

# A Community Based Study on the Prevalence and Factors Affecting Smoking in Kampong Jenderam Hilir, Sepang, Selangor

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## Summary

**Objectives:** i) To determine the prevalence of smoking among the community aged 15 and above in Kg. Jenderam Hilir in Sepang District, Selangor state. ii) To determine the relationship between smoking and age, sex, household income and education. iii) To determine the parental and peer influence on smoking in Kg Jenderam Hilir.

**Materials and Methods:** A study was conducted in Kg. Jenderam Hilir, Sepang. All residents aged 15 years and above from all the 381 households of Kg. Jenderam Hilir were included in this study. A standardized pre-tested structured questionnaire was used in this study.

**Results:** Out of 894 respondents interviewed 69% were males compared to 3.9% of the females (overall 33.6%) reported to have smoked at least once in his/her lifetime. The difference was statistically significant. The mean duration of smoking was 17.7 years. The age at which smoking was first attempted ranged from 4 years to 51 years with a mean of 18.7 years. The mean initiation age for the males was significantly lower as compared to the mean initiation age for the females. The prevalence of current smokers was significantly higher amongst males (52.8%) as compared to the females (1.4%). The prevalence of smoking among current smokers increased with age ( $p < 0.01$ ). There was no significant difference in the prevalence of smoking by household income and educational level. The mean number of cigarettes smoked by current smokers per day was 14.9 cigarettes and ranged from 1 to 60 cigarettes. The mean number of cigarettes smoked by the males was significantly higher than the females ( $p < 0.05$ ). The mean duration of smoking among current smokers was 20 years. There was a significant difference in the level of addiction to smoking and the duration of smoking ( $p < 0.05$ ). The high level of addiction increased with the duration of smoking ( $p < 0.05$ ). Sixty five percent of the current smokers reported to have tried to quit smoking while 26% of ever smokers had reported to quit smoking and remained non-smokers. The quit ratio was calculated to be 26.0%. The quit ratio was 52.6% among those with college or university education. There was a significant difference in the quit ratio by education level ( $p < 0.01$ ). There was no significant difference in smokers whose parents were smokers as compared to non-

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smokers whose parents were smokers. However, there was a significant association between smoking and peer influence ( $p < 0.01$ ).

**Key Words:** Smoking, Prevalence, Initiation age, Duration, Intensity, Quit attempts

## Introduction

Smoking is the most preventable cause of death. It causes three million deaths each year worldwide<sup>1</sup>. With the current smoking pattern, about 500 million people alive today will die due to tobacco. Out of 1.15 billion smokers worldwide who consumes on an average of 14 cigarettes per day, 82% of them live in developing countries. By 2030 smoking will cause ten million deaths per year worldwide<sup>2</sup>. It causes 90% of all cases of lung cancer, 75% of chronic bronchitis and emphysema, and 25% of cases of ischaemic heart diseases in men under 65 years old<sup>3</sup>. Addiction to tobacco is due to its nicotine content which is the active pharmacological agent that activates the mesolimbic dopaminergic pathway in the brain<sup>4</sup>. Each puff of a cigarette contains 4000 chemicals such as nicotine, tar, carbon monoxide, acetone, ammonia, naphthylamine, methanol, naphthalene, cadmium, benzopyrene, vinyl chloride, hydrogen cyanide, urethane, toluene, arsenic, phenol, butane, polonium-210 and DDT. There is an 80% increased risk of impotence in men aged between 31 and 49 who smoke. Smoking also increases the risk of erectile dysfunction to about 50% in male smokers aged 30 years and above<sup>5</sup>. The increase in deaths due to smoking is highest in developing Asian countries<sup>6</sup>. However, consumption of cigarettes in the developed countries is reducing. For example the prevalence of smoking has dropped among the males in the United Kingdom by 20%, in Norway by 11%, in Australia by 40% and in Canada by 9%<sup>3</sup>. In Malaysia, one out of every four adults are smokers. The prevalence of smoking among males is 49.2% and in females is 3.5%. The prevalence among teenage girls has

increased from 1% in 1986 to 4.8% in 1996<sup>7</sup>. The objectives of the study were to determine the prevalence of smoking in Kg Jenderam Hilir and to determine the relationship between smoking and age, sex, household income, education level, peer and parental smoking status.

## Materials and Methods

This study was conducted in Kg. Jenderam Hilir, district of Sepang. A cross sectional study design was used in this study. All adults 15 years and above on the day of the interview, residing in the 381 households in Kg. Jenderam Hilir was included in this study. A standardized pre-tested structured questionnaire was used in this study. The Fagerstrom Tolerance Questionnaire (FTQ) was used to determine the level of addiction to nicotine. Statistical Package for Social Sciences Version 10.0 was used to analyze the data. Chi-square test was used to determine the relationship between smoking and age, sex, household income and education. The t-test was used to compare the mean age.

