RESEARCH ARTICLE

Prevalence and Factors Associated with Smoking Intentions among Non-smoking and Smoking Adolescents in Kota Tinggi, Johor, Malaysia

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Abstract

Intention to smoke is a valid and reliable factor for predicting future smoking habits among adolescents. This factor, however, has received inadequate attention in Malaysia. The present paper elaborates the prevalence and factors associated with intent to initiate or to cease smoking, among adolescent nonsmokers and smokers in Kota Tinggi, Johor, Malaysia. A total of 2,300 secondary school students aged 13-16 years were selected through a two-stage stratified sampling method. A set of standardized questionnaires was used to assess the smoking behavior among adolescents and the inter-personal and intra-personal factors associated with smoking intention (intention to initiate smoking or to cease smoking). Multivariable logistic regression was used to identify factors related to smoking intention. The prevalence of intention to smoke in the future or to cease smoking among non-smoking adolescents and current smokers were 10.7% and 61.7% respectively. Having friends who smoke, social influence, and poor knowledge about the ill effects on health due to smoking showed significant relationships with intention to smoke in the future among non-smokers. Conversely, perceived lower prevalence of smoking among peers, weak contributory social influence, and greater awareness of the ill effects of smoking are factors associated with the intention to cease smoking sometime in the future. The study found that prevalence of intention to initiate smoking is low among non-smokers while the majority of current smokers intended to cease smoking in the future. Existing anti-smoking programmes that integrate the factors that have been identified in the current study should be put in motion to reduce the prevalence of intention to initiate smoking and increase the intention to cease smoking among adolescents.

Keywords: Intention to smoke - adolescents - interpersonal - intrapersonal

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Introduction

The adverse effects of smoking on health, the national economy and society in general, have resulted in numerous efforts being undertaken by Malaysian authorities to try to reduce significantly the prevalence of smoking while ensuring that ailments associated with smoking is no longer a public health concern by the year 2020 (Norsiah, 2013). Ample resources including finance have been specially allocated to fight the smoking menace over the last few decades. Despite all these efforts, the smoking prevalence among adults and adolescents in Malaysia remains relatively high-almost half of men aged 18 and above, and one third of adolescents, still smoke (Manimaran, 2003; Institute of Public Health, 2008). Only a negligible declining rate in smoking prevalence has been observed in the last 10 years (Institute of Public Health, 1997; 2008).

Smoking is a learned behavior and initiated during adolescence (USDHHS, 2014), and an individual who does not initiate smoking during adolescence is found to be less likely to initiate smoking during adulthood. The earlier an individual initiates smoking, the more likely he or she will become a heavy smoker as an adult, and less likely to quit smoking (Reidpath et al., 2014), as well as having an increased risk to develop smoking related disease such as lung cancer. Reducing smoking Initiation among non-smokers and increasing cessation rate among smokers have been identified as some of the measures that could curb the smoking menace among Malaysians.

Human behavioural theories such as the Theory of Reasoned Action (Fishbein and Azjen, 1975) and the

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Theory of Planned Behavior (Azjen and Madden, 1986) posit that behavior intent (intention) preceded the actual behavior. In some cross-sectional and longitudinal studies, it had been proved as a valid and reliable predictor of actual behavior later in life, and this includes the smoking habit or smoking cessation (Conrad et al., 1992; Eckhardt et al., 1994; Engel et al., 1999; Wakefield et al., 2004; Olds et al., 2005). The validity of this concept has led researchers to conduct further studies to identify the factors associated with smoking intent and intention to quit smoking. This is to ensure that appropriate formulation of steps and actions are taken in order to prevent smoking intent or to encourage smoking cessation among adolescent smokers.

