

## Research Article

# Smoking, Alcohol Consumption, and Illegal Substance Abuse among Adolescents in Sri Lanka: Results from Sri Lankan Global School-Based Health Survey 2016

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**Background.** Adolescence is defined by the World Health Organization (WHO) as “the transition period from childhood to adulthood”. Increases in autonomy during this period, willingness to experiment, and peer influence create an environment of taking high-risk decisions influencing adolescent health, such as substance abuse and smoking. The current study was conducted to estimate the prevalence of smoking, alcohol consumption, and illegal substance abuse and their determinants on in-school adolescents using data from the Global School-based Student Health Survey, Sri Lanka in 2016. **Methods.** A cross-sectional survey was conducted among 3,650 students using a self-administered questionnaire in government schools. Weighted prevalence was calculated, and logistic regression analysis was conducted to determine the correlates. **Results.** The prevalence of current alcohol, smoking, smokeless tobacco consumption, and substance abuse, 30 days before the survey, was 3.4% (95% CI 2.6 - 4.3), 3.6% (95% CI 2.5-5.0), 2.3% (95% CI 1.5-3.7), and 2.7% (95% CI - 1.7-4.2%). Male sex and involvement in physical fighting were independently associated with increased risk in all four substance categories assessed. Multivariate analysis using multiple logistic regression revealed that only the male sex and involvement in physical fighting were correlates for four substance categories assessed when confounding effects of other variables were accounted for. Being in the 16-17 age category, parents’ tobacco use and seeing actors consuming alcohol on TV increased the risk of alcohol consumption, smoking, and smokeless tobacco. Having ever attempted suicide was positively associated with increased risk for alcohol consumption, smoking, and illegal substance abuse. **Conclusion.** Alcohol use, smoking, smokeless tobacco use, and illegal substance abuse by students remain a concern in Sri Lanka and implementing life skills-based interventions at schools is recommended.

## 1. Introduction

Adolescence is defined by the World Health Organization (WHO) as “the transition period from childhood to adulthood”, ranging from ages 10 to 19 years. In Sri Lanka, adolescents consist of 16.1% of the total population, with 70% attending school [1].

Adolescence is one of the most rapid phases of human development where biological maturity precedes psychosocial maturity [2]. Both individual and the environmental characteristics influence changes taking place during adolescence. Increased autonomy during this period, willingness to experiment, and peer influence/pressure create an environment encouraging high-risk decisions which influence

adolescents' health, such as substance abuse and smoking [3, 4].

During the past few decades, an increase in trends of smoking and substance abuse among adolescents has been reported worldwide [5, 6]. These behaviors are well-associated with various social, biological, economical, and psychological issues such as violence, crime, injuries, diseases, increased school dropout rates, and deaths in extreme cases [3]. However, every year, more than 12300 of Sri Lankan people are killed by tobacco-caused disease. Further, more than 6000 children (10-14 years old) and 1725000 adults (15+ years old) continue to use tobacco each day [7]. In Sri Lanka, the smoking prevalence among aged 13-15 years is believed to be around 2% [8]. Tobacco use includes use of both smoked (ganja, cigarette, bidi, cigars) and smokeless (chewing tobacco, betel with tobacco, babul, and madana modaka). Though the importing or selling is banned in Sri Lanka since 2016, smokeless tobacco products such as Babul, Beeda, Mawa, Pampara, and Gurkha are still available in the market. Understanding the usage pattern of illicit drug use among adolescents is useful in developing effective strategies to prevent initiation of these behaviors.

The Global School-Based Student Health Survey (GSHS) was initiated in 2001 by the WHO in collaboration with UNICEF, UNESCO, and UNAIDS with technical assistance from the US Centers for Disease Control and Prevention (CDC). Since 2003, this has been an important source of information to observe the prevalence of behavioral risk and protective factors among the adolescent school-attending population. In Sri Lanka, the GSHS was conducted both in 2008 and 2016. The GSHS in 2008 did not assess the usage patterns of alcohol, cigarettes, smokeless tobacco, or illegal substances. Realizing the importance of estimating the magnitude of these behaviors among school children, the survey in 2016 explored practices related to smoking, alcohol consumption, and illegal substance abuse. Furthermore, the Ministry of Health, Sri Lanka, is planning to carry out this survey periodically; thus the usage patterns of alcohol, cigarettes, smokeless tobacco, or addictive substances among adolescents could be found out.

