Predictors of Early Stages of Smoking Uptake among Thai Male Adolescents

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Abstract: Smoking uptake is a complex behavioral process comprised of several stages and remains a major public health problem, especially among Thai adolescents. Specific intrapersonal, attitudinal and social factors may function differently at various stages of smoking uptake. Thus, this study of 1,012 predominantly Buddhist Thai male secondary school students, who were living with their parents and had an average age 12.72 years, aimed to: identify the prevalence of various early stages of smoking uptake, examine predictors of various early stages of smoking uptake, and examine predictors of progression from one early stage of smoking uptake to another.

Most were in the non-susceptible pre-contemplation stage, followed by the stages of initiation/tried, susceptible pre-contemplation, experimentation/addiction, and contemplation/preparation. Predictors of the susceptible pre-contemplation stage were: prevalence estimate, attitude toward smoking, parental approval of smoking and parental smoking. Tried stage predictors included: offers of smoking, attitude towards smoking, peer smoking and level of academic success. Predictors of the experimentation/addiction stage involved: attitude toward smoking, offers of smoking, peer smoking, parental smoking and level of academic success. Offers of smoking and parental approval of smoking were factors influencing advancement from the susceptible pre-contemplation stage to the initiation/tried stage, while peer smoking and attitude toward smoking predicted transition from the initiation/tried stage to the experimentation stage. Since only two students were in the contemplation/preparation stage, made the number was too small to demonstrate any significant findings, no predictors of this stage were calculated. The findings may prove useful in developing primary prevention smoking programs for Thai male adolescents.

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Introduction

Smoking has increased in prevalence worldwide[1] and, similar to other countries, it remains a major public health problem in Thailand. The vast majority of Thai smokers start during their adolescent years, with few new initiations of smoking beginning after 24 years of age.[2] There are negative effects of smoking on adolescents, such as becoming addicted to the

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nicotine present in cigarettes.[3] Research has shown that adolescents who experiment with smoking, by trying only one or two cigarettes, are twice as likely to become adult smokers as adolescents who do not engage in such behavior.[4] Although attempts to cease smoking are common among young smokers, only a few are successful.[5,6] The literature suggests that if teenagers do not start smoking during adolescence it is unlikely they will smoke as adults.

Background

Taking up smoking is a complex behavioral process comprised of movement through several progressive stages.[7,8] However, controversy remains over the names and descriptions of the various stages. According to Mayhew, Flay and Mott,[9] based upon examination of prior research studies,[10-12] the stages of smoking uptake include the: (a) pre-contemplation stage (one has never smoked and never thought to start smoking); (b) contemplation or preparatory stage (one begins to think about smoking); (c) initiation or tried stage (one tries their first few cigarettes); (d) experimentation/addition stage (tobacco is repeatedly, but irregularly used); (e) regular smoking stage (one smokes regularly); and (f) established smoking stage (one has a strong desire to smoke). To date, the literature does not suggest a demarcation between early and late stages of smoking. However, according to the epidemiological approach, the aim of primary prevention, regarding the use of illicit substances, is to ensure that a process (such as smoking) does not develop to a point of risk or severity.[13] Flay, Hu and Richardson[14] suggest primary prevention of smoking should involve prevention of experimental use, such as the experimentation/addiction stage proposed by Mayhew, Flay and Mott.[9] Therefore, the investigators in this study chose to examine, as early stages of smoking, the pre-contemplation stage through the experimentation/addiction stage, as described above.

Since a large majority of early adolescents are in the pre-contemplation stage of smoking, those in this stage should not be viewed as one homogeneous group.[7] Pierce et al.,[12] therefore, proposed the concept of "susceptibility" and suggested that it is indeed the first stage of smoking. They affirmed that adolescent smoking does not involve a conscious intent to smoke. Some adolescents, who are nonsmokers, may have a weak commitment not to smoke if they have the opportunity to try smoking when offered cigarettes by their best friends. Thus, susceptibility to smoking was defined as a characteristic of those who did not exhibit a firm commitment not to try smoking soon or during the next year, or not to refuse a cigarette if offered one by their best friends. To expand knowledge from prior studies,[15-17] the pre-contemplation stage, using the concept of susceptibility, was further divided, by the investigators, into two stages: the non-susceptible pre-contemplation stage and the susceptible pre-contemplation stage.

