

# Prevalence of Smoking and Drinking Habits Among Form Six Students in Petaling District, Selangor

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## Summary

Smoking and alcohol intake patterns may persist from adolescence to adulthood. The aims of this study are to determine the prevalence and factors associated with smoking and drinking habits among Form Six students. This was a cross-sectional study conducted in January 2003 among Form Six students from government schools in the Petaling District, Selangor. A hundred and thirty six self-administered questionnaires were distributed to students selected through multistage stratified sampling. Response rate in this study was 90.1% (136/151). The respondents were mainly Chinese 60 (44.1%) and female 88 (64.7%). The prevalence of smoking was 22.8% whereas the prevalence of alcohol intake was 47.8%. Only 33.1% of the respondents practiced undetermined activities and 1.5% have undetermined characters. There were significant associations between smoking and males (Adjusted OR 2.56, 95% CI 1.02-6.43) and smoking and alcohol intake (Adjusted OR 2.74, 95% CI 1.11-6.78). Alcohol intake has significant negative association with Malays (Adjusted OR 0.83, 95% CI 0.03-0.27). Smoking habits among adolescents were associated with males and alcohol intake. However, only alcohol intake was negatively associated with Malays. Program interventions to reduce behavioral problems, particularly smoking and alcohol intake should be emphasized.

**Key Words:** Smoking, Alcohol intake, Undetermined activities, Undetermined characters, Form Six students

## Introduction

Adolescence is a period when important life events occur and decisions with far-reaching consequences made. In the past, adolescents have been among the healthiest people in the world. They have survived the dangers of birth and infancy, and defeated childhood diseases that kill many of them in developing countries. Attitudes and patterns related to diet, physical activity, tobacco use, safety and sexual behavior might persist from adolescence to adulthood<sup>1</sup>.

The adolescent population in developing countries has increased rapidly. More than half of the world's

population is under the age of twenty-five<sup>2</sup>. Tobacco use was prevalent among the high school students in the United States; with 26.5 percent reporting they have smoked at least one or two cigarettes in their life and 51.4 percent reporting they have consumed alcohol at least within a month prior to the survey. In Malaysia, the prevalence of self-reported smoking among adolescents is 16.7 percent and alcohol intake among secondary school students is 9.0 percent<sup>3</sup>.

Adolescents who were experiencing behavioral problems, such as addictive behavior, violence and suicide, and risky sexual behavior are also less likely to

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engage in health enhancing behaviors<sup>1</sup>. A survey in New York State in 1994 showed that users of both alcohol and cigarettes have generally displayed more negative behaviors, attained poorer grades in school on average and been engaged in more school misconduct. Cigarette smoking has well known health risks (morbidity, mortality, cancer, cardiovascular disease, nicotine addiction) and is considered the chief preventable cause of premature death<sup>4</sup>.

The purpose of this study was to determine the prevalence of smoking and alcohol intake among Form Six students in a district in Selangor. We also studied the association between smoking and alcohol intake with undetermined activities and character since activities play an important role and could influence Form Six students in their lifestyles. The findings can assist the designing of intervention programs on behavioral problems, particularly smoking and alcohol intake among adolescents in the school health program.

## Materials and Methods

This study was conducted in January 2003. This is a cross-sectional study using self-administered questionnaires. The study population consisted of three hundred and twenty five 19-year old secondary school students who studied in eight schools in the district of Petaling, Selangor.

The list of schools in Selangor with Upper Six students served as the sampling frame. A multistage stratified random sampling method was used. Stage one involved the schools with Upper Six students in Selangor. Stage two involved the total students in the respective schools. Schools were chosen according to the highest number of Upper Six students and all students from the selected schools were included in the study. A hundred and thirty six secondary school students aged 19 from four schools were selected. The sample size was calculated based on the formula by Kirkwood (1998). The formula incorporates the prevalence of smoking ( $p=0.306$ ) and also the estimate standard error of 5%<sup>6</sup>. The estimation of the sample size was 85.

