CIGARETTE SMOKING AMONG SCHOOL CHILDREN IN SINGAPORE. PART II - DEVELOPMENT OF THE SMOKING HABIT

S C Emmanuel, C K Ho, A J Chen

ABSTRACT

The second in this series on smoking among school children in Singapore aims to define the characteristics of young smokers. Results show that of respondents who had ever smoked, the median age of experimentation with smoking was 12 years. This was seen among boys as well as girls.

The median age at which current smokers went on to smoke regularly was 14 years, approximately two years after trying their first cigarette.

Friends and parents were the main sources of the first cigarette for all categories of smokers, whether they be ex smokers, experimenters or current smokers.

Among the reasons as to why current smokers smoked, the leading two were "to relax" (46.4%) and "out of sheer curiosity" (22.3%).

Boys tend more to smoke with friends of the same sex (40.6%) whilst girls preferred mixed company (45.5%) when they smoked.

Fathers played a major role in the development and continuation of smoking among those who had ever smoked before - 52.0% of boys and 51.6% of girls currently smoking reported that their fathers smoked as well.

Keywords : age at experimentation, age at regular smoking, source of first cigarette, reasons for smoking and where children smoked, influence of family members.

SINGAPORE MED J 1991; VOL. 32: 146-150

INTRODUCTION

This is the second in a series of three articles presenting the first ever national assessment of the smoking status among Singapore school children.

The survey on smoking in the school-going population was undertaken as part of activities in Singapore's efforts towards becoming "A Nation of Non Smokers." An essential strategy of this campaign is promoting messages aimed at non smokers especially the young, who have not yet been exposed to smoking or have only just started experimenting with smoking. The basis for this measure is that children are impressionable. Correct information, through formal and informal approaches of education, such as mass media and intensive instruction, will assist youths to resist the overtures of peer and other powerful pressures to smoke[1,2].

Towards this, the Research & Evaluation (R&E) Department of the Ministry of Health undertook a nationwide survey on the school-going population with the objectives of:

1. ascertaining the current levels, or prevalence, of smoking among Singapore's young, and
2. gauging the knowledge, attitude and practice of smoking among the young smokers.

Ministry of Health HQ
College of Medicine Building
16 College Road
Singapore 0316

S C Emmanuel, MBBS, MSc(Public Health), AM
Director, Research & Evaluation Department

C K Ho, BSc(Hons), MSc(Medical Stats), FSS, MIS
Statistician, Research & Evaluation Department

A J Chen, MBBS, DPH, DTM&H, DCH, AM
Deputy Director of Medical Services(Primary Health)/
Asst Director of Medical Services(Planning & Development)

Correspondence to : Dr S C Emmanuel

Survey results would provide valuable information for formulating relevant and effective national anti-smoking programme targetted at the school-going population.

The survey covered two distinct groups in the school-going population in the country. Trainees from the sixteen vocational institutes in Singapore formed the first group whilst school children from the public school system were the target population for the second.

An earlier article highlighted the smoking prevalence among the younger generation of Singaporeans and outlined their socio-demographic profile[3].

This report, the second in its series, sets out to present a composite picture of young smokers. It details the age of first experimentation with smoking, the effects of the family and home environment and other factors which influence young smokers to take up smoking.

The third report will deal with the knowledge and attitudes of the young towards smoking and assess their future intentions with regard to smoking.

METHODOLOGY

The target population for the survey among the school-going population was all pupils aged between 9 and 20 years old attending the state-run schools, junior colleges and vocational institutes in Singapore. This comprised approximately 446,000 students from Primary Four up to 'A' level and trainees attending the Basic Skills Training (BST) or Pre-Vocational Training (PVT), Technical, Business and Trade Certificate courses, in the vocational institutes in the country.