In this milieu, the purpose of this paper is to estimate the prevalence and correlation of smoking, alcohol consumption, and illegal substance abuse among school-going adolescents ages 13-17 in Sri Lanka, using the data of the GSHS conducted in 2016.

## 2. Methods

This study involved analysis of data from the Sri Lankan GSHS conducted in 2016. Students of grades 8, 9, 10, 11, and 12 in government schools in Sri Lanka were recruited for the survey. Data collection was done during the period of October 1st to November 31<sup>st</sup>, 2016.

**2.1. Sample Size and Sampling.** A sample of 3,650 was selected, based on a desired precision of  $\pm 5$  percent and an expected response rate of 80%. A two-stage cluster sample design was employed to produce a representative sample of students in grades 8 to 12 in the country. In the first stage, the

sampling frame consisted of all schools with grades 8-12 in Sri Lanka. Out of them, 40 schools were selected by probability proportional to school enrollment size. Systematic equal probability sampling with a random start was used to select classes from each selected school in the next step. All students in the selected classes were eligible to participate in the survey.

**2.2. The Questionnaire.** Data were collected via a self-administered, standard GSHS questionnaire adapted to the Sri Lankan culture and translated to Sinhala and Tamil. There were three separate sections in the questionnaire assessing the status of smoking, alcohol consumption, and illegal substance abuse. In the questions related to smoking, there were a total of 10 questions which inquired into aspects such as the commencement of smoking (e.g., ganja, cigarette, bidi, and cigars), current smoking status, and the use of smokeless tobacco (chewing tobacco, betel with tobacco, babul, madana modaka, Beeda, and Mawa). Alcohol consumption was assessed using seven questions, including aspects such as the initiation of drinking and current drinking status. In the three questions relating to substance abuse, the use of marijuana, amphetamines, cocaine, inhalants, babul, ganja, and madana modaka was assessed. Initiation of substances and current usage patterns were assessed using these questions. Current consumption was assessed by asking the students if they had consumed a substance 30 day prior to the survey. In addition to these questions, sociodemographic details and data related to students' mental health and parental engagement in students' life were collected. Adequate measures were taken to obtain quality data while ensuring minimal interference in school activities.

**2.3. Data Analysis.** Data were analyzed using SPSS version 21.0 software. A weight was associated with each questionnaire to reflect the likelihood of sampling each student and to reduce bias by compensating for differing patterns of non-response. The weight used for estimation is given by

$$W = W1 * W2 * f1 * f2 * f3;$$

W1 = the inverse of the probability of selecting the school;

W2 = the inverse of the probability of selecting the classroom within the school;

f1 = a school-level nonresponse adjustment factor calculated by school size (small, medium, large). The factor was calculated in terms of school enrollment instead of the number of schools;

f2 = a student-level nonresponse adjustment factor calculated by class;

f3 = a poststratification adjustment factor calculated by grade.

The prevalence of smoking, alcohol consumption, and illegal substance abuse in in-school adolescents in Sri Lanka is presented together with 95% confidence intervals. The correlates of smoking, alcohol consumption, and illegal substance abuse in in-school adolescents were determined by conducting bivariate analyses and a backward logistic regression analysis.

TABLE 1: Description of study participants of the 2016 Sri Lankan Global School-Based Survey (N=3262).

Characteristic	Total	
	n	(%)
<b>Age</b>		
12 years or younger	66	(2.1)
13-15 years	2197	(66.5)
16-17 years	977	(30.7)
18 and older	22	(0.7)
<b>Sex</b>		
Male	1437	(48.9)
Female	1805	(51.1)

**2.4. Administrative Requirements and Ethical Clearance.** Ethical clearance was obtained from the ethical review committee of Colombo Medical Faculty. Approval of the study protocol was obtained from the Ministry of Education and relevant zonal education directors and principals.

### 3. Results

Of the selected 3,650 sampled students, 3,262 questionnaires were usable after data editing, giving a response rate of 89%.

**3.1. Description of the Study Sample.** Most of the students who responded belonged to the 13-15-year age group (66.5%). The study group consisted of a slightly higher proportion of females (51.1%) than males (Table 1).

