



PREVALENCE AND ASSOCIATED FACTORS OF TOBACCO SMOKING EXPOSURE AMONG YOUTHS IN SOUTHEAST ASIA: EVIDENCE BASED ON GLOBAL YOUTH TOBACCO SURVEY

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Abstract

Tobacco smoking (TS) is a leading preventable cause of death internationally. The young generation is getting addicted to smoking rapidly which is alarming for the future generation. It is essential to increase awareness about exposure to TS in the environment (TSE) among youths in Southeast Asia. This study targets to obtain a reliable prevalence and associated factors of TSE among youths in Southeast Asia, as well as, to identify the major influencing factors for smoking. The Global Youth Tobacco Study (GYTS), a nationwide representative cross-sectional survey based on school-going adolescents of tobacco consumption and underlying factors among youths was examined in this study. Datasets from Bangladesh (2013), Indonesia (2019), and Thailand (2015) representing Southeast Asia were selected to analyze the prevalence of exposure to TSE. Predictors namely fundamental features, smoking at home, enclosed public spaces and other public locations, lessons about the influence of TS in class, etc. were found associated with TS. Tobacco use among adolescents is substantially associated with their social environment (at home and public locations). In Bangladesh, Indonesia, and Thailand, correspondingly 33%, 44.5% and 39.1% of participants were exposed to TS at home. In Bangladesh, for example, exposure to TS at home was a strong predictor of adolescent TS (OR=3.64; 95% CI=2.53-5.21); in Indonesia, (OR=0.42; 95% CI=0.38-0.48); and in Thailand, (OR=0.58; 95% CI=0.45-0.74). Similarly, adolescents who were aware of their exposure to TS were less likely to smoke. TS use prevention among school-going adolescents should be every government's top goal to reduce tobacco consumption to get a healthy generation.

Keywords: TS, TSE, GYTS, Logistic Regression, Southeast Asian Countries.

Introduction

Adolescent tobacco smoking is one of the vital public health concerns globally nowadays. Tobacco use is a leading cause of preventable death and it causes various disorders and diseases, including psychological distress, cancer, cardiac disease, and pulmonary disease, especially in little children and young adolescents (Amu et al., 2020; Healey et al., 2015; Perez-Warnisher et al., 2019). The young generation is increasingly becoming regular smokers, which is concerning for future generations around the world. Southeast Asian developing countries, such as Bangladesh, India, Indonesia, Nepal, Pakistan, and others, whose teenagers make

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up the majority of the population, are particularly susceptible to the smoking pandemic and its consequences. Tobacco consumption, particularly cigarette smoking, is the major risk factor for premature death globally, including over 6 million death annually (Khan et al., 2021; WHO: *WHO Global Report: Mortality Attributable to Tobacco*, n.d.; Xi et al., 2016). Every year, smoking kills roughly 8 million people (Chan et al., 2021; World Health Organization, 2017). Considerable decreases in the overall prevalence of regular smoking have been reported on a worldwide scale including both males and females since 1980, although the smoking rate has increased dramatically due to population expansion. As a result, tobacco use tends to pose a threat worldwide, necessitating further measures to reduce the rate of TS (Ng et al., 2014, pp. 1980–2012; Sinha et al., 2018; Xi et al., 2016). Nonsmokers, particularly adolescents, are affected by the harmful consequences of smoking since they are exposed to tobacco smoke in the environment (TSE) also known as secondhand smoking and without any doubt, it has a similar harmful implication for both adults and adolescents direct smoking (Abidin et al., 2014, Bolte et al., 2016). There are approximately 1.2 billion tobacco smokers worldwide, among them half are below the age range of 21 (Abidin et al., 2014; Al-Sadat et al., 2010). TSE exposure occurs when a person inhales tobacco smoke unintentionally and indirectly while not utilizing TS products willingly rather it is consumed from another person's smoke in the environment (Khan et al., 2021).

