

# TOBACCO AND ALCOHOL USE AMONG THE YOUTH OF THE AGRICULTURAL TEA INDUSTRY IN ASSAM, INDIA

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**Abstract.** A cross-sectional study was conducted to assess tobacco use (both smoking and non-smoked tobacco) and alcohol use among tea garden youths of Assam, India during the period 2002-2003. A total of 650 tea plantation youth age 15-24 years (255 males, 395 females) from eight randomly selected tea plantations, Dibrugarh District, Assam, were interviewed to collect information on alcohol and tobacco use using a pre-designed, pre-tested questionnaire. Nearly 59% of the respondents had no formal education. Fifty-eight percent of the youth used at least one substance and 27.4% were concurrent users of both alcohol and tobacco. The smoking rate was only 2.2% (4.7% in males, 0.5% in females). However, 52.5% of the study population used non-smoked tobacco (56.9% males, 49.6% females). The prevalence of alcohol consumption was 32.2% (43.9% males, 24.6% females). A higher rate of alcohol and tobacco use was found among the respondents who had no formal education or were school dropouts. A higher rate of alcohol and tobacco use were seen among respondents in whom both parents were illiterate. Working as a manual worker in the tea industry is significantly associated ( $p < 0.01$ ) with higher rates of alcohol and tobacco use. We recommend a vigorous campaign against tobacco and alcohol use among tea plantation youth to reduce the health risks associated with the use of these two substances.

## INTRODUCTION

Health-risk behaviors, which contribute to leading causes of mortality and morbidity, often are established during youth, extend into adulthood, are interrelated, and preventable (Kann *et al*, 2000). Alcohol and tobacco use are two important preventable health-risk behaviors which are established risk factors for many serious non-communicable diseases, like hypertension, stroke, coronary artery diseases (CHD) and cancers. These two behaviors are more often established at a young age (Kann *et al*, 1994; Selvan and Kupad, 2004). In India, out of more than 2.2 million cancer patients, tobacco related cancers account for half the total cancers among men and 20% among women and about 0.7 million die each year (Kotwal *et al*, 2005). The use of alcohol and other drugs, besides their adverse health effects, also contributes to many

social problems, including dysfunctional families, crime, school dropout, and lost of economic productivity (Kann *et al*, 1994). Globally, tobacco and alcohol rank 4<sup>th</sup> and 5<sup>th</sup>, respectively, as risk factors for avoidable disease measured by Disability Adjusted Life Years (DALY) (WHO, 2002). Since most tobacco and alcohol related diseases have a long latency period, early management of these risk factors in the form of primary prevention is beneficial in controlling these diseases.

Tea is one of the largest agricultural industries in India. There are reports of a rapid rise in tobacco and alcohol related disease in people in the tea industry in Assam, northeastern India. There are no published reports regarding cancer prevalence in this community. However, available records indicate a higher prevalence of hypertension among this population in comparison to other studies (Hazarika *et al*, 2002). A recent investigation into the cause of death in this community indicates the highest numbers of deaths occurs in this population due to cerebrovascular diseases (Regional Medical Research Center for Northeast, unpublished data). Some studies regarding different ethnic groups in this region indicates that both alcohol and to-

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bacco use are usually initiated before 25 years of age (Chaturvedi *et al*, 1998, 2004; Hazarika *et al*, 2000). However, there is lack of adequate information regarding risk behavior related to alcohol and tobacco use among these youths.

This study is an attempt to understand the prevalence of alcohol and tobacco use among youth working on tea plantations, in order to form the basis of an effective prevention strategy.

## MATERIALS AND METHODS

This study was conducted in Dibrugarh District, Assam. Dibrugarh District is at the hub of the tea industry in Assam; it is situated in the eastern part of the state. There are 138 tea plantations in Dibrugarh with a population of about 360,000 (workers and other dependents). Tea workers migrated to Assam, in the latter part of the nineteenth century to the early part of the twentieth century, from Central and South India (Griffiths, 1967). The area is socio-economically lagging behind other areas in India and the population are mostly illiterate. These workers are solely dependent on this industry for their livelihood.

