

Risk factors of cigarette smoking among secondary school adolescents in Kuala Lumpur

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Abstract

Smoking is an old vice that does not spare adolescents. This study was carried out in collaboration with the Ministry of Education to examine smoking habits among urban secondary school children, and to identify risk factors of smoking among adolescents. A two stage stratified sampling design was used, covering all government secondary schools in Kuala Lumpur, but excluding the vocational schools. The age and ethnic distribution closely represented the distribution of secondary school students in Kuala Lumpur. The prevalence of smoking among the 8,532 students was 3.6%. More than 14.6% reported having tried smoking at least once. Smoking was more prevalent among the Malays compared to the other races. The mean age the adolescents started smoking was 13.1 years. The main risk factors identified in this study were gender, sibling smoking, peer pressure, ethnicity and father smoking. It is strongly recommended that health education intervention programmes be started to reduce or prevent smoking in primary and secondary schools and to determine their effects on future generations.

Key words: adolescents, smoking, risk factors, intervention programmes

Introduction

Cigarette smoking has become a world epidemic and a public health problem of great concern. Each year tobacco causes about 3.5 million deaths globally, which translates to nearly ten thousand deaths per day. Based on the current trends, this will increase to 10 million annual deaths during the 2020's or 2030's, with seven million of these deaths occurring in developing countries. By 2020, it is predicated that tobacco use will cause over 12% of all deaths globally (WHO-No Tobacco Day 98). These facts and figures speak for themselves.

Cigarette smoking is the most important single preventable cause of premature death. It is a major risk factor for coronary heart disease, stroke and cancer which incidentally are among the top five leading causes of death in Malaysia (Ministry of Health Malaysia Annual Report, 1995). In 1995, a total of 4,240 Malaysians died of coronary heart disease and another 80,000 were hospitalised with non-fatal heart attacks. Stroke which is the second leading cause of death kills about 2,400 Malaysians annually. Cancer accounts for about one in every eleven deaths and kills more than 2,200 Malaysians annually. In 1995, 22% cancer deaths were due to lung cancer, of which 80% or more were attributed to cigarette smoking (Ministry of Health Malaysia Annual Report, 1995).

The aim of this paper is to identify the risk factors related to cigarette smoking among adolescents, a habit which is also the basis of exposure to more dangerous addictions like alcohol and drugs in the future (United States Department of Health and Services Report, 1994). It is also the intention of the Ministry of Education to introduce intervention programmes in schools to control the increasing rates of smoking and to lower or prevent smoking among students in Malaysia.

Materials and Methods

A two-stage stratified sampling design was applied to select 10% of students from all the 54 secondary schools in Kuala Lumpur. Boarding schools (a total of four) and private schools were excluded to obtain a homogenous population sample. Of the 54 schools, 27 schools were selected randomly for inclusion in the study. A 20% student population was selected randomly from each class in all the 27 schools. All classes from Remove Class through to Form VI were included in this study.

A structured, pre-coded questionnaire was used to collect data. The questionnaire included socio-demographic data, detailed history of smoking, family influence, peer influence and other risk factors influencing the habits and

behaviours of adolescent smoking. No names were recorded to ensure complete confidentiality.

The data was analysed using the SPSS® Statistical package. Bivariate analysis was done through cross tabulation between the possible risk factors and the students who were current smokers and the demographic background of the students.

Results

The response rate to the questionnaire was 100%. Of the total 8,625 questionnaires, about 1% (93) was rejected as they were incompletely filled. All subsequent analyses were based on the remaining 8,532 questionnaires.

The age distribution of the sample population ranged from 11 to 20 years, with 98.5% between 12 and 18 years of age. The male: female ratio was 0.9: 1. The ethnic distribution closely represented the distribution of ethnic groups in Kuala Lumpur with 49.2% Chinese, 37.1% Malays, 10.4% Indians and 2.9% others.