As a result of the refinement of the pre-contemplation stage, five stages of early smoking uptake were used in this study. They included the: non-susceptible pre-contemplation stage; susceptible pre-contemplation stage; contemplation/preparation stage; initiation/tried stage; and experimentation/addiction stage. Each of these stages can be influenced by certain internal and external factors.

According to the "Triadic Influence Theory (TTI),"[18] formulated within the context of adolescent substance use,[19] the factors include: social influences, attitudinal influences and intrapersonal influences. These three "streams of influence" can affect behavior in a different manner at the various stages of smoking uptake.[20] Intrapersonal influences include academic success and self-esteem, while attitudinal influences refer to attitude toward smoking. Interpersonal influences include availability of spending money, peer smoking, offers of smoking, prevalence estimate (the number of students known to the participant

who has tried smoking), parental smoking, parental disapproval of smoking, parental attachment and school attachment.

Thus, in order for any type of prevention program to be effective, it requires different strategies for different people, including adolescents,[21, 22] and a need to focus on the early stages of smoking uptake.[23, 24] However, current research is limited in providing adequate information about the early stages of the smoking uptake process.[25, 26] It is time to examine the mechanisms of smoking uptake among adolescents, so as to adequately address their health care needs.[27] Therefore, the purposes of this study of Thai male adolescents, were to: identify the prevalence of various early stages of smoking uptake, examine predictors of various early stages of smoking uptake, and examine predictors of advancement from one early stage of smoking uptake to another.

Method

Sample: An appropriate sample size, for the study, was estimated to be between 874 and 1,049 subjects. However, to compensate for ineligible subjects and incomplete questionnaire responses, the sample was increased to 1,200. Among the 1,200 consenting adolescents, 47 did not complete the questionnaires and 51 did not meet the inclusion criteria. Of the 51 who did not meet the inclusion criteria, 43 were in the later stages of smoking (9 regular smokers and 34 established smokers), and 8 were not living with a parent or not in touch with a parent. Thus, the final sample size was 1, 102, giving a viable response rate of 92%.

The 1,102 participants (See **Table 1**) were male secondary school students from 16 public schools located in the eastern part of Thailand. The public schools had a range of 150 to 1,900 students enrolled, with an average of 858.

The selection criteria for subjects involved being a male secondary school student who was: (a) enrolled in one of the 16 public schools used in the study; (b) living with a parent or, if not living with a parent, having contact with a parent; (c) classified as being in one of the five early smoking uptake stages (non-susceptible pre-contemplation, susceptible pre-contemplation, initiation/tried or experimentation/addiction); and, (d) not having circulatory and/or respiratory problems, such as heart disease or asthma, because the treatment of these illnesses requires no smoking. Those who took part in the study were primarily Buddhist, tended to be living with parents, ranged in age from 12 to 16 years (mean age of 13.72), and almost equally distributed among the secondary educational levels of L1 to L3. The majority of parents, both mother and father, held only a primary education or lower. Approximately 68% (n = 755) of the students indicated never having tried a cigarette, while 32% (n = 347), starting at an average age of 12.8 years, had tried smoking. Only 2 students (0.18%) fell into the contemplation/preparation stage of smoking uptake. As a result of this small number (which would fail to produce findings of significance), data from these students were not used in the analyses, other than calculations of the demographic data, making the total number of participants 1,100.

Procedure: Approval to conduct the study was obtained from the Research Ethics Committee of the primary investigator's university. In addition, the principal of each school selected was approached for approval to conduct the study within the school, as well as for access to students' names and identification numbers. Multi-stage sampling was used to determine which schools and students might participate in the study.

Eastern Thailand consists of seven provinces that can be grouped, based on the levels of their districts, into three sizes: "large" (2 provinces), "medium" (4 provinces) and "small" (1 province).[28] To ensure

Table 1 Distribution of respondents by demographic characteristics (n = 1,102)

Characteristics	n	%
Religion		
Buddhism	1,098	99.64
Islam	4	0.36
Age (years)		
≤ 13	466	42.28
14	370	33.58
≥ 15	266	24.14
Min – Max = 12 – 16; $\bar{X}$ = 13.72 SD = 0.98		
Secondary educational level		
Level 1	388	35.21
Level 2	356	32.30
Level 3	358	32.49
Living with parents		
Neither father nor mother (but keep in touch)	82	7.44
Only father	56	5.08
Only mother	143	12.98
Both father and mother	821	74.50
Educational level of father		
Primary education and lower	538	48.82
Secondary education	375	34.03
Diploma or higher	189	17.15
Educational level of mother		
Primary education and lower	651	59.07
Secondary education	292	26.50
Diploma or higher	159	14.43
Current smoking status		
Non—susceptible pre-contemplation	603	54.72
Susceptible pre-contemplation	150	13.62
Preparation	2	0.18
Initiation/Tried	214	19.42
Experimentation	133	12.06
(Average age of smoking initiation = 12.8 years)		