Students who were absent on the day the questionnaire was distributed were excluded from the study. The students were gathered in a classroom to fill in the questionnaire. They were given the same instruction by one of the researchers. Permission to conduct the study was obtained from the National and State

Education Department and the students themselves. Student's anonymity was protected through confidential conditions.

In this study, a validated self-administered questionnaire was used. The questionnaire adopted from another study included questions on socio-demographic profile (gender and ethnic group, status of alcohol intake, smoking status, activities and character of students)<sup>7</sup>. Questions on activities and character of students were adapted from other studies<sup>8</sup>. Students who smoked at least once prior to the study were considered smokers irrespective of the amount. Alcohol intake was defined as having had at least once in their lifetime drunk alcohol. Alcohol was defined as any drink containing alcohol (ethanol) irrespective of the concentration<sup>6</sup>. Each activity was considered an undetermined activity if the respondents spent more than three hours doing the activity, and undetermined character as respondents who did at least more than one of the items in the character in their life. In this study, activities were assessed through 18-items activity questions. The total scores ranged from 0 to 18 and the level of activities was divided into undetermined activities if the score is 0 to 9 and positive activities if the score is 10 to 18. The characters of the students were assessed through 13-items character questionnaires. Character is considered to be undetermined if the score is 0 to 6 and positive if the score is 7 to 13. Undetermined activities were as in Table I and undetermined characters were as in Table II.

Data were analysed using Statistical Package for Social Science version 12.0. Frequency and percentage of respondents who smoked, consumed alcohol, had high-risk activities and character were analysed. Further analysis involved bivariate and multivariate analysis for smoking and alcohol consumption with the selected factors. Multivariate analysis using Multinomial Logistic Regression with Backward Selection Methods was used to analyse the most significant factors influencing the outcome. The level of significance was taken at  $p$ -value of  $< 0.05$ . The 95% confidence interval estimates the degree of association and if the interval does not include one, the estimated odds ratio is considered statistically significant.

## Results

Out of the 151 students, 136 students were included in the study. This gave a response rate of 90.1%.

### Socio demographic profile

There were 64.7% female respondents. The majority of them were Chinese (44.1%) followed by Indians (28.7%) and Malays (25.0%).

### Activity and Character

Based on the 18-items activity questions, 91 (66.9%) of them had mean total activity scores of 9 and below and were considered as having undetermined activity.

Table I shows the performance of the respondents on specific activity items and character items. Positive item activities ranged from 3% to 49% and undetermined item activities ranged from 1% to 65%. Most of the respondents possessed positive activities such as doing homework during weekdays and undetermined activities such as watching television during weekends.

In terms of character, only 3 (2.2%) of the respondents had undetermined characters. Table II shows the percentage of respondents practicing undetermined character items ranging from 0% to 22%. Most of the respondents (22.2%) got into physical fights with other people; however, none were expelled from school.

### Prevalence of smoking and factors associated

Prevalence of smoking among respondents was 22.8%. The number of cigarettes smoked ranged from less than ten cigarettes (2.2%) to more than 100 cigarettes preceding the study. However, only 3.7% of them smoked every day. Table III shows the association between smoking habits and socio-demographic profiles, activities and character. Smoking habits were significantly associated with males (OR 3.46, 95% CI 1.51-7.94), undetermined activities (OR 2.38 95% CI 1.04-5.46) and alcohol intake (OR 3.52, 95% CI 1.48-8.39). Multivariate analysis shows that only males (OR 2.74, 95% CI 1.11-6.78) and alcohol intake (OR 2.56, 95% CI 1.02-6.43) are predictors for smoking.

### Prevalence of alcohol intake and factors associated

In this study, the prevalence of alcohol intake among the respondents was 47.8% and at least 16.9% of the respondents had more than ten drinks of alcohol in their lifetime. Factors such as males (OR 3.33, 95% CI 1.59-6.98) and those practicing undetermined activities (OR 2.15, 95% CI 1.02-4.54) had higher risk of alcohol intake. Being a Malay (OR 0.09, 95% CI 0.03-0.27) was a protective factor. However, on multivariate analysis, only Malays (OR 0.83, 95% CI 0.03-0.27) have significant negative association with alcohol intake (Table IV).