## Results

### The Respondents

Table I shows the distribution of respondents by age and sex. Out of the total 933 subjects in the 381 households in Kg. Jenderam Hilir, 894 were interviewed with a response rate of 95.8%. The age ranged from 15 years to 91 years. The overall mean and median age of the respondents was 37.1 and 34.8 years respectively with a standard deviation (SD) of 14.6 years. There was no

significant difference in the mean age between males and females ( $p > 0.05$ ). All the residents and respondents in Kg. Jenderam Hilir were Malays.

### **Prevalence of Smoking**

#### *Ever Smokers*

Out of 894 respondents interviewed 300 were ever smokers giving an overall prevalence of 33.6%. Out of the 300 ever smokers there were 281 (93.7%) male smokers and 19 (6.3%) female smokers. Out of the 407 males, 281 (69%) were ever smokers as compared to 19 (3.9%) out of the 487 females. There was a significant difference in the prevalence of male and female ever smokers ( $p < 0.01$ ).

#### **Duration of Smoking Among Ever Smokers**

Table II shows the duration of smoking among ever smokers. Out of the 300 ever smokers, 10.4% had been smoking for more than 40 years. The mean and median years were 17.7 and 15.0 years respectively.

#### **Initiation Age**

Table III shows the initiation age by sex. The initiation age ranged from the age of 4 years to 51 years. The overall mean and median initiation age was 18.7 years and 18.0 years respectively. The male ever smokers had a significantly lower mean and median initiation age of 18.4 years and 18.0 years respectively as compared to 23.8 years and 22.0 years respectively in the females ( $p < 0.01$ ).

#### **Current Smokers**

Out of 894 respondents interviewed 222 were current smokers with an overall prevalence of 24.8%. Out of these 222 current smokers 215 (96.8%) were males. The prevalence of smoking was significantly higher in males (52.8%) as compared to 1.4% in females ( $p < 0.01$ ).

#### **Prevalence of Current Smokers by Age**

Table IV shows the prevalence of current smokers by age. The mean and the median age of the male current smokers were 38.6 and 36.9 years respectively with a SD of 13.4 years. The mean and the median age of the female current smokers were 65.2 and 67.6 years respectively with a SD of 20.9 years. The mean age of the male current smokers was significantly lower when compared to the females ( $p < 0.01$ ). The prevalence of smoking among current smokers increased with age ( $p < 0.01$ ).

#### **Prevalence of Smoking by Household Income and Education level**

Out of the 650 respondents with household income less than RM2000, 164 (38.7%) were current smokers as compared to 23.7 % of the 244 respondents with household income RM2000 or more. However this difference was not statistically significant [ $p > 0.05$ ]. The study showed that there was also no significant difference in the prevalence of current smokers between the different education levels.

#### **Smoking Intensity Amongst Current Smokers**

Table V shows the number of cigarettes smoked per day by sex. The number of cigarettes smoked ranged from 1 to 60 cigarettes per day. The overall mean and the median number of cigarettes smoked per day were 14.9 and 14.0 cigarettes respectively. For the males the mean and median numbers of cigarettes smoked per day were 15.2 and 14.0 cigarettes and the number of cigarettes smoked ranged from 1 to 60 cigarettes per day. For the females the mean and median numbers of cigarettes smoked per day for females were 6.1 and 6.0 cigarettes with a SD of 3.9 cigarettes and the number of cigarettes smoked ranged from 2 to 10 cigarettes per day. The mean number of cigarettes smoked by the males was significantly higher than the females ( $p < 0.05$ ). There were no heavy smokers among the female.

### **Duration of Smoking Among Current Smokers**

Out of the 222 current smokers, 170 (76.6%) of them had been smoking for 10 years or more. The mean and median years of duration of smoking were 20.0 and 18.0 years respectively. Twenty six (11.7%) had smoked more than 40 years.

### **Level of Addiction Determined from Fagerstrom Tolerance Questionnaire (FTQ)**

Out of 220 (99%) current smokers who answered this questionnaire, 55.9% of them had low nicotine dependence, 24.1% had moderate nicotine dependence and 20% had high nicotine dependence. Table VI shows the comparison between the level of addiction to smoking and the duration of smoking. There was a significant difference in the level of addiction to smoking and the duration of smoking ( $p < 0.05$ ). A Chi square for linear trend was performed to compare high-level of addiction and the lower and moderate level of addiction combined with duration of smoking. The high level of addiction increased with the duration of smoking ( $p < 0.05$ ).