a representative, geographical spread, one province from the "large" group and two provinces from the "medium" group were randomly selected. Next, 16 districts were randomly selected from the 3 selected provinces, followed by random selection of one school from each of the 16 districts. Then the student identification numbers, within each selected school, were arranged, according to classroom assignment and educational level (L 1 to L3). Finally, students were drawn, via systematic sampling, proportionally to the population of each of the 16 schools.

Once potential subjects were identified, information was sent, via the selected students, to their respective parents regarding: the purpose of the study, what the students' involvement would entail, and the maintenance of students' anonymity and confidentiality. In addition, a consent form was enclosed. Parents were asked to read, sign and return the consent form, which contained the primary researcher's contact information, within two weeks.

A meeting, without teacher participation, was held by the primary researcher with students whose parents consented to allow them to participate in the study. Students were given information regarding the purpose of the study and what their involvement would entail. They were informed: their participation was voluntary; they could withdraw at any time without negative repercussions; their identities and information would be kept confidential and anonymous; and only general conclusions would be drawn from the findings. Students willing to participate signed an assent form.

Once consent and assent were obtained, the researcher gave the students the questionnaires in an unsealed envelope, in a classroom setting, without the presence of a teacher. Students completed the questionnaires in approximately 25 minutes. The researcher told them not to put any type of identifying marks on the questionnaires (i.e. names) and to place them back into the envelope they had received, seal the envelope and place it in a box at the front of the classroom. To assure confidentiality and anonymity, the researcher placed code numbers on the completed questionnaires.

Instruments: Seven research instruments were used, including the: Demographic Data Questionnaire; Personal Information Questionnaire; Rosenberg Self-Esteem Scale; [29] Attitude toward Smoking Questionnaire; Parental Attachment Scale; School Attachment Scale; and, Current Smoking Stage Questionnaire. With the exception of the Rosenberg Self-Esteem Scale,[29] all instruments were developed, by the primary investigator, based upon a literature review and data from four focus group discussions. The focus group discussions were held, in two schools, with 32 male students, 12 to 15 years of age. One school was located in an urban area. The other was in a peri-urban area. Two focus group discussions were held in each of the two schools. One focus group was comprised of students from the educational levels of L1 and L2, while the second group consisted of students from the L3 level. Each focus group consisted of eight students.

The preliminary instruments' items were validated by a 5 member panel with expertise in child development, mental health, health education and behavioral sciences. To ascertain content validity, inter-rater agreement and a content validity index were calculated. Construct validity was tested, using factor analysis, on the responses of 289 students to the preliminary instruments' items. To establish the reliability of the preliminary instruments' items, pilot testing was conducted with a small, representative, sample of adolescents (n = 55). Instrument consistency was analyzed using a 2-week test-retest and Cronbach's alpha coefficient. Details regarding each instrument follows.

***Demographic Data Questionnaire* (DDQ):** The DDQ was designed by the researcher to obtain information on each student's: age, religion, level of secondary education, and living arrangements with

parents. The DDQ also asked the educational level of each student's parents.

Personal Information Questionnaire (PIQ): The PIQ was designed by the researcher to obtain information related to the following seven items:

(a) Academic success was measured by the student's grade point average (GPA). The test-retest reliability, from the pilot test, was .96.

(b) Availability of spending money was measured by how much money the student had available per week. The test-retest reliability, from the pilot test, was .84.

(c) Peer smoking was measured by "yes" or "no," response to whether the student's close friends smoked. The test-retest reliability, from the pilot test, was .85.

(d) Offers of smoking was measured by "yes" or "no," response to whether the student ever had been encouraged to smoke by friends. The test-retest reliability, from the pilot test, was .83.

(e) Prevalence estimate was measured, via an item from the study of Flay et al.,[14] by indication of the number of people, the student's age, who had tried smoking. The statement was scored on a 10-point Likert-like scale ranging from 1 = 10 or fewer people to 10 = 91 to 100 people. The test-retest reliability, from the pilot test, was .77.

(f) Parental smoking was measured by response to whether parents smoked ("Parents do not smoke" or "At least one parent smokes"). The test-retest reliability, from the pilot test, was .96.

