ORIGINAL ARTICLE

PRACTICES AND SOCIO CULTURAL ASPECTS OF SUBSTANCE USE AMONG RESIDENTS OF A NEWLY FORMED STATE: A CROSS SECTIONAL STUDY IN DEHRADUN

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ABSTRACT

Introduction Numerous studies have demonstrated that excessive alcohol consumption and tobacco use are independently associated with a plethora of health-related, social, and economic adverse consequences for the consumers of these legal substances as well as for society at large.

Material & Methods: A cross sectional study was done in rural & urban areas of Distt. Dehradun. Multistage Stratified Random Sampling was used for selection of study area, Kish method was applied for the selection of study subjects. Statistical analysis: Proportions, Chi square, Odds ratio was calculated.

Results: The overall prevalence of ever use of tobacco was 24.4%. It was observed that prevalence of tobacco was more (32.9%) in rural area as compare to urban area (15.8%). The prevalence of ever smokers was 12.2%. Smoking was more among males [25.6%] as compared to females [3.2%]. Bidi was the main form of smoking i.e. 72.9%. The prevalence of current daily smokeless tobacco user was 16.8%. Khaini was the most commonly used form. Prevalence of ever alcohol use among respondents was 17.4%. Overall 16.6% of male respondents while only 0.8% of females have consumed alcohol in their lifetime. Almost 21.2% of males in rural area and 12.0% in urban area were alcohol users. The prevalence of current alcohol use in rural / urban area was 20.6% & 13% respectively.

Conclusion : It can be concluded from our study that the burden of one of the major risk factors for Non Communicable Diseases (NCDs)i.e. substance abuse is quite high among rural & urban areas of district Dehradun.

Key words: Substance use, multistage stratified sampling, Kish method.

INTRODUCTION

Numerous studies have demonstrated that excessive alcohol consumption and tobacco use are independently associated with a plethora of health-related, social, and economic adverse consequences for the consumers of these legal substances as well as for society at large[1,2]. Some of these detrimental effects can be exacerbated in people who use and abuse both substances. For example, the risk of certain cancers is greater for people who drink and smoke than for people who use only one of these substances[3].

Tobacco alone is estimated to have killed 100 million people in the 20th century and continues to kill 5.4 million people every year and this figure is expected to rise to 8 million per year by 2030, 80% of which will occur in the developing countries[4]. Tobacco is used in different forms and the health effects are seen irrespective of the form in which it is used. Smokeless tobacco is found to be as addictive and harmful as smoking yet more difficult to quit. Smokeless tobacco, especially in the form of chewing has been associated with various oral diseases including cancers and adverse reproductive outcomes[5,6]. Tobacco chewing is prevalent in all

parts of the world and all age groups, though it varies in extent[7].Alcohol is one of the leading causes of death and disability globally. About two billion people worldwide consume alcohol user beverages and one-third (nearly 76.3million) is likely to have one or more diagnosable alcohol use disorders[8]. Alcohol is attributed to nearly 3.2% of all deaths and results in a loss of 4% of total DALYs (58 million)[9]. It is acknowledged that countries which had low alcohol consumption levels are now witnessing an increasing consumption pattern[8]. In India, the estimated numbers of alcohol users in 2005were 62.5 million, with 17.4% of them (10.6 million) being dependant users[10] and 20–30% of hospital admissions are due to alcohol-related problems[11].

Thus, it is important to know the rates of alcohol and tobacco use in the general population and whether certain demographic subgroups are particularly at risk of using alcohol and tobacco or being dependent on both substances. Studies of this nature are rare in the literature.

MATERIAL AND METHOD

The analysis is based on data collected from a cross-sectional survey of non-communicable disease risk factors which was carried out in Doiwala block and Rishikesh nagarpalika, Dehradun, over a period of one year from june 2011 to april 2012.Multistage Stratified Random Sampling has been used for the selection of study area.

Rural sample

There are six blocks in district Dehradun, out of which one block was chosen for the study purpose. This block (~2.5 lac population) comprises of five Nyaypanchayat, out of which one Nyaypanchayat with 19 villages was selected &10% of 19 villages i.e. 2 villages were randomly sampled to achieve the required sample size.

Urban sample

Out of four nagarpalika in district Dehradun, Rishikesh Nagarpalika was selected for study purpose. It is constituted by 20 wards out of which two wards (10%) were randomly selected to get the required sample population.