In a multistage sampling design, eight tea plantations in the district were selected randomly as a first stage unit, followed by random selection of households within the primary sampling unit in the second stage. A total of 650 boys and girls in the age group 15-24 years old (255 males, 395 females) were interviewed in selected households. Data regarding the current use of alcohol and tobacco (smoking and non-smoked tobacco) was collected by face-to-face interview using a pre-designed and pre-tested questionnaire after counseling. Socio-demographic information, such as educational status, marital status, and educational status of the parents, was collected from the head of each household or other adult member of the family.

Respondents who were currently using tobacco (smoking and non-smoked tobacco) or alcohol, and used them regularly for at least last one month, were defined as substance users. Those who were smoking bidi, cigarettes, hukka or other forms of tobacco were classified as smokers. Oral use of tobacco (processed) pouch

alone or along with betel nut with or without lime were classified as non-smoked tobacco users. History of intake of commercial alcoholic drinks, or the local brew (locally known as *haria*) prepared from rice and other herbal ingredients, were recorded.

Analysis of data was done using SPSS 11 and EPI 6 software. The response variable (use of non-smoked tobacco, tobacco smoking and use of alcohol) was converted into a dichotomous variable (*eg* yes-1 and no-0) and entered into the computer. The chi-square test was used to determine statistical significance in the prevalence rates between the different groups. A *p*-value <0.05 was considered as statistically significant.

## RESULTS

A total of 650 males and females age 15-24 years old (255 males, 395 females) were included in the study. The mean ( $\pm$ SD) age (years) of the respondent was 19.3 $\pm$ 2.8 years. Some important background characteristics of the participants are presented in Table 1. Of the 650 youths, 383 (58.9%) had no formal education. Thirty-three point seven percent of the respondents were manual laborers in the tea industry. Thirty-eight point two percent of the youths were married and 61.7% were single or living together.

Table 2 gives the prevalence of alcohol and tobacco use among the respondents. Of the 650 respondents, 58% used at least one substance and 27.4% used multiple substances. The prevalence of alcohol consumption was 32.2%. The prevalences in males and females were 43.9% and 24.6%, respectively. The prevalence of smoking was 2.2% (4.7% males, 0.5% females). However, the prevalence of non-smoked tobacco use was 52.5% (56.9% males, 49.6% females). The prevalences of any form of tobacco use (smoking and/or non-smoked tobacco) among males and females were 58.4% and 49.9%, respectively.

The prevalence of alcohol and tobacco use among different socio-demographic groups is presented in Table 3. The prevalence of alcohol consumption in the 15-19 year old age group was 21.9%. A two fold higher prevalence (41.8%)

Table 1  
Some important background characteristics of the respondents.

Variables	Male (%) n=255	Female (%) n=395	Total (%) n=650
Age (years)			
15-19	136 (53.3)	179 (45.3)	315 (48.5)
20-24	119 (46.7)	216 (54.7)	335 (51.5)
Educational status			
No formal education	116 (45.5)	267 (67.6)	383 (58.9)
Presently in school	25 (9.8)	30 (7.6)	55 (8.5)
School drop out	114 (44.7)	98 (24.8)	212 (32.6)
Marital status			
Unmarried	189 (74.1)	212 (53.7)	401 (61.7)
Married	66 (25.9)	182 (46.1)	248 (38.2)
Married but separated	-	1 (0.2)	1 (0.1)
Occupational status			
Manual worker	81 (31.8)	138 (34.9)	219 (33.7)
Homemaker	149 (58.4)	226 (57.2)	375 (57.7)
Students	25 (9.8)	30 (7.6)	55 (8.5)
Others	-	1 (0.2)	1 (0.1)

Table 2  
Prevalence of alcohol and tobacco use among young tea workers.