(g) Parental approval of smoking was measured, via an item from the study of Flay et al.,[18] as to how the student's parents would feel about the student smoking. The statement was scored on a 5-point Likert-like scale ranging from 1 = definitely approve to 5 = definitely disapprove. The test-retest reliability, from the pilot test, was .72.

Rosenberg Self-esteem Scale (RSES). Eight of the ten items from the RSES[29] were used to measure overall feelings of self-worth and self-esteem. This was done because when the internal consistency of the ten items was analyzed, during the pilot testing of the instruments, item one ("I feel that I am a person of worth, at least on an equal plane with others.") had a low item-total correlation, while item eight ("Wish that I could have more respect for myself") showed a negative-total correlation. Thus, items one and eight were not used in this study. The reliability of the remaining eight items produced a Cronbach's alpha of .76.

The 8 retained items included statements such as: "I take a positive attitude toward myself" and "I certainly feel useless at times." Responses were scored on a 4-point Likert-like scale ranging from 1 = strongly disagree to 4 = strongly agree. The four negatively stated items were reverse scored. A total score was obtained by summing all responses. Total scores could range from 8 to 32. Higher scores indicated higher self-esteem.

Because the original instrument was written in English, it required translation into Thai using a double-translation/back translation technique.[30] This technique was used to assure that, during the translation process,[31] no change in the meaning of items occurred.

Attitude towards Smoking Scale (ATTS): This 20 item instrument was developed, based on Weber's[32] three-component model of attitude. According to the model, an attitude is a non-neutral, evaluative reaction of a person toward an event or another aspect of the environment. In other words, an attitude must be either positive or negative, but never neutral. A single attitude involves three dimensions: Cognitive (beliefs), affective (emotions) and behavioral (choices and actions).

Based upon this model, an initial pool of 20 items was developed. The items included a cognitive dimension (6 items), an affective dimension (7 items) and a behavioral dimension (7 items). There were

both negatively stated (10) and positively stated (10) items. Examples of instrument items were: (a) "Smoking ruins my health;" (b) "Smoking calms me down when I am upset;" and, (c) " I want to see if I am strong enough to be a nonsmoker." Responses were scaled on a 4-point Likert-like scale ranging from 1 = absolutely disagree to 4 = absolutely agree. The 10 negatively stated items were reverse-scored prior to analysis. To obtain a total score, all responses were summed giving a possible range of scores from 20 to 80. Items were stated to reflect a positive attitude toward smoking. Thus, the higher the total score, the more positive the attitude towards smoking.

During pilot testing, the instrument's scores for inter-rater agreement and the content validity index were .94 and .93, respectively. A confirmatory factor analysis, with maximum likelihood estimation, was conducted using LISREL to evaluate the instrument's construct validity. The resulting three-factor model, with the 20 items, was found to have the best fit. All instrument items were found to have statistically significant factor loading at $p < .05$. Factor loading on the items measuring the cognitive component ranged from .28 to .48, while the items measuring the affective component ranged from .34 to .70. The items measuring the behavioral component ranged from .33 to .51. Thus, the 20 items were retained for use in the study. The instrument's Cronbach's alpha was .91.

Parental Attachment Scale (PAS): This 12 item scale, developed by the researcher, was based upon a literature review[33-36] and data from focus group discussions. Items included statements such as: "My parents do not understand me;" and "I respect my parents." The instrument was scored using a 4-point Likert-like scale, which ranged from 1 = not true to 4 = very true. The four negatively stated items were reverse scored prior to data analysis. To obtain a total score, all item responses were summed, giving a possible range of scores from 12 to 48. Higher scores suggested a more positive attachment to parents.

The inter-rater agreement and content validity index for the instrument, during the pilot testing, were found to be .92. Exploratory factor analysis, based on the significant highest loading, showed three instrument factors existed. Five items loaded on factor 1 (closeness) ranging from .74 to .44; three items loaded on factor 2 (contribution) ranging from .78 to .60; and four items loaded on factor 3 (respect) ranging from .78 to .66. Based upon the analysis of the instrument items, during the pilot study, all 12 items were retained for this study. The instrument's Cronbach's alpha was found to be .75.

