

An analysis of global youth tobacco survey among school children aged 13–15 in Vietnam

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Abstract

Smoking is a global public health concern. Vietnam is facing a rapidly growing epidemic of tobacco use. The trend of smoking in Vietnam seems to be increasing and the magnitude of the problem affects people who smoke before reaching adulthood. One of the factors implicated in the continuously rising trend of smoking among young people in Vietnam is clearly due to unavailability of restrictive laws and regulations. Therefore, our study sought to analyze available dataset from the Global Youth Tobacco Survey (GYTS) for developing a comprehensive national smoking policy in order to lower smoking risks among young people in Vietnam.

Keywords: Current smoking prevalence; Tobacco use; Smoking in Vietnam; Smoking among minors; Smoking policy; Tobacco control program

1 Background

Adolescent tobacco smoking remains a major public health concern worldwide. In Vietnam, smoking is very common, especially among men. Data from the Vietnam Global Adult Tobacco Surveys (GATS) showed that the prevalence of tobacco smoking among Vietnamese adults aged 15 years and over was 23.8% (47.4% among men and 1.4% among women) in 2010. Even though the prevalence of current smoking among adolescents in Vietnam seems to be low, the problem of youth smoking in Vietnam should not be underestimated because tobacco industry has been trying to expand cigarette markets by promoting cigarettes to adolescents. Also, youth smokers are 3 times more likely to use alcohol, 8 times more likely to use marijuana, and 22 times more likely to use cocaine than non-smokers. Smoking is associated with a host of other risky behaviors, such as fighting and engaging in unprotected sex, etc. and 22.5% (45.3% among men and 1.1% among women) in 2015.

In addition, causal relationships have been established between tobacco use and some adverse health outcomes [1]. Smoking can increase the probability of developing chronic diseases such as lung cancer, cardiovascular diseases, chronic airways diseases, premature births and many other conditions [2]. Recent epidemiologic and experimental findings show that cigarette smoking can be highly associated with the risk of getting lung cancer [3] and cardiovascular diseases [4]. Smoking has also been found to increase the risk of developing Mycobacterium tuberculosis infection, which accounts for high mortality in developing countries [5]. Therefore, smoking has become one of the major preventable indicators for mortality and morbidity. Since smoking can harm people's health, it has become an emerging public health concern in both the developed and developing world including in Vietnam.

Taking advantage of data from the Vietnam Global Youth Tobacco Survey (GYTS) 2014, which was initiated by the World Health Organization (WHO), Tobacco Free Initiative, and the Center for Disease Control and Prevention (CDC) Office on Smoking and Health, the purpose of my research was to assess the prevalence of current smoking among school children aged 13–15 years in Vietnam and to identify factors that have associations with individual smoking.

2 Methods

2.1 Data source

We used the data from Vietnam GYTS 2007. GYTS is an internationally standardized school-based survey that has been conducted in more than 140 countries. The GYTS was developed by the WHO and the Centers for Disease Control and Prevention (CDC) to track tobacco use among young people. The GYTS is a school-based surveillance system designed to allow countries throughout the world to track youth tobacco use in a common, standardized format. Standard methodology guided the sampling and selection procedures, preparation

of questionnaires, and ensured consistency of data collection, management, and analysis. The GYTS used a two-stage cluster sample design that produced representative samples of students in grades 7 to 9, which were associated with ages 13–15. The survey sought to collect information in seven major areas: knowledge and attitudes toward cigarette smoking, prevalence of all tobacco use, the influence of media and advertising on the use of cigarettes, accessibility of cigarettes, tobacco-related curriculum in schools, exposure to secondhand smoke, and smoking cessation.

2.2 Study design and participants

The GYTS was a cross sectional analysis, using a survey. The survey included a self-administered questionnaire with 67 core questions. The questionnaire has been annexed in the final report of the survey, which can be accessed online <http://dhsprogram.com/pubs/pdf/fr235/fr235.pdf>. Through a multi-stage sampling design, schools were selected in the first stage proportional to their enrollment size; then, the second stage, classrooms within each school were randomly selected, with all students in the class eligible to participate. Student participation was voluntary and anonymous using self-administered data-collection procedures. The Vietnam GYTS included data on prevalence of cigarette and other tobacco use as well as information on five determinants of tobacco use: access/availability and price, exposure to second-hand smoke (SHS), cessation, media and advertising, and school curriculum. In 2009, Vietnam conducted the GYTS, which was a school-based survey of students in grades 1, 2, and 3 (equivalent to grades 7, 8 and 9 in other settings). A two-stage cluster sample design was used to produce representative data for Vietnam. At the first stage, schools were selected with probability proportional to enrollment size. At the second stage, classes were randomly selected and all students in selected classes were eligible to participate. The school response rate was 95.0%, the class response rate was 100%, the student response rate was 96.9%, and the overall response rate was 92.1%. A total of 15,610 students aged 13–15 participated in the Vietnam-GYTS.

