Adolescent Smoking: A Cross-sectional Study on the Knowledge, Attitude and Practices of Filipino Adolescents in a Tertiary Hospital

Natasha Ann R. Esteban-Ipac, MD and Vanessa Maria Torres-Ticzon, MD

Division of Adolescent Medicine, Department of Pediatrics, Philippine General Hospital, University of the Philippines Manila

ABSTRACT

Objective. The study aims to determine the knowledge, attitudes and practices of Filipino adolescents aged 13-18 years old regarding cigarette smoking.

Methods. This is a descriptive cross-sectional study that utilized a questionnaire adapted from the Global Youth Tobacco Survey.

Results. The prevalence among study participants who tried smoking (11.8%) and current users (3.6%) is lower than the global statistics and the country's reported prevalence, but started at a younger age (5.3% started smoking at 12-13 years old). Electronic cigarette (12.9%) is more commonly tried and used than conventional cigarettes (11.8%). Ninety five percent (95%) of the participants view smoking as harmful. Some (13.5%) do not know the effects of smoking, 1.1% consider it harmless, and 8.2% have no objections to starting to smoke someday. Most adolescents (49.1%) do not know the price of cigarettes, but 22% prefer to pay less than the actual price.

Conclusion. Adolescents are knowledgeable and have a negative attitude towards smoking. Regardless if they are non-smokers, tried smoking, or are currently smoking, they still need to be educated more regarding the effects and consequences of smoking.

Keywords: smoking, tobacco use, electronic cigarette, vaping, adolescents

INTRODUCTION

Tobacco is the leading behavioral risk factor that causes preventable death and is the single largest cause of death and disability worldwide.[1] Adolescence is a susceptible time for initiation of cigarette use. In the Philippines, the average age of initiation of smoking is 17.5 years old.[2] During this period, smoking is mere experimentation, but it can also lead to the formation of habits that may continue on to adult life.[3]

The adolescent's transition to adulthood is a critical period for the development of enduring smoking-related attitudes and behaviors, and presents an important population to target with tobacco prevention messages, public health intervention, and regulatory interventions.[4]

The Philippines is the second biggest market for cigarettes in Asia.[5] Being a tobacco-growing country, it is one of the countries with high prevalence of tobacco use in the Western Pacific Region.[6] The Global Youth Tobacco Survey (GYTS) is the global standard for monitoring youth tobacco use using a school-based survey. It has been done in the country with the sixth and latest report being completed in 2019.[7] Among 13 to 15 years old alone, 12.5% are current

Corresponding author: Natasha Ann R. Esteban-Ipac, MD
Division of Adolescent Medicine
Department of Pediatrics
Philippine General Hospital
University of the Philippines Manila
Taft Avenue, Ermita, Manila 1000, Philippines
Email: nrestebanipac@up.edu.ph

cigarette smokers (those who smoked cigarettes anytime during the past 30 days) where 18.3% are males while 6.9% are females. This number increases for those who ever smoked cigarettes, even one or two puffs, to 26.8% with 36.0% males and 18.1% females.[7,8] The National Capital Region (NCR) had the highest reported proportion of youth smokers at 26.6%.[9]

The World Health Organization (WHO) came up with a Framework Convention on Tobacco Control (FCTC) treaty to respond to the tobacco epidemic. It was developed to protect every person, including adolescents, from exposure to tobacco and to inform everyone about the health consequences, addictive nature and health risks associated with tobacco consumption and exposure to tobacco smoke.[10] In 2008, WHO introduced MPOWER, a package of six evidence-based tobacco control measures to reduce tobacco use.[11] MPOWER refers to:

- **M:** monitoring of tobacco use and prevention policies
- **P:** protecting people from tobacco use
- **O:** offering help to quit tobacco use
- **W:** warning about the dangers of tobacco
- **E:** enforcing bans on tobacco advertising, promotion and sponsorship, and
- **R:** raising taxes on tobacco

In the Philippines, although tobacco control efforts started in 1987, it was only in 2003 that the Republic Act 9211, known as Tobacco Regulation Act of 2003 was passed. One of the law's main thrusts is to protect the youth from starting a life-long addiction to tobacco use by prohibiting the sale of tobacco products to minors. The National Tobacco Control Strategy was developed to reduce the prevalence of smoking and its effects, and to improve the health and lives of Filipinos.[6]