***School Attachment Scale* (SAS):** Based upon a literature review [35, 37, 38] and data from focus group discussions, this 15 item SAS was developed to assess students' attachment to school. The items included statements such as: "Your teachers treat students fairly," and "You get along with classmates." Responses were scaled on a 4-point Likert-like scale with scores ranging from 1 = not true to 4 = very true. The five negative items were reverse scored prior to data analysis. To obtain a total score, all instrument items were summed. The possible range of total scores was from 15 to 60. Higher scores suggested a more positive attachment to school.

The inter-rater agreement and content validity index for the instrument, during the pilot testing, were found to be .95; while factor analysis showed four factors existed: enthusiast, respect, security, and contribution. Five items loaded on factor 1 (enthusiast) and ranged from .75 to .50; four items loaded on factor 2 (respect) and ranged from .77 to .69; three items loaded on factor 3 (security) and ranged from .76 to .56; and three items loaded on factor 4 (contribution) and ranged from .77 to .36. Based upon analysis of the instrument items, during the pilot study, all 15 items were retained for this study. The reliability coefficient of the instrument was found to be 87.

Current Smoking Stage (CSS): The CSS consisted of four items developed by the researcher to

determine the subjects' early stages of smoking. Items were created from data of previous studies,[7, 9, 39,40] as well as integration of concepts of basic stages of smoking[9] and susceptibility.[12] The first item ("Have you ever smoked a cigarette, even a few cigarettes?") required a "yes" or "no response." Subjects who answered "no," were asked to response to the second item ("Do you think you would like to try smoking in the next year?"), which required a "yes" or "no" response. Those who answered "no" were directed to go to the third item ("If one of your closest friends offers you a cigarette, would you smoke it?"), which allowed either a "definitely yes;" "probably yes;" "probably not;" or "definitely not" response. Subjects who responded "yes" to the first item were directed to the fourth item ("How often do you smoke?"), which allowed the following responses: (a) "Only 1-4 cigarettes in my life;" (b) "About 5-100 cigarettes in my life, but I do not smoke anymore;" (c) "Sometimes, in a variety of situations, such as at party, on holidays or with a special person;" (d) "Usually;" (e) "Every week;" or (f) "Every day."

The following classification method was used to determine each student's early smoking stage. Subjects, who responded "no" to items one and two and "definitely not" to item three, were assigned to the non-susceptible pre-contemplation stage. Those, who responded "no" to items one and two and gave any response other than "definitely not" to item three, were placed in the susceptible pre-contemplation stage. Students, who responded 'no" to item one and "yes" to item two, were classified as being in the contemplation/preparation stage. Those, who responded "yes" to item one and "only 1 to 4 cigarettes in "my life" to item 4, were considered to be in the initiation/tried stage. Participants, who responded "yes" to item one, and "about 5-100 cigarettes in my life, but do not smoke anymore" or "sometimes, in the variety of situations, such as at party, on holidays or with a special person" to item 4, were determined to be in the experimentation/addiction stage. Those who reported smoking every week (9 regular smokers) and every day (34 established smokers) were excluded from the study. The instrument's test-retest reliability was found to be .97.

Data analysis: Data were analyzed using descriptive statistics and multi-nominal logistical regression analysis. Assumptions for each of the statistical measures were met and an alpha level of 0.05 was established.

Results

Predictors among the early stages of smoking uptake: Table 2 shows the adjusted odds ratio for the early stages of smoking. Attitude toward smoking and prevalence estimate were associated positively with the susceptible pre-contemplation stage. Respondents with parents who smoked or approved of smoking were almost twice as likely to be classified in this stage. GPA was associated negatively with the initiation/tried stage, while attitude toward smoking was positively associated. Respondents who had close friends who smoked were 1.6 times more likely to try smoking than those who did not have close friends who smoked. The offer to smoke was a strong predictor of the initiation/tried stage. GPA was related negatively to the experimentation/addiction stage, while attitude toward smoking was positively related. Respondents whose parents smoked had almost double the risk of being experimenters. Peer smoking and offers of smoking were strong predictors of the experimentation/addiction stage.

Predictors of advancement to the next early stage of smoking uptake: As shown in **Table 3**, advancement from the non-susceptible pre-contemplation stage to the susceptible pre-contemplation stage was the same as the predictors of the susceptible pre-contemplation stage (see **Table 2**). Adolescents given offers to smoke were 4.5 times as likely to progress from the susceptible

pre-contemplation stage to the initiation/tried stage. In contrast, those having parents who disapproved of smoking were almost twice (OR = 1/ 0.58) as likely to progress to the initiation/tried stage, compared to those having parents who approved of smoking. Attitude toward smoking was associated positively with advancement to the experimentation/addiction stage. Respondents having peers who smoked were at a higher risk of progression to the experimentation/ addiction stage than those whose peers did not smoke.