A one-stage disproportionate stratified sample design was used for both components of the survey. Altogether, 33,700 of the school-going population were randomly selected as respondents. Details of the sampling methodology has been presented in the first article of this series[3]. The response rate was 99% giving a total of 33,400 respondents for this survey. Those in the late teens (ie. 18 to 20 year olds) comprised only 3.9% of the final survey sample. There was thus a much lower representation of this group compared with their distribution in the population (33.2%)[4] as the majority of children in this age group would have finished with the normal school programme. The smoking levels in this age group from the

survey cannot therefore be taken to represent the smoking levels of this age group in the population.

Two sets of questionnaires were used. The first questionnaire contained basic questions on smoking behaviour and this was addressed to all respondents. "Older" children, ie. those aged 16 years and above, were in addition probed in depth about their knowledge and attitudes towards smoking. Those who smoked were asked further why they took up the habit, where and with whom they smoked, whilst ex-smokers were questioned on what motivated them to give up smoking.

Statistical analyses performed on the data included detecting any significant differences between the level of smoking in the various categories using the χ^2 test of significance. Figures have been adjusted to account for the population composition in the Schools and the VITBs.

RESULTS

Age of First Experience With Cigarettes

Table I shows the cumulative proportion of all respondents and those who had ever smoked, by the ages at which they first experimented with cigarette smoking.

Table I

Cumulative Proportion of Respondents Who had Ever Smoked by Selected Ages at which they First Experimented with Smoking(%)

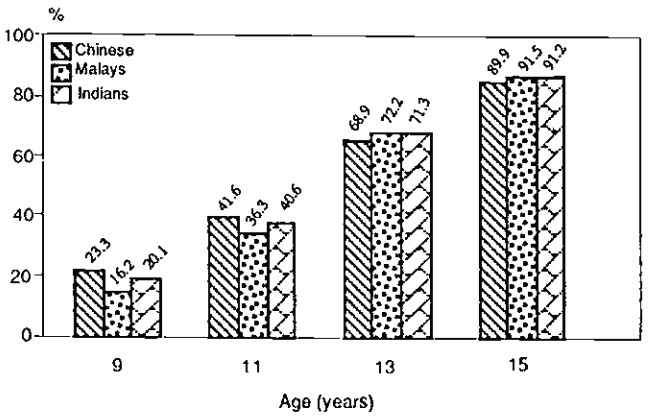
Had Tried Smoking By The Age Of	Among All Respondents			Among Respondents Who Had Ever Smoked		
	Boys	Girls	All	Boys	Girls	All
Total	**16992**	**16118**	**33110**	**3638**	**983**	**4621**
≤7 years	2.0	1.0	1.5	9.8	16.6	11.4
9 years	4.1	1.6	2.9	20.3	27.8	22.0
11 years	8.0	2.6	5.3	39.8	43.5	40.6
13 years	13.9	4.2	9.0	69.2	71.2	69.7
15 years	18.2	5.3	11.7	90.5	89.8	90.3
≥17 years	20.1	5.9	13.0	100.0	100.0	100.0

Only a small proportion, comprising 2.0% and 1.0% of all boys and girls respectively, in the school-going population had experimented with smoking by the age of 7 years. The proportion was much higher by age 13 years, at 13.9% and 4.2% respectively. Findings showed that on overall, boys tended more to experiment with smoking as they grew older, compared with girls.

A different picture emerged if only respondents who had tried smoking a cigarette before were looked at (Table I). Smoking experimentation occurred much earlier among girls of this category than boys, at almost every age; 16.6% of girls had already tried their first puff by the time they were 7 years of age compared with 9.8% of boys. It is worth noting here that the prevalence of smoking among girls is very low, at 0.2%, compared to that of 3% for boys[3]. However, by the age of 15 years, almost all boys (90.5%) and girls (89.8%) who had ever smoked before, had already tried their first cigarette. The median age for experimentation was 12 years for boys and girls, a finding corresponding to that seen elsewhere in the world[5-7]. This appears therefore to be a phase in "growing up" among all children.