Other tobacco control policies include establishing smoke-free environments such that there is a complete smoking ban on schools and healthcare facilities. Advertising and promoting cigarettes are banned on local television, radio and newspaper as well as having health warnings on the cigarette product packaging.[2] One of the most efficient smoking cessation policies implemented across the world is the cigarette price policy. Adolescents are two to three times more responsive to tax and price changes, hence reducing their tobacco initiation and consumption.[12]

Tobacco control is a multi-sectoral undertaking which is not limited to the government and school system. Healthcare providers are likewise important partners. such that it is one of the advocacies of the Philippine Pediatric Society. Physicians can help protect adolescents from tobacco use, monitor their use and warn about its dangers as well as offer help to quit. Presently, since studies are mostly done in schools, no hospital or clinic-based study is available.

Although GYTS is being periodically done every 3-4 years, efforts must be done to reduce smoking among adolescents by continuously identifying other issues and factors related to smoking. The adolescent medicine clinic in the Philippine General Hospital screen adolescent patients for psychosocial risk factors, including smoking behaviors during consults. Although the clinic caters to adolescents 10-19 years old, only patients 13-18 years old are directly triaged to the clinic, since younger patients are triaged to the Sick Child Clinic, while older patients are decked to the Adult Services, either Internal Medicine or Family Medicine outpatient services.

Since this study will be done in a hospital-based clinic, this study would include those who are out of school not covered by GYTS. Identifying the present knowledge, attitude and practices of these adolescents in a tertiary hospital will allow us to identify how adolescents view smoking in general. An in-depth understanding of the different factors that make adolescents smoke is necessary to assist us establish important strategies for preventive guidelines and facilitate the implementation of some programs and policies which are geared towards eradication of smoking among adolescents.

Factors related to Adolescent Smoking

The number of youths initiating smoking in the country is increasing.[7] Understanding the different factors leading to smoking in adolescents is a matter that must be explored. This includes their knowledge, attitudes and practices regarding smoking.

Interplay of different factors determines if an adolescent will smoke or not.[13] Individual factors including age, sex and grade level affect the knowledge, attitude and practices of an adolescent. This will be influenced by interpersonal factors including behavior of parents, peers and the media. Moreover, this will be further influenced by societal factors or community/national factors which includes exposure to second hand smoke as well as the laws available and implementation (or lack thereof) of such laws. All these factors affect the knowledge, attitudes and practices which in turn is the basis of the smoking behavior of an adolescent (Figure 1).

Objectives of the Study

This study aims to determine the knowledge, attitudes and practices of Filipino adolescents consulting an Adolescent Clinic of a tertiary hospital regarding cigarette smoking. The following are the specific objectives:

1. To describe the demographic and socio-economic profile of Filipino adolescents consulting in an Adolescent Clinic of a tertiary hospital
2. To determine the prevalence of cigarette smokers among adolescent Filipinos consulting a tertiary hospital
3. To identify factors that encourage adolescents to smoke

METHODS

Research Design

A descriptive cross-sectional study design was used.

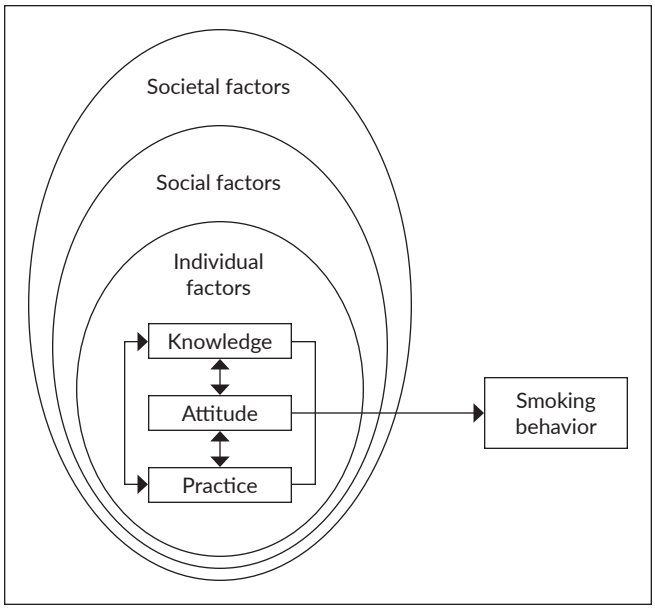

Figure 1. Conceptual framework of adolescent smoking behavior.

