The role of psychosocial and belief factors in self-reported cigarette smoking among university students in Malaysia

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Abstract

This study aimed to explore factors associated, specifically belief factors, with self-reported tobacco smoking status. A sample of 300 students was recruited from a private university in Malaysia. Data was collected using a pre-tested self-administrated questionnaire that investigated various factors including socio-demographics, socio-economic status, smoking behavior and beliefs on tobacco smoking. The main tobacco use in this study sample was cigarettes and the estimated prevalence of self-reported cigarette smoking was 10.3%. In bivariate analysis, self-reported cigarette smoking was significantly associated with socio-demographic, behavioral factors and faculty of study ($P<0.05$). In multivariate modeling, being male and a non-medical student, did not exercise, having a smoker father and brother or sister, suffering from financial difficulties and having the belief that smokers had more friends, all had statistically significant associations ($P<0.05$) with self-reported cigarette smoking. Social and interpersonal factors were associated with self-reported cigarette smoking status. A comprehensive health model focusing on changing the social norms of parent and sibling tobacco smoking and students' beliefs, alongside nurturing skills of dealing with stressful situations, warrant implementation.

Introduction

Tobacco smoking is the leading cause of preventable morbidity (lung cancer) and mortality (fatal malignancies) worldwide.[1] The prevalence of tobacco smoking amongst students (at university, college and undergraduates) varies according to a constellation of factors that include definition of tobacco smoking status, seniority in academic year, academic specialty and gender. For instance, the prevalence of *at least one smoking occasion* among college students was reported to be 57.7% in Germany, 26.7% in Pakistan, 34.5% in Turkey.[2-4] In a representative sample of all undergraduate students in the Kingdom of Saudi Arabia, the overall prevalence of tobacco smoking amongst students was estimated at 14.5% and amongst male was 32.7% and female 5.9%.[5]

The current literature suggests that a range of factors are associated with tobacco smoking amongst university students. These include personality factors, stress, parental smoking, socio-economic status, ethnicity, academic achievement and smoking was also found to be associated with alcohol use in smoker students.[6-14]

Importantly, one of the major problems of smoking is the students' belief towards smoking. Females were reported to be more likely to believe that cigarette smoking controls weight, whereas males believed it to help have and to make friendships.[15,16]

Currently there are many conceptual frameworks (Health Belief Model, Social Learning Theory, the Theory of Reasoned Action) for understanding the health related behaviors that include tobacco smoking.[17-19] The theory of the triadic influences (TTI) which integrated many conceptual frameworks of behavior, described by Brian *et al.*,[20] has been adapted to help understand tobacco smoking amongst university students in Malaysia. The TTI postulates that the execution of heath related behavior is based on three streams; cultural, social and intrapersonal influences. A person's cultural environment has influences on their health related values, knowledge, expectations, and evaluation regarding their financial situation and the social consequences of health related behavior. Social influences are thought to originate in one's current social situation or immediate microenvironment and flow through factors that affect social normative beliefs regarding health related behaviors. Finally, intrapersonal influences are suggested to originate in a person's inherited disposition and personality characteristics, and flow through health related self-efficacy. The TTI contends that attitudinal, social, and intrapersonal influences affect health-related decisions both independently and in unison.[20]

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Apart from a singular study amongst university students in Malaysia, there is a dearth of information on factors, specifically beliefs, associated with tobacco smoking status amongst this group. Exploring in depth the factors associated with tobacco smoking amongst university students in Malaysia is a crucial step for preventing the uptake of tobacco smoking behavior in the first place and also to target potential factors for current tobacco smoking amongst students through establishing tobacco control strategies.[21]

This study aimed to enumerate student tobacco smokers and to determine the associated factors, specifically belief factors, of tobacco smoking among students in a single university in Malaysia. We hypothesized that there would be similar associated factors of self-reported tobacco smoking in Malaysian university students as with other university students.

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Materials and Methods

Study design, sample size estimation and selection

A cross-sectional study was conducted among students of a private university in Malaysia. A mixed method of sampling was employed. Of the 300 students participating in this study, a universal sample of all the 150 medical students was recruited. The remaining 150 was an equal convenience sample of 150 non-medical students from the same university. This later method was employed due to ease of access, cost and time. Eligibility criteria included students aged 18 years and above who only spoke English or/and Malay.