Table 2 Multiznomial logistic regression analysis of predictors among early stages of smoking uptake (n=1,100)

Variables	Early stages of smoking uptake		
	N-SPC vs. SPC	N-SPC vs. T	N-SPC vs. E
	OR (95% CI)	OR (95% CI)	OR (95% CI)
Academic success (GPA)[c]	0.91(0.66 - 1.24)	0.71(0.53 - 0.97)*	0.67(0.45 - 0.99)*
Self-esteem [c]	0.94(0.87 - 1.02)	1.02(0.94 - 1.09)	0.97(0.88 - 1.06)
Attitude toward smoking [c]	1.08(1.05- 1.12)***	1.10(1.07- 1.14)***	1.17(1.12 -1.22)***
Availability of spending money [c]	1.06(0.67 - 1.68)	0.84(0.54 - 1.30)	0.64(0.36 - 1.12)
Peer smoking			
No[(R)]	1.00	1.00	1.00
Yes	1.32(0.85 - 2.05)	1.64(1.09 - 2.47)*	5.64(2.97-10.72)***
Offers of smoking			
No[(R)]	1.00	1.00	1.00
Yes	1.35(0.81 - 2.25)	6.12(4.02-9.32)***	6.68(3.83 - 11.64)***
Prevalence estimate [c]	1.46(1.01 - 2.11)*	1.32(0.93, 1.88)	1.25(0.78 - 2.00)
Parent smoking			
Neither parent [(R)]	1.00	1.00	1.00
At least one parent	1.63(1.10 - 2.42)*	1.44(0.98 - 2.10)	1.75(1.06 - 2.89)*
Parental approval of smoking			
Disapprove[(R)]	1.00	1.00	1.00
Approval	2.13(1.36 - 3.32)**	1.24(0.78 - 1.97)	1.48(0.83 - 2.65)
Parental attachment [c]	0.98(0.92 - 1.04)	0.95(0.90 - 1.01)	1.02(0.95 - 1.09)
School attachment [c]	0.96(0.91 - 1.00)	0.99(0.95 - 1.04)	0.95(0.89 - 1.00)

[c] These variables are measured in continuous form
[(R)] Reference group: *$p < .05$; **$p < .01$; ***$p < .001$.
N-SPC = non-susceptible pre-contemplation stage;
SPC = susceptible pre-contemplation stage
T = initiation/tried stage
E = experimentation/addiction stage

Table 3 Multinomial logistic regression analysis of predictors of advancement from one early stage of smoking uptake to another stage (n=1,100)

Variables	Early stages of smoking uptake		
	N-SPC vs. SPC OR (95% CI)	OR (95% CI) T vs. E	SPC vs. T OR (95% CI)
Academic success (GPA) [c]	0.91(0.66-1.24)	0.79(0.55-1.13)	0.94(0.64-1.36)
Self-esteem [c]	0.94(0.87-1.02)	1.08(0.99-1.17)	0.95(0.87-1.04)
Attitude toward smoking [c]	1.08(1.05-1.12)***	1.02(0.98-1.05)	1.06(1.02-1.10)**
Availability of spending money [c]	1.06(0.67-1.68)	0.79(0.47-1.32)	0.76(0.44-1.30)
Peer smoking			
No[(R)]	1.00	1.00	1.00
Yes	1.32(0.85-2.05)	1.24(0.76-2.03)	3.45(1.81-6.57)***
Offers of smoking			
No[(R)]	1.00	1.00	1.00
Yes	1.35(0.81-2.25)	4.54(2.72-7.56)***	1.09(0.64-1.87)
Prevalence estimate [c]	1.46(1.01-2.11)*	0.91(0.60-1.38)	0.94(0.61-1.47)
Parent smoking			
Neither parent[(R)]	1.00	1.00	1.00
At least one parent	1.63(1.10-2.42)*	0.88(0.56-1.38)	1.22(0.76-1.97)
Parental approval of smoking			
Disapprove[(R)]	1.00	1.00	1.00
Approval	2.13(1.36-3.32)**	0.58(0.35-0.92)*	1.19(0.69-2.05)
Parental attachment [c]	0.98(0.92-1.04)	0.97(0.91-1.04)	1.07(1.00-1.14)
School attachment [c]	0.96(0.91-1.00)	1.04(0.99-1.10)	0.95(0.90-1.00)