### **Quit Attempts**

Overall, out of the 222 current smokers 144 (64.9%) reported to have tried to quit smoking. The result showed that 65.6% male current smokers attempted to quit as compared to 42.9% female current smokers. Table VII shows the comparison of quit attempts among light, moderate and heavy smokers. A comparison between the proportion of quit attempts and the smoking intensity shows that the percentage of light smokers who tried to quit at least once (77.8%) was higher than the moderate (59.7%) and heavy smokers (65.5%). However, this

difference was not statistically significant ( $p > 0.05$ ).

### **Quit Ratio by Duration of Smoking**

Out of the 300 ever smokers, 78 (26.0%) had reported to quit smoking and remained non-smokers. The mean and median age at cessation of smoking was 29.9 and 27.0 years respectively. The quit ratio was calculated to be 26.0%. The quit ratio was highest among those with household income less than RM500. However, this study showed no significant difference in the quit ratio and household income ( $p > 0.05$ ). Table VIII shows the quit ratio by duration of smoking. The quit ratio was 47.5% among those who smoked for less than 10 years. There was a significant difference in the quit ratio by duration of smoking ( $p < 0.01$ ).

The quit ratio was 52.6% among those with college or university education as compared to 20.6% with secondary education, 23.4% with primary education and 40% with no education. There was a significant difference in the quit ratio by education level ( $p < 0.01$ ).

### **Parental and Peer Influence**

There were 163 (73.4%) smokers whose parents were smokers as compared to 459 (68.3%) non-smokers whose parents were smokers. However, there was no significant difference between them ( $p = 0.15$ ). Table IX show the number of smokers and non-smokers in relation to the smoking habits of their friends. There were 211 (95%) smokers whose friends were smokers as compared to 378 (56.3%) non-smokers whose friends were smokers. There was a significant difference between them ( $p < 0.01$ ).

**Table I: Distribution of Respondents by Age and Sex**

Age (Years)	Male		Female		Total	
	Number	%	Number	%	Number	%
< 20	36	8.8	51	10.5	87	9.7
20 - 29	103	25.3	132	27.1	235	26.4
30 - 39	118	29.0	128	26.3	246	27.5
40 - 49	79	19.5	84	17.2	163	18.2
50 - 59	35	8.6	41	8.4	76	8.5
≥ 60	36	8.8	51	10.5	87	9.7
<b>TOTAL</b>	<b>407</b>	<b>100.0</b>	<b>487</b>	<b>100.0</b>	<b>894</b>	<b>100.0</b>

**Table II: Duration of Smoking in Years Among Ever Smokers**

Duration of Smoking (Years)	No. Ever Smokers	(%)
< 10	99	33.0
10 - 19	81	27.0
20 - 29	61	20.3
30 - 39	28	9.3
≥ 40	31	10.4
Total	300	100.0

**Table III: Initiation Age of Smoking by Sex**

Age (Years)	Male		Female		Total		
	Number	%	Number	%	Number	%	Cum %
< 10	8	2.8	0	0	8	2.7	2.7
10 - 14	33	11.7	2	10.5	35	11.7	14.3
15 - 19	142	50.5	5	26.3	147	49.0	63.3
20 - 24	62	22.1	3	15.8	65	21.7	85.0
25 - 29	23	8.2	3	15.8	26	8.7	93.7
≥ 30	13	4.7	6	31.6	19	6.3	100.0
<b>TOTAL</b>	<b>281</b>	<b>100</b>	<b>19</b>	<b>100</b>	<b>300</b>	<b>100</b>	

**Table IV: Prevalence of Current Smokers by Age**

Age (Years)	No. of smokers	No. non-smokers	Total	Prevalence (%)
< 20	9	79	87	10.3
20 - 29	54	181	235	23.0
30 - 39	66	180	246	26.8
40 - 49	42	121	163	25.8
50 - 59	25	51	76	32.9
≥ 60	26	61	87	29.9
<b>Total</b>	<b>222</b>	<b>673</b>	<b>894</b>	<b>24.8</b>

**Table V: Number of Cigarettes Smoked per day by Sex**

Age (Years)	Male		Female		Total
	No	%	No	%	
<10	50	23.3	4	57.1	54
10 - 19	87	40.5	3	42.9	90
20 - 29	59	27.4	0	0	59
30 - 39	11	5.1	0	0	11
40 - 49	6	2.8	0	0	6
50 - 59	0	0	0	0	0
> 60	2	0.9	0	0	2
<b>Total</b>	<b>215</b>	<b>100</b>	<b>7</b>	<b>100</b>	<b>222</b>