The prevalence of smoking among this adolescent group was 3.6% (310 out of 8,532) and 14.7% (1,248 inclusive of the current smokers) had tried smoking at least once. The mean age of smoking among the adolescents was 13.1 years. The analysis showed that 51.5% of fathers, 3.2% mothers and 13.5% of elder siblings also smoked cigarettes.

Thirty nine percent of the adolescents tried smoking below the age 15 years, and of these 2.9% were still smoking. Another 5.2% who were current smokers, were aged 15 years and above. Seventy percent of the students who had tried smoking were males. The male: female ratio of students who have attempted to smoke was 3:1. Among the current smokers 88.7% were males.

The ethnic distribution of students who had attempted smoking were 51% Malays, 36.4% Chinese, 7% Indians and 1.2% others. The ethnic distribution among the current smokers was also similar, being 65.5% Malays, 24.8% Chinese, 7.1% Indians and 1.3% others.

The data showed that 64.4% of the adolescents were with friends when they first attempted smoking, while another 18.8% were with their family. Among the current smokers, 73% bought their own cigarettes, 25% got them from friends and 2% from family members. Among those who had attempted to smoke at least once, 36% had bought their own cigarettes, 32.5% got them from their friends and 8.4% from their family members. Thirty four percent

of the smokers only smoked one cigarette per day, 41% smoked 1-5 cigarettes per day, 13% smoked 5-10 cigarettes per day, 6% smoked more than 10 cigarettes per day and another 6% did not give a response.

Nearly eighty percent (79.3%) of adolescents who had attempted to smoke at least once, want to give up the habit, while 5% did not want to stop smoking and the rest were undecided as to whether they want to smoke in the future.

Table 1 shows that 58.8% fathers of adolescents are smokers while only 41.2% of them are not smoking. Among the adolescents who smoke, 76.3% of their fathers smoke. It also shows that father's smoking habit increases the odds of adolescents smoking. (odds ratio 1:2.3)

Table 2 shows that the mother's smoking habit does not show a high influence on the adolescents as compared to the father's smoking habit (odds ratio 1.629; C.I. 0.94 to 2.83). This shows that mother's smoking habit is not a risk factor to the habit of adolescents smoking.

Table 3 indicates that elder siblings smoking increases the odds of adolescents smoking about 4.933 times. But the odds ratio is higher (7.07) if the younger siblings smoke. This clearly shows that younger siblings' smoking has a greater impact on the habit of smoking among the adolescents as compared to the elder siblings smoking.

In 13.5% of the smokers, the elder sibling (either brother or sister) was a smoker. About thirty percent (30.2%) of these adolescents had tried smoking and 9.3% were still smoking compared to the group where the elder brother or sister did not smoke; 10.7% of the adolescents have tried smoking and 2% were current smokers (Table 3). Among adolescents who were smokers, 5.5% of their younger siblings smoked. Among adolescents who were non-smokers, 1% of the younger siblings were smokers. More than four percent (4.3%) of the adolescents had lost their father, 1.2% their mother and 0.2% both their parents. Other family disturbances included divorced (3.4%) or separated (1.5%) parents but the majority (89%) of the parents were still married and staying together. Four and 5% and 18% of the adolescents who have lost their father, mother or both parents respectively smoked. Of adolescents staying with both parents, 3.4% currently smoked. Five and 8% adolescents whose parents were divorced or separated respectively, smoked.