An adequate sample was drawn to carry out the present study. The sample size was calculated following the formula $n = 4\,pq / L^2$, taking into consideration the prevalence (p) of NCD as 41% (WHO survey on prevalence of NCDs done in 2004)[12], q=1-p, with an allowable error (L) of 10% and confidence interval of 95%. The calculated sample size was 575. A non-response rate of 10% (57) was added to this, so the final sample size was 632 & was equally allocated to rural and urban areas i.e.316 subjects in each area.

Study houses were selected by systematic random sampling & sampling interval i.e. every k^{th}house was visited. Keeping in view that prevalence of NCDs & its risk factors are increasing in younger age group individuals aged between 20 to 60 years were selected for the study. In every selected household "Kish" method[13] was applied for the selection of study subjects.

Ethical clearance from the institution and informed consent from the study population were obtained beforehand.

Data was collected on parameters related to tobacco and alcohol use as per the WHO **STEPS guidelines** [14].

Current Smoker / Smokeless Tobacco User: Someone who at the time of the survey, smokes / uses tobacco in any form either daily or occasionally.

Past- Daily Smokers / Smokeless Tobacco User: These are those individuals who were smoking daily in past, but have not smoked ever in one year preceding the survey.

Non-Smoker / Never Used Smokeless Tobacco: These are those individuals who have never smoked / used smokeless tobacco in the lifetime.

Current Drinker: Those who consumed one or more than one drink of any alcohol in the year preceding the survey.

Former Drinker: Those who have consumed alcohol but those who did not consume one or more drink during the year preceding the survey.

Lifetime Abstainer: Those who have never consumed one or more drink of any type of alcohol in lifetime.

High Risk Drinker (Binge Drinker): Those who drink more than 5 (for women 4) standard drinks on any single day.

Standard Drink: It is defined as any standard drink with net alcohol content of 10 gm ethanol.

Data analysis:

Data were entered and analyzed using SPSS latest version and Microsoft excel 2007.The results were reported as percentages, proportions, odds ratio & 95% confidence interval. Statistical significance was considered at $p<0.05$.

RESULTS

During the study period a total of 632 individuals were contacted & interviewed with 254 (i.e. 40.2%) males & 378 (i.e. 59.8%) females.

Table-1 presents the prevalence estimates of alcohol & tobacco use by area of living & gender. According to these data, approximately two (2.4) in every ten respondents were using tobacco in any form.

Table 1 - Prevalence of substance use by place of residence and gender

Variables	Rural (n=316)	Urban (n=316)	Male (n=254)	Female (n=378)	Total (n=632)
Ever tobacco users	104(32.9)	50(15.8)	127(50.0)	27(7.1)	154(24.4)
OR(95% CI)- p value	2.61(1.78,3.8)-<0.001	1	13(8.18,20.64)-<0.001	1	
Ever smokers	52(16.5)	25(7.9)	65(25.6)	12(3.2)	77(12.2)
OR(95% CI)- p value	2.29(1.38,3.8)-0.001	1	10.48(5.52,19.9)-<0.001	1	
Ever smokeless users	77(24.4)	33(10.4)	91(35.8)	19(5.0)	110(17.4)
OR(95% CI)- p value	2.76(1.77,4.3)-<0.001	1	10.54(6.22,17.88)-<0.001	1	
Ever alcohol user	69(21.8)	41(13.0)	105(41.3)	5(1.3)	110(17.4)
OR(95% CI)- p value	1.87(1.22,2.86)-0.003	1	52.5(21.01,131.52)- <0.001	1	
Current smokers	49(15.5)	24(7.6)	62(24.4)	11(2.9)	73(11.6)
OR(95% CI)- p value	2.23(1.33,3.73)-0.002	1	10.77(5.54-20.94)- <.0001	1	
Current smokeless users	73(23.1)	33(10.4)	87(34.3)	19(5.0)	106(16.8)
OR(95% CI)- p value	2.57(1.65,4.02)-<0.001	1	9.84 (5.79,16.7)- <.001	1	
Current alcoholic	66(20.9)	41(13.0)	102(40.2)	4(1.1)	107(16.9)
OR(95% CI)- p value	1.77(1.15,2.71)-0.008	1	50.06(20.0,125.28) <.001	1	

Age of initiation of substance use: (**fig. 1**) Majority of respondents started tobacco use in the age group of 16-20 years & very few initiated use of smokeless product in < 10 yrs. Same age pattern was observed in rural area, whereas in urban wards delayed age (>20 yrs) of initiation of tobacco use was observed. Similarly, more than half (58.5%) of the alcohol users in urban area have initiated its consumption after 20 years of age whereas in rural area 52.2% have initiated it early in life (16-20 years of age).