Sampling Design and Participants

The target subjects of the study are Filipino adolescents seen at the Adolescent Medicine Clinic of the University of the Philippines-Philippine General Hospital (UP-PGH) from August to October 2018.

Inclusion Criteria

Patients aged 13 to 18 years of age and seen at the Adolescent Medicine Clinic of the UP-PGH from August to October 2018, who were willing to participate voluntarily and accomplished an assent form and parental consent form.

Exclusion Criteria

Patients who refused to join the study, or failed to submit a completed parental consent and assent form, or failed to complete the survey, or were not able to participate due to mental or physical incapacity were excluded.

Sample Selection

All patients who came in for a consult at the Adolescent Medicine clinic were qualified to be part of the study. Parental consent forms and assent forms were given. Only subjects with completed parental consent, assent and survey forms were included in the study.

Survey

A survey was used to measure the knowledge, attitude and practices of high school students regarding cigarette smoking. Questions on the survey were mostly adapted from the Global Youth Tobacco Survey, but was translated to Filipino and took into consideration the current local pricing of cigarettes.

A pilot test was done to a sample of 50 participants in the Adolescent Medicine clinic, who also accomplished the assent and parental consent forms (Supplementary Material). There were no issues noted and questions raised during the pilot study hence, there were no revisions made in the survey used for the study proper.

Data Collection Procedure

Ethical clearance was secured from the Ethics Review Committee. A research assistant took charge of recruitment to minimize risk of coercion from the primary investigator. The details of the study, informed consent and assent form were discussed with the patient and parents/guardians. Parental consent and assent forms were obtained prior to distribution of the survey forms. Qualified participants answered the survey alone and privately inside the Adolescent clinic. Obtained surveys were encoded electronically using Microsoft Excel.

Outcome measures

Demographic and clinical variables including age (in years), sex, grade level and weekly allowance were determined. The main outcome variable for this study is the collected comprehensive information from each selected respondent on the knowledge, attitude and practice of tobacco use among the participants from the survey.

Ethical consideration

The study was extensively reviewed, approved and monitored by the University of the Philippines, Manila Ethics Review Board. Participant assent and parental permission forms were obtained from all participants prior to answering the survey. Confidentiality was assured by removing any identifying information from the survey forms and allowing the participant to answer the survey alone and privately. Information obtained from the survey was kept confidential, even to the parents, by properly securing them. Only the investigator and the research assistant had access to the information.

RESULTS

A total of 170 adolescents answered and completed the survey and were included in the study. The mean age was 15 years old (standard deviation of 1.6), most of whom are 14 to 16 years old (52.9%) and more than half of them are female (62.9%) (Figure 2). Most of the participants are in school with majority of them in Grade 7 to 10 (55.3%) while there are 11.2% who are at their college level, and 1.8% are taking alternative learning school (ALS). The regular weekly allowance is less than 50 pesos weekly allowance (42.4%), while 23.5% are given from 51 to 150 pesos weekly allowance.

Majority of the participants (85%) reported they never smoked. However, there are 11.8% who tried smoking and 3. 6% are current smokers. Although majority also reported

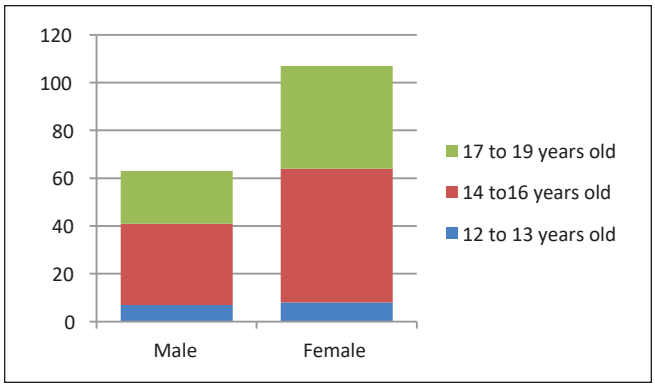

Figure 2. Age and sex distribution of adolescents from the adolescent clinic (n=170).

that they never used an electronic cigarette, there are more participants who tried e-cigarette (12.9%) compared with the regular cigarette (Figure 3). Among those currently using e-cigarette, half of them have not tried using the regular cigarettes.