Instruments

A self-administrated questionnaire based on factors previously identified and validated as correlates of self-report-tobacco smoking amongst university students was used for data collection.[21-23] The first part included questions on socio-demographic, socio-economic and behavioral factors such as age, gender, race, marital status, faculty, residential status, living arrangement (living with family or not), drinking alcohol, and use of sleeping pills and anti-depressive drugs. The dependent variable, tobacco smoking status, was defined as daily or occasional smoking in the past 30 days.[24,25]

In the second part, familial and peer factors were assessed by questions on the level of parental education, smoking status of mother, father, siblings and friends, marital status of parents (married or separated), and whether one or both parents have passed away. Smokers were asked whether their parents knew that they were smokers and whether they accept that fact. The third part included 17 statements on student beliefs and views of smoking such as *smoking is harmful to health*, *tobacco is addictive*, *smoking makes a person more attractive*, *someone who is smoking has more friends*, *smoking makes one less depressed*, *smoking helps in controlling things better*, *smoking makes one less tired*, etc; with responses given as either a *yes* or *no*. The fourth part included questions to assess smoking behavior such as age of starting smoking, number of cigarettes smoked per day, duration of smoking in years, factors influencing them to smoke (included items such as *just want to try*, *influence of friends* and *feelings of depression/anxiety*) and factors that increase their urge to smoke (included items such as *stressful situations*, *heavy meal*, *drinking coffee* etc). The participants were also asked whether they had ever tried to stop smoking and if they had the intention to quit smoking in the coming three months.

Data collection and ethical approval

The data was collected over one month in January, 2011. Students were approached in their classrooms after finishing lectures. Arrangements with lecturers and course co-coordinators were ensured prior to data collection. The purpose of the study was explained to students orally and in a written form attached with the questionnaire. They were informed that participation was voluntary and their withdrawal at any time from the study would not affect their academic progress. One calibrated data collector was made available to clarify any ambiguity of questions. Confidentiality of participation and the information obtained was ensured and each participant signed an informed consent form. This study project was approved by the research committee in the Management and Science University.

Statistical analysis

Continuous variables such as age and monthly income were categorized around the mean if normality assumption was met (Kolmogorov Smirnov), otherwise the median was used, in order to ease interpretation and comparisons. Descriptive statistics were obtained for all the variables in the study. Chi-square test was used to assess the association between smoking status and other variables in the study. Daily or occasional smoking in the past 30 days was combined into one category (smoker). Multiple logistic regression analysis with Backward LR technique was performed to obtain the significant factors associated with self-reported smoking status among students. All independent variables with significant associations with smoking status in bivariate analysis were included in the multivariate logistic regression analysis. Multi-colinearity between independent variables was checked for by the values of standard errors (SE) not exceeding 5 and the most important predictor of self-reported tobacco smoking through the Wald Value. The accepted level of significance in this study was set at $P<0.05$. Data analysis was carried out using SPSS version 16.

Results

General sample socio-demographic, socio-economic and behavioral characteristics

The mean (±SD) age of the respondents was 22.1 (±2.2) years. Sixty nine percent were females, 50.3% Malay and 95.3 singles. About 30% and 40% of participants' mothers and fathers had university level of education. Ten students (3.3%) stated their parents were divorced and twenty (6.6%) stated one of their parents passed away. Half of the respondents lived with their parents. Table 1 reports behavioral characteristics of respondents and their social models (father, mother, sibling and friend smoking status).

Tobacco smokers' characteristics

Out of 31 smoker students, 58.1% started smoking between 13 to 18 years old and 25.8% started before age 13 years. Sixty eight percent and 64.5% stated their fathers and mothers (respectively) did not know they were smokers. The majority (83.9%) had smoked for more than one year and smoked more than 5 cigarettes per day. Ninety four percent of smokers tried to stop smoking but failed, and 63.3% reported that they had the intention to stop smoking in the coming three months. The most common reason for smoking was just wanting to try it (71.0%), followed by influence of friends (67.7%), feeling depressed and anxious (58.1%), stress of academic life (45.%) then influence of people in the community (32.3%). The least reason was packaging of the cigarettes or its advertisements (12.9%). As for the factors that increase the urge to smoke, the most important factor was stressful situa-

Table 1. Behavioral characteristics of participants and their social models in 300 students in a private Malaysian university.

	N	%
Self-reported (cigarette) smoking	31	10.3
Drinking alcohol	24	8
Doing exercise	217	72.3
Having trouble sleeping	71	23.7
Taking sleeping pills	5	1.7
Taking anti-depressive drugs	5	1.7
Taking mood enhancing drug	5	1.7
Father smokes	87	29.0
Mother smokes	2	0.7
Brother and/or sister smokes	79	26.3
Friend smokes	212	70.7

tion (77.4%) followed by the effect of weather (64.5%) then by heavy meals (51.6%) (Table1).

Belief factors and self-reported tobacco smoking

Out of the 17 beliefs on tobacco smoking, five were associated significantly with self-reported tobacco smoking (Table 2). Other factors including *it is difficult to quit smoking, smoking is harmful to health, tobacco is addictive*, *smoking makes a person more attractive* and *smoking makes one less tired* did not associate significantly with self-reported tobacco smoking.

