

USE OF AND ATTITUDES TOWARD TOBACCO AND ALCOHOL AMONG ADULTS IN SOUTHERN SRI LANKA

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Abstract. The adverse health effects of tobacco and alcohol are well known. Alcohol consumption is increasing in Sri Lanka, but few population studies have been conducted. The objective of this study was to document tobacco and alcohol consumption levels among adults in southern Sri Lanka and to identify the main reasons for using or refraining from alcohol and tobacco products. Tobacco and alcohol use within Sri Lanka is relatively common, particularly among adult males. Reasons given for smoking and drinking frequently relate to social and image-based motivators. Women may be especially susceptible to the influence of peer pressure in social situations. Public health efforts should consider the use of demographic-specific anti-tobacco and anti-alcohol messages, as the motivators driving behavior appear to differ across gender and age groups.

Keywords: alcohol, attitudes, behavior, tobacco, Sri Lanka

INTRODUCTION

The use of alcohol and tobacco poses a serious threat to health and well-being. Habitual alcohol consumption is a major risk factor for numerous disease entities, including malnutrition and infection, cardiovascular disease, cancer, neuropsychiatric illnesses, and intentional and unintentional injury (Ezzati *et al*, 2002). Tobacco use, ingested in either smoked or oral form, is a leading cause of premature morbidity and mortality worldwide (Cummings *et al*, 2009). An estimated 5 million people die annually as a result

of smoking, primarily from cancers and diseases of the respiratory tract (Ezzati *et al*, 2002; Ezzati and Lopez, 2003). A recent report by the World Health Organization estimated that tobacco use accounted for 7% of all causes of mortality among Sri Lankan adults aged 30 years and older in 2004, with almost all deaths occurring among males (WHO, 2012). Although data capturing the impact of alcohol and tobacco use on the regional and global burden of disease have become richer and more available in recent years, the extent and pattern of alcohol and tobacco use in Sri Lanka have not been well studied. This lack of knowledge limits the ability of public officials, health providers, and researchers to adequately address these significant health concerns.

In addition to undesirable health

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effects, the consumption of alcohol and tobacco imparts an economic burden on society and the users, particularly in low- and middle-income countries. A study of adult males in Sri Lanka, found that active smokers and drinkers spent as much as 40% of their monthly income on tobacco and alcohol (De Silva *et al*, 2011). The total expenditure fell with decreasing income levels; those in the lowest economic bracket spent the largest percentage of their earnings on these substances. Cultural attitudes driving usage behavior in Sri Lanka have yet to be systematically evaluated; an understanding that may be valuable for future anti-alcohol and anti-tobacco efforts.

Alcohol use in Sri Lanka

Data regarding the production and consumption of alcohol in Sri Lanka is relatively limited and believed to be quite inaccurate (Jayasekara and Schultz, 2007). The Department for Excise collects figures on the amount of beer, *arrack*, *toddy*, and imported liquor sold within the country; however, no surveillance mechanisms are in place to estimate the production and consumption of unregulated, illegal alcohol (*kasippu*). A study coordinated by the WHO concluded that *kasippu* accounted for 73% of alcohol consumption by males (WHO SEARO, 2006).

Given the difficulty of accurate assessment, increasing alcohol use has been inferred from trends observed in both the consumption of legal alcohol, and the higher prevalence of alcohol-related health conditions. According to the Department of Census and Statistics, the per capita consumption of legal alcohol in Sri Lanka was 7.37 liters in 2003, a four-fold increase from 1981 (Department of Census and Statistics, 2012). While the value (7.37 liters per head) is comparable to Western European countries, it excludes illicit al-

cohol use. Additionally, with abstinence being relatively common, many drinkers are likely to be consuming alcohol at levels far above the average (WHO SEARO, 2006). Possibly reflecting this increase in alcohol use, deaths secondary to alcoholic liver disease increased by 44% during the 1990s (Jayasinghe and Foster, 2010).

Similar to other South Asian countries, alcohol use in Sri Lanka is considered a predominantly male habit (Samarasinghe, 2006; Jayasinghe and Foster, 2010); however, only a handful of epidemiologic studies have been conducted. Reflecting higher alcohol use in urban or semi-urban areas, a cross-sectional survey ($N=783$) conducted in a semi-urban community in southern Sri Lanka concluded that 52.5% of males and 5% of females aged above 10 years were current alcohol users (Perera and Fonseka, 1997). The highest prevalence was found in the age group 41-50 for both males and females.

A study of 455 urban adolescents (15-19 years) found that 36.4% of male students and 9.2% of female students had ever consumed alcohol, and 21.2% male and 3.3% female students were current alcohol users (Perera, 1999). Students from upper income families were more likely to have tried alcohol compared to students from middle income and lower income families. Urban males reported greater and more frequent alcohol use than their rural counterparts (De Silva *et al*, 2009); of a national survey from 2003 reported an urban adult male prevalence of abstinence of 52%, compared to a rural prevalence of 62% (WHO SEARO, 2006).

The urban-rural discrepancy was less pronounced among adult females (95% *vs* 98%). Special populations, among them female tea pluckers and war veterans, have also shown to drink at levels above the national average (Gunawardena *et al*,

2007; Weerakoon *et al*, 2009).