In the WHO South-East Asia Region (SEAR), where a large number of the world's largest tobacco manufacturers and consumers are rooted, smoking is responsible for 1.6 million deaths annually. India and Indonesia are two of the five biggest tobacco producers worldwide. Over 22% of adult smokers who belong to the age group 15, live in this region. The SEAR accounts for more than a third of the adolescents between the ages of 13 to 15 (34 percent or 14.8 million) who use tobacco in different ways (Abidin et al., 2014; WHO: *WHO Global Report: Mortality Attributable to Tobacco*, n.d.). The use of tobacco by school children has distinct consequences than it does among other teenagers, and this is something that adults must acknowledge (Zaidi et al., 2011). Most adolescent smokers get addicted to smoking as they grow up. Adolescents' exposure to TS in the environment increases morbidity rates and mortality rates dramatically (Cheraghi & Salvi, 2009; Öberg et al., 2011). Age, gender, parenting practices of smoking, friend and classmates' smoking behavior (Rachiotis et al., 2010; Rudatsikira et al., 2009, 2010), and lower psychological sensitivity (Amu et al., 2020; Li et al., 2003) were all found to be strongly linked with an adolescent's exposure to TS in the environment. Furthermore, various studies have identified socio-demographic and environmental factors, parental influence, intrinsic motivation, and strategic elements as possible causes of teenagers' tobacco smoking (Kobus, 2003; Mays et al., 2014; Morgenstern et al., 2013). Several researchers have concentrated on the role of family members, especially parents and the friends an adolescent is surrounded by to develop adolescents' smoking habits (Al-Sadat et al., 2010; Seo & Huang, 2012). Smoking was considered a normal part of life by adolescents who were accustomed to it at home, and they continued to develop this harmful habit (Lamin et al., 2014; Morgenstern et al., 2013; Sham et al., 2015).

Establishing good health and well-being is the third goal of SDG. Early deaths from cancer, chronic lung diseases, and cardiovascular disorders occur every two seconds in those between the ages of 30 and 70. The risk of developing these diseases is increased by TS and TSE exposure (Bennett et al., 2018). The updated sustainable development goals (SDGs) emphasize the execution of tobacco control policies and measures as smoking harms our health and the consequences of smoking go against the third goal of SDGs (Flor et al., 2021; Imran et al., 2015; Lozano et al., 2018). The WHO SEAR consists of 11 nations with a total 1.9 billion of people equivalent to nearly 26% of the worldwide population, and it includes one of the world's most populous tobacco-consuming and producing countries (Rani et al., 2017). Tobacco use is deeply entrenched in the socio-cultural habits of about 50% of adult males and two-fifth of females in SEAR (*WHO Nepal | World Health Organization*, n.d.). There are 250 million TS users in the region, with an approximately equivalent number of smokeless TS users (Rani et al., 2017). Furthermore, the number of people using smokeless tobacco appears to be increasing, which is causing concerns across many SEAR countries (Sinha et al., 2014, 2015).

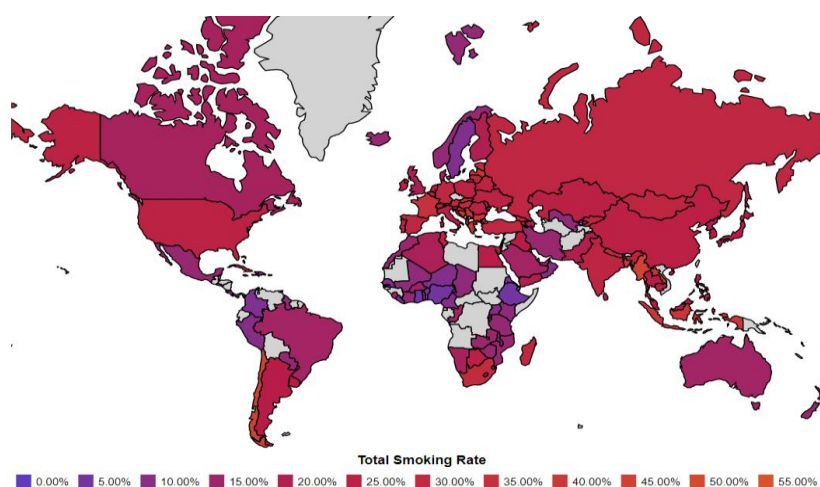


Figure 1. The country-wise smoking rates according to the World Population Review.