Table 1. Relationship between smoking habit of fathers and that of adolescents

| | Adolescents smoking (%) | Adolescents not smoking (%) | Total (%) |
|------------------------|----------------------------|--------------------------------|-------------|
| Fathers smoking | 200 (76.3) | 4144 (58.2) | 4344 (58.8) |
| Fathers not smoking | 62 (23.7) | 2977 (41.8) | 3039 (41.2) |
| Total | 262 | 7121 | 7383 |

Odds Ratio = 2.317

Table 2. Relationship between smoking habit of mothers and that of adolescents

| | Adolescents smoking (%) | Adolescents not smoking (%) | Total (%) |
|------------------------|----------------------------|--------------------------------|-------------|
| Mothers smoking | 14 (5.7) | 259 (3.6) | 273 (3.6) |
| Mothers not smoking | 232 (94.3) | 6991 (96.4) | 7223 (96.4) |
| Total | 246 | 7250 | 7496 |

Odds Ratio = 1.629

Table 3. Relationship between smoking habit of elder siblings and that of adolescents

| | Adolescents smoking (%) | Adolescents not smoking (%) | Total (%) |
|-------------------------------|----------------------------|--------------------------------|-------------|
| Elder siblings smoking | 107 (57.5) | 1028 (21.5) | 1135 (22.9) |
| Elder siblings not smoking | 79 (42.5) | 3744 (78.5) | 3823 (77.1) |
| Total | 186 | 4772 | 4958 |

Odds Ratio = 4.933

Table 4. Risk factors of smoking habit in adolescents

| Risk factors* | Odds ratio | Confidence Interval |
|---|------------|------------------------|
| Sex (male : female) | 8.82 | 6.18-12.56 |
| Younger siblings smoking : | 7.07 | 4.09-12.22 |
| Younger siblings not smoking | | |
| Elder siblings (Elder brother/sister) smoking : | 4.93 | 3.55-6.65 |
| Elder siblings not smoking | | |
| Peer pressure : Non peers | 4.21 | 1.98-8.95 |
| Ethnicity (Malay : Non-Malay) | 3.40 | 2.66-4.32 |
| Father smoker : Father non smoker | 2.25 | 1.73-3.10 |
| First time smoking with friends : others | 2.11 | 1.55-2.86 |
| Age (>15 yrs : < 15 yrs) | 1.84 | 1.46-2.31 |
| Mothers education level (tertiary : Non tertiary) | 1.64 | 1.03-2.62 |
| Mother smoker : Mother non smoker | 1.63 | 0.94-2.83** |
| Family (broken : united) | 1.61 | 1.17-2.20 |
| Fathers education level (Tertiary : Non tertiary) | 1.59 | 1.11-2.26 |
| Family size (No. of siblings >5 : no. of siblings <5) | 1.40 | 1.06-1.85 |
| Age first tried smoking (>12 yrs : <12 yrs) | 1.34 | 1.02-1.76 |

*p value for all the above risk factors is less than 0.05

More than twenty one percent (21.4%) of the fathers had primary education, 38% secondary education, 8.5% tertiary education and 32.1% unknown education level. In adolescents who smoked 2.7%, 2.8% and 5% of their father had primary, secondary, and tertiary education respectively.

Thirty two percent of the mothers had primary education, another 32% secondary, 4.5% tertiary, 0.05% no formal education, and the rest (31.5%) unknown status. Nearly two and a half percent (2.4%), 3.4% and 5.3% mothers of adolescents who smoked had primary, secondary and tertiary education respectively. Here again a higher percentage of adolescent smokers had mothers with tertiary education. The risk factors of smoking among the adolescents are summarised in Table 4.

Discussion

The main socio-demographic factor identified among the adolescents who smoked in the Kuala Lumpur Federal Territory was gender. Males have nine times higher risk of developing the smoking habit when compared to females. This may reflect the eastern culture and customs as smoking is generally less prevalent among females. Age and sex plays an important part in the initiation of the smoking habit. The upper secondary students (i.e. ≥ 15 years age group) have 1.8 times more chances of starting to smoke when compared to the lower secondary students.

The age when the child first started to smoke was then divided into 2 groups, that is 12 years and below (primary school) and more than 12 years (secondary school). Adolescents who had attempted to smoke in secondary schools had a 1.3 times greater risk continuing smoking when compared to primary school children. Smoking started at younger age groups in the present study when compared to earlier studies by Pathmanathan (1975) and Thambypillai (1985). In this study, smoking began in the upper primary schools.