**3.2. Prevalence of Current Alcohol Consumption, Smoking, Use of Smokeless Tobacco Products, and Illegal Substance Use.** The prevalence of current alcohol consumption, 30 days prior to the survey, was 3.4% (95% CI 2.6 - 4.3). Compared to girls (1.1%, 95% CI 0.6 - 1.5), the prevalence among males (5.8%, 95% CI 4.6 - 7.1) was significantly higher ( $p < 0.05$ ). Prevalence in the older adolescents (16-17 years) (5.8%, 95% CI 4.2-7.9) was higher compared to the younger (13-15 years) (2.0%, 95% CI 1.4-2.9).

Current smoking prevalence among the study group was 3.6% (95% CI 2.5-5.0). Similar to alcohol consumption, significantly ( $p < 0.05$ ) more boys (6.4%, 95% CI 5.2-7.7) were engaged in smoking, compared to girls (0.7%, 95% CI 0.3-1.1). During the 30 days before the survey, 2.3% (95% CI 1.5-3.7) of the students consumed smokeless tobacco with more males consuming smokeless tobacco (4.5%, 95% CI 3.4-5.6) compared to females (0.4%, 95% CI 0.1 -0.7). Unlike alcohol consumption, the prevalence of current smoking consumption was similar among the younger and older adolescents.

The prevalence of illegal substance abuse among the school children was 2.7% (95% CI - 1.7-4.2%). The percentage among the male students (4.1%, 95% CI 3.1- 5.2) was significantly ( $p < 0.05$ ) higher compared to the females (1.1%, 95% CI 0.6-1.5). However, the consumption of substance between the age categories was almost equal (Table 2).

According to the survey, of those who had ever had a drink of alcohol other than a few sips, 42.5% had their first

drink before the age of 14, with a significantly higher proportion of younger (64.7%) reporting the first drink before 14 years of age compared to the older (20.2%) adolescents ( $p < 0.05$ ). On inquiry as to the main reason for the first drink of alcohol, the desire to actually taste alcohol was the main reason for the first drink (41.9%).

Of those who ever had smoked, 54.8% had their first smoke before the age of 14 years, with no significant difference by age or sex.

**3.3. Correlates of Alcohol Consumption, Smoking, Smokeless Tobacco, and Illegal Substance Abuse.** Age and sex-matched analysis, using logistic regression, revealed that being physically attacked during past 12 months (OR 2.2, 95% CI 1.4-3.3), involvement in physical fighting within the past 12 months (OR 4.0, 95% CI 2.4-6.6), obtaining a serious injury within the past 12 months (OR 2.5, 95% CI 1.5-3.9), being bullied in school within the last 30 days (OR 2.3, 95% CI 1.5-3.6), attempted suicide within the last 12 months (OR 3.3, 95% CI 1.8-6.1), having seen actors consuming alcohol on TV (OR 3.4, 95% CI 2.2-5.4), engaging in leisure activities more than three hours (OR 3.4, 95% CI 2.2-5.4), and parental tobacco use (OR 2.2, 95% CI 1.4-3.4) were significantly associated with alcohol consumption. The same factors were associated with smoking and smokeless tobacco consumption. The factors significantly associated with substance abuse were being physically attacked within the past 12 months (OR 2.5, 95% CI 1.5- 4.0), involved in physical fighting within the last 12 months (OR 4.1, 95% CI 2.3- 7.2), obtaining a serious injury within the past 12 months (OR 5.7, 95% CI 3.1- 10.3), being bullied in school within the last 30 days (OR 3.6, 95% CI 2.1-6.1), attempted suicide within the last 12 months (OR 6.5, 95% CI 3.6- 11.6), and seen actors consuming alcohol on TV (OR 2.9, 95% CI 1.7- 4.9).

The age-matched analysis revealed that the male sex was significantly associated with current use of alcohol (OR 5.6, 95% CI 3.3-9.4), smoking (OR 9.6, 95% CI 5.2-17.6), smokeless tobacco (OR 11.2, 95% CI 5.1-24.6), and illegal substance abuse (OR 4.1, 95% CI 2.4-7.0). Similarly, sex-matched analysis revealed that, except for illegal substance abuse, being in the older age category (16-17 years) was significantly associated with the current use of alcohol (OR 3.1, 95% CI 2.0-4.7), smoking (OR 2.6, 95% CI 1.7-3.9), and smokeless tobacco (OR 2.7, 95% CI 1.6-4.3) (Table 3).