Children and teens (10–19 years) are a key sociodemographic category in the WHO SEAR, contributing to over one-fifth population, or 18.8 percent (362.2 million people) (Desa, 2015). Among these, adolescents aged 13–17 account for 181 million, or roughly 9.4% of the overall population. It is a varied cultural and economic community. While Nepal and India are mainly built with Hindu communities, Bangladesh, Maldives and Indonesia are built predominantly Muslim, and Thailand, Myanmar, and Sri Lanka contain a vast Buddhist population. We used the Bangladesh 2013, Indonesia 2019, and Thailand 2015 datasets in our research to acquire an insight into the most tobacco-used countries covered by WHO SEAR (Desa, 2015; Rani et al., 2017). Bangladesh is the eighth ranking country in the SEAR which includes a smoking rate of 39.10 percent, according to the World Population Review (*Smoking Rates by Country 2022*, n.d.). As Bangladesh, Indonesia and Thailand are parts of the WHO SEAR region, we used these datasets as representatives for SEAR.

The main purpose of this study is to assess the prevalence of TS exposure along with its associated factors among youths in the SEAR using the latest population-based cross-sectional databases from the Global Youth Tobacco Survey (GYTS) of Bangladesh, Indonesia, and Thailand. This research also intends to discover the significant factors affecting TSE in adolescents to strengthen privacy policies and reduce tobacco usage, resulting in a better future, and healthier generation, which will help to achieve the third SDG goal.

Materials and Methods

Dataset and sampling

Secondary data of Bangladesh 2013, Indonesia 2019, and Thailand 2015 from Southeast Asia's GYTS (Global Youths Tobacco Survey) database were included in this research and these datasets were the latest data for each country. The Global Youth Tobacco Survey (GYTS) is a comprehensive national tobacco epidemiological survey operated as part of comprehensive risk factor surveys based on school-going youths to reduce tobacco use among middle and high school students between the age group 13–15 years (GYTS) for tobacco control and prevention initiatives (*Global Youth Tobacco Survey*, n.d.). The GYTS is a vital resource for countries to implement WHO MPOWER, a combination of six evidence-based demand-reduction initiatives outlined in the WHO Framework Convention on Tobacco Control (FCTC) (Rani et al., 2017). GYTS consists of 43 "core" questions aimed at gathering information on young people about tobacco.

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This given web address can be used to obtain the data sets- <https://nccd.cdc.gov/GTSSDataSurveyResources/Ancillary/DataReports.aspx?CAID=2>.

The response variable

The response variable in this research was tobacco use among adolescents in the dataset, described as smoking cigarettes at least once before the survey.

The predictors

We chose the variables in our analysis as predictors from the wide set of variables from the whole dataset. It's important to emphasize that the characteristics we considered weren't selected at random; rather, the literature study on adolescent tobacco usage impacted our selections (Healey et al., 2015; Lamin et al., 2014; Rani et al., 2017; Rao et al., 2014; Xi et al., 2016). Basic characteristics (age, sex, and educational status); exposure to TSE (at home, enclosed public places, and in other places); inspirational factors (commercials and promotions shown in media and elsewhere); and curriculum aspects (Lesson about TS in class or curriculum about the risk factors of smoking, awareness about second-hand smoking) were selected as the predictor variables in this study.

Statistical analysis

This study included statistical analysis involving univariate and multivariate analysis utilizing the Statistical Package for Social Sciences (SPSS version 25.0, Chicago, IL) (*SPSS Statistics - Overview*, 2021). Initially, we performed a univariate analysis and gave quantitative results for the dataset. The Chi-square test was used to determine bivariate correlations between tobacco usage among adolescents (response variable) and chosen predictor variables. Finally, we performed multivariate regression analysis for the response variable, which was dichotomized as "yes = 1 = adolescent tobacco users" and "no = 0 = adolescent non-tobacco users." To display summary findings from the multivariable model, we employed odds ratios (OR) and 95 percent confidence intervals (95% CI).

Results

Background properties with frequency distribution

Table 1 visualizes the basic profile and characteristics with the frequency distribution of the variables summarized from three datasets after processing the data.