**Table VI: Comparison of Addiction Level and Duration of Smoking**

Duration of smoking (Years)	Addiction level						Total
	Low		Moderate		High		
	No	%	No	%	No	%	
< 10	28	53.8	18	34.6	6	11.5	52
10 - 19	40	59.7	15	22.4	12	17.9	67
20 - 29	28	51.9	16	29.6	10	18.5	54
30 - 39	12	60.0	0	0	8	40.0	20
≥ 40	15	60.0	3	12.0	7	28.0	25
<b>TOTAL</b>	<b>123</b>	<b>55.9</b>	<b>53</b>	<b>24.1</b>	<b>44</b>	<b>20.0</b>	<b>220</b>

**Table VII: Proportion of Quit Attempts Among Light, Moderate and Heavy Smokers**

Quit attempts	Smoking Intensity						Total	
	Light		Moderate		Heavy		No	%
	No	%	No	%	No	%		
Never	12	22.2	56	40.3	10	34.5	78	35.1
1-2 times	23	42.6	52	37.4	8	27.6	83	37.4
3 more	19	35.2	31	22.3	11	37.9	61	27.5
<b>TOTAL</b>	<b>54</b>	<b>100.0</b>	<b>139</b>	<b>100.0</b>	<b>29</b>	<b>100.0</b>	<b>222</b>	<b>100.0</b>

**Table VIII: Quit Ratio by Duration of Smoking**

Duration of smoking (Years)	No. of smokers	No. of non-smokers	Total (%)
<10	99	47	47.5
10 - 19	81	15	18.5
20 - 29	61	5	8.2
30 - 39	28	5	17.9
≥40	31	6	19.4

**Table IX: Peer influence in Cigarette Smoking**

Friends	Smokers		Non-smokers	
	No	%	No	%
Smokers	211	95.0	378	56.3
Non-smokers	11	5.0	294	43.7
<b>Total</b>	<b>222</b>	<b>100.0</b>	<b>672</b>	<b>100.0</b>

## Discussion

The prevalence of current smokers among all Malay adults in the study area aged 18 years and above was 25.9%, which was lower than the reported national prevalence of 27.9% among the Malay ethnic group<sup>7</sup>. The National Health and Morbidity Survey<sup>7</sup> however, included both urban and rural populations and did not report the prevalence separately for the Malays in rural areas. The mean initiation age for the males was significantly lower as compared to the females. Cavelaars *et al*<sup>8</sup> also reported that females lag behind males in adopting smoking. By the age of 25, 85% of the respondents had started smoking. The study showed that half the current smokers were with low nicotine dependence and 53.8% of them were less than 25 years of age. Thus, interventions to quit smoking among this group of smokers could be carried out effectively with the "cold turkey method". The quit ratio was highest among those with household income less than RM 2000. The lower income group was most affected if there were any increase in cigarette price or increase in inflation. Thus, they respond by either stop smoking, reduce the number of cigarette smoked or change to different brand of cigarettes that are cheaper<sup>9</sup>. The implication is that

if the government increases tax on tobacco and tobacco related products prevalence of smoking would decrease at least in the lower income socio economic group. The quit ratio was highest among those with college or university education. Having higher education may have provided them enough information about the harmful effects of smoking to themselves and others around them and assisted them to quit smoking. A similar pattern was also observed in the European countries where the lowest educated people smoked more than the higher educated people<sup>10</sup>. In this study peers have shown to have greater influence than parents in influencing an individual to pick up the smoking habit. The Ministry of Education should form Action on Smoking and Health (ASH) clubs in schools so that students will be advising their friends who are smoking not to smoke and the hazards of smoking. For those who are smoking these clubs can arrange for counseling groups on how to stop smoking. The school children can be the main target group for the preventive measures. As it was reported in previous studies that one out of every two males aged 30 and above who are smokers are impotent, it is important to know the awareness of such side effects among the respondents<sup>5</sup>. Forty-two percent 42.4% of the

respondents were aware that smoking causes impotence. The knowledge of association between smoking and impotence might also reduce the prevalence of smoking. All forms of direct or indirect advertising of tobacco products should be prohibited. The Government should monitor and regulate the sale and marketing of this harmful product. Sales of tobacco and tobacco related products should be behind counters with no visibility and to be provided to appropriate customers upon request. There is a need for the development of resource centers to provide information on resources, materials and updated guidelines on effective smoking cessation methods nationwide.

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