[c] These variables are measured in continuous form
[(R)] Reference group: *$p < .05$; **$p < .01$; ***$p < .001$.
N-SPC = non-susceptible pre-contemplation stage
SPC = susceptible pre-contemplation stage
T = initiation/tried stage
E = experimentation/addiction stage

Discussion

The majority of adolescents were in the pre-contemplation stages (non-susceptible and the susceptible pre-contemplation) which indicated they were adolescents who had never smoked cigarettes. Slightly over one-third of participants had tried smoking, thus they fell into the initiation/tried and experimentation/addiction stages. The average age of initiation of smoking was 12.8 years.

The results did not differ much from those of Supawongse, et al.[2] and suggest that Thai male adolescents start smoking at an early age. It is noteworthy that there were few adolescents, in this study, who could be classified as being in the contemplation/preparation stage. Prior studies[7, 41] examining adolescents from the European Union also supported this finding. Thus, it appears that adolescent uptake of smoking remains an unplanned action.

Kremers Mudde, and De Vries[41] suggest that adolescents experiment with smoking without rational plans to smoke in the future. The smoking initiation may then be viewed as a behavior that corresponds with adolescent risk taking or experimentation. Engels, Knibbe, and Drop[42] state that experimentation with smoking is done during the turbulent times of an adolescent's life.

Findings of the present study seem to suggest that instead of five early stages of smoking uptake, there are only four stages among Thai male adolescences: non-susceptible pre-contemplation stage, susceptible pre-contemplation stage, initiation/tried stage, and experimentation/addiction stage. There was insufficient evidence to support the presence of a contemplation/preparation stage.

The findings also suggest that attitude toward smoking was an important predictor for all smoking stages. However, the prevalence estimate was found to be a strong predictor of only the first stage of smoking (susceptible pre-contemplation stage). It is noteworthy that the effects of parental issues are strong factors influencing the earliest stages of the smoking process, while peer factors are strongly predictive of the more progressive stages of early smoking behavior. In addition, parental approval of smoking may be more important than parent smoking behavior itself. The effects of offers to smoke are strong for starting smoking behavior, while those of peer smoking are strong for continuing to smoke. These results are similar to those found in prior studies.[14, 24, 43]

Interestingly, this study found that parental approval of smoking was a factor influencing the susceptible pre-contemplation stage, which is the earliest smoking stage. However, previous studies found parental approval effects the later stages of smoking uptake (regular and established smoking).[14, 44] This difference may have been due to the different cultural backgrounds among the subjects. In the Thai culture, children generally have a close relationship with parents and are expected, due to social norms, to obey their parents. Thus, before peer influences increase, Thai adolescents may remain relatively sensitive to their parents' values and expectations.

Unexpectedly, adolescents having parents who disapproved of smoking were more likely to move from the susceptible pre-contemplation stage to the initiation/tried stage than those with parents who approved of smoking. One possible explanation for this finding may be the presence of certain parental characteristics, such as the general parenting style, the types of messages conveyed to children and parent-child communication. However, no previous studies, that link parental approval of smoking with advancement from the susceptible pre-contemplation stage to the initiation/tried stage, could be located. Further studies are needed to confirm this association.

Recommendations

The results suggest that predictors of smoking play different roles at various stages of smoking behavior, as well as during advancement from one early stage of smoking to another. Thus, it is important for health care providers to match appropriate prevention strategies to the smoking stage of an adolescent. For example, to decrease the risk of adolescents moving to the susceptible pre-contemplation stage, educational programs should be provided for both adolescents and their parents. To prevent adolescents from becoming "triers" of smoking, teaching refusal skills and enhancing adolescents' refusal skills are needed. The implementation of a no smoking policy, in each school system, may facilitate the presence of a smoke free environment and, subsequently, reduce availability of and temptation to smoke. Dissemination of mass-media educational information promoting non-smoking behavior may prove beneficial for fostering negative attitudes toward smoking, as well as reducing the attractiveness of smoking behavior.

Limitations

All studies have limitations and this study was no exception. The study examined smoking behavior at one point in time and, therefore, the generalizability of the findings is limited to those adolescents who are a part of the public school system in eastern Thailand. In addition, the results cannot be interpreted as having a cause and effect relationship. Since no parents were surveyed in the study, one has to trust that what the students indicated was in fact truthful.