Multivariate analysis using multiple logistic regression revealed that only the male sex and involvement in physical fighting were correlates for four substance categories assessed when confounding effects of other variables were accounted for. Being in the 16-17 age category, parents' tobacco use and seeing actors consuming alcohol on TV increased the risk of alcohol consumption, smoking, and smokeless tobacco. Having ever attempted suicide was positively associated with increased risk for alcohol consumption, smoking, and illegal substance abuse (Table 4).

Male students had a 10.2 times higher risk of smoking (AOR 10.2; 95% CI 4.3-24.0), and 10.8 (AOR 10.8; 95% CI 3.8-30.8) times higher risk of using smokeless tobacco compared to females. Elder students have 2.5 times higher risk of smoking (AOR 2.5; 95% CI 1.5-4.2) and 2.4 times the risk of

TABLE 2: Prevalence of current use of alcohol consumption, smoking, smokeless tobacco, and illegal substances among the study participants (N = 3173).

	Current use of Alcohol		Current Smoking		Current use of smokeless tobacco		Current use of illegal Substances	
	n*	% (95% CI)	n*	% (95% CI)	n*	% (95% CI)	n*	% (95% CI)
<b>Total</b>	103	3.4 (2.6-4.3)**	107	3.6 (2.5-5.0)**	69	2.3 (1.5-3.7)**	79	2.7 (1.7-4.2)**
<b>Age</b>								
<b>13-15 Years</b>	49	2.0 (1.4-2.9)**	40	2.5 (1.6-3.9)**	30	1.5 (0.9-2.6)**	46	2.4 (1.4-3.9)**
<b>16-17 Years</b>	52	5.8 (4.2-7.9)**	55	5.5 (3.7-8.0)**	36	4.0 (2.4-6.4)**	30	3.3 (1.6 – 6.9)**
<b>Sex</b>								
<b>Male</b>	81	5.8 (4.6 – 7.1)* * *	92	6.4 (5.2-7.7)* * *	62	4.5 (3.4 -5.6)* * *	58	4.1 (3.1 – 5.2)* * *
<b>Female</b>	19	1.1 (0.6 – 1.5)* * *	12	0.7 (0.3-1.1)* * *	7	0.4 (0.1 – 0.7)* * *	19	1.1 (0.6 – 1.5)* * *

\* denotes unweighted frequency; \*\* denotes weighted percentage; \* \* \* denotes unweighted percentage.

TABLE 3: Factors associated with current use of alcohol consumption, smoking, smokeless tobacco, and illegal substances (age and sex matched Odds Ratios with 95% CI).