Tobacco use in Sri Lanka

Tobacco in Sri Lanka, as elsewhere in South Asia, is most frequently smoked or chewed. Despite a long history of tobacco use and a recent effort by the government to curb smoking among its youth, the epidemiology of tobacco use in the country remains largely unknown (Perera, 1999; De Silva *et al*, 2009). Similar to the problems presented by the consumption of illicit alcohol, some significant but unknown fraction of tobacco use occurs via the consumption of illegal, unregulated products. Therefore, usage estimates based on sales numbers are likely to be misleading.

Chewing tobacco with betel and areca nut has long been a common habit in Sri Lanka, especially amongst rural populations (Perera, 1999). Recently, however, smoking has gained in popularity relative to these traditional methods of tobacco use. This increase has been especially profound among young and middle-aged individuals in urban settings (Perera *et al*, 1999; De Silva *et al*, 2009). A low-cost tobacco product called *beedi* (tobacco rolled in a leaf), widely available in many parts of the country, is smoked largely by low-income, middle-aged and elderly males (Perera, 1999).

Backed by several cross-sectional studies reporting low smoking prevalence (1-2%) among women (Randeniya and Weerasooriya, 1989; Perera *et al*, 2005), it is commonly assumed that very few Sri Lankan females actively use tobacco products. However, new evidence gathered from a survey of female tea pluckers suggests that women may be using tobacco in other forms, namely chewing tobacco in combination with the betel and areca nut (Weerakoon *et al*, 2009). Among a cohort

of 928 female tea pluckers, 70% reported regular use of chew tobacco with betel, a prevalence that is nearly 10-fold greater than smoking (7.2%).

Population-based surveys in other South Asian countries have found significantly lower usage of both betel and smoked tobacco (Ikeda *et al*, 1995; Gupta, 1996; Gupta and Ray, 2004). A school-based survey of young people ages 13-15 years living in the Southeast Asian region reported total tobacco use prevalence to be 12.9% (Warren *et al*, 2006). Cigarette smoking was less common than other forms of tobacco use, and boys were 2 to 3 times more likely than girls to have used these products within the past 30 days.

Perceptions of alcohol and tobacco use

Motivating and de-motivating factors impacting the use of alcohol and tobacco have not been adequately investigated in the context of the Sri Lankan culture. Studies conducted in high-income countries have indicated that motives for drinking alcohol and smoking tobacco are closely related to drinking and smoking patterns (Cox and Klinger, 1990; Engels *et al*, 2005; Marshall *et al*, 2009). Social motives, such as peer behavior and workplace dynamics, have been found to associate with moderate alcohol use, while personal enjoyment (enhancement) motives are more strongly tied to heavy drinking (Galen *et al*, 2001; Engels *et al*, 2005; Beseler *et al*, 2008). Justification for alcohol and tobacco use may also be shaped by factors intrinsic to individual communities, including culture and environment.

A study sampling 448 alcohol users in the Southern Province in Sri Lanka in 2006 evaluated the relationships between drinking motives and drinking patterns. The findings concluded that tension-reduction, but not personal enjoyment

or social pressure, predicted drinking frequency (Perera and Torabi, 2009). A 2009 cross-national comparison of reasons adults abstain from alcohol use that sampled from southern and western provinces in Sri Lanka found that religion, cultural upbringing, and concerns for adverse health effects to be the most common reasons for not drinking among lifetime abstainers (Bernards *et al*, 2009). These motives for abstaining were identified at similar rates by both male and female respondents.

An evaluation of the motives influencing smoking uptake and cessation has yet to be done in Sri Lanka, although some information has been gathered with respect to the social acceptability of tobacco. In one such study, approximately one quarter (24.3%) of males believed that smoking was an acceptable male habit (Perera and Torabi, 2009). Moreover, while approximately 75% of respondents believed that smoking advertisements should be banned in electronic media, a small but considerable proportion (19% men and 12% women) supported smoking as an acceptable habit that generates substantial revenue for the country.

To be effective, strategies and interventions to curb both alcohol use and smoking should be based on epidemiological data of the two substances. The primary objective of this study was to determine what the prevalence and extent of tobacco and alcohol consumption is among adults in southern Sri Lanka. The secondary objective was to document adults' main reasons for using or refraining from alcohol and tobacco products.

MATERIALS AND METHODS

Setting and sample selection

Data were obtained via a cross-

sectional survey of adults aged 18 or above residing in the three districts of the Southern Province in Sri Lanka: Galle, Matara, and Hambantota. Multi-stage, stratified proportional quota sampling was used to achieve a sample from each district proportional to its population size and representative of both rural and urban populations. Each administrative District is divided into Divisional Secretariats (DS), which are further divided into smaller *Gramaseva Niladhari* Divisions (GND). Following the selection of two or three DS divisions from each district, two to three GNDs were selected from each DS division to ensure representation of both the urban and rural communities. A household in the chosen GND was selected randomly, with subsequent households identified by following a random direction from the previous household until the required number of households was surveyed. One male and female, if present, were interviewed in each household. Non-response was less than 5%, and the final sample consisted of 2,073 participants.

The instrument

Data collection consisted of face-to-face interviews in Sinhalese, the local language. The survey instrument was developed in English, translated to Sinhalese and back translated. It was pilot tested ($n=25$) and refined before final fieldwork.

Key demographic indicators included gender, age, ethnic and religious affiliations, educational attainment, occupation, and estimated average monthly household income. Self-rated physical health and mental health were assessed using the questions: How would you rate your physical health in general? and How would you rate your mental health in general? Answers were ranked on a 4-point Likert scale.