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ปัจจัยทำนายการเริ่มต้นสูบบุหรี่ของเด็กวัยรุ่นชายไทย: ระยะแรกของลำดับขั้นของการสูบบุหรี่

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บทคัดย่อ: การสูบบุหรี่เป็นพฤติกรรมที่มีความซับซ้อนผ่านลำดับขั้นต่าง ๆของการสูบบุหรี่ (มั่นใจที่จะไม่สูบบุหรี่ ลังเลใจที่จะสูบบุหรี่ เตรียมตัวที่จะสูบบุหรี่ ทดลองสูบบุหรี่ และสูบบุหรี่ตามโอกาส) และการสูบบุหรี่ยังคงเป็นปัญหาสาธารณสุขที่สำคัญในสังคมไทยโดยเฉพาะอย่างยิ่งในกลุ่มวัยรุ่น ปัจจัยต่าง ๆได้แก่ปัจจัยภายในบุคคล ทัศนคติ และปัจจัยทางสังคมจึงอาจทำหน้าที่แตกต่างกันตามลำดับขั้นของการสูบบุหรี่ การศึกษาในกลุ่มวัยรุ่นชายครั้งนี้จึงมีวัตถุประสงค์เพื่อศึกษาอัตราการสูบบุหรี่และปัจจัยทำนายในแต่ละลำดับขั้นของการสูบบุหรี่ในระยะแรก รวมทั้งเพื่อศึกษาปัจจัยทำนายที่มีผลต่อการเลื่อนลำดับขั้นการสูบบุหรี่จากขั้นหนึ่ง ๆไปสู่ลำดับขั้นที่สูงขึ้น

กลุ่มตัวอย่างได้แก่นักเรียนมัธยมศึกษาชายจำนวน 1,102 คนซึ่งมีอายุเฉลี่ย 13.75 ปี ส่วนใหญ่นับถือศาสนาพุทธ และอาศัยอยู่กับพ่อแม่ และส่วนใหญ่ถูกจัดกลุ่มการสูบบุหรี่อยู่ในขั้นมั่นใจที่จะไม่สูบบุหรี่ที่เหลืออยู่ในขั้นทดลองสูบบุหรี่ ขั้นลังเลใจที่จะสูบบุหรี่ ขั้นสูบบุหรี่ตามโอกาสและขั้นเตรียมตัวที่จะสูบบุหรี่ ปัจจัยทำนายการสูบบุหรี่ขั้นลังเลใจที่จะสูบบุหรี่ได้แก่ การคาดการณ์อัตราการสูบบุหรี่ ทัศนคติต่อการสูบบุหรี่ การยอมรับการสูบบุหรี่ของพ่อแม่ และการสูบบุหรี่ของพ่อแม่ ปัจจัยทำนายการสูบบุหรี่ขั้นทดลองสูบบุหรี่ได้แก่ การชักชวนให้สูบบุหรี่ ทัศนคติต่อการสูบบุหรี่ การสูบบุหรี่ของเพื่อน และผลสัมฤทธิ์ทางการศึกษา ปัจจัยทำนายการสูบบุหรี่ขั้นสูบบุหรี่ตามโอกาสได้แก่ ทัศนคติต่อการสูบบุหรี่ การชักชวนให้สูบบุหรี่ การสูบบุหรี่ของเพื่อน การสูบบุหรี่ของพ่อแม่ และผลสัมฤทธิ์ทางการศึกษา นอกจากนี้ยังพบว่าการชักชวนให้สูบบุหรี่ และการยอมรับการสูบบุหรี่ของพ่อแม่ สามารถทำนายการเปลี่ยนแปลงการสูบบุหรี่จากขั้นลังเลใจที่จะไม่สูบบุหรี่ไปสู่ขั้นทดลองสูบบุหรี่ ขณะที่การสูบบุหรี่ของเพื่อน และทัศนคติต่อการสูบบุหรี่สามารถทำนายการเปลี่ยนแปลงจากขั้นทดลองสูบบุหรี่ไปสู่ขั้นสูบบุหรี่ตามโอกาส ผลการศึกษาครั้งนี้จะเป็นประโยชน์ต่อการพัฒนาโปรแกรมซึ่งมีความเหมาะสมกับระยะการสูบบุหรี่ของวัยรุ่นเพื่อการป้องกันการเริ่มต้นสูบบุหรี่ในวัยรุ่นต่อไป

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คำสำคัญ: เด็กวัยรุ่นชาย ลำดับขั้นของการสูบบุหรี่ ประเทศไทย

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