Regarding age, approximately half of the respondents were from the age group 13 or less (48.1%) from the Bangladesh dataset. In Indonesia and Thailand adolescents from this age group were 33.8% and 37.4% respectively (Figure 2). 36%, 17.9%, and 41.1% of adolescents were 14 years old from Bangladesh, Indonesia, and Thailand respectively and the rest were 15 or above. Each dataset represented more girls (58.4%, 56.3%, and 54.8% respectively for Bangladesh, Indonesia, and Thailand) compared to the boy ratios. More than half of adolescents were from eighth grade and lower in each country and the rest of them were from ninth grade or above (Table 1).

Exposure to TS in the environment and prevalence of tobacco use behavior

Figure 2 displays the prevalence of exposure to TS in the environment in three set-ups *i.e.*, at home, at enclosed public places and public places correspondingly for Bangladesh, Indonesia and Thailand. Table 2 represents the prevalence of TS at the environment with respect to all the explanatory variables.

Approximately 33% of participants said at least one parent or family member had been seen smoking tobacco at home in the week before the survey was conducted in Bangladesh where it was 44.5% in Indonesia

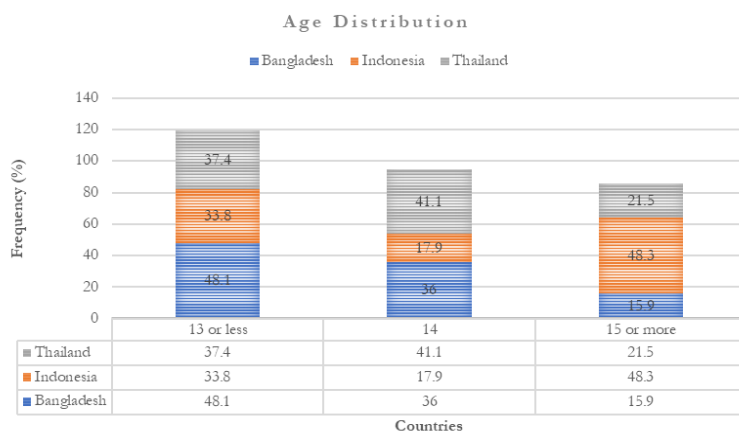


Figure 2. Age distribution of the respondents compared to each age group in selected countries.

and 39.1% in Thailand. 60.2% of students were exposed to TS in enclosed public places, other than the home such as shops, schools, restaurants, or inside a bus, etc. in Bangladesh which is a large percentage compared to Indonesia (33.4%) and Thailand (39.1%). 57.9% of students were exposed to TS at public places like playgrounds, entrances to buildings, or railway stations in Bangladesh. Compared to Indonesia (32.7%) and Thailand (37.6%) this rate was also larger. Adolescents were exposed to TS in public places like shops, schools, restaurants, or inside a bus, etc. in Bangladesh whereas in Indonesia participants were more exposed to TS at home. In Thailand, adolescents were less exposed to TS at playgrounds, sidewalks, parks, and bus terminals than at home or in enclosed public places. In all countries, adolescents were aware of exposure to TS at a substantial rate, with Indonesia having the highest rate (95.1 percent).

Factors correlated with tobacco consumption

Bivariate analysis of all selected variables is represented in Table 2. Gender, age of the adolescents in years, exposure to TS at home, enclosed public places and other public places, Advertisements or promotions for tobacco products in public places, and awareness about exposure to TS was significantly ($P < 0.001$ to $P < 0.01$) associated with tobacco use in Bangladesh (Table 2). In Indonesia and Thailand, all variables were found to be significant while some variables were highly significant ($P < 0.001$ to $P < 0.01$). For Bangladesh educational status and lessons about the harmful consequences of TS at school were found to be insignificant.

Multivariate analysis was conducted to determine the associations in regression (Table 3). According to the regression results, the likelihood ratio of tobacco use among older students (14 years of age or above) was 0.80 and 0.26 respectively in Bangladesh and this variable was found insignificant in Indonesia. Whereas in Thailand, adolescents aged 14 years are more likely to be exposed to TS than 13 year or less old participants (OR = 2.38; 95 % CI = 1.51-3.75) and adolescents aged 15 years or above are also more likely to be exposed to TS than 13 year or less old participants (OR = 1.57; 95% CI = 1.7-2.30). A significantly higher likelihood of tobacco use was found among girls than boys in Bangladesh and Indonesia. In Thailand girls are 0.29 times less likely to be exposed to TS compared to the reference category boys. Besides these results, Figure 2 is showing the prevalence of TS in environment in all these three countries.