Variable	Male (%) N=255	Female (%) n=395	Total (%) n=650
Users of at least one substance <sup>1</sup>	165 (64.7)	212 (53.7)	377 (58.0)
Users of both alcohol and tobacco	96 (37.7)	82 (20.8)	178 (27.4)
Alcohol use	112 (43.9)	97 (24.6)	209 (32.2)
Tobacco smoking	12 (4.7)	2 (0.5)	14 (2.2)
Non-smoked tobacco use	145 (56.9)	196 (49.6)	341 (52.5)
Use of any form of tobacco <sup>a</sup>	149 (58.4)	197 (49.9)	346 (53.2)

<sup>a</sup> Smoked and/or non-smoked

was found in the 20-24 year old age group. The prevalence of tobacco use in the 15-19 year old age group was 38.1%, which jumped to 67.5% in the next five-year age bracket. Both tobacco and alcohol use were found to be significantly associated with sex. An association of alcohol and tobacco use with educational level was highly significant ( $p < 0.01$ ). The highest percentages of alcohol and tobacco users were found to be in those without a formal education (alcohol use in 35.3%, tobacco use in 58.2%) and in school dropouts (alcohol use in 30.8%, tobacco use in 47.6%). This is in comparison to those who remained in school (alcohol use in 16.4%,

tobacco use in 40%). Differential prevalences of alcohol and tobacco use varied depending on the parental education level. The prevalence of alcohol use was significantly higher ( $p < 0.05$ ) among respondents in whom both parents were illiterate (34.8%) than in the respondents in whom at least one parent was literate (25.4%). Of the respondents in whom both parents were illiterate, the prevalence of tobacco use was 55.1%, higher than the respondents in whom one parent was literate (48.4%). The findings of this study indicate that use of both alcohol and tobacco was significantly higher ( $p < 0.01$ ) among married persons (alcohol use in 42%, tobacco

Table 3  
Distribution of alcohol and tobacco users by age, sex, education, marital status, parents' education and occupation.

Variables	Prevalence of substance use		
	Numbers (%)	Alcohol Numbers (%)	Tobacco <sup>a</sup> Numbers (%)
Age (years)			
15-19	315 (48.5)	69 (21.9)	120 (38.1)
20-24	335 (51.5)	140 (41.8)	226 (67.5)
Chi-square (association)	DF 1	29.43 <sup>e</sup>	56.24 <sup>e</sup>
Sex			
Male	255 (39.2)	112 (43.9)	149 (58.4)
Female	395 (60.8)	97 (24.6)	197 (49.9)
Chi-square (association)	DF 1	26.64 <sup>e</sup>	4.56 <sup>d</sup>
Educational status			
No formal education	383 (58.9)	135 (35.3)	223 (58.2)
Presently in school	55 (8.5)	9 (16.4)	22 (40.0)
School dropout	212 (32.6)	65 (30.8)	101 (47.6)
Chi-square (association)	DF 2	8.18 <sup>e</sup>	10.36 <sup>e</sup>
Marital status <sup>b</sup>			
Unmarried	401 (61.7)	105 (26.2)	178 (44.4)
Married	248 (38.2)	104 (42.0)	168 (67.7)
Chi-square (association)	DF 1	17.41 <sup>e</sup>	33.57 <sup>e</sup>
Parents' education			
Both illiterate	468 (72.0)	163 (34.8)	258 (55.1)
One or both literate	182 (28.0)	46 (25.4)	88 (48.4)
Chi-square (association)	DF 1	5.48 <sup>d</sup>	2.42 NS
Occupational status <sup>c</sup>			
Manual worker	219 (33.7)	109 (49.8)	160 (73.1)
Homemaker	375 (57.7)	91 (24.3)	164 (43.7)
Students	55 (8.5)	9 (16.4)	22 (40.0)
Chi-square (association)	DF 2	48.10 <sup>e</sup>	52.05 <sup>e</sup>

<sup>a</sup> Smoked and/or non-smoked

<sup>b</sup> One person who is married but separated was excluded from analysis

<sup>c</sup> One person who was in the "other" occupational category was excluded from analysis

<sup>d</sup> Significant at 5% level; <sup>e</sup> Significant at 1% level; DF=degree of freedom; NS=Not significant

use in 67.7%) than in unmarried persons (alcohol use in 26.2%, tobacco use in 44.4%). Distribution of alcohol and tobacco users by occupation indicates that compared to other occupational groups, the prevalence of alcohol and tobacco use is significantly higher ( $p < 0.01$ ) in workers in the tea industry.