2.3 Selection of variables and statistical methods

The outcome variable was the current cigarette smoking status, which was defined as having smoked a cigarette, even in a single puff, in the last 30 days preceding the survey. The independent variables included the demographic variables such as gender and education level by grades and some other significant variables such as parental and close friends smoking, areas of smoking, family discussion about harmful effects of smoking and exposure to tobacco related advertisements. These selected predictors were found to be proximate causes of high smoking rate among adolescents [6].

My data analysis was performed using RStudio 2022.12.0 and R-base 4.1.3. Descriptive analyses were computed to identify the demographic characteristics of study participants in the 2007 Vietnam GYTS. Multilevel logistic regression analysis was performed to examine the association between independent variable and the outcome of being current smoker. The level of significance was $\alpha = .05$.

3 Results

3.1 Descriptive analysis

The demographic characteristics of study participants are displayed in Table 1. A total of 15,610 in-school students participated in the Vietnam GYTS in 2007. Overall, 54 % of the participants were girls, and 36 % were in grade 8. Prevalence of current cigarette smoking was found to be 11 %.

Characteristic	N = 15,610 [†]
Gender	
Female	8,376 (54%)
Male	7,234 (46%)
Grade	
1	5,427 (35%)
2	5,672 (36%)
3	4,511 (29%)
Smoking Status	
Non-smoking	13,955 (89%)
Smoking	1,655 (11%)

Figure 1: Demographic characteristics of study participants in the Vietnam GYTS 2007

3.2 Multilevel logistic regression analysis

The prevalence of current smoking status was higher in boys than girls (p-value $\leq .001$). Students in grade 3 had higher prevalence of current smoking status (40.6 %), the association was statistically significant (p-value $\leq .001$).

The results of logistic regression analysis of the association between each independent variable of interest and the outcome of current smoking status. The prevalence of current smoking status was higher in students who had parents and close friends smoke (p-value $\leq .001$). The prevalence of current smoking status among in-school students was higher when they had seen people smoking in the house for more than 3 day (p-value $\leq .001$). Furthermore, the prevalence of current smoking status was higher among students who had family discussion about harmful effects of smoking (p-value $\leq .001$). Participants who saw cigarette advertisements on billboard also had higher prevalence of smoking (40.9 %).

4 Discussion

4.1 Prevalence of current smoking status among minors (ages 13–15) in Vietnam

Our main findings demonstrate that an overall prevalence of current cigarette smoking status among minors in Vietnam is 11 % with rate among boys of 17.2 % and girls of 4.9 % respectively.

There are some possible reasons for the high prevalence of smoking among minors in Vietnam. Lacking of restrictive law to control cigarette sales and consumption by minors. Cigarettes are available in small shops and street vendors with retail price. Most cigarettes cost less than US\$1 a pack. Ordinary people including children underage are able to buy even only 1 stick of cigarette from small shops and street vendors. Although every single pack of cigarette is labeled with health warnings, it is effectively meaningless to many smokers due to high illiteracy among poor people, especially in rural settings. Therefore, it is clear that the accessibility and affordability of cigarettes are very high in Vietnam.

4.2 Influence of parental and peer smoking

Our analysis found that both parental and close friends smoking were independently associated with current smoking prevalence among minors (ages 13–15) in Vietnam. Having parents and close friends who smoke can be a significant factor to influence smoking initiation among minors. The odds of smoking status were higher among students who had both of their parents smoking (aOR, 1.94; 95% CI, 1.41-2.66). Students whose best friends smoked had greater odds of being smoked (some of friends smoked: aOR, 3.41; 95% CI, 2.98-3.92; most of friends smoked: aOR, 8.53; 95% CI, 6.85-10.62). Those whose family discussed about the harmful effects of smoking were less likely to be susceptible to smoking (aOR, 0.74; 95% CI, 0.64-0.85). In addition, students who had been taught about the dangers of smoking were less likely to smoke (aOR, 0.81; 95%, 0.70-0.94) This finding is supported by some literatures conducted in other countries. For example, prevalence of young Latinos who smoked in the United States was found to be associated with having both parents and friends who were smokers at baseline. The study concluded that having parents and peers smoking could have higher acceptability of smoking among minors and may influence them to start initiating cigarette smoking. Consequently, the association between parental and peer smoking and prevalence of smoking among minors can indicate easy availability and accessibility of cigarettes within home, which is obvious in the case of Vietnam.

4.3 Environmental tobacco smoke or second-hand smoke

Our analysis revealed that although harmful effects of smoking was discussed by the family, the rates of current smokers among students were found to be statistical significantly associated. This suggests that exposure to environmental tobacco smoke (ETS) or second-hand smoke (SHS) especially at schools, public places and homes remains a big concern in Vietnam.

The odds of the use of tobacco were higher among students who had number of days that people smoked in their home more than 2 days during the past 7 days, in their presence (3 to 4 days: aOR, 1.37; 95% CI, 1.14-1.64, 5 to 6 days: aOR, 1.74; 95% CI 1.36-2.20, 7days: aOR, 1.44; 95% CI 1.21-1.70).