Several studies reported factors such as smoking behavior among the significant others, that is, either a brother or father who smoked or having best friends who smoked (Victoria et al., 2011; Mohammadpoorosi et al., 2012), produced a positive social perception towards smoking. Perceived high prevalence of smoking among peers and poor knowledge about the health effects of smoking were also significantly associated with smoking intention among non-smoker adolescents (Sen and Basu 2000; Halpern-Flesher 2004; Brown et al., 2010). Similarly, having a positive perception of the smoking habit, the perception that positive effects can result from smoking was reported to be associated with the intention to smoke within the population (Sen and Basu, 2000; Halpern-Flesher, 2004; Tyc et al., 2004; Brown et al., 2010). On the other hand, having a negative perception of smoking being aware that people smoked fewer cigarettes (Wong et al., 2012), being male (Wong et al., 2012), having parents who were non-smokers (Wong et al., 2012), and having the perception of lower social acceptability of tobacco users and the potential hazardous effects of tobacco use (Savvides et al., 2014) were associated with the future intention to cease smoking among current smokers.

The existing literatures on this aspect are abundant and frequently reported in developed countries, but they refer to only specific ethnic groups. Socio-cultural differences, however, between Malaysia and these developed countries may result in some findings that may not be relevant to the Malaysian context. In addition, local researches in this important aspect of smoking behaviour are scarce despite many reports dealing mainly on the prevalence and associated psycho-social factors of smoking habits among adolescents. In the light of this, a local study may help to bridge this existing knowledge gap, Therefore, it was the aim of the study to determine the prevalence and factors associated with smoking intention and intent to quit smoking among adolescents who were either non-smokers or current smokers in Kota Tinggi, Johor, Malaysia.

Materials and Methods

Data for this paper were obtained from a longitudinal study conducted on adolescents in Kota Tinggi District, located in the southern part of Malaysia, from the year 2008 to 2010. The study was a collaborative project between Institute for Medical Research Malaysia (IMR) and Kota Tinggi Health Department (PKD) Johor. IMR was responsible for the initiation, preparation of study proposal, design and the instruments used in the study. PKD Kota Tinggi was responsible for coordinating the activities of data collection. Data collection was carried out by the Principal Investigator, trained research assistant and Public Health Nurses. The study protocol was approved by the Ministry of Education of Malaysia and Johor State Education Department. The Malaysia Research Ethical Committee of Ministry of Health granted permission to conduct the study.

Sampling

Two-stage stratified sampling was used to select the sample for this study. The first stratum consisted of classification of schools according to Urban, Rural and FELDA areas. 10 schools were selected: six from Felda, three Urban, and one Rural; the number of schools selected from each stratum was proportionate to the total number of schools in each stratum. The second stage involved the selection of students using simple random sampling from each selected school using a software "Digenerate epi- info 6" from a list of names provided by the school administration. The number of students selected from each school was proportionate to the enrolment of each school. A total of 2700 students (Form 1, 2 and 4) were ontained from a pilot study and selected based on the prevalence of 3.5% for Form 1 (13 year olds), Form 2 (14 year olds), and 6% for Form 4 (16 year olds. A maximum tolerable error of 3% with design effect of 0.67 and assumed intra-class correlation coefficient of 0.5 was used. The average proportion of students per strata was 0,33 and 30% of non-response rate were considered in order to generate the estimated sample size.

Study instrument

A set of validated questionnaire adopted from Hanjeet et al. (2001) and Lim et al. (2006) was used in the present study. It was pre-tested among Forms 1, 2 and Form 4 students from three secondary schools in Kota Tinggi district from the respective urban, rural and FELDA areas, who were subsequently excluded from the sampling frame. Minor amendments were done to the questionnaire based on the finding from the pilot study. The dependent variables in this study were "Intention to initiate smoke" and "Intention to quit smoking". These variables were assessed using a question "Do you intend to smoke in the future?"; this was answered only by non-smokers, i.e. those who did not smoke in the previous 30 days, with 'Yes' or 'No' options. Respondents who were current smokers, i.e. those who smoked in the previous 30 days were asked, "Do you intend to quit smoking in the future?" with similar response options. Those who answered 'Yes' were categorized as having 'Intention to initiate smoking' or 'Intention to cease smoking' in the future based on the relevant questions.