Tobacco and alcohol users were classified based on usage frequency within the preceding 12 months. Occasional smokers were defined as those who had smoked any form of smoking product (cigarettes, cigars, *beedi*) at least once during the past year, but not smoked daily. Occasional and daily smokers were also combined and defined as smokers. Similarly, occasional drinkers were defined as those who had used alcohol at least once during the past year, but not used alcohol daily. Occasional and daily alcohol users were also combined and defined as drinkers. Smokers and drinkers were asked to select all relevant reasons for use from a provided list. Former smokers and drinkers were distinguished by further questioning and asked to identify their reasons for quitting. Estimates of monthly cigarette and alcohol consumption were requested from all current and former users. Questions pertaining to age, education, occupation, monthly income, and quantity of cigarette or alcohol consumption were free-response (write-in), from which categories and summary statistics were determined during analysis.

Data management and analysis

Descriptive statistics were calculated for key demographic variables. Age categories were selected to reflect lifetime stages of early adulthood (18-34 years), middle age (35-54 years), and retirement (≥ 55 years). Educational attainment was classified into three groups: grade 10 and below, Ordinary level (O-level) (comparable to 11 grade), and any Advanced (A-level), post-secondary, or graduate training. Reported occupations were categorized to fit one of the following descriptors: professional, semi-professional, business, skilled worker, semi-skilled worker, retired, or unemployed (inclusive of students, housewives, and the jobless).

The overall prevalence of daily, occasional, and former tobacco and alcohol use was determined. Prevalences were subsequently broken down by subcategories based on sociodemographic and psychological variables. Chi-square tests (Fisher's exact) were used to determine the difference between current users and non-users across these variables. Reasons for consumption of and abstaining from tobacco or alcohol were also tabulated. Data management and descriptive statistical analysis were done using Stata/IC (version 11.1; StataCorp LP, Microsoft; College Station, TX: 2009). Tests of statistical significance were performed in MS Excel 14.1 (version 14.1.0; Redmond, WA: Microsoft 2010).

Ethical approval

This study was approved by the Ethics Review Committee, Faculty of Medicine, Galle, Sri Lanka (confirmation provided; 2006 Jun 28) and by the Institutional Review Board of Duke University Medical Center, Durham, North Carolina (Pro 00014508; 2006, Jun 1).

RESULTS

Demographics

The study sample of 2,073 included 1,143 women (55%), 926 (45%) men, and 4 individuals who failed to indicate their gender (Table 1). Average age was 40 years (SD=15.8 years), within a range of 18 to 100 years. Most subjects were Sinhala and Buddhist or Christian (84%). Muslims accounted for 12%, and Hindu-practicing Tamils made up 4%. Nearly one-third of respondents reported an educational attainment of Advanced level (Grade 13) or better, while a similar number had reached the Ordinary level (Grade 11). The remainder had completed Grade 10 or below. The average monthly household

Table 1
Subjects' characteristics (N=2,073).

Characteristic	%	n
Gender (n=2,069)		
Male	45.0	926
Female	55.0	1,143
Age (n=2,073)		
18-34	42.0	870
35-54	38.0	792
55+	20.0	411
Ethnic group (n=2,056)		
Sinhala	84.0	1,724
Tamil	4.0	87
Muslim	12.0	245
Religion (n=2,059)		
Buddhism	83.0	1,706
Hinduism	4.0	76
Islam	12.0	248
Christianity/Catholicism	1.0	29
Education (n=2,059)		
Grade 10 or below	39.0	803
O-level	31.0	638
A-level or higher	30.0	618
Occupation (n=2,072)		
Professionals	1.0	20
Semi-professionals	11.0	226
Businessmen	7.0	144
Skilled workers	27.0	555
Semi-skilled workers	2.0	41
Retired	4.5	93
Unemployed ^a	48.0	993
AMHI (LKR ^b) (n=2,059)		
<5,000	21	432
5,000-9,999	28	576
10,000-19,999	31	637
≥20,000	20	411

AMHI, Average monthly household income;

^aStudents, housewives, jobless;

^b1 USD=110 LKR.

income was less than 5,000 Rupees for 21% of our sample, and greater than 20,000 for 20%. Unemployed (those out of work, students, and housewives) individuals accounted for the largest category of

occupation (48%).

Extent of smoking

Among the survey population, 16% and 6% reported daily smoking and occasional use, respectively (Table 2). Among these 468 active smokers the mean number of cigarettes, cigars, and *beedi* smoked a month was 138 (average 4.6 smoking units per day). While 36% of men reported smoking daily and 14% smoked occasionally, less than 1% of women reported having smoked in the past year. Thus, men were 55 times more likely to smoke daily than women. Former smokers (those who had quit before participating in the study) represented 9% of respondents. Despite no longer engaging in smoking, this group reported the highest average use of tobacco products among all past and present smokers.

The proportion of people smoking varied significantly with age and educational attainment. The prevalence of smoking increased from young adulthood to middle age, then decreased slightly among those of retirement age. Smoking activity increased with higher educational attainment, from 10% among the least educated to 37% among those completing A-levels or a post-secondary degree. Self-assessed mental and physical health as well as the presence of any medical condition did not correlate with smoking behavior. A positive history of physical or emotional abuse was associated with higher prevalence of tobacco use, with as much as one-third of abuse victims reporting daily smoking.