## DISCUSSION

A higher prevalence of alcohol and tobacco use among youth working in the tea industry in Assam is present compared to other communi-

ties in this part of the country (Chaturvedi *et al*, 1998, 2003, 2004; Hazarika *et al*, 2000). Small proportion of tea worker youth smoked tobacco. However, most indulged in non-smoked tobacco. This may be true because the non-smoked variety is cheaper and more easily available, and considered by some to be less harmful (Mishra *et al*, 2005). Alcoholic beverages (local name-*haria*) are traditionally prepared in tea worker households and shared freely with all the family members. The concurrent use of tobacco and alcohol by high proportion of youth is a cause of concern due to their deleterious effects

on health (Gupta *et al*, 2005).

Substance use may also be influenced by cultural practices and religious faith, which are unique to India (Chaturvedi *et al*, 2003). Alcohol use is woven into religious rituals and the cultural fabric of tea worker society. The prevailing cultural norm regarding substance use exerts a powerful influence on the tea worker youth. Use of alcohol or tobacco by young people is not taboo and culturally acceptable in this community. Tea worker children grow up in an environment where most of the senior members of the family and community, including their parents, use alcohol and tobacco. Previous reports reveal that more than 80% of adult tea workers used alcohol and tobacco (Hazarika *et al*, 2002). The impact of family on substance use has been described by many. Studies have shown that parental substance use, parental communication with their children, parental concern regarding the consequences of drug or substance use by older siblings have an influence on substance use in adolescents and youth (Needle *et al*, 1986; Kafka and London, 1991; Anderson and Henry, 1994; Denton and Kampfe, 1994; Bhattacharya *et al*, 1999; Boyle *et al*, 2001; Li *et al*, 2002; Sandro Galea *et al*, 2004).

Substance use in this population is also compounded by wide spread illiteracy. The parents of most of the respondents were illiterate in this study. Lower parental educational levels are related to higher levels of adolescent substance use (Wills, 1995). In the present study, the prevalence of substance use was significantly higher among youths in whom both parents were illiterate. A higher rate of alcohol and tobacco use was recorded among respondents who had no formal education or had dropped out of school. Other studies of India found illiteracy and lower educational levels were associated with higher use of tobacco and alcohol (Hazarika *et al*, 2000; Rani *et al*, 2003). The less educated may be less aware of the dangers of tobacco and alcohol and more likely to be exposed to risk taking behaviors, predisposing them to serious diseases (Rani *et al*, 2003; Seth *et al*, 2004).

Peer drug use, sceptibility to peer pressure, and encouragement by peers has a potent influence on substance use in adolescents and

youth (Wong *et al*, 1997). Bonding with friends is an important part of adolescent development (Kotwal *et al*, 2005). Using substances improves the emotional bonding between peers (Petraitis and Flay, 1995). In the tea workers, adolescents become independent and are more susceptible to peer influence. Most of them work in the tea industry as manual laborers by age 18-20 years old. In this study, the use of alcohol and tobacco were significantly higher among manual workers. In the work place, sharing non-smoked tobacco is a common practice among the workers. The young tea workers consume alcohol as a way to relax and reduce the stress of the hard physical labor.

There were sex differences in alcohol and tobacco use in similar reports from India. This indicates the existence of certain social principles regarding substance use (Chaturvedi *et al*, 2004). Despite the sex differential, the prevalence of both alcohol and tobacco use among females was higher than in previous reports.

A limitation of this study was the collection of self-reported information regarding alcohol and tobacco use, which may result in under reporting of substance use. Despite this limitation, the findings of the study have important implications for the health policy on alcohol and tobacco use as well as have impact on the profit making tea industry. Despite excessive tobacco and alcohol use by young tea workers, few interventional activities are used in this group. It is time to initiate an intensive campaign against tobacco and alcohol use among young tea workers to reduce the health risks associated with the use of these two substances. Public health strategies should take into account the socio-cultural context of the community.

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