### Discussion

Adolescence is a vulnerable age group. The ten to nineteen-year old period is a time of high-risk change and experimentation. This study showed that the prevalence of smoking was high (22.8%) compared to a study done by Hanjeet et al on Form One to Form Six students in Kuala Lumpur, which was 3.6%<sup>9</sup>. This study is however not directly comparable since the age groups being studied was markedly different. This high level of prevalence could also be due to our sample population, which comes from an urban area. The age of our respondents (19 years old) was another factor that might contribute to the higher prevalence. Findings from a study conducted in the United Arab Emirates on 1500 public secondary boys showed that adolescents aged 18 years old and above had a higher prevalence of smoking compared to those aged less than 16 and between 17 to 18 years old<sup>10</sup>. The Youth Risk Behaviour Surveillance Survey also reported that 26.5% of the high school students have smoked at least one or two cigarettes in their life<sup>11</sup>. In addition, Kann (1995) revealed an increase in smoking prevalence among school's students in higher grades<sup>12</sup>.

Based on crude analysis and logistic regression analysis, this study shows significant association between smoking and gender. Males are at a higher risk of smoking compared to females. This factor might be due to cultural reasons in Malaysia where it is unusual for females to smoke as compared to males. A study done among urban secondary school students in Kuala Lumpur indicated that 88.7% of Form One to Form Six students who were smoking were males. In the United States in the 1980s, smoking was generally more common among females than males, but in the 1990s the prevalence of adolescents currently smoking had been slightly higher for males rather than females<sup>4</sup>. Age adjusted smoking prevalence in a National Health Interview Survey (NHIS) of Taiwan (2001) among male and female adolescents aged 18 to 19 years old revealed higher male smoking prevalence (24.7%) and much lower female prevalence (4.7%)<sup>13</sup>.

Our study showed that the prevalence of alcohol intake was 47.8%. It might be due to the exposure of the respondents in this study, since they are from an urban situated school and the majority of them were non-Malays. This could be the contributing factor towards the increased intake of alcohol because it is socially acceptable among the non-Malay community. The prevalence of alcohol intake in the Second National Health Morbidity Survey was 9.0%<sup>6</sup>. However, the

**Table I: Number and percentage of respondents practice positive and undetermined item of activities (n=136)**

Item activities	n	%
<b>Positive item activities</b>		
Doing homework during weekdays*	132	97.0
Doing homework during weekend*	126	92.7
Doing their hobbies weekdays **	66	48.5
Doing their hobbies weekend **	106	78.0
Going for tuition / school activities on weekdays *	114	83.8
Going for tuition / school activities on weekend *	101	74.3
Activity with parent on weekdays *	71	52.2
Activity with parent on weekend *	120	88.2
<b>Undetermined item activities</b>		
Watching television weekdays *	129	94.9
Watching television weekend *	131	96.3
Going to cinema weekdays **	63	46.3
Going to cinema weekend **	95	70.0
Going to disco/pub weekdays *	8	5.9
Going to disco/pub weekend *	16	11.8
Chatting through internet weekdays *	67	49.3
Chatting through internet weekend *	98	72.0
Outing with friends weekdays *	60	44.1
Outing with friends weekend *	104	76.4

\* more than 3 hours/day

\*\* more than 3 times

**Table II: Number and percentage of respondents practicing undetermined item of characters (n=136)**

Characters item	n	%
Run away from home	3	2.2
Got into physical fight with other people	30	22.1
Injured other people	9	6.6
Injured animal	16	11.8
Carried a weapon	6	4.4
Damaged something in a public place	13	9.6
Purposely damaged something of your parents	4	2.9
Damaged a parked car, scratched a panel, broke an aerial	3	2.2
Stolen something	10	7.4
Driven a car without permission	18	13.2
Been suspended or expelled from a school	1	0.7
Sacked from school	0	0.0
Done graffiti	18	13.2

**Table III: Crude odds ratio, adjusted odds ratio and 95% confidence intervals for smoking by socio demographic profiles, activities and characters (n=136)**