Looking at the ethnic profile of respondents who had ever smoked, Chinese tended to experiment with smoking at an earlier age compared with Malays or Indians (Fig 1). Almost one quarter (23.3%) of Chinese had already tried smoking by the age of 9 years, compared with 20.1% Indians and 16.2% Malays. However, by the age of 13 years, more Malays had experimented with smoking compared with the other two major ethnic groups - 72.2% Malays versus 68.9% Chinese and 71.3% Indians. Although Malays were shown to be late experimenters, earlier studies have consistently shown that more Malay youths go on to take up the habit permanently as they grew older[3,8-9].

Fig 1 - Cumulative Propotion Of Respondents Who Had Ever Smoked By Race At Selected Ages When First Experimented With Smoking



Significant ethnic differences were observed among respondents who stated that they first experimented with smoking at ages 9 (χ^2 = 17.79, 2df, P = 0.0001) and 11 (χ^2 = 6.16, 2df, P = 0.046). However, among those who first experimented with smoking at ages 13 and 15, no differences were observed between the three ethnic groups (χ^2 = 3.19, 2df, P = 0.14 and χ^2 = 2.11, 2df, P = 0.35 respectively).

Onset of Regular Smoking

In addition to being asked their age of experimentation with smoking, all current smokers were probed further on the age at which they began smoking regularly (ie smoking more than one cigarette a week continuously for at least two months). Table II presents the median age of current smokers at their age of experimentation with smoking and onset of regular smoking, as well as the average age of current smokers when the survey was conducted.

Table II

Current Smokers by Sex and Their Median Age during the Survey and Median Ages at Experimentation, and Onset of Smoking

Age	Boys	Girls
At First Puff	12.1	11.9
At Onset of Regular Smoking	14.1	13.9
Of Current Smokers	16.3	16.7

For respondents categorised as current smokers when the survey was carried out, the median age at which they first started smoking regularly was 14.1 years for boys and 13.9 years for girls. Therefore, for school children of today, the vulnerable age for the establishment of the smoking habit has been shown to be 14 years, almost 2 years after they started experimenting with smoking[5,6,10-13].

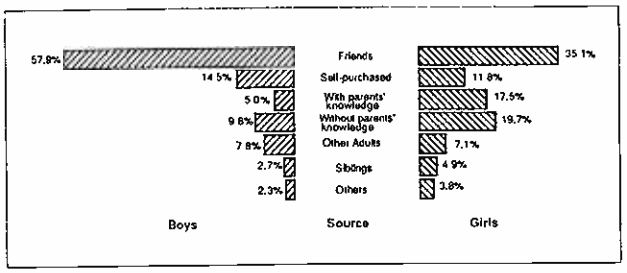
Source of First Cigarette

From whom did these young smokers obtain their first cigarette? This question was posed to all older respondents (ie. those aged 16 years and above) who had tried smoking before, that is experimenters, current and ex-smokers.

Significant differences were observed between the sex of smokers and the various sources of the first cigarette (χ^2 =

27.76, 6df, P = 0.0001) for smokers of each gender. For the boys, 57.9% were initiated into the habit by their friends, whilst 14.5% purchased their first cigarette themselves. The third largest source (14.8%) was their parents' supply, either with or without their parents' knowledge (Fig 2). What is also worth noting is that 9% of the boys who bought their first cigarette themselves had at least one family member who smoked.

Fig 2 - Source of First Cigarette By Sex

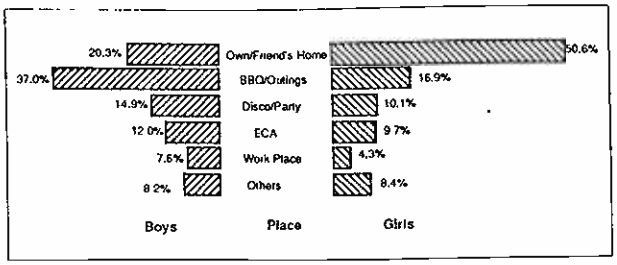


For girls, friends too were the main source of their first cigarette (35.1%). Almost equal proportions of girls obtained their first cigarette from their parents, - 17.5% with their parents' knowledge, whilst for 19.7% their parents did not know about it. Self purchase of the cigarette (11.8%) was the next source of the first cigarette.