Extent of drinking

Occasional and daily use of alcohol was reported by 30% and 2% of the survey population, respectively (Table 3). One-in-14 participants (7.2%) related a history of prior alcohol use but were currently

Table 2
Extent of smoking by risk factors, bivariate analysis (N=2,073).

	Total <i>n</i>	Ex-smokers <i>%</i>	Occasional <i>%</i>	Daily <i>%</i>	Smokers <i>%</i>	<i>p</i> -value ^a
Gender						
Male	926	20.6	13.5	35.9	49.4	<0.001
Female	1,143	0.3	0.4	0.4	0.9	
Age (years)						
18-34	870	4.6	5.5	11.4	16.9	<0.001
35-54	792	10.2	7.7	21.0	28.7	
55+	411	18.0	5.4	17.5	22.9	
Ethnic group						
Sinhala	1,724	10.0	6.3	15.8	22.0	0.891
Tamil	87	6.9	8.0	13.8	21.8	
Muslim	245	5.3	5.7	20.0	25.7	
Religion						
Buddhism	1,706	10.1	6.1	15.8	21.9	0.129
Hinduism	76	7.9	6.6	11.8	18.4	
Islam	248	5.6	6.0	20.2	26.2	
Christianity/Catholicism	29	6.9	24.1	20.7	44.8	
Education						
Grade 10 or below	803	4.4	2.1	8.1	10.2	<0.001
O-level	638	8.9	4.5	20.7	25.2	
A-level or higher	618	16.5	13.9	22.7	36.6	
Occupation						
Professionals	20	5.0	10.0	20.0	30.0	<0.001
Semi-professionals	226	9.7	8.8	10.6	19.5	
Businessmen	144	15.3	11.8	37.5	49.3	
Skilled workers	555	16.6	11.0	35.5	46.5	
Semi-skilled workers	41	19.5	14.6	41.5	56.1	
Retired	93	26.9	8.6	17.2	25.8	
Unemployed ^b	993	2.7	1.9	2.6	4.5	
AMHI (LKR)						
< 5,000	432	8.3	5.1	16.2	21.3	0.847
5,000 - 9,999	576	8.0	5.6	16.3	21.9	
10,000 - 19,999	637	8.2	6.0	17.0	22.9	
> 20,000	411	9.5	5.8	12.4	18.2	
Physical health (self-rated)						
Very good	557	6.3	7.0	14.0	21.0	0.843
Good	782	8.1	6.3	18.5	24.8	
Average	556	12.1	6.1	15.3	21.4	
Poor	162	18.5	6.2	16.7	22.8	
Mental health (self-rated)						
Very good	633	8.8	7.6	13.7	21.3	0.778
Good	911	7.9	5.3	18.0	23.3	
Average	434	11.8	6.9	15.4	22.4	
Poor	77	20.8	6.5	24.7	31.2	

Table 2 (Continued).

	Total <i>n</i>	Ex-smokers %	Occasional %	Daily %	Smokers %	<i>p</i> -value ^a
Any health problem						
Yes	757	12.2	4.9	15.3	20.2	0.246
No	1,217	7.7	7.4	16.8	24.2	
History of physical abuse						
Yes	400	18.0	9.0	33.0	43.5	<0.001
No	1,600	6.3	3.8	8.8	12.6	
History of emotional abuse						
Yes	490	16.7	10.0	28.0	39.6	<0.001
No	1,515	4.7	2.8	7.9	10.8	
Total	2,073	9.4	6.2	16.3	22.5	

^aSmokers *vs* non-smokers; ^bStudents, housewives, jobless; AMHI, Average monthly household income.

abstainers. Men were 18 times more likely to drink than their female counterparts; not one woman reported daily alcohol consumption. Nearly half of all Tamil respondents reported drinking alcohol, while those identifying as Muslim had the lowest drinking prevalence (14%). The prevalence and frequency of alcohol use increased with greater educational attainment. More than half of the most educated respondents reported occasional or daily drinking, compared to only 11% among those least educated. Drinking prevalence also varied by occupation, with prevalence among businessmen, and skilled and semi-skilled workers at approximating 50%. Homemakers, students, and the unemployed were significantly more likely to abstain from alcohol (93%) than employed or retired individuals were (52%).

There were no significant relationships between age, monthly household income, or self-reported mental and physical health, and alcohol intake. The prevalence of occasional alcohol consumption peaked among 15-34 year-olds (33%), while daily

drinking was more common in older age categories. No individuals under 25 years reported drinking daily. The presence of any health problem was associated with a significantly higher prevalence of alcohol use (34% *vs* 31%). A history of physical or emotional abuse correlated with a 4-fold greater likelihood of current alcohol use, and a 5-fold increase in daily drinking.

Reasons for substance use and for quitting

The most commonly cited reason for smoking was "as a habit" (Table 4a). This was true in all age groups except the 15-34 year-olds who instead noted "for fun" as the primary reason for smoking. Respondents with the highest level of education (A-level or above) also chose "for fun" more often than "as a habit." "As a habit" was the second most common reason among 15-34 year-olds, in the highest education group, and among women ($n=10$). The main reason given by women was to "overcome frustration," which women were 3.8 times more likely to report than men. Individuals aged ≥ 55 years identified "help go to the toilet" and to "increase appetite" more frequently

Table 3
Extent of drinking by risk factors, bivariate analysis.