Table 1. Basic profile and characteristics with the frequency distribution of the variables for three countries Bangladesh, Thailand and Indonesia

Characteristics	Frequency Distribution					
	(Bangladesh) N=3029		(Indonesia) N=9992		(Thailand) N=1803	
	n	%	n	%	n	%
Age (Years)						
13 or less	1456	48.1	3249	33.8	674	37.4
14	1091	36.0	1723	17.9	741	41.1
15 or more	482	15.9	4645	48.3	388	21.5
Gender						
Boy	1261	41.6	4202	43.7	815	45.2
Girl	1768	58.4	5415	56.3	988	54.8
Educational status						
Eighth grade or below	1792	59.2	9149	95.1	1293	71.7
Ninth grade or above	1237	40.8	468	4.9	510	28.3
Exposure to TS (At home)						
Yes	999	33.0	4277	44.5	705	39.1
No	2030	67.0	5340	55.5	1098	60.9
Exposure to TS (At enclosed public places)						
Yes	1822	60.2	3208	33.4	705	39.1
No	1207	39.8	6409	66.6	1098	60.9
Exposure to TS (In public places)						
Yes	1755	57.9	3141	32.7	678	37.6
No	1274	42.1	6476	67.3	1125	62.4
Lessons about the harmful consequences of TS at school						
Yes	1736	57.3	5865	61.0	1389	77.0
No	1293	42.7	3752	39.0	414	23.0
Advertisements or promotions for tobacco products in public places						
Yes	850	28.1	5342	55.5	529	29.3
No	2179	71.9	4275	44.5	1274	70.7
Awareness about exposure to TS						
Yes	2785	91.9	9149	95.1	1650	91.5
No	244	8.1	468	4.9	153	8.5

Note: The total varies concerning count the ry.

In our study educational status of the adolescents was found to be insignificant in the chi-square test hence it was not included in the regression analysis for Bangladesh. Adolescents in ninth grade or above in Indonesia are less likely to be exposed than adolescents in eighth grade or below (OR=0.72; 95% CI = 0.61-0.85). On the other hand, in Thailand, adolescents in ninth grade or above are more likely to be exposed compared to adolescents in eighth grade or below (OR = 1.22; 95% CI = 0.84-1.78). Smoking at the home of the adolescents did not significantly influence (3.64 times lower likelihood ratio) tobacco use behaviors than their counterparts who came from non-smoking homes in Bangladesh. In Indonesia and Thailand adolescents who were not exposed to TS at home had lower odds. Exposure to TS in enclosed public places was found to be insignificant in both Bangladesh and Thailand. But in Indonesia, it was found that adolescents who were not exposed to TS in enclosed places had 0.68 times lower odds. In Bangladesh, adolescents exposed to TA in