An interesting observation was seen as regards the source of the first cigarette for the three categories of smokers - current, ex-smokers, and experimenters. Although all respondents who had tried smoking before cited friends as the major source of their first cigarette, the strength of influence of these friends varied substantially between these three categories, ie current smokers, ex-smokers and experimenters of school children (χ^2 = 36.97, 2df, P << 0.001). Among ex-smokers, friends were their main source (Table III). The proportions of friends as the major source among current smokers and experimenters was less. This picture held true for boys as well as girls. Parents also featured prominently as the main source of the first cigarette for experimenters, especially among girls.

Significant difference was also noted between boys and girls with regard to the place where these smokers had their first smoking experience. (χ^2 = 186.5, 5df, P << 0.001). Among boys, the majority (37.0%) indicated that they obtained their first cigarette while on an outing (either camping or at the seaside) or at a barbecue (Fig 3). The next common place for

Fig 3 - Respondents By Place Obtained First Cigarette



the boys trying their first cigarette was at their own or their friend's home (20.3%) or at a party or the disco (14.9%). About 12.0% cited extra curricular activities after school hours as the place and time where they tried their first puff.

Within the confines of home environment (either own home or friend's) was where for about half of the girls had for their first smoking experience. Only 16.9% of girls mentioned that they had tried their first cigarette while on an outing (camping or at the seaside) or at a barbecue. A further 10.1% said that they first experimented with smoking while at a party or at the disco.

Reasons for Smoking

The majority (46.4%) of respondents who were currently smoking at the time of the survey, said they smoked to relax (Fig 4).

Fig 4 - Reasons For Smoking Among Current Smokers

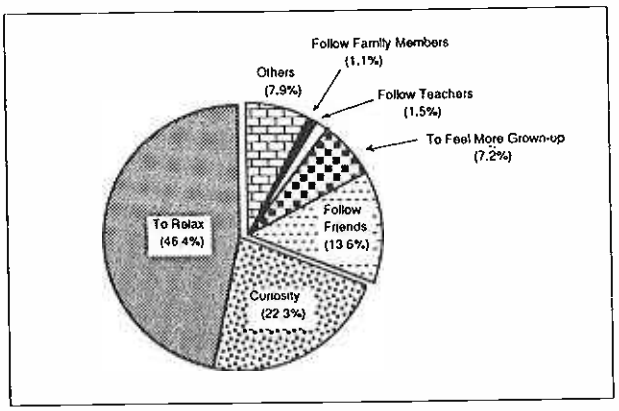


Table III

Source of First Cigarette by Sex and Smoking Status

	Boys			Girls		
	Current Smokers	Ex Smokers	Experi-menters	Current Smokers	Ex Smokers	Experi-menters
Total	**436**	**490**	**835**	**21**	**74**	**369**
Friends	57.1	64.3	55.2	37.9	55.3	31.7
Parents*	7.4	10.6	19.5	18.8	14.9	41.7
Self purchased	25.0	16.5	9.7	28.6	9.5	6.8
Other Adults	6.4	5.1	9.6	4.9	9.5	11.4
Siblings	2.1	2.7	3.0	4.9	5.4	4.9
Others	2.1	0.8	3.0	4.9	5.4	3.5