Bivariate and multivariate analysis of factors associated with self-reported tobacco smoking

In the bivariate analysis, socio-demographic, behavioral and social models factors associated significantly with self-reported tobacco smoking (Table 3). Males and non-medical students were more likely to self-report tobacco smoking (OR=5.7, 95%CI 2.58-12.79, P<0.001; OR=3.9, 95%CI 1.62-9.34, P=0.002, respectively). Other factors investigated including parents socio-economic status, smoking of mother and having unsolved family problems were not found to be associated with self-reported tobacco smoking (P>0.05).

In the multiple logistic regressions model, significant factors associated with self-reported tobacco smoking among university students were: being male (OR=6.1, 95%CI 2.2-16.8, P<0.001), non-medical student (OR=4.9, 95%CI 1.7-14.2, P=0.004), did not exercise (OR=3.2, 95%CI 1.2-9.1, P=0.030), father being a smoker (OR=3.7, 95%CI 1.3-10.5, P=0.016), brother and/or sister being a smoker (OR=6.7, 95%CI 2.4-18.7, P<0.001), suffering financial difficulties (OR=4.6, 95%CI 1.6-13.0, P=0.004) and believed that smokers had more

Table 2. Belief factors associated significantly with self-reported tobacco smoking in 300 students in a private Malaysian university.

Beliefs	N (%)	Smokers, N (%)	Non-smokers, N (%)	OR (95%CI)	P
Smoking affects weight					
Yes	249 (83)	20 (8.0)	229 (92.0)	3.1 (1.40-7.07)	0.004
No	51 (17)	11 (21.6)	40 (78.4)		
Smokers had more friends					
Yes	100 (33.3)	20 (20.0)	80 (80.0)	4.3 (1.97-9.38)	0.001
No	200 (66.7)	11 (5.5)	189 (94.5)		
Smoking help people feel more comfortable					
Yes	96 (32)	15 (15.6)	81 (84.4)	2.2 (1.03-4.61)	0.039
No	204 (68)	16 (7.8)	188 (92.2)		
Smoking makes one less depressed					
Yes	115 (38.3)	17 (14.8)	98 (85.2)	2.1 (1.0-4.48)	0.046
No	185 (61.7)	14 (7.6)	171 (92.4)		
Smoking help thinking more clearly					
Yes	68 (22.7)	12 (17.6)	56 (82.4)	2.4 (1.10- 5.24)	0.024
No	232 (77.3)	19 (8.2)	213 (91.8)		

Table 3. Factors associated significantly with self-reported tobacco smoking in 300 students in a private Malaysian university.

Variable	Smoking status		OR	95%CI	P-value
	Yes, N. (%)	No, N. (%)			
Gender				2.58-12.79	0.001
Male	21 (22.6)	72 (77.4)	1.0		
Female	10 (4.8)	197 (95.2)	5.7		
Faculty					
Medical	7 (4.7)	143 (95.3)	1.0	1.62-9.34	0.002
Non medical	24 (16.0)	126 (84.0)	3.9		
Alcohol					
Yes	7 (29.2)	17 (70.8)	1.0	1.63-11.46	0.006
No	24 (8.7)	252 (91.3)	4.3		
Exercise					
Yes	16 (7.4)	201 (92.6)	1.0	0.17-0.77	0.010
No	15 (18.1)	68 (81.9)	0.4		
Father smokes					
Yes	18 (20.7)	69 (79.3)	1.0	1.87-8.62	0.001
No	13 (6.1)	200 (93.9)	4.01		
Brother and/or sister smokes					
Yes	21 (26.6)	58 (73.4)	1.0	3.41-17.13	0.001
No	10 (4.5)	211 (95.5)	7.6		
Friend smoking					
Yes	28 (13.2)	184 (86.8)	1.0	1.28-14.58	0.011
No	3 (3.4)	85 (96.6)	4.31		
Having any problems with boyfriend/girlfriend					
Yes	12 (20.0)	48 (80.0)	1.0	1.31-6.40	0.015
No	18 (8.0)	208 (92.0)	2.9		
Having financial difficulties					
Yes	21 (17.4)	100 (82.6)	1.0	1.60-7.84	0.002
No	10 (5.6)	169 (94.4)	3.5		

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friends (OR=4.3, 95%CI 1.5-11.8, P=0.006) (Table 4). The most important factor emerging in this model was tobacco smoking of brother and/or sister as indicated by the high Wald value. The total model was significant (P<0.001) and accounted for 52% of the variance (Table 4).