Among those who are smoking and tried smoking, most of them have started when they were 12 to 13 years old with one participant even starting as early as 10-11 years old. Those who use e-cigarettes started at a later age at 16-17 years old, although one participant as young as 7 years old tried it. Among those who are smoking, most smoke for 1-2 days in a week while one participant smokes 5-6 days in a week and another one smokes daily. Among those who smoke, majority already tried to stop smoking.

Friends and peers are perceived as the most common influence to start smoking (10.6%), while a little percentage (1.2% are affected by advertisements and other reasons such as sadness). As much as 40% of the participants have friends who smoke, with four (2.4%) claiming all of his/her friends smoke. Most of the smokers get their cigarettes from their friends who give it to them for free (4.7%) while others buy it with their own money (4.1%). They most often smoke in a public place (7.1%) or at their friend's place (4.7%) while a few smokes at home (2.4%) and none regularly smoke in their school.

A good number of adolescents (81.2%) perceive smoking to be harmful, however, some (13.5%) do not know the effects of smoking and one participant even considered smoking as healthy. Secondhand smoke is perceived to be harmful by the majority as well.

Although around half of the participants (52.9%) claim that they did not see anyone smoking in front of them for the past week, but 4% claims that they were still exposed to smoking and cigarette use through television. Almost a third of the participants (32.9%) have fathers or male guardians who smoke and 6% have mothers or female guardians who smoke. Nearly everyone (97.1%) is not allowed to smoke at home. Six (3.5%) of the smokers have parents or guardians who know that they do smoke.

Generally, adolescents have parents or guardians who discuss the dangers of smoking as well as classes which teach about smoking and where to get help to stop smoking. Among the participants who bought a cigarette in the past 30 days, eight (4.7%) of them were refused to be sold cigarettes

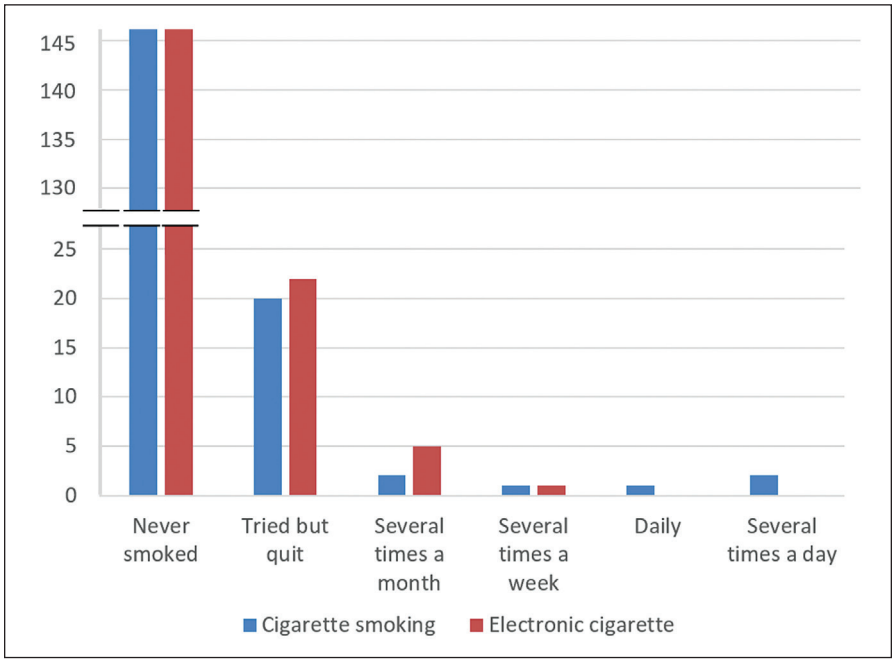

Figure 3. Prevalence of cigarette smoking and electronic cigarette smoking among adolescents in a tertiary hospital (n=170).

because of their age. Five (2.9%) were not prohibited despite their young age.

Although majority claims they do not smoke and have no plans of smoking, 8.2% have no objections to start smoking. All participants also plan to quit smoking, with most of them planning to stop in the next few days or within 1 year.