* With or without knowledge

Fig 5 - Smoking Companions Of Current Smokers

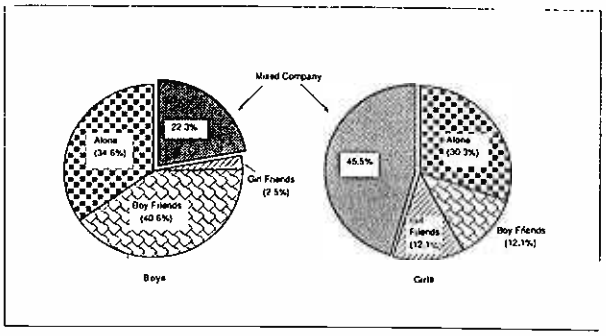
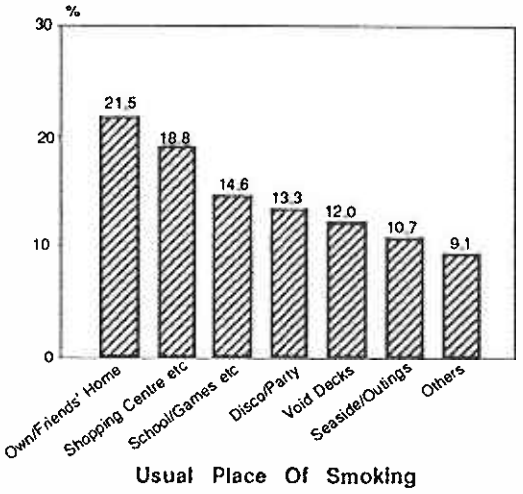


Fig 6 - Current Smokers By Usual Place Of Smoking



Curiosity was another main reason which led these children to try the habit, after which it became established (22.3%). Other reasons given included projecting an adult image, peer pressure and the desire to emulate parents, siblings or teachers who smoked. There were no notable differences between boys and girls with regard to their main reasons for wanting to smoke.

Smoking Companions and Usual Place of Smoking

All current smokers were asked to identify who they usually smoked with. Once again, there was a significant difference in the responses from boys compared with girls ($\chi^2 = 24.1$, 3df, $P < 0.001$). The majority of boys usually smoked in the company of other boys (40.6%), whilst girls preferred to do so in mixed company (45.5%). A further one-third (34.6%) of boys and girls (30.3%) stated that they preferred to smoke alone (Fig 5).

Current smokers were further asked to identify the favourite places where they liked to smoke. It was surprising that the majority (21.5%), regardless of sex, preferred to smoke within the confines of their own or their friends' homes (Fig 6). Another 18.8% said that they usually smoked at shopping centres or at fast food/hawker centres. Smoking in school during after school activities such as extra curricular activities or games was the next common setting for 14.6% of current smokers.

Effect of the Home Environment on Smoking Behaviour

In an attempt to study whether the smoking behaviour of family members had an influence on a child's smoking status, all respondents were asked to indicate whether any of their family members (ie. father, mother or siblings) smoked. Table IV shows the smoking status of respondents (by sex) in relation to the smoking behaviour of their family members.

About two-thirds of current smokers (66.0% boys and 63.6% girls) came from homes where at least one family member smoked. This held true also among ex-smokers and experimenters, the majority of whom also had at least one family member who smoked.

As regards non smokers, the majority, not surprisingly, came from families of non smokers. More than half (57.6%) of boys and girls (58.2%) who had never smoked came from families where no one smoked.

Children from families where their fathers smoked were more likely to smoke themselves - 52.0% boys and 51.6% girls who were current smokers had fathers who also smoked. A negligible proportion of current smokers reported their mothers to be the only family member who smoked (1.0% boys and 3.0% girls) whilst 3.0% boys and 9.0% girls stated that both their parents smoked. This is commensurate with the low level of smoking among adult females in Singapore[9].

Table IV

Respondents by Smoking Status of Family Members(%)

	All Respondents	Current Smokers	Ex Smokers	Experi-menters	Non Smokers
Boys	**16992**	**694**	**893**	**2051**	**13354**
No One Smokes	54.4	34.0	37.6	44.9	57.6
Someone Smokes	45.6	66.0	62.4	55.1	42.4
Father only	37.3	48.0	45.0	43.5	35.4
Mother only	0.8	1.0	1.2	1.2	0.7
Both Parents	2.1	3.0	4.3	3.1	1.8
Siblings only	4.1	13.0	9.6	5.7	3.2
All Family Members	1.3	1.0	2.3	1.6	1.3
Girls	**16118**	**33**	**142**	**808**	**15135**
No One Smokes	57.2	36.4	39.5	41.6	58.2
Someone Smokes	42.8	63.6	60.5	58.4	41.8
Father only	35.8	36.3	40.8	43.9	35.4
Mother only	0.9	3.0	2.1	2.5	0.8
Both Parents	1.9	9.0	4.9	4.1	1.7
Siblings only	3.6	9.0	9.9	6.2	3.4
All Family Members	0.6	6.3	2.8	1.7	0.5