Moreover, some literatures have revealed that exposure to ETS can be associated with adverse health outcomes. Exposure to ETS at homes especially among children can prejudice them to be at high risk of getting diseases such as acute respiratory illnesses, asthma, ear infection and sudden infant death syndrome. Therefore, intervention such as health education or improving knowledge seems to help reduce children's ETS exposure at homes. However, this strategy will be less effective to prevent smoking behavior and reduce ETS exposure without strong policy support such as restriction on smoking at home. Indeed, mounting evidence suggests that legislation to ban smoking at homes has been found to reduce various health outcomes. For instance, ear problems and infant death syndrome related to ETS exposure in New South Wales, Australia were found to be reduced after implementing and enacting a legislation to ban smoking at homes [7]. In the case of Vietnam, comprehensive interventions through both family education and policy development to forbid smoking at public places and homes are required

to reduce harm from SHS exposure especially among vulnerable populations. Protection of the environment from SHS to protect human health and wellbeing should be strategic, which must have a support from both leadership commitment and strategic policy settings.

4.4 Tobacco related advertisements

A piece of literatures have revealed that public awareness and support through mass communication, health education and reliable information are essential elements for the success of tobacco control program. However, our findings showed that current smoking status among minors in Vietnam was associated by factors such as billboard advertisements. Those who had seen anti-smoking media messages (e.g. television, radio, billboards, posters, newspapers, magazines, movies, drama) during the last 30 days were less likely to smoking (a few: aOR, 0.68; 95% CI, 0.55-0.85, a lot: aOR, 0.58; 95% CI, 0.47-0.72). Students who had gone to a concert sponsored by a tobacco company had greater odds of being smoked (aOR, 1.34; 95% CI, 1.12-1.60). The odds of the use of tobacco were higher among students who had been offered a free cigarette by a cigarette representative (3 to 4 days: aOR, 1.27; 95% CI, 1.07-1.52). Cigarette products can be seen everywhere through billboard advertisements. This clearly shows that the cigarette company simultaneously advertises, markets and promotes all forms of tobacco. This tobacco marketing has been a substantial contributing factor to smoking among young people in the country, while restriction law is not in place.

4.5 Policy implications

Public concern about the health effects of smoking has prompted a number of countries to adopt policies designed to reduce smoking rate among young people. Among these policies are: laws prohibiting sale of tobacco products to underage groups; restrictive advertising laws; and smoke-free areas regulation. In Vietnam, public awareness, education and support for tobacco control are unlikely to reduce smoking rates among young people without legislative intervention. Vietnam must develop and enact a comprehensive policy to regulate and control the circulation of cigarettes across the country, particularly among underage groups. Developing a restriction law of the current tobacco sales to minors is extremely effective strategy to lower smoking prevalence and consumption among underage people. This analysis recommends that Vietnam's government should develop and enact a proper policy intervention that should include an article setting down a minimum age for those who smoke and sell cigarettes. Moreover, schools in Vietnam have virtually no health education with regard to smoking. The whole school system has absolutely no regulation on tobacco use in school, whether among school kids or teachers. Evidence suggests that wider introduction of comprehensive school smoking policies helps reduce smoking among young people. Thereby, school environment is critical to be target for tobacco control strategies and school tobacco policies should be considered as part of a comprehensive approach to tobacco use among minors. This analysis recommends the government of Vietnam to implement a strategic intervention targeting school-based health education and to develop school tobacco policies. Therefore, both school education and tobacco policy interventions are essential to reduce smoking prevalence among in-school students in Vietnam. Besides, since people in Vietnam have high exposure to SHS, it is necessary to forbid smoking in public places such as public transport, health facilities, offices and schools to reduce health outcomes associated with smoking as well as the smoking rate among population in the country. in Vietnam should have a free-smoke policy to regulate and ban smoking in public places. This analysis suggests that smoking should be restricted in all government offices and schools as the starting point. As of current smoking status among minors has been found to be highly associated with exposure to billboard advertisements, in Vietnam must establish a policy on comprehensive bans on all forms of tobacco advertising, marketing, sponsorship and promotion. This policy approach has been found to be effective in reducing young people smoking rates, as observed in other low and middle-income country settings.

5 Conclusion

Undoubtedly, smoking behavior among adolescents in Vietnam is associated with some determinant factors such as availability of the product, easy access or lack of restrictive laws and other factors such as family and peer smoking. In Vietnam, as a result of early exposure, smoking has increased the severity and spread of tuberculosis and other respiratory conditions, which remain high among adolescents in the country. Despite the known health problems associated with tobacco use through family health education and anti-smoking messages, young people in Vietnam continue to initiate and develop regular patterns of tobacco use. Our findings reveal that overall prevalence of current cigarette smoking status among minors in Vietnam is 11 % with rate among boys of 17.2 % and girls of 4.9 % respectively. Some immediate actions are possible, such as developing age restriction and smoke free policies. This analysis provides evidence-based information for developing comprehensive tobacco control programs - both education and policy interventions to reduce smoking rate among young people in Vietnam.

6 References

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