In terms of attitude towards smoking (Table 1), the participants strongly disagree that smoking should be allowed in all places (mean of 1.870) and to allow everyone (adults and young people) to smoke (mean 1.38). Participants disagree about allowing smoking in outdoor public places only (mean of 2.21) and allowing adults only to smoke (mean of 2.48). They are, however, undecided if smoking should be allowed in enclosed public places only (2.88).

Different factors affect the smoking status of the participant (Table 2). Age (p=0.3542), sex (p=0.1065), grade level (p=0.6372), whether they are allowed to smoke at home or not (p=0.0850) and whether dangerous effects were discussed by parents or guardians (p=0.4035) were not significant. On the other hand, number of friends who are smoking proved to be a significant factor, where those who have either tried smoking or are currently smoking have friends who also smoke, while those who do not smoke or have not tried smoking have no friends who are smokers (p=0.0001). Allowance is also a significant factor, specifically, those whose weekly allowance is from P51 to P150, they are more likely to be try or be a smoker (p=0.0370). On the other hand, adolescents report that the main reason why they should not smoke is that it is bad for their health (94.7%).

Adolescents consider that the cost of each stick of cigarette is less than 4 Philippine pesos (22.4%) while half of them (49.1%) responded that they have no idea about the price. Additionally, 25.9% of them think that cigarettes should cost more than the actual retail price. Among those who smoke, only 4 will still smoke despite a price increase. Most are willing to pay less than P4.00 per stick; some are willing to pay from P4.00 to 5.99 (4.7%), and as high as more than P20.00 per stick (4.1%).

DISCUSSION

Prevalence of adolescent smoking and vaping

The prevalence of smoking among the study participants is lower than the global statistics and the country's reported prevalence of youth smoking.[7,8] This may suggest that there really is a lower prevalence of smoking among adolescents who consult a tertiary clinic or that the adolescents were, despite the confidentiality, did not report their real smoking status. Majority of adolescents in the clinic started smoking 6 months to 1.5 years earlier compared to the country's reported average age of initiation of smoking.[2] Similarly though, some adolescents are exposed early on that they tried smoking at a very young age.[10] E-cigarette use is common and is increasingly recognized among adolescents[14,15] but despite being more expensive, electronic cigarettes are more commonly tried than the conventional cigarette.

Risk factors for adolescent smoking

Different factors determine if an adolescent will smoke or not. A study by Cosci done in 2013 noted that the lack of knowledge on the negative effects of smoking and second-hand smoking is a strong predictor of youth smoking.[16] This highlights the importance of educating the adolescents regarding the effects of smoking even at an early age.

A favorable attitude towards smoking is an important determinant of the desire to smoke among adolescents. Some of these attitudes associated with cigarette smoking are related to the belief that students who smoke cigarettes have more friends and are more attractive. Others would view smoking as a way to express feelings, cope with stress, or lose weight.[3,17]

Practices are related to individual, social, and societal factors. Individual factors would include age, where youth

Table 1. Attitudes towards smoking

Attitudes towards smoking	Mean	Interpretation	SA		A		N		D		SD	
			n	%	n	%	n	%	n	%	n	%
Smoking should be allowed in all places	1.80	Strongly Disagree	9	5.3	7	4.1	15	8.8	49	28.8	90	52.9
Smoking should be allowed in enclosed public places only	2.88	Neutral	21	12.4	40	23.5	34	20.0	47	27.6	28	16.5
Smoking should be allowed in outdoor public places only	2.21	Disagree	7	4.1	30	17.6	25	14.7	38	22.4	70	41.2
Allow everyone (adults and young people) to smoke	1.38	Strongly Disagree	3	1.8	1	0.6	6	3.5	38	22.4	122	71.8
Allow only adults to smoke and prevent young people from smoking	2.48	Disagree	17	10.0	36	21.2	18	10.6	39	22.9	60	35.3
Allow only young people to smoke and prevent adults from smoking	1.31	Strongly Disagree	1	0.6	0	0.0	8	4.7	32	18.8	129	75.9