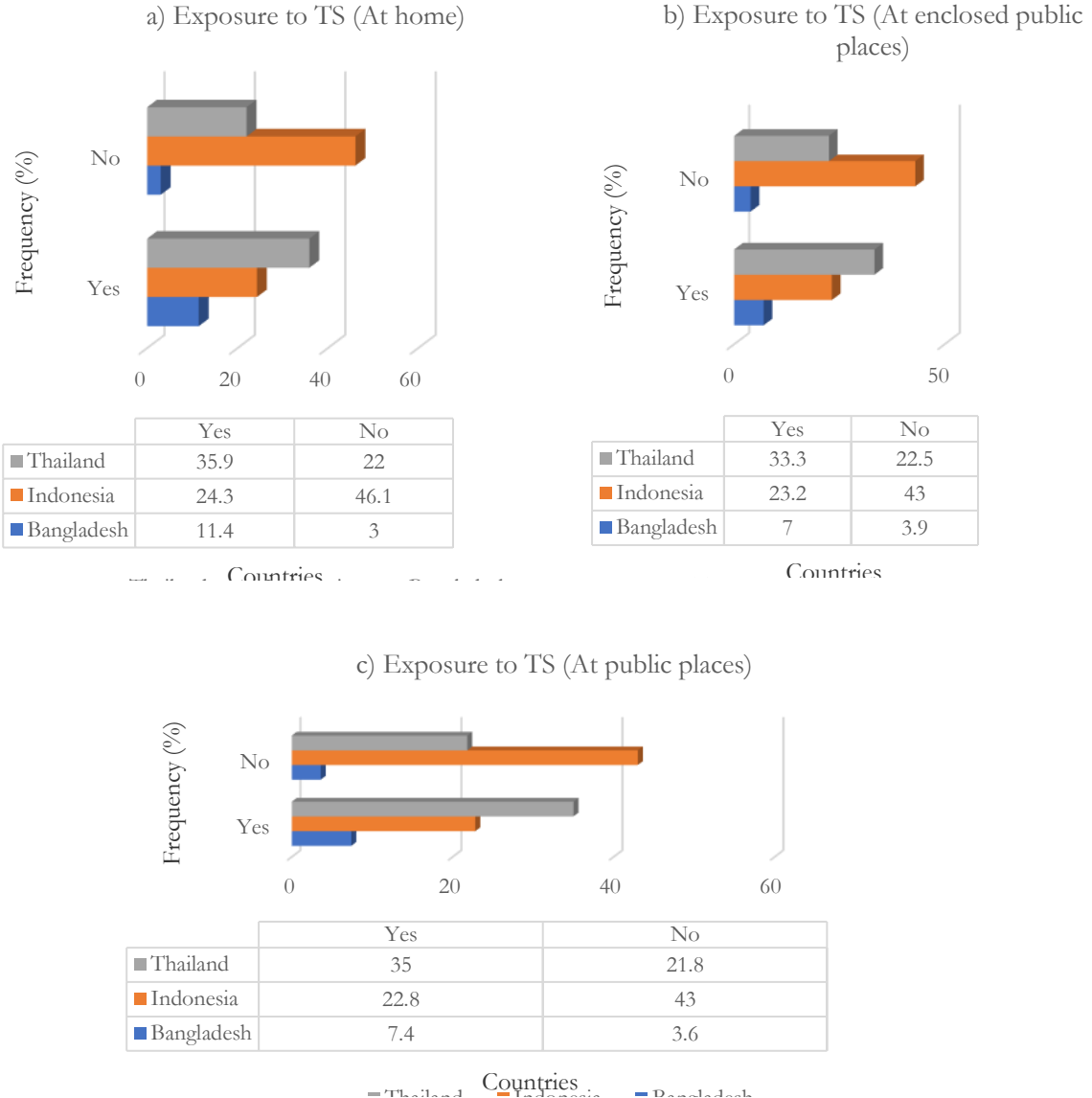


Figure 3. Prevalence of exposure to TS in environment.

public places were found to be insignificant in the regression model. But it was found significant in the other two countries.

Awareness about exposure to TS and Promotions and advertisements shown in public locations were identified as significant in the multivariable regression analysis, just as they were in the bivariate outcomes in Bangladesh (OR = 0.38; 95% CI = 0.24-0.59) and Thailand (OR = 1.5; 95% CI = 1.02-2.2) but insignificant in Indonesia. This study found that TS lessons in class about the risk factors and harmfulness of smoking and