	Total <i>n</i>	Ex-drinkers <i>%</i>	Occasional <i>%</i>	Daily <i>%</i>	Drinkers <i>%</i>	<i>p</i> -value ^a
Gender						
Male	926	14.7	63.3	4.8	68.1	<0.001
Female	1,143	1.0	3.8	0.0	3.8	
Age (years)						
18-34	870	3.7	33.2	0.7	33.9	0.1
35-54	792	7.2	30.4	3.4	33.8	
55+	411	14.8	23.4	2.7	26.0	
Ethnic group						
Sinhala	1,724	7.1	27.1	2.1	29.2	<0.001
Tamil	87	9.2	37.9	5.7	43.7	
Muslim	245	6.1	13.1	0.8	13.9	
Religion						
Buddhism	1,706	7.0	26.8	2.1	29.0	<0.001
Hinduism	76	9.2	38.2	6.6	44.7	
Islam	248	7.3	13.3	0.8	14.1	
Christianity/Catholicism	29	10.3	51.7	3.4	55.2	
Education						
Grade 10 or below	803	4.2	9.7	1.2	11.0	<0.001
O level	638	6.7	25.1	2.5	27.6	
A level or higher	618	10.2	48.2	3.1	51.3	
Occupation						
Professionals	20	0.0	25.0	5.0	30.0	<0.001
Semi-professionals	226	6.6	31.4	1.3	32.7	
Businessmen	144	9.7	40.3	8.3	48.6	
Skilled workers	555	12.1	52.1	4.0	56.0	
Semi-skilled workers	41	12.2	46.3	4.9	51.2	
Retired	93	22.6	32.3	2.2	34.4	
Unemployed ^b	993	2.8	6.6	0.2	6.8	
AMHI (LKR)						
< 5,000	432	7.9	30.1	2.5	32.7	0.178
5,000 - 9,999	576	6.1	32.9	2.4	35.3	
10,000 - 19,999	637	6.6	28.9	1.9	30.8	
> 20,000	411	5.4	22.9	1.9	24.8	
Physical health						
Very good	557	4.7	36.9	0.9	37.8	0.599
Good	782	5.9	28.3	2.6	30.8	
Average	556	8.6	23.4	2.5	25.9	
Poor	162	18.5	21.6	3.1	24.7	
Mental health						
Very good	633	6.5	36.2	0.8	37.0	0.777
Good	911	5.3	27.1	2.4	29.5	
Average	434	10.6	23.0	3.0	26.0	
Poor	77	18.2	28.6	6.5	35.1	

Table 3 (Continued).

	Total <i>n</i>	Ex-drinkers %	Occasional %	Daily %	Drinkers %	<i>p</i> -value ^a
Any health problem						
Yes	757	10.7	31.3	2.5	33.8	0.011
No	1,217	5.3	28.8	2.0	30.7	
History of physical abuse						
Yes	400	12.5	65.5	5.5	71.0	<0.001
No	1,600	5.1	24.4	1.1	25.4	
History of emotional abuse						
Yes	490	14.0	59.3	4.4	63.7	<0.001
No	1,515	5.3	22.1	1.4	23.5	
Total	2,073	7.2	30.2	2.1	32.3	

^aDrinkers *vs* non-drinkers; ^bStudents, housewives, jobless; AMHI, Average monthly household income.

than members of younger age groups, although "as a habit" remained the most common reason. Smoking for the purpose to "boost confidence" was not a common response except among participants with a positive history of physical abuse.

The main reason among all ex-smokers for quitting was due to "health problems" (Table 4b). This was not true, however, for women or among respondents aged 15-34 years, who stated "useless" as the most common justification for quitting. "Uselessness" was the second most reported reason among all other groups, except for people aged 35-54. In this subgroup, "family influence" was more important. No women noted "family influence" as a reason for quitting smoking; however, the response rate to this question among females was very low ($n=7$). Other reasons for quitting smoking were "cost" and "awareness campaigns." Among those who had never smoked, "health concerns" was the number one reason for not partaking (80%). One-third (29%) believed smoking to be a "useless habit," while just 3.9% noted the "high

cost" and 1.8% mentioned the influence of "anti-smoking campaigns" in their decision.

Among all current self-reported alcohol users, the most common reason for continuing to drink was "for fun" (Table 5a). This was true for men across all age groups. Among women who reported consuming alcohol; however, the most frequent reason for drinking was that they were "unable to refuse in parties and other functions." "Social recognition," "as a habit," and "peer pressure" were the next most frequent justifications.

Similar to the case of ex-smokers, ex-drinkers rationalized their abstinence from alcohol as a need borne out of "health problems" (Table 5b). "Uselessness" was the most common reason for quitting among women and those aged 15-34 years, while the 35-54 age group was most likely to cite "family influence." Other frequently noted responses included "cost," "awareness campaigns" and "medical treatment." Non-drinkers overwhelmingly identified "health concerns" as the primary reason (80%). One-quarter (26%)

Table 4a
Reasons for smoking among smokers.