The independent variable of family members who smoked was evaluated by using the question "Does your father smoke?" and "Do your elder brother/s smoke?". Respondents who answered 'Yes' to one of these questions were considered as having a family member who smoked. Factors contributory and instrumental to making smoking

popular among adolescents were evaluated using 12 questions, while perceived negative effects of smoking to health, e.g. smoking will increase the risk of a stroke, were also determined by 12 questions. Both instrumental factors and health effects of smoking were measured using Likert type scale (1-4). The total scores of 12 questions for each domain were divided by the number of questions to give the average score. A higher average score indicates a lower instrumental factor and a higher perception of the negative effects of smoking to health. Smoking perceived as a social norm was assessed by two questions: "In your opinion, what is the reaction of society toward smoking adolescents?", and "What is your parents' reaction if you smoke?", using Likert type scale 1-7. A lower value indicates respondents perceived more negative reaction from society and parents. Peer smoking was measured by the question "Out of five of your best friends, how many of them smoke?", with the choices 0, 1, 2, 3, 4 and 5, and 0 to mean "No smokers among my best friend", and '1' as 'Only one is a smoker,' and so on and so forth. The respondents were evaluated according to their class-age cohort: Form 1-13 year old cohort, Form 2-14 year-old, and Form 4-16 year-old. The addiction to nicotine by current smokers was measured using full name (FTND), which is then classified as lower (score 0-4), medium (score 5) and high to very high (6-10), The category of medium, high and very high were combined in view of the small number of respondents in these categories.

Data collection protocol

A passive consent approach was employed prior to data collection. Letters and consent forms were sent to the parents or guardians of the selected respondents to inform them about the involvement of their sons or wards in the survey. The letter consisted of information on objectives of the study, the anonymity of the information given and their voluntary participation. The parents were requested to return the consent forms to the research team through the school administration if they disapproved; those respondents who did not return the consent form were considered as agreeable and allowed to participate in the study. None of the consent form, however, was returned to the research team, and this indicated that passive consent from the respondents' parents or guardians was given.

During data collection, detailed explanations on each item was given by the research team members to the respondents from Forms 1 dan 2, while only brief explanations were given to those from Form 4. The reason was that respondents from the different Forms had different levels of cognitive maturity and sense of apprehension of towards the questions in the survey. The respondents who faced difficulties in understanding the questions were assisted by the research team members. Respondents were asked only to sign the questionnaire and not write their names or give any other self identification symbols in order to ensure anonymity and confidentiality. None of the teachers or school staff was present during the survey session. The completed questionnaire was then sealed in an envelope in front of the respondents. "Bogus pipe line method" was employed to reduce the under-reporting of smoking status among the respondents. The respondents had been informed earlier that 15% of them, picked at random, would undergo a breath test using a CO Analyzer after the survey session in order to determine their smoking status.

Statistical analysis

The data were analyzed using SPSS version 16. Descriptive statistics was used to illustrate the characteristics of the respondents and Chi square analysis was used to determine the association between categorical variables. Independent t test was used to compare the differences in mean scores of instrumental smoking factors, health effects of smoking, perceived parents' reaction, public reactions to adolescents who smoke, between non-smokers who intend or do not intend to smoke in the future, and smokers who intend or don't have any intention to cease smoking in the future. Two multi-variables binary logistic regressions using the backward likelihood method were run separately for non-smokers and current smokers. Variables with p values of smaller or equal to 0.25 generated from Chi-Square and independent t tests analysis were included in a binary logistic regression model. The fitness of final models was examined using Hosmer-Lemeshow goodness of fit test. The p value of 0.66 and 0.61 indicated that the models were fit. Two-way interaction between all variables in the final model was carried out but none was significant. All statistical analyses were performed at 95% confidence level.

Results

Of the 2700 respondents, only 2256 responded to the survey, giving a response rate of 83.5% (2256/2700). Of these, 1725 (76.5%) were non-smokers while the remaining 531 (23.5%) were current smokers. Among non-smokers, 1,510 (87.5%) had no intention to smoke while 320 (60.3%) of current smokers expressed a desire to cease smoking in the future. Male and respondents having best friends who smoked were significantly associated with intention to smoke in the future, while those who were more likely to cease smoking in the future were respondents who had low perceived prevalence of smoking among peers and younger current smokers (Table 1).

Table 2 shows that there are significant differences between instrumental scores of smoking, knowledge about the hazards of smoking and perceived parents' disapproval among non-smokers who had intention to smoke as compared to their counterparts who had no plans to do so. The result showed that current smokers who perceived less instrumental value of smoking and having knowledge of health hazards of smoking are more likely to cease smoking in the future.