Table 2. Prevalence of exposure to TS in environment

Characteristics	Prevalence of Tobacco Consumption (Bangladesh)		Prevalence of Tobacco Consumption (Indonesia)		Prevalence of Tobacco Consumption (Thailand)	
	(%)	Chi-square (P-values)	(%)	Chi-square (P-values)	(%)	Chi-square (P-values)
Age (Years)						
13 or less	4.2		33.8		18	
14	4.9	50.327 (0.000)	39.3	16.862 (0.000)	27.3	66.841 (0.000)
15 or more	12.7		37.1		41	
Gender						
Boy	9.6	57.853 (0.000)	68.1	3233.056 (0.0000)	38.3	101.280 (0.000)
Girl	3.1		11.8		17.2	
Educational status						
Eighth grade or below	5.5	0.768 (0.381)	34.4	10.441 (0.001)	22.2	48.035 (0.001)
Ninth grade or above	6.2		37.7		38.2	
Exposure to TS (At home)						
Yes	11.4	86.916 (0.000)	24.3	490.708 (0.000)	35.9	40.349 (0.000)
No	3		46.1		22	
Exposure to TS (At enclosed public places)						
Yes	7	13.077 (0.000)	23.2	365.202 (0.0000)	33.3	25.747 (0.000)
No	3.9		43		22.5	
Exposure to TS (In public places)						
Yes	7.4	18.964 (0.000)	22.8	371.920 (0.000)	35	37.508 (0.000)
No	3.6		43		21.8	
Lessons about the harmful consequences of TS at school						
Yes	5.3	1.707 (0.191)	35.5	5.860 (0.015)	25.7	3.285 (0.000)
No	6.4		37.9		30.2	
Advertisements or promotions for tobacco products in public places						
Yes	7.6	7.587 (0.006)	39.1	38.095 (0.000)	35.3	28.378 (0.0000)
No	5		33		23.2	
Awareness about exposure to TS						
Yes	5.2	20.708 (0.000)	35.7	36.784 (0.000)	25.7	10.660 (0.001)
No	12.3		49.6		37.9	

mentioning smoking and health in the course curriculum were insignificant in Thailand but significant in Indonesia.

Table 3. Correlated factors concerning adolescents' tobacco consumption from GYTS, Bangladesh-2013, Indonesia 2019, and Thailand 2015 datasets

Variables of interest	Bangladesh	Indonesia	Thailand
	OR (95% CI)	OR (95% CI)	OR (95% CI)
Age (Years)			
13 or less	-	-	-
14	0.80(0.54-1.19)	0.89(0.75-1.06)	2.38(1.51-3.75) ***
15 or more	0.26(0.17-0.38) ***	0.86(0.71-1.03)	1.57(1.7-2.30) *
Gender			
Boy	-	-	-
Girl	3.81(2.70-5.38) ***	17.03(15.22-9.0.5) ***	0.29(0.23-0.37)
Educational status			
Eighth grade or below		-	-
Ninth grade or above		0.72(0.61-0.85) ***	1.22(0.84-1.78)
Exposure to TS (At home)			
Yes	-	-	-
No	3.64(2.53-5.21) ***	0.42(0.38-0.48) ***	0.58(0.45-0.74) ***
Exposure to TS (At enclosed public places)			
Yes	-	-	-
No	0.95(.61-1.50)	0.68(0.59-0.79) ***	0.82(0.60-1.11)
Exposure to TS (In public places)			
Yes	-	-	-
No	1.21(0.77-1.91)	0.71(0.61-0.82) ***	0.55(0.41-.74) ***
Lessons about the harmful consequences of TS at school			
Yes	-	-	-
No	-	0.87(0.78-0.97) *	1.30(0.99-1.70)
Advertisements or promotions for tobacco products in public places			
Yes	-	-	-
No	1.03(0.73-1.44)	1.03(0.92-1.15)	0.55(0.43-0.69) ***
Awareness about exposure to TS			
Yes	-	-	-
No	0.38(0.24-0.59) ***	0.82(0.65-1.03)	1.5(1.02-2.2) *

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Discussion

In SEAR, tobacco usage among adolescents aged 13–15 years is on the rise. Numerous factors were linked to teenage tobacco consumption in these countries, including fundamental features, smoking at home, enclosed public spaces and other public locations, lessons about the influence of TS in class, etc. Tobacco consumption is widespread among adolescents in the age range (15 years or above), as well as senior adolescents (ninth and above), and among boys (Leatherdale et al., 2005; Sirirassamee et al., 2009; The GTSS Collaborative Group, 2006), according to the first level hypothesis of triadic impact and other researches (Flay et al., 1999). One justification for this could be located in the relationships between smoking and traits like superiority, especially in the context of South Asia. Although tobacco consumption among girls in developing economies such as Bangladesh, Indonesia, and Thailand was formerly low, it is currently on the rise (World Health Organization, 2009). This is due to the general effect of globalization, urban development, and tobacco industry advertising strategies (Al-Sadat et al., 2010; Eriksen et al., 2012; Sirirassamee et al., 2009). Tobacco usage among

adolescents is significantly more tightly connected to their surrounding social context (Flay et al., 1999; Kim Choe et al., 2004; Kobus, 2003). If they did not encounter someone smoking at home and residence around them, Indonesian and Thai pupils were 0.42 and 0.58 times less likely to consume tobacco, correspondingly. Furthermore, with tobacco smoking, the chi-square test was significantly significant ($P < 0.0001$). Other studies have accompanied the conclusions (Akpinar et al., 2006; Rachiotis et al., 2010; Rani et al., 2017; Wakefield et al., 2000).