Reasons	Total (n=446)		15 - 34 years old (n=142)		35 - 54 years old (n=212)		≥55 years old (n=91)		Male (n=435)		Female (n=10)	
	%	n	%	n	%	n	%	n	%	n	%	n
As a habit	61.0	272	44.0	62	68.0	145	71.0	65	62.0	267	40.0	4
For fun	40.0	181	53.0	75	39.0	83	24.0	22	41.0	178	20.0	2
Social recognition	16.0	73	20.0	28	15.0	32	14.0	13	17.0	73	0.0	0
Overcome frustration	14.0	62	9.0	13	15.0	32	19.0	17	13.0	57	50.0	5
Peer pressure	10.0	45	16.0	23	7.0	14	9.0	8	10.0	45	0.0	0
For its taste	9.0	40	10.0	14	8.0	17	10.0	9	9.0	39	10.0	1
To be able to work long hours	9.0	38	7.0	10	10.0	21	8.0	7	9.0	38	0.0	0
Other	8.0	35	5.0	7	9.0	19	10.0	9	8.0	34	10.0	1
Help to go to the toilet	7.0	32	5.0	7	6.0	12	14.0	13	7.0	31	10.0	1
Increase appetite	7.0	29	8.0	11	3.0	7	12.0	11	7.0	29	0.0	0
Help concentrate	5.0	21	3.0	5	7.0	14	2.0	2	5.0	21	0.0	0
Boost confidence	3.0	12	4.0	6	2.0	4	2.0	2	3.0	12	0.0	0
Improve aptitude	3.0	11	3.0	5	1.0	2	4.0	4	2.0	11	0.0	0
Show off	2.0	10	2.0	3	3.0	6	1.0	1	2.0	10	0.0	0
Sexual pleasure	1.0	4	2.0	3	0.0	0	1.0	1	0.6	3	10.0	1

Table 4b
Reasons for quitting smoking ($n=265$).

Reasons for quitting smoking	%	n
Health problems	46	123
Uselessness	40	106
Family influence	31	82
Cost	19	50
Other	11	28
Awareness campaigns	10	26
Medical treatment	5	14
Peer pressure	4	10
Non-availability	1	3
As smoking is prohibited in certain places	1	3

reported they did “not want it as a habit,” and 3% considered drinking to be a “waste of money.” Just 11% of ex-drinkers, 10% of former smokers, and fewer than 2% of lifetime non-smokers were influenced by public awareness campaigns (no lifetime non-drinkers identified public health efforts as a factor).

DISCUSSION

Understanding the demographic risk factors and rationale behind continued tobacco and alcohol use can aid in the development of effective public health campaigns that encourage smoking cessation and responsible drinking behaviors. In the present study, men were significantly more likely to use tobacco and alcohol on a regular basis, a finding consistent with previous reports from Sri Lanka (Perera *et al*, 2005). A trend of higher male tobacco and alcohol consumption is common throughout much of the developing world, irrespective of country or geographical region (Neufeld *et al*, 2005; Martiniuk *et al*, 2006; Rahav *et al*, 2006). This gender gap appears to be

inversely related to the degree of modernization of society; countries with greater gender equity scores report higher levels of female drinking (Rahav *et al* 2006). Interestingly, this discrepancy in drinking prevalence is also positively correlated with the prevalence of heavy alcohol use among men (Rahav *et al* 2006). It remains unclear, however, to what extent the stigma of male alcoholism directs cultural attitudes on female drinking, or whether the social unacceptability of even moderate drinking contributes to the polarization of individuals as abstainers or alcoholics. No women in this cohort reported daily alcohol use, a finding consistent with the cultural and religious values of this primarily Buddhist society. Similarly, individuals ascribing to the Buddhist faith had lower usage than their Hindu and Christian peers.

The prevalence of smoking and alcohol use among adult males in southern Sri Lanka was slightly higher than reported prevalences from urban (Colombo) and rural (Polonnaruwa) sites in the Western and North Central Provinces (De Silva *et al*, 2009). De Silva *et al* (2009) reported the prevalence of current smoking (defined as percentage of subjects who had used cigarettes at least once in the last month) as 27.6%, while in our study the prevalence of daily smoking among men was 35.9%. In our study, we asked about the use of cigarettes as well as *beedi* and other smoking products available in the country. This may explain the higher prevalence observed in our study.

Though literature from outside Sri Lanka indicates an association between lower socioeconomic status, and substance use, such relationships may be more complex than initially believed (Neufeld *et al*, 2005). Evidence from four developed countries suggests that indi-

Table 5a
Reasons for drinking among drinkers.

Reasons	Total (n=571)		15 - 34 years old (n=198)		35 - 54 years old (n=263)		≥55 years old (n=108)		Male (n=525)		Female (n=44)	
	%	n	%	n	%	n	%	n	%	n	%	n
For fun	57.0	328	66.0	131	54.0	143	49.0	53	59.0	308	45.0	20
Unable to refuse at parties and other functions	49.0	277	48.0	96	47.0	124	53.0	57	28.0	254	52.0	23
Social recognition	21.0	118	20.0	40	21.0	55	21.0	23	22.0	115	7.0	3
Peer pressure	16.0	94	16.0	32	17.0	44	17.0	18	17.0	92	4.0	2
As a habit	13.0	77	7.0	14	16.0	43	18.0	19	14.0	75	2.0	1
Other	6.0	33	4.0	9	6.0	15	7.0	8	5.0	27	9.0	4
Overcome frustration	5.0	28	2.0	4	7.0	18	5.0	6	5.0	26	4.0	2
Increase appetite	4.0	23	3.0	6	3.0	7	8.0	9	4.0	22	0.0	0
To be able to work long hours	4.0	21	1.0	3	4.0	10	7.0	8	4.0	20	2.0	1
For its taste	3.0	19	2.0	4	4.0	10	5.0	5	3.0	18	2.0	1
Boost confidence	3.0	14	3.0	7	1.0	4	3.0	3	3.0	14	0.0	0
As a medicine	2.0	12	1.0	3	2.0	5	4.0	4	2.0	11	2.0	1
Improve aptitude	1.0	7	1.0	2	1.0	2	3.0	3	1.0	7	0.0	0
Show off	0.9	5	1.0	3	0.4	1	1.0	1	1.0	5	0.0	0
Help to go to the toilet	0.5	3	0.5	1	0.0	0	2.0	2	0.5	3	0.0	0
Sexual pleasure	0.5	3	0.5	1	1.0	2	0.0	0	0.4	2	2.0	1
Help concentrate	0.4	2	0.0	0	0.4	1	1.0	1	0.4	2	0.0	0