Factors	Smoking			
	n	%	Crude OR 95% CI	Adjusted OR 95% CI
<b>Gender</b>				
Males	18	58.1	**3.46, 1.51-7.94	**2.56, 1.02-6.43
(Females)	13	41.9		
<b>Ethnicity</b>				
Malays	11	32.4	1.96, 0.82-4.68	-
(Non Malays)	23	67.6		
<b>Activities</b>				
Undetermined	17	54.8	**2.38, 1.04-5.46	0.84, 0.33-2.14
(Positive)	14	45.2		
<b>Characters</b>				
Undetermined	2	6.5	7.17, 0.63-81.92	-
(Positive)	29	93.5		
<b>Alcohol intake</b>				
Yes	22	33.8	**3.52, 1.48-8.39	**2.74, 1.11-6.78
(No)	43	66.2		

\*\* Significant (p&lt;0.05)

**Table IV: Crude odds ratio and adjusted odds ratio and 95% confidence intervals for alcohol intake by socio demographic profiles, activities and characters (n=136)**

Factors	Alcohol intake			
	n	%	Crude OR 95% CI	Adjusted OR 95% CI
<b>Gender</b>				
Males	32	49.2	**3.33, 1.59-6.98	2.37, 0.98-5.73
(Females)	33	50.8		
<b>Ethnicity</b>				
Malays	4	11.8	**0.09, 0.03-0.27	**0.83, 0.03-0.27
(Non Malays)	30	88.2		
<b>Activities</b>				
Undetermined	38	58.5	**2.15, 1.02-4.54	0.47, 0.18-1.20
(Positive)	27	41.5		
<b>Characters</b>				
Undetermined	1	1.5	0.54, 0.05-6.09	-
(Positive)	64	98.5		

\*\* Significant (p&lt;0.05)

Second National Health Morbidity Survey was carried out among non-Muslim adults.

Our findings also showed that adolescents with undetermined activities have high alcohol intake. This corresponds to a study done by Hoffman et al (2001) which reported that adolescents who smoked cigarettes and consumed alcohol were associated with personal and social problems, as well as delinquency<sup>4</sup>.

Findings from this study also suggested that adolescent cigarette smoking was associated with other adolescent problems such as alcohol drinking. A study among United States high school students reported that current smokers were more likely than nonsmokers to report use of alcohol<sup>1</sup>. Adolescents who engage in risky behaviours such as physical fighting, using alcohol and using marijuana had a higher prevalence of smoking than adolescents who did not engage in risky behaviors<sup>4</sup>. Concurrent use of alcohol with cigarettes has known synergistic effects, which increase the health risk of tobacco products. The approximate relative risks for mouth and throat cancer in non-smokers and non-drinkers are greater in those who use both tobacco and alcohol compared to use of tobacco or alcohol only<sup>4</sup>. However, this was not addressed in the present study.

The norms and culture of the different components in the undetermined activities and character were not taken into account. The study findings reflect the situation of these groups of adolescents at the time the study was conducted. Unlike many prior local studies, this study reflects the smoking status and drinking practices of all ethnic groups in the district of Petaling. The reliability of the study would have been greater if larger sample populations were evaluated to confirm

our findings. Additionally, this study was only a preliminary study of behavioral lifestyle among adolescents in Selangor. This sample might have missed a portion of the out-of-school adolescent population and a community-based study can be done in order to get a better perspective of adolescents' smoking and alcohol drinking practices.

Smoking and alcohol intake habits can be changed through interventions and programmes. School health teams could play an important role in the prevention of smoking and alcohol intake among adolescents by educating them individually about the association between smoking and alcohol intake and practice of negative undetermined activities and behaviors. Collaboration and support from the Ministry of Education and other organizations such as youth clubs are also essential.

### Conclusion

The prevalence of smoking and alcohol intake was high among the adolescents in the Petaling district. Health education and intervention programs on smoking and alcohol intake should focus on adolescents. Alcohol intake was an important factor influencing the smoking habit among adolescents.

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