Multivariable logistic analysis showed that respondents with best friends who smoked (aOR 2.22, 95% CI 1.38-3.54), perceived less hazards of smoking to health (aOR 1.96, 95% CI 1.27-3.08) and high instrumental value of smoking (aOR 2.23, 95% CI 1.59-3.45) were more likely to initiate smoking, while low perceived prevalence of smoking among peers (aOR 3.17, 95% CI 1.63-6.18), negative attitude toward smoking (aOR 1.90, 95% CI 1.14-

Table 1. The Association between Social Demography with Intention to Initiate Smoking among Adolescent Non-smokers, and to Quit Smoking among Current Adolescent Smokers

Variable		Intention to initiate smoking			Intention to cease smoking in future		
		Yes	No	p value	Yes	No	p value
		Mean (sd)	Mean (sd)		Mean (sd)	Mean (sd)	
Gender	Male	117 (14.5)	688 (85.5)	<0.001	311 (60.7)	201 (39.3)	0.563
	Female	61 (6.9)	818 (93.1)		8 (53.3)	7 (46.7)	
Perceived prevalence of peer smoking	Non-a few	87 (9.4)	840 (90.6)	0.116	160 (72.7)	60 (27.3)	<0.001
	More-a lot	87 (11.8)	653 (88.2)		158 (51.8)	147 (48.2)	
Family member/s smoked	Yes	118 (11.3)	912 (88.7)	0.13	103 (63.6)	59 (36.4)	0.578
	No	94 (12.3)	670 (87.7)		181 (60.9)	116 (39.1)	
Form	1	53 (8.7)	553 (91.3)	0.21	133 (73.5)	48 (26.5)	<0.001
	2	76 (11.2)	600 (88.8)		129 (61.7)	80 (38.3)	
	4	48 (11.9)	357 (88.1)		57 (41.3)	81 (58.7)	
Number of friend smoked	None	68 (6.7)	942 (93.3)	<0.001	18 (69.2)	8 (30.8)	0.338
	One or more	109 (16.5)	553 (83.5)		299 (59.8)	201 (40.2)	
Restriction of smoking at home	Yes	53 (10.4)	459 (89.6)	0.982	72 (55.0)	59 (45.0)	0.164
	No	118 (10.4)	1018 (89.6)		243 (61.8)	150 (38.2)	
Stringent of anti smoking at school	Very strict	139 (9.9)	1262 (90.1)	0.31	282 (60.1)	187 (39.9)	0.895
	Not Strict at all	35 (13.1)	233 (86.9)		36 (61.0)	23 (39.0)	
Addiction level	Low				263 (58.7)	185 (41.3)	0.24
	Mediam-high				5 (41.7)	7 (58.3)	

Table 2. The Mean Score between Non-smoking Adolescents Who Intent to Initiate Smoking and Current Smokers who Intend to Quit Smoking in the Future

Variable	Intention to initiate smoking				Intention to cease smoking in future			
	Yes	No	t value	p value	Yes	No	t value	p value
	Mean (sd)	Mean (sd)			Mean (sd)	Mean (sd)		
Society perception toward adolescent smoking	2.48(1.82)	2.38(2.0)	-0.69	0.59	3.06(2.06)	3.33(1.97)	-1.49	0.134
Parents reaction if they know you smoke	1.66(1.40)	1.41(1.26)	-2.22	<0.03	1.87(1.60)	2.14(1.73)	-1.78	0.08
Attitude toward smoking	2.01(0.65)	1.60(0.56)	-7.99	<0.001	2.08(0.62)	2.37(0.60)	-5.22	<0.001
Knowledge of health effect of smoking	1.96(0.52)	1.73(0.42)	-4.53	<0.001	1.56(0.48)	1.86(0.65)	-3.774	<0.001

Table 3. Multivariable Logistic Regression for Non-smoking Adolescents Who Intent to Initiate Smoking and Currnt Smoking Adolescents to Quip Smoking in the Future