Table 5b
Reasons for quitting drinking ($n=236$).

Reasons	%	n
Health problems	40	94
Uselessness	36	86
Family influence	35	82
Cost	18	43
Other	12	28
Awareness campaigns	11	27
Medical treatment	8	19
Peer pressure	2	5
Non-availability	2	5

viduals under financial stress may be less likely to attempt to quit and have a lower probability of success in maintaining abstinence (Siahpush *et al*, 2012). These patterns are yet to appear for the developing world despite some predictors of quitting success—principally the presence of societal norms against the substance—being consistent for smokers in Southeast Asian and these Western nations (Hosking *et al*, 2009; Li *et al*, 2010). Additionally, substance accessibility, extent of media penetration (both pro-and anti-tobacco and alcohol), and local attitudes towards tobacco and alcohol are all likely to impact uptake and usage among populations in Sri Lanka. This variation among different groups will need to be taken into careful consideration when designing a comprehensive national public health campaign to counter tobacco and alcohol use throughout the country.

This is one of the first studies to evaluate motivating and demotivating factors that influence patterns of substance use among men and women in Sri Lanka. The majority of active tobacco users in this study (*ie*, adult males) continued to smoke out of habit, although a large number also

noted its entertainment value. Alcohol consumption was also primarily considered an activity of diversion. Women and older individuals, on the other hand, were more likely to identify smoking as a means of coping with frustration, while younger users highlighted the social benefits of smoking (“peer pressure” and “social recognition”). Interpersonal motives for imbibing (“social recognition,” “peer pressure,” and “unable to refuse at parties”) accounted for a greater percentage of responses than for tobacco use with little variation across age groups. Women were almost twice as likely as men to report drinking because they felt unable to refuse a drink at a social function.

These results highlight the considerable influence that social expectations and peer pressure exert on the smoking and drinking habits of adult Sri Lankans, particularly among women. Prior studies have repeatedly demonstrated a connection between the consumption patterns of alcohol and tobacco and cultural expectations present in various social settings (Shiffman *et al*, 1985; McCrady, 2004). Friendly settings increase the amount of smoking at a given occasion, while drinkers have reported improvements in mood when alcohol is consumed in the company of peers (Shiffman *et al*, 1985; McCrady, 2004). Positive associations likely strengthen the connection between substance use and sociability, and encourage the continuation of such behaviors. Viewed as communal pastimes, smoking and drinking often take place together when groups of men gather in the evenings or on weekends (De Silva *et al*, 2011). Male college students in India reported the cultivation of friendship to be the most valued reason for continued smoking (Nichter and Van Sickle, 2004). Similar to practices observed in Sri Lanka,

these young men regularly congregate with peers at local smoke shops during breaks and at the end of the workday. The social activity is thus often associated with peer pressure to participate in tobacco and alcohol use.

The desire for social recognition acts as a motivator for 1-in-5 active drinkers and almost an equal number of smokers. While this reason for drinking does not vary with age, the perceived social benefit of tobacco use appears to fall off with time. Smoking is a relatively cheap pastime with individual cigarettes often available for purchase at local shops for a few rupees a piece.

Evaluations of the smoking behaviors of Southeast Asian male adolescents (18 years of age and under) have consistently found low levels of smoking—often just a few cigarettes per day—much of it occurring in a social gathering around these small local shops during free periods between classes (Nichter and Van Sickle, 2004; Howteerakul *et al*, 2005; Hammond *et al*, 2008). The higher prevalence of smoking and drinking among more educated individuals suggest a link between social attainment and substance use. Commonly noted reasons for smoking and drinking among similar populations are the desire to “look cool,” appear modern or mature, and to increase one’s manliness (Mohan *et al*, 1984; Nichter and Van Sickle, 2004; Ng *et al*, 2007; DuongTran, 2008; Parkinson *et al*, 2009; McKnight-Eily *et al*, 2010).

Thus, young Sri Lankans pursuing advanced degrees may also be learning to view tobacco and alcohol as both a means of socialization and a symbol of status. The desire for such effects are likely to wane as an individual ages and assumes adult responsibilities (those with less education taking on these duties sooner),

leading to a shift in the motives driving smoking behaviors. Consistent with such expectations, older age categories are significantly more likely to report smoking out of habit or as a means of coping with stress (*ie*, “overcome frustration”).

By comparison, the evolution of drinking intentions with advancing age differs, as the perceived social value of alcohol remains constant and perhaps even increases with age. Relative to tobacco, alcohol is a more expensive diversion and may be financially out of reach for some younger individuals. Costs may partially explain the low prevalence of daily alcohol consumption relative to daily tobacco use, though drinking is in fact more popular than smoking among all age categories.