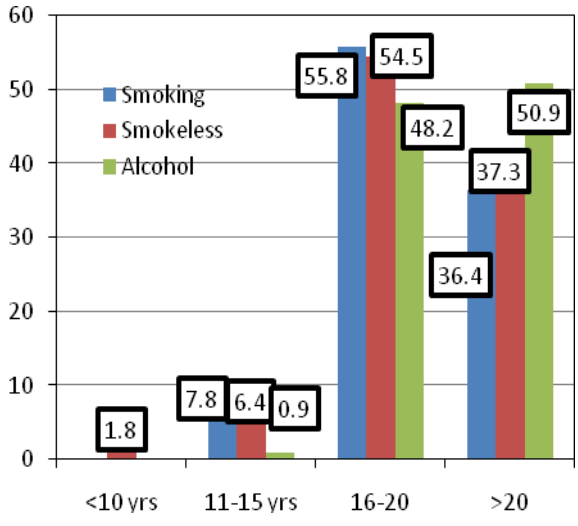

Fig 1 : Age wise distribution of substance use in study population

Reason for initiation: Majority of subjects have started substance use for enjoyment (smoking- 63.6%, smokeless- 61.8%, alcohol-57.3%) followed by peer pressure (smoking- 27.3%, smokeless- 21.8%, alcohol-41.8%), 5.2% due to gastric problems (smoking) & 10.9% to relieve toothache (smokeless), and this pattern was similar in urban & rural area.

Type & frequency of product used: The most common modality of smoking was bidi while Khaini was the commonest smokeless product used (**fig-2**). In rural area most (46.8%) of the smokers were consuming more than one bundle of bidi or cigarette (>20) /day, whereas in urban area this proportion was 17.5% & 39.1% were smoking 6-10 bidi/cigarette per day.

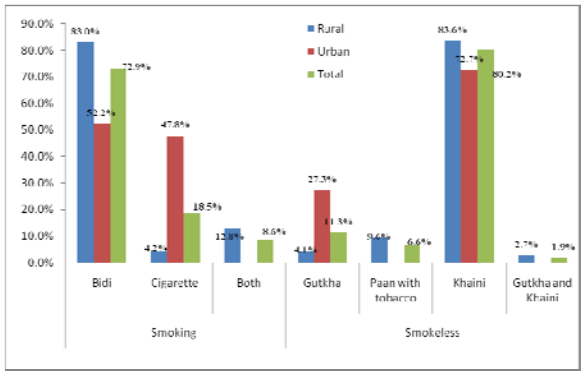

Fig-2: Distribution of study subjects according to area & modality of tobacco use:

Alcohol use: Out of 110 respondents in ever consumption of alcohol about 96.4% had consumed alcohol in past 12 months & 79.2% had consumed in past 30 days. Percentage of lifetime abstainer to alcohol was higher among urban subjects (87.0%) as compared to rural (78.2%). Rural respondents were more likely to consume alcohol (81.5% in last 30 days) than urban (75.6% in last 30 days). Amongst current drinkers majority i.e. 27.3% in rural area consumed alcohol in a frequency of 1-3 days/month while 51.3% in urban area have consumed less than once per month. In past 30 days majority i.e. 63.2% were found to be high risk / binge drinker, while 13.1% were consuming it daily.