Variable		Intention to initiate smoking		Intention to cease smoking in future	
		Crude OR (95% CI)	Adjusted OR (95%CI)	Crude OR (95%CI)	Adjusted OR (95% CI)
Gender	Male	2.28(1.65-63.16	0.74(0.26-2.07)		
	Female	1	1		
Form	1	1	1		
	2	1.32(0.91-1.91)	1.72(1.15-2.65)		
	4	1.40(0.93-2.12)	3.94(2.45-6.32)		
Family member/s smoked	Yes	1.27(0.88-1.84)	1.69(0.99-2.88)	1.12(0.75-1.66)	
	No	1	1		
Perceived norm of smoking	Non-a few	1	2.48(1.71-3.60)	3.17(1.63-6.18)	
	More-a lot	1.29(0.94-1.76)	1		
Number of friend smoked	None		1		
	One or more	2.73(1.98-3.76)	2.22(1.38-3.54)	1.51(0.65-3.54)	
Restriction of smoking at home	Yes	1		1	
	No	1.00(0.71-1.41)		1.77(0.77-4.04)	
Stringent of anti smoking at school	Yes	1		1	
	No	1.36(0.92-2.03)		0.96(0.55-1.68)	
Addiction level	Low	NA		1	
	High			1.99(0.62-6.39)	
Society perception toward adolescent smoking		1.29(0.94-1.76)		1.06(0.98-1.16)	
Parents reaction if they know you smoke		1.19(1.09-1.29)		1.10(0.99-1.22)	
Attitude toward smoking		2.86(2.23-3.66)	2.23(1.59-3.45)	2.15(1.59-2.92)	1.90(1.14-3.15)
Knowledge of health effect of smoking		2.63(1.74-3.99)	1.96(1.27-3.08)	1.10(1.05-1.16)	2.22(1.24-3.99)

*Hosmer Lemeshow p=0.66, Chi square value 5.89 df =8; **Hosmer lemeshoe p=0.61. Chi Square value 6.33 df=8

3.15) and higher perceived hazards of smoking towards health were (aOR 2.22, 95% CI 1.24-3.99)more likely to think of smoking cessation in the future (Table 3).

Discussion

We believe this is the first paper to illustrate and to discuss the intention to initiate, or to cease, smoking among teenagers in Malaysia. The prevalence of non-smoker adolescents who intended to initiate smoking in the future was quite alarming (10.8%) and it was significantly higher in male (14.5%) as compared to female non-smokers (6.9%). The result is similar to the findings from the Global Youth Tobacco Surveillance (GYTS) survey which revealed that the 10.7% of adolescents who were non-smokers expressed their intent to smoke in the

future (Manimaran, 2003). Similarly, the above study also reported that there were more male non-smokers (15.9%) who wished to intiate smoking than their female counterparts (Manimaran, 2003). A study in Korea (8.4%), however, revealed that the prevalence rate of male non-smokers who intended to intiate smoking in the future was slightly lower than that of the present study (Lee et al., 2010). The overall prevalence of intention to smoke among non-smoker adolescents in the present study is lower than that reported from previous studies such as those reported in GYTS study in the Seychelles (16.5%) (Viswanathan et al., 2008), in Lebanon (15.5%) (Saade et al., 2008), Turkey (16.2%) (Ertas, 2007) and Saudi Arabia (42.2%) (Al Nohair, 2011). The difference in prevalence rate among these studies may be because of the low prevalence of male respondents and over representation of female respondents who intended to smoke, as found in two previous studies in Seychelles (19.5%) and Lebanon (15.6%), which would have inflated the overall prevalence. Gender based differences in the prevalence on intention to smoke in the future as reported from the present study may be explained by the existing social perception in Malaysia towards smoking by females as it is still viewed as a taboo by our society. This in turn might influence the judgment of male and female respondents to smoke in the future. The findings of this study seem to show that the traditional values of Eastern culture is probably still quite strong in our society despite the rapid changes in socio- economic conditions.