Characteristic	n	Current use of Alcohol	Current Smoking	Current use of Smokeless Tobacco	Current use of illegal Substances	
<b>Age**</b>	<b>16-17 Years</b>	977	3.1 (2.0-4.7)	2.6 (1.7-3.9)	2.7 (1.6-4.3)	1.5 (0.9-2.4)
	<b>13-15 Years</b>	2196	1	1	1	1
<b>Sex* * *</b>	<b>Male</b>	1437	5.6 (3.3 – 9.4)	9.6 (5.2-17.6)	11.2 (5.1-24.6)	4.1 (2.4-7.0)
	<b>Female</b>	1805	1	1	1	1
<b>Physically attacked <sup>(1)</sup></b>	<b>Yes</b>	1119	2.2 (1.4-3.3)	1.8(1.2-2.8)	2.2 (1.3-3.7)	2.5 (1.5-4.0)
	<b>No</b>	2120	1	1	1	1
<b>Engage in physical fighting <sup>(1)</sup></b>	<b>Yes</b>	1420	4.0 (2.4-6.6)	4.4 (2.6-7.3)	2.4 (1.4-4.2)	4.1 (2.3-7.2)
	<b>No</b>	1838	1	1	1	1
<b>Serious Injury <sup>(1)</sup></b>	<b>Yes</b>	1044	2.5(1.5-3.9)	2.8 (1.8-4.4)	2.1 (1.2-3.6)	5.7 (3.1-10.3)
	<b>No</b>	1981	1	1	1	1
<b>Bullied in School <sup>(2)</sup></b>	<b>Yes</b>	1208	2.3 (1.5-3.6)	2.6 (1.7-4.2)	1.8 (1.1-3.1)	3.6 (2.1-6.1)
	<b>No</b>	1988	1	1	1	1
<b>Felt Lonely <sup>(1)</sup></b>	<b>Yes</b>	2021	1.5 (0.9-2.3) *	1.5 (0.9-2.3) *	1.1 (0.6-1.6) *	1.2 (0.5-1.3) *
	<b>No</b>	1229	1	1	1	1
<b>Considered Suicide <sup>(1)</sup></b>	<b>Yes</b>	298	2.1 (1.2-3.6)	2.0 (1.1-3.7)	1.3 (0.6-3.1) *	2.6 (0.6-3.1) *
	<b>No</b>	2923	1	1	1	1
<b>Attempted Suicide <sup>(1)</sup></b>	<b>Yes</b>	214	3.3 (1.8-6.1)	4.2 (2.4-7.5)	2.7 (1.2-5.7)	6.5 (3.6-11.6)
	<b>No</b>	3006	1	1	1	1
<b>Having close Friends</b>	<b>No</b>	180	1.6 (0.7-3.7) *	1.3 (0.6-3.3) *	2.1 (0.8-5.1) *	1.8 (0.7-4.3) *
	<b>Yes</b>	3065	1	1	1	1
<b>Parent Tobacco Use</b>	<b>Yes</b>	659	2.2 (1.4-3.4)	2.0 (2.7-6.4)	1.7 (1.1-3.0)	1.5 (0.9-2.5) *
	<b>No</b>	2589	1	1	1	1
<b>Other activities &gt;3 Hours</b>	<b>&gt;3 Hours</b>	1196	2.1 (1.3-3.2)	1.8(1.2-2.8)	1.8 (1.1-2.9)	1.4 (0.8-2.2) *
	<b>&lt;3 Hours</b>	2044	1	1	1	1
<b>Parents understood the problems</b>	<b>No</b>	1217	1.6 (0.8-3.3) *	1.4 (0.7-2.6) *	1.1(0.5-2.4)*	1.0(0.5-1.7) *
	<b>Yes</b>	827	1	1	1	1
<b>Played sports</b>	<b>No</b>	824	1.3 (0.6-.3.0) *	1.0(0.5-2.3)*	3.3 (0.9-11.0) *	1.0 (0.4-2.6) *
	<b>Yes</b>	532	1	1	1	1
<b>Seeing actors consuming alcohol on TV</b>	<b>Yes</b>	849	3.4 (2.2-5.4)	2.4 (1.6-3.7)	2.9 (1.7-4.9)	2.9 (1.7-4.9)
	<b>No</b>	2389	1	1	1	1

\*Not significant at p=0.05 level, \*\*sex matched, and \* \* \*age matched.

<sup>(1)</sup>During last 12 months. <sup>(2)</sup>During last 30 days.

TABLE 4: Factors associated with current use of alcohol consumption, smoking, smokeless tobacco, and illegal substances (Adjusted Odds Ratios with 95% CI).

Characteristic	Current use of Alcohol	Current Smoking	Current use of Smokeless Tobacco	Current use of illegal Substances	
Sex	Male	3.7 (2.0-3.9)	10.2 (4.3-24.0)	10.8 (3.8 – 30.8)	3.4 (1.6 – 6.8)
	Female	1	1	1	1
Age	16-17 Years	2.4 (1.5-6.7)	2.5 (1.5-4.2)	1.7 (1.05-3.1)	
	13-15 Years	1	1	1	
Physical Fighting <sup>(1)</sup>	Yes	3.6(2.0-6.5)	3.9 (2.0-7.4)	2.2 (1.1-4.5)	3.6 (1.6 -8.0)
	No	1	1	1	1
Attempted Suicide <sup>(1)</sup>	Yes	3.1 (1.5-6.2)	3.4 (1.6-7.0)		6.0 (3.0 – 12.0)
	No	1	1		1
Parents Smoking <sup>(1)</sup>	Yes	1.8 (1.1 – 2.9)	1.8 (1.1-3.0)	1.8 (1.09 – 3.5)	
	No	1	1	1	
Seen Actors Consuming Alcohol on TV	Yes	2.9 (1.7 – 4.9)	2.5 (1.5-4.1)	2.5 (1.3 – 4.5)	
	No	1	1	1	
Bullied in school <sup>(2)</sup>	Yes	1.6 (1.09-2.7)			2.1 (1.03– 4.1)
	No	1			1
Being physically attacked <sup>(1)</sup>	Yes			1.8 (1.04-3.5)	
	No			1	
Other activities >3 Hours	>3 Hours			1.7 (1.07-3.0)	
	< 3 Hours			1	
Obtaining serious injuries <sup>(1)</sup>	Yes				2.5 (1.3 -5.1)
	No				

<sup>(1)</sup> During last 12 months. <sup>(2)</sup> During last 30 days.

alcohol consumption (AOR 2.4; 95% CI 1.5-6.7) compared to younger students (Table 4).