Table 2 - Association of substance use with various socio-demographic variables

Variables	Current smoking			Current smokeless			Current alcohol		
	%	OR (95% CI)	P value	%	OR (95% CI)	P value	%	OR (95% CI)	P value
Age									
20- 40	8.8	1		16.3	1		16.3	1	
41-60	14.6	1.78(1.08,2.93)	0.02	17.3	1.07(.70,1.62)	0.05	17.6	1.09(0.72,1.66)	1.09
Marital status									
Unmarried	8.8	1		15.4	1		13.2	1	
Married	12.3	1.456(0.67,3.15)	0.34	15.9	1.04(0.56, 1.93)	0.05	18.5	1.49(0.78,2.86)	1.49
Widow/Divorcee / Separated	8.9	1.012(0.28,3.55)	1.01	28.9	2.23(0.94, 5.28)	0.06	6.7	0.47(0.12,1.759)	0.47
Education									
Illiterate	5.8	1		7.9	1		10.1	1	
Primary school	22.9	4.83(2.16,10.8)	<0.0001	35.7	6.4(3.18,12.85)	<0.0001	35.7	4.91(2.58,9.33)	<0.001
Intermediate	12.4	2.30(0.98, 5.38)	0.04	13.6	1.81(0.85,3.87)	0.11	15.4	1.61(0.80,3.21)	0.17
Graduate & above	4.8	0.82(0.29,2.2)	0.68	9.5	1.21(0.54,2.71)	0.6	6.5	0.62(0.27,1.41)	0.25
Stress									
Yes	14.7	2.55(1.4, 4.6)	<0.001	20.3	2.06(1.2,3.31)	0.002	20.0	1.87 (1.17,2.97)	
No	6.3	1		10.9	1		11.8	1	0.007
Social class									
Upper middle	6.0	1	-	6.0	1	-	14.0	1	-
Lower middle	4.9	0.80 (0.208-3.07)	-	9.2	1.58(0.44-5.64)	-	12.9	0.92(0.36-2.26)	0.84
Upper lower	11.5	2.04(0.594-7.02)	0.24	20.1	3.93(1.17-13.21)	0.017	16.2	1.19 (0.49-2.84)	0.6
Lower	20.9	4.12(1.21-14.08)	0.001	23.9	4.92 (1.45-16.71)	0.005	23.3	1.86 (0.77-4.49)	0.15
Occupation									
Employed	12.3	1		10.5	1		14.0	1	
Agr/ daily wager	16.1	1.37(0.65,2.88)	0.4	24.6	2.76(1.33,5.74)	0.005	25.4	2.08(1.06,4.08)	0.02
Self emp/shopkeeper	7.0	0.54(0.18,1.57)	0.25	18.3	1.9(0.81,4.449)	0.13	15.5	1.12(0.48, 2.58)	0.79
Unemployed	10.6	0.85(0.43,1.64)	0.63	15.8	1.59(0.81,3.11)	0.16	15.2	1.09(0.59,2.01)	0.76
Religion									
Hindu	12.5	1		16.2	1		19.0	1	
Muslim	16.4	1.35(0.66,2.85)	0.389	34.4	2.72(1.52,4.86)	0.0004	1.6	0.07(0.009, 0.52)	<0.001
Sikh	1.8	0.12(0.017,0.92)	0.01	8.8	0.49(0.19,1.288)	0.14	19.3	1.018(0.50, 2.04)	1
Others	4.0	0.29(0.03,2.20)	0.29	4.0	0.216(0.028,1.62)	0.22	8.0	0.37(0.08,1.59)	0.37

Table 2, summarise the unadjusted odds of smoking, chewing and alcohol use in different socioeconomic and demographic groups. Odds of Substance use increases with increasing age, positively related to stressful lifestyle & was more in lower socio-economic status, whereas with increasing education decrease in substance use was observed.

DISCUSSION

In the traditional Indian system, the acceptance of lifestyle indicators such as tobacco use and alcohol consumption varies between socioeconomic groups and between genders[15].

The total prevalence of ever tobacco use was 24.4%, which was almost double in rural (32.9%) area as compared to urban (15.8%). These findings accord with the findings of ICMR survey (29.6% in Karnataka & 34.6% in U.P)[16], IIPS survey (30 %)[17] and NFHS-3[18] survey. Whereas Thankappan et al concurs with slightly high prevalence of tobacco use in urban area (22.6%) & low prevalence in rural area (24.3%)[19] as compared to our study.

Around 12.2% of the respondents were ever smokers & 11.6% were current smokers and it was more prevalent in males. Our findings are in line with the several other authors like Chaudhary KC, Medhi GK, & Bhardwaj et al [16,20,21]. Some reports lay in contrast with our findings like IDSP survey Uttarakhand (2008), NFHS-3 India (2005-06), NFHS-3 UK (2005-06), which have reported a slightly higher prevalence as compared to our study[14,18,22]. Lower prevalence of smoking in the

present study might be due to false history of tobacco use revealed by some participants because of either presence of an elder family member during the interview or due to discomfort with female interviewer or had stigmatised these habit. The difference between ever user & current user was small suggesting that tobacco use once initiated is continued & quitting of tobacco use is infrequent.

About 17% (106/632) of the total respondents were current users of smokeless tobacco. The prevalence of smokeless tobacco use was higher in rural area as compared to urban area with 34.3% among men & 5% among women. These findings are supported by IDSP survey in UK (12%), Chaudhary KC, NFHS 3 UK, NFHS 3 India, Chaturvedi HK and Bhardwaj et al which have reported more prevalence in rural males[14, 16, 18, 21, 22, 24].

In the present study, majority of respondents (~55%) have started use of tobacco products at the age of 16-20 years & 87.1% of the respondents smoke 6 or more times a day that was comparable to observations of Chaudhary KC (2001) who has revealed that 81.0% respondents in U P and 89.0% in Karnataka smoked 6 or more times a day [16]. NFHS-3 UK data reported that majority (59.1%) of respondents were smoking 10 or more bidi / cigarettes per day that was quite similar to 67.1% reported in the present study[22]. On the contrary NFHS-3 India reported slightly lower prevalence (44 %) of smoking 10 or more smokes per day[18].