Almost 2/3rds of current smokers (61.7%) showed intention to stop smoking in the future. It was still lower than that found in the GYTS study, at 78.6% (Manimaran, 2003), and at 72%, as reported by Bachman et al. (2013) in their 5-year longitudinal study among adolescents, aged 16 and 17 years. These differences may be due to the varied compositions of both ethnic groups and age groups of the respondents in these studies. No other factors in the present study could explain this low prevalence and it needs to be investigated in future studies. There is no difference, however, between male and female current smokers who wished to cease smoking in the future, and the result is consistent with findings reported by Sussmann et al. (1998) and Haddad et al. (2006). On the contrary, Wong et al. (2012) reported male smokers were likely to cease smoking in the future rather than female smokers. It was reported from the previous study that female respondents relied more on smoking when they were under stress while male respondents had other means to cope with stress apart from smoking. This explains the reason why more male smokers have expressed their wish to stop smoking in future. Future studies need further investigations on psychological factors that influence their decision to stop smoking in the future.

Social Influence modeling (by peer and family members who smoke) shows different results on the respondents in the present study. Non-smokers and current smoker adolescents having best friends who smoked were more likely to initiate and to cease smoking in the future. The findings are consistent with previous studies (Tyc et al., 2004; Lim et al., 2013; Zhu et al., 2013). It continues to support the important contribution of peer influences on intention to smoke among adolescents. Human development theory posits that abstract thinking which is formed during adolescence causes an individual to find his or her own personal identity. A peer who is an individual from a group whose behaviour matches closely to that of an adolescent will become a major reference point; peer behavior whether good or bad will be learned and followed, through modelling or imitation of friends' behaviour, or through selective reinforcement by peers. Thus current smokers with peer smoking behavior will act in accordance with their peers's behavior as smoking has become peer socialization normative standards.

High prevalence of perceived smoking among peers which serves as a reference to contemplate in decision-making about smoking (Cialdini et al., 1991) had been shown to be significantly associated with the intention to smoke among the current non-smokers in previous studies but this has not been confirmed in the present study (Fagan et al., 2001; Brown et al., 2010). The reason may be due to the fact that adolescents might not perceive smoking as prevalent within their reference population. Perceived low prevalence of smoking among peers, however, influenced the current smokers to cease smoking in the future. It may due to the effects of de-normalising the smoking practice in the community through the introduction of various regulations such as prohibiting smoking in public areas, increasing the price of tobacco products and prohibiting the possession of tobacco products by adolescents in 2004. It was thought that these rules and regulations could further drive youths away from smoking.

Quite surprisingly, having family members who smoked did not show any significant relationship with 'intention to smoke' among adolescents and contrast to the finding by Zhu et al. (2013) and Cremer et al. (2014). This may due to the reduction of family influence on adolescents as they grow older and their first and second hand exposure to the adverse effects of smoking may make smoking less appealing to them. The findings of this study however is not consistent with results reported from Kleinjan et al. (2009) and Virtanen et al. (2009) who found a lower likelihood of the intention to cease smoking among adolescents whose parents were smokers. Brown et al. (2010) also reported that siblings who smoked was one of the predictors to future smoking intention among adolescents. Lee and Tak (2005) and Mak et al. (2012) showed that parenting style, family practice of smoking habits, communication between parents and family members significantly associated with intention to initiation and cease smoking, All these factors, however, were not investigated in the present study.

This study has also found that non-smokers and current smokers who have higher knowledge about smoking related hazards are less likely to initiate smoking and more likely to cease smoking in the future (Table 3). The findings are consistent with the results of previous surveys conducted both in Asia and Western countries (Brown et al., 2010; Wong et al., 2012). The findings of this study are supported by the theory of the Health Belief Model and the Protection Motivation Theory, which state that an individual will avoid a practice that he perceives as harmful and that he/she is vulnerable to

that event either at the present moment or sometime in the future. Health education on the hazard of smoking in the school curricula and anti tobacco advertising campaign might be the plausible reasons for the above finding. The legal provisions that require pictorial health warning to be mandatory printed on cigarette packs may be another factor which helped to increased the level of knowledge about the dangers of smoking among current smokers. We, nonetheless, feel that appropriate anti-smoking advertisements should be given to the widest possible audience to enhance the effectiveness of health education and to attract the attention of youths as a way forward to improve the knowledge about the hazards of smoking.