## 4. Discussion

**4.1. Prevalence of Alcohol, Smoking, Smokeless Tobacco, and Illegal Substance Use.** The survey inquired about alcohol use 30 days prior to the survey as an indicator for current use of alcohol. The current prevalence of alcohol consumption among the participants was 3.4% (95% CI: 2.6-4.3) and the prevalence was significantly higher among males (5.8%, 95% CI: 4.2-7.9) compared to females (1.1%, 95% CI: 0.6-1.5). In a similar survey conducted by UNICEF among Sri Lankan school-age adolescents in 2004, the current use of alcohol among adolescents was 5.7%, higher than the current study result [9]. In the National Youth Health Survey (NYHS) conducted by the Family Health Bureau, Sri Lanka, in 2014, the current alcohol prevalence among adolescents, both school going and nonschool going, was 10.2% (95%CI: 8.9-11.7) [10]. Further, alcohol prevalence was significantly higher among the nonschool-going adolescents (4.9%; 95% CI: 4.2-5.6) compared to schoolers (3.1%, 95% CI: 2.6-3.8). School is a place where students are nurtured, and tools are provided to make correct choices in life. Evidence indicates that less school bonding is associated with problem behaviors among adolescents [11].

Evidence indicates that the prevalence of alcohol use among school-going adolescents varies markedly among countries. In an analysis of 12 developing countries around the world, using the GSHS data revealed that the prevalence of alcohol consumption was ranging from 40-60% in Seychelles, St. Vincent, St. Lucia, Grenada, and Trinidad; 10-20% in Botswana, Thailand, Kenya, Philippines, and Uganda [12].

Current smoking among school children was 3.6% (95% CI: 2.5-5.0). This prevalence has been in a steady state since 2003, despite numerous steps taken by the relevant stakeholders. According to the Global Youth Tobacco Survey (GTYS) done in Sri Lanka in 2003, the prevalence of current cigarette use among adolescents was 2.5%, while it was 1.5% (95% CI: 0.8 – 2.7) in 2016 [13, 14]. Despite having laws to control the sale of tobacco products to youth, all the students enrolled in these surveys who used tobacco were under the age of 18, which indicates ineffective implementation of tobacco control laws in the country. Further, in the present survey, of those who had ever smoked, 54.8% had their first smoke before the age of 14. According to a multicounty study done in 61 countries, the median current tobacco smoking prevalence among students aged 13–15 years was 10.7%. The highest prevalence was reported in Timor-Leste (35.0%), followed by Bulgaria (27.4%) and Lithuania (26.4%). Of the South-East Asian countries, the highest was reported in Timor-Leste (35.0%) followed by Indonesia (19.4%) and Bhutan (16.6%) [8].

The prevalence of the current use of smokeless tobacco products has a declining trend among students. According to 2011 GYTS, the prevalence of current users of smokeless tobacco among students was 8.6% (95% CI 7.1 – 10.1), but both the present study (2.3%; 95% CI 3.4-5.6) and the GYTS (2.4%; 95% CI 1.2 – 4.7) which were conducted in 2016, show significantly lower rates [14, 15]. According to a study published comparing GYTS data available in South-East Asia region, the prevalence of current use of SLT among youth varied from 5.7% in Thailand to 23.2% in Bhutan; among boys, from 7.1% in Bangladesh to 27.2% in Bhutan; and among girls, from 3.7% in Bangladesh to 19.8% in Bhutan [16].

The addictive illegal drugs commonly used in Sri Lanka are babul (areca nut from India), madana modaka (Cannabis based product), cough syrup and cannabis (ganja), with cannabis being the most widely used illicit drug [17]. In Sri Lanka, 2.7% (95% CI: 1.7-4.2) of the students currently use addictive drugs, according to the current survey. According to a UNICEF study in 2004, the prevalence of illegal substances was 2.3%, which indicates that the above-prevalence has not changed much over the last decade.

