 0.084
Nuclear	138		
Joint	39		
Extended	6		
Generation families	3		

Figure* denotes p value is significant as it is less than 0.05 at 95% CI

Table 8: Association between socio-demographic variables and AUDIT scores (excess alcohol consumption) amongst the study population (n=275).

Socio-demographic variables	Total no. of alcohol consumption (n=219)	AUDIT scores P values	AUDIT scores: multinomial regression at 95% CI
Age (years)			
18-27	24	P value = 0.019*	All the socio-demographic variables were insignificant with P value >0.05; except for socio-economic status class I, II and III P value = 0.000*
28-37	32		
38-47	39		
48-57	46		
58-67	42		
68-77	30		
78-87	6		
Sex		P value = 0.916	

Continued.

Socio-demographic variables	Total no. of alcohol consumption (n=219)	AUDIT scores P values	AUDIT scores: multinomial regression at 95% CI
Male	200		
Female	19		
Education			
Illiterate	37		
Primary	30		
Secondary	32	P value = 0.287	
Higher secondary	53		
Graduate	58		
Post graduate	9		
Occupation			
Profession	7		
Semi-profession	40		
Clerical/farmer/shopkeeper	128	P value = 0.051	
Skilled	18		
Semi-skilled	14		
Unskilled	2		
Unemployed	10		
Socio-economic status			
Class I	5		
Class II	105		
Class III	89	P value = 0.000*	
Class IV	29		
Class V	1		
Family type			
Single	20		
Nuclear	148		
Joint	32	P value = 0.002*	
Extended	8		
Generation families	11		

Figure* denotes p value is significant as it is less than 0.05 at 95% CI

DISCUSSION

In the present study in the 58-67 years there were 57 (20.7%) participants in which the total males were 251 (91.3%) and total females were 24 (8.7%). In this nearly 80 (29.1%) were graduated, 72 (26.2%) had secondary education and 70 (25.5%) had higher secondary education. The majority of them belonged to farming and shop-keeping in around 169 (61.5%) study participants. The predominant socio-economic class was found to be class II in 133 (48.4%) individuals. The nuclear type of family arrangement was observed in 182 (66.2%).

In a study conducted by Kumar et al in 2012, in rural Puducherry to estimate the prevalence of Alcohol consumption using AUDIT questionnaire there were nearly 238 (25.16%) individuals in the 58-70 years age group in which males were 495 (52.3%) and females were 451 (45.7%).[20] In about 562 (59.4%) individuals had either primary or secondary education and in about 282 (29.8%) had been to higher secondary. The majority of them belonged to class II modified BG prasad scale in 502 (53.06%) individuals. In the study by Kumar et al in 2012, it was found that alcohol consumption was seen in 9.4%, tobacco smoking in 55 (5.8%) and smokeless tobacco in 50 (5.3%).[20]

In the present study in about 168 (61.09%) used smoke form of tobacco in which 98 (35.6%) were smoking cigarettes with 91 were males (33.06%) and 7 (2.54%) were females. The beedi smoking was observed in 50 (18.2%) in which there were 44 (16%) males and 6 (2.18%) females. The cigars were smoked by 20 (7.3%) individuals with 18 (6.54%) males and 2 (0.72%) female individuals.

In a study conducted by Rajan et al in 2015, with a sample population of 1464, nearly 244 (16.7%) individuals were smoking tobacco in which 191 (13%) smoked beedi and 85 (5.8%) smoked cigarettes. The smokeless tobacco was observed in 168 (11.5%) individuals only.

In the present study the alcohol consumption was seen in 219 (79.6%), out of which 200 (72.7%) of them were males and 19 (7%) of them were females. In about 79 (28.7%) consumed alcohol 2-3 times a week and 53 (19.3%) consumed four times a week. However; alcohol

consumption in a study done by Rajan et al in 2015 was found in nearly 207 (14.1%) individuals.[21]

In the study conducted by Rajan et al in 2015 the age, gender and educational status were associated with tobacco usage and alcohol consumption. There were 66 (25%) males in the 45-54 years age group who smoked tobacco and 207 (18.6%) were literates with a p value of less than 0.05. In the alcohol consumption there were 49 (18.6%) individuals with 174 literates with a p value of less than 0.05.[21]

In the present study the smokeless tobacco (SLT) was used predominantly in the form of snuff in 6 (2.2%) individuals and chewable tobacco in 23 (4.4%) study participants. However; in a study conducted by Jain et al in 2018, the prevalence of smokeless tobacco usage in the form of chewable tobacco was seen in 51 (20.4%) rural participants and 35 (14%) of the urban elderly study population.[22]

In a study conducted by Sukumaran et al in 2020, using the AUDIT and the ASSIST questionnaire in a study population of 1545, the prevalence of alcohol consumption was found in nearly 146 (9.5%) individuals in which 143 (18.3%) were males and 3 (0.4%) were females (quite few in number). This study concluded with the suggestion of health education in 99 (50%), counseling sessions in 74 (37.8%) and de-addiction in 23 (11.7%) individuals based on AUDIT scoring.[23]

In a study conducted by Islam et al in 2016, using the NFHS 4 data, after multivariate logistic regression the age, poor education, occupation, religion, alcohol consumption, marital status and socio-economic status were significantly associated with tobacco usage especially amongst the male population.[24]

In GATS 2 (2016-2017) India, the prevalence of smokeless tobacco was observed in 31.7%. However; the pattern of smokeless tobacco usage was comparatively less in the present study (6.6%). In our study the second-hand smoke (SHS) was seen in 101 (36.7%) study participants. However; in the GATS Tamil Nadu (2009) the second-hand smoke exposure was observed in nearly 31% of the survey participants.[25]

Limitations were that it was a cross-sectional study. A sample size of only 275 study participants, and tobacco quitting exercises were not done. The study had predominantly male participants.

CONCLUSION

There was association between all the socio-demographic variables and the usage of tobacco products except for the gender. The age, family arrangement and the socio-economic status were associated with alcohol consumption. After adjusting for potential confounders by doing the multivariate regression it was found that the socio-economic class I, II and III were strongly associated with alcohol consumption. The best and safest way to approach this problem is ensuring health education programs and running de-addiction camps.

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