While this study did not seek to characterize the sociocultural significance of communal tobacco and alcohol use, one can speculate that any such offer between individuals is made as a gesture of friendship or partnership. Individuals likely understand the associated, unspoken social recognition and expectations accompanying the offered drink and thus feel compelled to accept. Such peer pressure motivating factors were more commonly reported among female drinkers, influencing the habits of more than half of the currently drinking women. It should be noted, however, that the ambiguity of the statement used in this survey (“unable to refuse at parties and other functions”) might not clearly differentiate whether the woman feels unable to refuse an offer due to perceived social pressures, or if she lacks the self-control to decline the drink.

Concern for one’s health was the most commonly noted reason for abstaining from tobacco and alcohol, among both lifetime non-users and former users. Al-

though it was beyond the scope of this survey to assess how individuals acquire information regarding the health risks of such activities, only a small percentage reported quitting or abstaining due to public health campaigns. It is unclear whether this is due to ineffective strategies by health officials, the inability of existing educational efforts to effectively penetrate communities, or if individuals participating in this study simply did not recognize the information as such.

In 2006 Sri Lanka passed the National Authority on Tobacco and Alcohol (NATA) Act N° 27 that made it illegal to sell tobacco or alcohol products to minors under 21 years, required the inclusion of health warnings on product labels, increased the tax on cigarettes, restricted mass media advertising, and prohibited smoking in all public places. Despite these ambitious goals, much of NATA Act N° 27 has proven difficult to enforce which resulted in little reduction in usage and consumer knowledge (Ministry of Healthcare and Nutrition, 2009). Warning labels are infrequent (completely absent when cigarettes are sold individually), lack pictures, and are inconsistent with regard to the information supplied. Furthermore, a significant percentage of the population remains unaware of the health risks of smoking, smokeless tobacco products, and alcohol use (Amarasinghe *et al*, 2010).

Provisions set forth in NATA Act N° 27 demonstrate the government's commitment to reduce tobacco and alcohol use even though current attempts to curb smoking and drinking habits within Sri Lanka have seen only marginal success. An improved understanding of the motivating and demotivating factors driving use, abstinence, and quitting behaviors among adult Sri Lankans may prove valu-

able for public health officials attempting to maximize campaign impact.

This study identified the significant influence of social pressures on smoking and drinking behaviors within an adult population in southern Sri Lanka. Failure to address peer pressure or attempt to alter the communal culture associated with smoking and drinking will overlook the most powerful factors that reinforce continued use. As the poor health outcomes resulting from tobacco and alcohol use are often delayed by 30-40 years, it may be difficult for early adopters to accurately comprehend the long-term health consequences.

Educational efforts should focus on the adverse health effects associated with tobacco and alcohol use, a frequently cited motivator among both lifetime abstainers and quitters (Curry *et al*, 1997; Riedel *et al*, 2002; Bernards *et al*, 2009). As the motives for using or abstaining from tobacco and alcohol products vary across age and gender, targeted messages may prove more effective. For example, in addition to highlighting the health risks of smoking, an anti-tobacco campaign aimed at reducing female smoking may recommend alternative means of coping with stress. Alcohol awareness education, regardless of the intended audience, must address reducing social acceptance of peer pressure to drink. Health professionals, educators, and government officials must strive to encourage society to respect an individual's right to refuse a cigarette or drink and educate to resist peer pressure.

Viewpoints collected and summarized in this study reflect those of the individual and may not be fully representative of the collective attitude towards tobacco and alcohol use. One-on-one interviews attempt to provide a safe environment

for full disclosure of personal history and opinions. Day-to-day actions, however, may differ considerably from those reported owing to the influence of peer pressure and social expectations. Conversely, some individuals may have felt embarrassed or had difficulty discussing their smoking and drinking habits with the interviewer. Nevertheless, collection techniques used in this study were selected to maximize the opportunity for honest and accurate reporting by participants.

It is important to note that findings presented here could not be generalizable to the entire country, particularly the less-developed northern regions where the Tamil ethnic minority is most prominent. This study also does not consider the smoking and drinking motives of individuals under the age of 18 years. There is credible evidence that dependence and addiction may begin during adolescence (DeWit *et al*, 2000; Jayakrishnan *et al*, 2011). Youths are more susceptible to advertising and media messages (Wakefield *et al*, 2003) and their motives for smoking and drinking may differ from those of older individuals included in this survey. Thus, future studies should focus on the younger generations in Sri Lanka, identifying key motivators and de-motivators shaping usage behaviors.

Tobacco and alcohol use within Sri Lanka is relatively common, particularly among adult males. Reasons given for smoking and drinking frequently relate to social and image-based motivators. Women may be especially susceptible to the influence of peer pressure in social situations. Public health efforts should consider the use of demographic-specific anti-tobacco messages, as the motivators driving behavior appear to differ across gender and age groups. Alcohol aware-

ness education must address reducing social acceptance of peer pressure to drink, both by encouraging a new social norm that respects the individual's right to refuse and by educating people to resist peer pressure to imbibe.

ACKNOWLEDGEMENTS

The Tsunami Fund established by the Chancellor of Duke University Medical Centre and by the Hubert Yeargen Centre for Global Health funded this study. Our thanks go to Chandima Arambepola for final editing of this manuscript.

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