Compared to prior (Al-Sadat et al., 2010; Oswal, 2015), advertisements and marketing content viewed in public areas and media in Bangladesh and Indonesia did not indicate any significant differences between tobacco consumers and non-consumers, but they did in Thailand. As a result, we recommend additional research to accomplish our findings. Only in Thailand, it was seen that school teaching and classroom discussion about the detrimental effects of TS affect adolescents' behaviors and attitudes about tobacco consumption, which is validated by other research (Kotwal et al., 2005; Rudatsikira et al., 2008). However, it was not linked in Bangladesh and Indonesia, indicating that more research is needed.

Because numerous factors have been linked to an increase in tobacco consumption among adolescents in these countries, certain preventive initiatives should be implemented to build adequate tobacco control policies and a tobacco-free epidemic. The WHO Framework Agreement on Tobacco Control has been signed by these three countries (Eriksen et al., 2012). More ways to minimize the tobacco consumption rate among school-going adolescents include community and education initiatives, conducting frequent curricular and co-curricular tobacco preventive activities in school, and motivating social actions to prevent minors' access to these products (Gunasekara & World Health Organization, 2008; Pandey et al., 2008). We'd like to make some recommendations obtained from this study about current tobacco control policies.

First, because smoking in crowded locations (public areas) and at home raises health risks and affects early tobacco consumption, these spaces should be designated as smoke-free zones, as other researchers have advised (Rudatsikira et al., 2008; Sham et al., 2015; Wakefield et al., 2000). Second, to raise awareness among kids across the country, school programs should be updated to stress tobacco preventative measures and implications. Furthermore, tobacco advertisements and tobacco use by school workers should be prohibited from school grounds, as adolescents can follow their teachers and staff.

School disciplinary authorities should keep an eye on this routine basis. Finally, parents should watch their kid's choice of friends. School employees should assist parents in this attempt, because surrounding tobacco use has been identified as the largest risk factor, and keeping stability in the school climate is the first approach in selecting friends. Boys and girls both should be prioritized in policymaking since they are more susceptible nowadays (World Health Organization, 2009). Girls, on the other hand, must be supervised because tobacco companies attract them in various ways in developing countries. As a result, a qualitative approach is recommended to enhance a better knowledge of the characteristics of adolescent tobacco consumption behavior.

To conclude, tobacco consumption reduction among school students and adolescents should be the government's primary objective because they are protracted consumers. Any unfavorable health results will have a direct impact on educational activities as well their mental development will be hampered. As a result, comprehensive initiatives like the ones we described, as well as established preventative programs, should be strengthened to assist teenagers in quitting risky behaviors.

Conclusion

Tobacco use preventative measures among school-aged youths should be the government's primary concern to minimize tobacco intake since they are the future consumers and supplement smokers who quit or die as a result of TS or exposure to TS in the environment. Any unfavorable health results will have a direct impact on

their academic achievements, such as absence from class and exams, and will raise the dropout rates. Furthermore, it will put further stress on family budgets, particularly for low-income households, and will consequently raise government spending on health and education. As a result, comprehensive initiatives, as well as existing prevention programs, should be strengthened to assist teenagers in quitting risky behaviors.

Data Limitations

The GYTS dataset is self-reported, so bias and purposeful inaccurate reporting could be included. And although individuals were assured of privacy at the start of the interview, they may have misreported because tobacco use is not a commonly accepted social or cultural norm. Young boys are thought to have over-reported because they perceived tobacco usage as courageous, masculine, and a sign of dominance. Female adolescents, on the other hand, may have inadequately reported due to social and family constraints. This misreporting could have an impact on the prevalence of TS and its relationships, as well as policy recommendations. Finally, cause-effect correlations could not be determined because the datasets were cross-sectional.

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