Another factor that influences smoking habit is race. Malay adolescents are at a higher risk of developing the smoking habit. They have 3 times higher risk becoming smokers when compared to the other races. This could be related to the high percentage (59%) of their fathers who smoke.

Another factor is the number of siblings in the family. Parents of a large family (> 5 siblings) may not be able to give individualised attention to all their children. Quite often the elder child is told to take care of the younger

ones. Adolescents from such families have a 1.4% greater risk to start smoking when compared to adolescents from smaller families (< 5 siblings). The smoking habit increases from 12.6% for the first child to 17.8% for the 5th child in the family. However the odds ratio is 1.1 showing that there is no significant difference in the smoking habits, as related to the rank order of the child in the family. Similar findings have been observed among the current smokers, where 2.9% of the adolescents are the eldest child, 3.7% second child, 4.3% third child, 4.1% fourth child and 5.8% the fifth child. The differences seen are statistically not significant.

The most important single factor related to smoking habit was peer pressure, as was also reported by Chassin *et al.* (1986). The analysis shows that adolescents have 2 times greater risk of continuing to smoke if they were among friends when they first started to smoke as compared to other members. From the study it is shown that adolescents who were offered cigarettes by their friends had 4 times higher risk continuing smoking when compared to others. During adolescence there are many challenges and smoking gives them the feeling of adulthood and independence to make their own decisions. They begin with just trying, and they do not want to stop as they do not want to be segregated from their peers and soon they become addicted and find it difficult to quit, even if they wanted to, as was reported in the United States Department of Health and Human Services Report (1994). In a recent quit smoking campaign, it was known that 80% of the smokers would like to quit, but cannot; they are addicted and dependent on the nicotine. Each time they have attempted to quit, they have failed.

The strongest influence to smoking on the adolescent from among the family members is the younger brother or sister, followed by elder siblings, father and mother. Similar findings have also been reported by Bauman *et al.* (1990). The risk of an adolescent starting smoking is two times greater if the father is a smoker, as compared to a father who is a non-smoker. The risk of beginning to smoke is seven times higher if the younger sibling is smoking as compared to a non-smoking younger sibling. From this analysis, it is found that if the elder siblings smoke, the younger siblings were at a 5 times higher risk to start smoking.

The adolescent has a 1.6 times greater risk to start smoking if his mother is a smoker as compared to a non-smoking mother. In this study

there is no significant effect on adolescents if their mothers smoked. However, the number of mothers that smoked was too small to make a valid conclusion.

The risk of smoking is also high among broken families as compared to others (Table 1). Probably the parents are busy sorting out their affairs, and the children are also undergoing stress in the home environment, trying to cope with the situation and their own problems thus leading them to take up the smoking habit. Adolescents claim that they also smoke to get away from stress and tension (mental, psychological, physical or emotional). The prevalence of smoking is higher among adolescents where the family is incomplete or broken as compared to complete and united families. There was a higher risk (1.6 times) of the adolescent becoming a smoker in an incomplete or broken family.

Another finding was that adolescents of parents with tertiary education had a higher risk of smoking. When both parents are educated to tertiary level there is a good probability that both are working and so find little time to guide the children and to foster a healthy family. Accordingly the analysis shows that adolescents of fathers with tertiary education had a higher risk (1.6 times) of developing a smoking habit when compared to the others. To our knowledge this finding has not been reported in any other study. The limitation in this study could be the small numbers that had tertiary education. There is also the probability that the father with tertiary education could earn more money and the adolescent gets more money to spend. Similarly, the adolescents whose mother had tertiary education had a 1.6 times higher risk of developing a smoking habit as compared to the others. It is also possible that parents with tertiary education do not spend much quality

time with their adolescents because they are busy with their careers. It is also known from the proceedings of the Seventh World Conference on Tobacco and Health (1990) that if one does not start smoking during the adolescent years, the chances of smoking in the latter years is reduced by fifty percent.

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