SA=Strongly agree; A=Agree; N=Neutral; D=Disagree; SD=Strongly Disagree

Table 2. Factors affecting smoking

Factors	Never Tried Smoking	Tried but Quit Smoking	Smoker	p-value
Age				
12 to 13	14 (9.7)	1 (5.0)	0 (0.0)	0.3542
14 to 16	76 (52.8)	12 (60.0)	2 (33.3)	
17 to 19	54 (37.5)	7 (35.0)	4 (66.7)	
Sex				
Male	49 (34.0)	10 (50.0)	4 (66.7)	0.1065
Female	95 (66.0)	10 (50.0)	2 (33.3)	
Grade Level				
Out of School	8 (6.0)	2 (10.0)	0 (0.0)	0.6372
Grade 1 - 12	116 (81.0)	16 (80.0)	6 (100.0)	
College	17 (12.0)	2 (10.0)	0 (0.0)	
ALS	3 (2.0)	0 (0.0)	0 (0.0)	
Weekly Allowance				
Less than 50	65 (45.1)	6 (30.0)	1 (16.7)	0.2017
P51 to P150	29 (20.1)	8 (40.0)	3 (50.0)	0.0370*
P151 to P250	17 (11.8)	3 (15.0)	0 (0.0)	0.8670
P251 to P350	11 (7.6)	1 (5.0)	1 (16.7)	0.6127
P351 to 450	8 (5.6)	0 (0.0)	0 (0.0)	0.6998
P451 to P550	12 (8.3)	1 (5.0)	0 (0.0)	1.0000
More than P550	2 (1.4)	1 (5.0)	1 (16.7)	0.0530
Smoking Allowed at Home				
Yes	3 (2.1)	1 (5.0)	1 (16.7)	0.0850
No	141 (97.9)	19 (95.0)	5 (83.3)	
Discussed about the dangers of smoking with your parents/guardians				
Yes	97 (67.4)	11 (55.0)	5 (83.3)	0.4035
No	47 (32.6)	9 (45.0)	1 (16.7)	
Number of friends who smoke				
None of my friends	98 (68.1)	3 (15.0)	1 (16.7)	0.0001*
With Friends Smoking	46 (31.9)	17 (85.0)	5 (83.3)	
Few of my friends	30 (20.8)	9 (45.0)	1 (16.7)	
Half of my friends	14 (9.7)	7 (35.0)	3 (50.0)	
All of my friends	2 (1.4)	1 (5.0)	1 (16.7)	

**Statistically significant*

who start smoking before age 14 years are less likely to quit smoking and more likely to continue smoking into adulthood.[18] In the Philippines, 12% tried their first cigarette at the age of 7 years old or even younger[10] and the prevalence of smoking increase substantially with age.[19]

Gender has been a major predictor of smoking in some countries across the globe where males smoke more than females. In a study done by Teixeira, prevalence of smoking initiation among the boys was 49% higher than among the girls ($p = 0.010$).[20] In the Philippines, men are more likely than women to smoke probably due to the social norm on gender behavior where men have more liberty and are allowed more range of social activities compared to women.[19]

A study by Teixeira noted that children with an allowance and greater purchasing power, enables them to make decisions and purchases without the financial barrier which often induces them to try cigarettes.[20] In another study by Siziya done in Zambian schools, students who received pocket money were 2.3 times more likely to be smokers as compared to those students who did not receive pocket money.[21]

One of the most studied social factors is family/parents. A study by Malta revealed that family plays an essential role in prevention of not only tobacco, but also alcohol, and drug use as well as promote health among teenagers.[22] Parents who smoke leads to adolescent smoking.[20,23] This risk-taking behavior may be changed by modifying the attitude of the parents and increasing their parental supervision. Adolescents would not begin or continue to smoke if they think their parents do not approve it.[19,24]

Other factors affecting an adolescent's decision to smoke include (a) grade level, where the higher the grade a student is, the higher the chances that the student smokes cigarettes[21], (b) peers, where the more smoker friends an adolescent has, the higher likelihood of smoking, even alcohol use.[25,26] and (c) media, where viewing movie depictions of tobacco use is associated with higher receptivity to smoking.[27]

The environment per se is a societal factor, which includes cigarette taxes and prices, as well as implementation of smoking prevention programs specifically for the youth. Living in a more socioeconomically disadvantaged neighborhood is independently associated with increased smoking.[26] On the other hand, taxes and price increases also influences cessation or reduction of cigarette consumption.[28] In a study in India, providing professional and program advice for quitting smoking is very effective for adolescents, hence more programs and healthcare professionals must be employed to prevent the use of tobacco.[29]

In the study, age, sex, grade level and knowledge on effects of smoking were not considered as significant factor, contrary to what the studies show.[16,19-21] However, it must be noted that aside from the factors per se, the relationship and interplay between the different factors contribute to the general behavior of the adolescent regarding smoking. Peers have a great and significant impact on adolescents' decision to start smoking, serving as the most common influence to start smoking. Peer pressure affects the adolescents' behavior as shown in the study: the more friends that they have that smoke, the more likelihood that they will smoke.