Parents's and societies negative perceptions towards smoking did not seem to affect adolescents's intention to initiate smoking or to cease smoking in the present study. These findings are not in keeping with the findings from other studies (Sargent and Dalton 2001; Sawter and Stevenson 2008; Page et al., 2012) which found that parent disapproval of smoking is a protective factor against smoking initiation and intention among adolescents. The present findings are contrary to findings reported by Lipperman-Kreda and Grube (2009) who suggested that community disapproval of adolescent smoking may affect adolescents's decision to smoke through personal disapproval and perceived harm of smoking. On the other hand, the present findings are consistent with the findings reported by Olds et al. (2005) , who found that both parents and community perception on adolescent smoking did not have significant relationships with smoking initiation intentions. It was suggested that perceived approval of smoking among close friends and siblings has the strongest relation to adolescents' smoking initiation (Olds et al., 2005). Therefore, a possible explanation for the findings is that the adolescents's intention to initiate smoking or to cease smoking is likely to be more influenced by best friends or siblings rather than parents and society.

Smokers and non-smokers who have negative attitude towards smoking are less likely to initiate smoking and more likely to cease smoking in the future. These findings are consistent with the results of studies conducted both in Asia and as well as in Western countries (Halpern-Flesher et al., 2004; Tyc et al., 2004; Myung et al., 2010; Binnai et al., 2013). These findings are consistent with The Theory of Reasoned Action and the Theory of Planned Behaviour which posits that an individual who believes smoking is beneficial or attaches a positive value to smoking, and then he or she will be more likely wish to smoke and in so doing contributing to behavior intent. This also reinforces the findings by Mohammadpoorasi et al. (2012) who reported that the intention to cease smoking among respondents with a negative attitude towards smoking habit is higher than those who have positive smoking values. This is more pronounced among teenagers who have accepted the views of others towards them seriously ("imaginery audience") and tend to act according to their perception.

Perceived strict anti-smoking regulation neither influences the intention to smoke among non-smokers nor the wish to cease smoking among current smokers in this study. These findings are in contrast with results of the earlier studies (Leatherdale et al., 2005; Barnett et al., 2007) which showed that strong enforcement of a smoking ban in schools has a protective effect on adolescents' future smoking. Factors such as allowing students to smoke on school grounds would increase the likelihood of smoking intention or perceived effectiveness of anti- smoking regulations by schools would motivate adolescents to quit smoking were not investigated in the present study. Adolescents in the present study seemed to consider schools only as a place to gain knowledge and the short duration of time spent in schools, from morning till noon would have reduced the influence of schools on adolescents bahavior. Therefore, this shows that schools would not affect greatly adolescents's intention to smoke. In addition, strict enforcement of anti-smoking rules which has not been extended after school hours may partly explain why strict school rules have no effects on intention to initiate or to cease smoking among adolescents in the present study.

The present study also found that nicotine addiction level has no association with the intention to cease smoking among adolescents. This, however, is inconsistent with the findings reported by Sergent and Dalton (2001), Girma et al. (2010), and Jung et al. (2012) who revealed that smokers with high nicotine addiction were less likely to stop smoking habit. It was suggested that the addiction had caused smokers to think irrationally which then justified their continued smoking habit and minimized the reasons quit smoking. In addition, young smokers with a high addiction nicotine level are more likely to experience withdrawal symptoms from their previous attempts to quit smoking. This might defer them from planning to quit smoking in the future.The presence of a small number of adolescents with medium to high nicotine addiction level in the present study may be one of the contributing factor for the different in results. Future studies with larger sample sizes are recommended to ascertain the relationship between nicotine addiction level and intention to quit smoking among this population group.

This study has several limitations. Firstly, adolescents' smoking status was self reported, therefore the likelihood of under reporting was possible. However, "Bogus pipe line method" which had been employed in the study might circumvent the under reporting of smoking practice. Secondly, a cross-sectional study design did not allow for causal relationship to be established. Thirdly, other variables such as psychological stress, parenting styles, family practice on the habits of smoking, communication between parents, family members and the respondents which had shown a significant relationship with intention to smoke in previous studies were not investigated in this study. Furthermore this study involved only students from secondary schools in Kota Tinggi and hence it may not be justifiably generalised to adolescents in other localities.

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