Discussion

This cross sectional study aimed to estimate tobacco smoking and explore the most important potential factors, with specific focus on beliefs, of students' tobacco smoking status. Of the 300 students surveyed, 10.3% self-reported cigarette smoking. Our final model has shown the significant importance of cultural-environmental, social and interpersonal influences as factors in tobacco smoking status. Students self-reporting cigarette smoking were more likely to be male, attending non-medical college, have father or sibling smokers, be facing financial difficulties and believing that smoking helps in promoting friendship as well as being less likely to do physical activities. The estimated prevalence of tobacco smoking in this sample was comparatively lower to that found in other studies among university students in Malaysia.[21] Discrepancies in prevalence rates of smoking were observed in previous studies.[26-28] It is noteworthy to mention that due to overrepresentation of medical students, high female participants as well as the convenience sampling comparison should be avoided. With respect to the associated factors of smoking status, our study found significantly higher rates of smoking among males. Similar findings were found in previous studies.[5,27] Higher rates of tobacco smoking were observed among non-medical students in comparison to medical students. This finding lent further support to the current literature.[14] According to Tamaki *et al.* these discrepancies could be attributed to the fact that medical students are more aware of the health effects of tobacco smoking due to their nature of study. The significant association of social models tobacco smoking *i.e.* father, sibling (brother and sister) in self- reported tobacco smoking in this study sample also confirmed previous research.[4,5,29]

An insignificant relationship between smoking and being physically inactivate was found in this study. The findings from the current literature are contradicting. There has been conflicting data published with regards to the associations between smoking and unhealthy behaviors such as poor eating and physical inactivity.[30-33] The association of self-reported tobacco smoking with the belief that smoking controls weight and that the smoker had more friends may add weight to what has been reported amongst other students in Malaysian universities.[21] Tobacco smoking and cessation has been reported as one of the environmental factors influencing low BMI and weight gain, though variation should be taken into consideration.[34,35] The association of tobacco smoking amongst university students with the belief that smoking affects weight has also confirmed data found amongst Western university students.[36] The association between smoking and the belief that it helps to have and make friends has also confirmed what has been reported elsewhere.[16]

Finally, no relationship was found between students' family socio-economic status and tobacco smoking. However, the tobacco smoking amongst this study sample was found to be associated with students' perceived financial difficulties. This can be interpreted as either during university the student is financially independent from their family income so may face financial difficulties related to their faculty demands leaving less time to work and earn. Alternatively, the transition to the university life is acknowledged as a period of increased freedom and permissiveness of social norms and as such students may partake in risky behaviors such as smoking and alcohol drinking which may subject them to a financial difficulty. The role of stressful situations such as living in deprived areas, coming from a poor socio-economic background or being subjected to any acute stressful situation were found to be predictors of smoking, as well as being associated with the urge to smoke and maintenance of smoking. Therefore, one can postulate that financial difficulties, through the stress it creates, can be a risk factor that can initiate starting and maintaining smoking.[37-41]

Limitations of this study

Firstly, the sampling method may make the findings of this study spurious and only any extrapolated of the results should be applied to this study sample. Secondly, though the data questionnaires were filled in by the participants themselves to limit social desirability, the self-reported tobacco smoking may have been underestimated; biochemical validation of self-reported tobacco smoking was not verified.

Implication and future direction

A holistic approach should be adopted to aid in the prevention of the uptake of tobacco smoking and tobacco cessation. Education involving parents, peers, universities and health authorities is vital to implement smoking cessation support. The need to change beliefs and cultivate hatred and refusal skills towards tobacco smoking is essential as it is through these perspectives that young people's perceptions towards beliefs, social, cultural and behavioral norms are filtered from early years of adolescents through the development of adulthood, which is critical for smoking cessation. A comprehensive health model that incorporates not just tobacco antismoking but also other health behaviors including healthy eating and exercises should be considered.[36]

Table 4 Multivariate binary logistic regression final model of factors predicting self-reported tobacco smoking status in a 300 students in a private Malaysian university.

Variable	Adjusted OR	95% CI	P-value
Gender			
Male	6.1	2.2-16.8	0.013
Female	1.0		
Faculty			
Medical	1.0	1.7-14.2	0.004
Non medical	4.9		
Exercise			
No	3.2	1.2-9.1	0.030
Yes	1.0		
Father smoke			
Yes	3.7	1.3-10.5	0.016
No	1.0		
Brother and/or sister smokes			
Yes	6.7	2.4-18.7	0.010
No	1.0		
Having financial difficulties			
Yes	4.6	1.6-13.0	0.004
No	1.0		
Smoking affects weight			
No	2.6	0.8-8.8	0.128
Yes	1.0		
Smokers had more friends			
Yes	4.3	1.5-11.8	0.006
No	1.0		

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Conclusions

In conclusion, this study showed that social and interpersonal factors were associated with self-reporting cigarette smoking status. Strategies should focus on these influences by changing the social norms of parents and siblings tobacco smoking as well as students' beliefs. Strategies should be undertaken to equip students with skills of dealing with stressful situations and instill healthy lifestyle ideals.

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