*4.2. Correlates of Alcohol, Smoking, Smokeless Tobacco, and Illegal Substance Use.* Multivariate analysis shows male sex and involvement in physical fighting has positive association with current use of smoking, alcohol, smokeless tobacco and illegal substances. The risk of all the substances studied in the present study was significantly higher, and similar results have been reported elsewhere in the international literature [18–20]. Seeking higher levels of sensation during the developmental stage among males compared to greater inhibitory control among females is evident [20]. Thus, males are more likely to experiment with risky behaviors, and this could be one reason for the higher risk among males.

In the current study, alcohol, smoking, and smokeless tobacco use were positively associated with age. It is stated that teenagers who started smoking were more likely to become smokers as adults and less likely to quit smoking [21]. Therefore, it is very important to address these issues at young age. Early initiation of these substances can lead to many problems such as poor school performance, school drop-outs, health problems, and future risks for substance use disorders [22, 23].

During the GSHS, the students were asked how often they see actors consuming alcohol when they watch television, videos, or movies. The current study indicates these students had 2.9 times increased risk in engaging in alcohol consumption compared to the nonexposed. A US study reveals exposing adolescents on alcohol advertising was positively related to an increase in drinking. The research concluded that individuals who saw one more advertisement on average than other individuals had 1% more alcoholic drinks per month (AOR, 1.01; 95% CI, 1.01-1.02) [24]. This highlights the importance of strict advertising regulation on movies and videos, which now include alcohol and smoking advertising.

It is well documented that when children are exposed to smoking on a daily basis or are exposed to secondhand smoking, they are at greater risk of becoming cigarette users [25]. Parental smoking increases the risk of smoking by the

student by 1.8 times in the current study. A similar result was observed in a study done in Hong Kong, where having a father who smoked increased the risk of the student smoking by 2.7 times (95% CI 2.2-10.2) [26]. These examples very clearly state that children tend to follow the actions of their parents and role models.

Attempted suicide is highly associated with illegal substance abuse (AOR 6.0, 95% CI 3.0-12.0), smoking (AOR 3.4, 95% CI 1.6-7.0) and alcohol intake (AOR 3.1, 95% CI 1.5-6.2) among school children. According to Kelly et al., alcohol and drug abuse is a risk factor for attempted suicide [27]. This is a very significant association, as it clearly indicates these substances have psychogenic properties and lead to adverse effects like suicide among their users. Therefore, finding these students and referring them for counselling are essential to avoid these mental health implications. As Sri Lanka is having one of the highest suicide rates in the world, it is important to note that addressing substance and alcohol abuse among adolescents will help to reduce it.

*4.3. Conclusion and Recommendations.* A comparison of the study findings with existing data shows that the proportion of alcohol and smokeless tobacco consumption among schooling adolescents though the prevalence of smoking and substance use has not changed. Males and those reported as having been involved in physical fights within the past 12 months were more likely to be current users of all illicit substances. Also, it is significant to note that alcohol, smoking, and substance abuse are associated with attempted suicide, parental substance abuse, and advertising.

School-based interventions to address these issues should be designed with the goal of increasing adolescents' awareness of the various social influences that support substance abuse and teaching them specific life skills for effectively resisting both peer and media pressures to smoke, drink, or use drugs. While direct advertising of alcohol is prohibited in Sri Lanka, indirect advertising by the media and at social gatherings is still in effect. Therefore, addressing these indirect alcohol promotions and full enforcement of Framework Convention of Tobacco Control (FCTC) recommendations banning advertisements of tobacco products is also important.

*4.4. Limitations of the Study.* The study had following limitations. Firstly, it was conducted only among school-going adolescents, limiting the ability to generalize the findings to the entire adolescent population. In Sri Lanka nearly 1/3 of the adolescent population were identified as nonschool goers according to FHB survey [10]. As discussed in the article, the prevalence of smoking and substance misuse is likely to be higher among nonschool-attending adolescents who are exposed to many adverse circumstances. Secondly, as a cross-sectional analysis was conducted, temporal direction between associations could not be established. As the data collection was done using a self-administered questionnaire, the answers depend on the participants' interpretations of the questions.

## Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

## Conflicts of Interest

The authors declare that they have no conflicts of interest.

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