Bidi was the most popular modality of tobacco smoking & Khaini was the most common form of smokeless tobacco used & comparable observations were made by Chaudhary KC (2001)[16], Krishnan et al[23], NFHS 3 India[18] & Bhardwaj SD et al in rural Maharashtra (2012)[21].

The high prevalence of tobacco use among rural population may be due to the reason that, these groups also have a higher proportion of respondents who are poorly educated , unemployed or engaged in lower paying jobs. These findings are supported by observations of Jindal et al., Chaudhary et al., Chhabra et al. and Gupta et al [25-28]. A very likely reason for these observation is the pricing strategy of tobacco products. Bidis cost nearly one-tenth of the cost of cigarettes, Gutkha and khaini, the two commonest smokeless tobacco products, are available for very cheap prices.

Prevalence of ever alcohol use i.e. 17.4% in the study was almost similar to current use i.e. 16.8%, whereas 82.6% of the respondents were found to be lifetime abstainer. Alcohol use was more among males (41.3%). These findings are positioning in line with NFHS-3 (39.1% in males)[22] & IDSP survey Uttarakhand with 82.0% of lifetime abstainer & 16.0% of current users[14]. Similarly IDSP survey accord with the prevalence of current alcohol users[29] and World health survey 2003[17] with proportion of lifetime abstainer. On the contrary Bhardwaj et al reported higher prevalence of ever alcohol use i.e. 38.7%[21]. More prevalence of alcohol use among males was in consistency with the results reported by NFHS 3 India [18], Sugathan et al (41% in males)[30] & Meena et al from Rohtak city in 2002 (20%)[31]. The difference in prevalence with other studies may be due to the geographic variations or different time trend.

Comparable proportion of frequency of alcohol use as in our study i.e. daily drinker 13.1%, 27.3% drink 1-3 days/ month, 51.3% less than once a month and 63.2% binge drinkers, was reported by Sugathan et al (daily drinkers 13%)[30] , Meena et al (16% once a week , 36% consume less than once in a month)[31] & IDSP survey of Uttrakhand with 13.3% daily drinkers, 36.1% less than once/month & 51.6% of high risk drinkers[14].

The prevalence of current alcohol use varies with different age groups & was comparatively low in younger age group (13.0% in 20-30 years) increasing in 31-50 years, where after it declines. Similar pattern was reported in IDSP Uttarakhand survey[14], ICMR study of six states[29], IIPS survey of India[17] and Sugathan et al[30] , showing more drinking habits among elderly persons as compared to younger generation.

In our study maximum prevalence of alcohol consumption was observed in individuals literate up to junior high school and declined in higher secondary and above educated and was highest among agriculture worker / daily wager. This may be due to the fact that majority of the illiterate were females. Similar observation were made in IDSP survey conducted in Uttarakhand (2007-08) and in six different Indian states[14,29].

NFHS 3(25.2%), Sugathan et al (45.9%) & Gururaj et al reported that alcohol consumption was more in lower SEC which is comparable to our study[18, 30,32].

In present study prevalence of drinking was almost similar among Hindu (19.6%) & Sikh (19.3%) & low among Muslims (1.6%). Chaturvedi HK et al [24] and NFHS 3 India[18] and Sugathan et al[30] also reported similar findings. This may be due to the religious belief in Muslims regarding alcohol consumption.

Limitation of the study was small sample size as compared to other studies carried out on WHO STEPS guidelines and thus results cannot be extrapolated on whole population of Dehradun.

Our study revealed that the main reason for initiation of substance use was for enjoyment, which reflects the lack of awareness among them regarding its harmful effects. Other reasons like easy availability and low cost of these products also facilitate their use in the low socio-economic class.`

CONCLUSION

It can be concluded from our study that the burden of one of the major risk factors for Non Communicable Diseases (NCDs)i.e. substance abuse is quite high among rural & urban areas of district Dehradun. Its high prevalence even in poor rural community and in the younger age group is a pointer to the fact that the burden of NCDs is going to rise in near future. Therefore it is pertinent to recommend effective & sound measures for prevention and control of risk factors in the given community. Raising taxes on tobacco, banning tobacco advertisement and sale of smokeless tobacco and legislating to curb smoking in public places are few steps to reduce tobacco use among masses.

Acknowledgement: We express our sincere gratitude to SRH University for permitting this research study & for providing all assistance for the same.

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