Allowance is also a significant factor, in which a weekly allowance of P51-P150 can already make an adolescent try to smoke or actually smoke. Giving adolescents money provide them greater purchasing power which allows them to buy cigarettes even if it means using almost half of their daily allowance for it.[20,21]

One of the countries tobacco control efforts is to ban advertising and promoting cigarettes on local television, however, this was reported to be inconsistent with the data where some of the participants who stated that they are still exposed to it through commercials on television. One significant exposure of the participants are family members themselves, mostly fathers.

Smoking and dangers associated with it are regularly discussed by parents and guardians and even in school or in class. For adolescents, the main reason for not smoking is that it is bad for their health. Adolescents mostly view smoking as harmful and have a negative attitude against it saying that smoking should not be allowed in all places and that everyone, including adults, should not be allowed to smoke. Generally, parents and guardians as well as school teach about effects of smoking. However, although majority already know the negative consequences of smoking and second-hand smoke, there is still a handful who express that they do not know the true effects of smoking and some even consider it harmless. There are even some who despite knowing the harmful effects of smoking, have no objections of starting to smoke. This emphasizes the vulnerability of adolescents during this time period. Brain development during this period is not yet well mature and established hence the difficulty controlling their impulsivity.[30,31] Teens are mostly driven by motivation and emotion rather than cognitive and self-control, and as such are really prone to explore and try out novel things and engage in risky behaviors. So, even if they are aware of the ill effects of smoking, and even know that they should not be smoking, adolescents may still really engage in smoking. This adds up to the multifactorial aspect of adolescent smoking and that there is a greater need to educate our adolescents regarding the adverse effects of smoking, even if they are aware of these effects already.

All of the participants plan to quit smoking someday. They are contemplating on stopping smoking since there is already the intention to quit. This gives us the opportunity to educate them more early on so they may start quitting earlier than intended and prevent the development of enduring smoking related attitudes and behavior as they grow older.

Price levels adolescents are willing to pay

Although most of the participants do not know the price of each stick of cigarette, some are willing to pay at a higher price up to P20.00 per stick, however most would prefer to pay for it at less than P4.00 per stick compared to the actual current price of cigarette. Some of the participants answered that cigarettes should cost higher. Most of the participants would not smoke if the price increases which shows that adolescents are price sensitive and that they are more responsive to tax and price changes. This finding is consistent with prior literature that cigarette taxes are associated with reduced smoking among adolescents.[26,28,32-34] Increasing the price through these taxes decreases the buying capacity of the teens, hence disabling them to buy any cigarette to start smoking or forcing them to quit if they are currently smoking. A similar finding is also noted in electronic cigarettes where higher prices is associated with reduced use among adolescents.[35]

The possible expansion of this research would benefit other adolescents through the development of programs aimed at helping to identify and educating adolescents in need. Other factors related to smoking behaviors among adolescents, such as the effect of graphic warnings, as well as exploring the factors why electronic cigarettes are being used by adolescents despite it being more expensive than conventional cigarette.

CONCLUSION

Adolescents are knowledgeable and have a negative attitude towards smoking, however, other factors have a significant impact on their decision to start smoking. Regardless if they are non-smokers, tried smoking, or are currently smoking, they still need to be educated more regarding the effects and consequences of smoking.

Electronic cigarette use is becoming more common among adolescents, so psychosocial risk assessment and preventive health guidance should not be limited to conventional cigarettes, but should also cover electronic smoking or vaping. More studies are recommended to explore the increasing prevalence of electronic cigarettes.

Supplementary Material

The supplementary survey forms are available upon request from the authors.

Statement of Authorship

Both authors contributed in the conceptualization of work, acquisition and analysis of data, drafting and revising and approved the final version submitted.

Author Disclosure

Both authors declared no conflicts of interest.

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