Siblings who smoked also seemed to have a major influence on whether a child smoked. This was the second most powerful family influence exceeding mothers who smoked or situations where both parents smoked. In all, 13.0% boys and 9.0% girls who were currently smoking had at least one sibling who was a current smoker when the survey was conducted.

DISCUSSION

A study done on adolescent and teenage smoking in developed countries has shown that almost half of school children, upon reaching 18 years of age, would have already established the smoking habit with some degree of regularity[14].

The results obtained from the Singapore study showed much lower proportions, with only 20.1% of all boys and 5.9% of all girls having experimented with smoking by the time they reached 17 years of age. Going on further, only 9.9% school boys and 0.7% school girls aged 18 years were regular smokers[3]. Notwithstanding this, experimentation with cigarette smoking seems to be initiated for a few at a surprisingly early age - 2.0% of all school boys and 1.0% of all school girls had already experimented with smoking by the time they were 7 years of age or younger. However, experimentation with smoking appears to be a stage in the growing up process for many children.

This survey has also shows that the majority of young Singapore smokers did not start smoking regularly soon after trying their first puff. There appeared to be a two-year lag before the habit became established. Although the levels of smoking in Singapore are much lower, these results on the ages of experimentation and establishment of smoking corroborate with those observed in other several other countries[5,6,10,13], and could be the pattern in smoking behaviour among children worldwide. This information highlights the vital period when vigorous health education should be mounted to prevent children from going on to take up smoking regularly after the initial relatively less innocuous experimentation with smoking. The critical age for establishing the smoking habit appears to be 14 years of age, while that for experimentation with smoking is age of 12 years.

Intervention programmes must therefore be aimed at least at children between the ages of 12-14 years where the likelihood of successful influence should be greatest[12]. This present study has provided detailed information regarding school children in Singapore who smoke relevant and specifically tailored education programmes on smoking can therefore be formulated aimed to help young children overcome the several overtures to smoking which present themselves during the "growing-years".

Friends and parents, the survey has shown knowingly or otherwise, played a major role in providing future smokers with their cigarette. Parents who smoked, in addition, had a significant influence on their children taking up the habit as has been shown in other studies[15-18]. The Singapore study has shown the father to be the lead figure in setting this example. Education programmes should therefore also be targetted at the family (particularly fathers and siblings) highlighting to them their influence on their children and siblings if they continue to smoke in their presence. Furthermore, children should be exposed to and encouraged to resort to other varied and much more healthy means of unleasing their energy, relaxing and enjoying themselves by games, dancing and outdoor activities. Non-smokers as the overwhelming majority in the school going population should exert their majority-influence on current smokers back to non-smokers, rather vice versa.

The next article will examine the future smoking intentions of school children and the reasons for which ex-smokers gave up smoking. Their knowledge and attitudes towards smoking will be analysed providing the final input to a complete understanding of the smoker of school-going age in Singapore.

ACKNOWLEDGEMENTS

The authors wish to thank the Ministry of Education (MOE) and the VITB for kindly agreeing to allow their students and trainees to participate in this first national survey to gauge the smoking levels and behaviour among the school-going population in Singapore. We also wish to acknowledge the ready and continued assistance of the MOE and VITB, particularly with regard to administrative support for the conduct of the survey. Our special thanks go to the twelve nurses from the Primary Health Division of the Ministry of Health who helped carry out the field work for the schools component of this large survey of smoking among school children, under the coordination of the R & E Department of the Ministry of Health.

Our special thanks too, to Ms Jane Ma and Low Bee Geok for their dedicated assistance in preparing this manuscript.

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