UNIVERSITI PUTRA MALAYSIA

FACTORS ASSOCIATED WITH EVER SMOKING AMONG STUDENTS IN TAMIL PRIMARY SCHOOLS IN KUALA LUMPUR, MALAYSIA

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By

JIVITA A/P THESTNAMOOTHI

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfillment of the Requirements for the Degree of Master of Science

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COPYTRIGHT

DEDICATION

This thesis is dedicated to my parents, supervisor, and friends for their financial, moral and spiritual support.

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the Degree of Master of Science

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January 2016

Chairmain : Salmiah Md. Said, M. Comm. Med.
Faculty : Medicine and Health Sciences

The Ministry of Health, Malaysia has conducted "Say No" as anti-smoking campaign in order to avoid Malaysian population especially school children from smoking. However, the prevalence of smoking was high among secondary school students and they usually started smoking during primary school. But, there is limited study on smoking among primary school children in Malaysia. Thus, this study was conducted to determine the factors associated with ever smoking (ever smoked even for a puff) among Indian students at Tamil primary schools in Federal Territory of Kuala Lumpur.

A cross-sectional study was conducted among 665 Indian students of age 10 and 11 years old in seven Tamil primary schools in Kuala Lumpur using cluster sampling from July to September 2014. Data collection used guided self-administered questionnaires. Section A was asked about characteristic of respondents, Section B was family background, Section C was influencing factors, Section D was history of smoking, Section E was knowledge of smoking. Ever smoking was defined as respondents who had history of smoking at any time regardless of frequency or amount even one puff or duration. Current smoker was defined as respondents who reported to smoke at least one cigarette every day in a week. The independent variables were characteristic of respondents, family background, influencing factors, and knowledge on smoking. Data were analyzed using International Business Machine Statistical Package for Social Sciences version 21 (IBM SPSS). Descriptive analysis used frequency and percentage to summarize the categorical data. The chi-square or Fisher's exact test was used to determine the association between categorical variables and ever smoking. Multiple logistic regression was used to determine the factors associated with smoking.

The overall response rate for the study was 86.6%. The percentage of ever smoking was 10.5 % (95% CI: 8.2, 12.8), whereas, the percentage of current smoker was 1.7 % (95% CI: 0.7, 2.7). The median (interquartile range) of age of smoking initiation was 9.00 (3.00). The main reason of smoking was curiosity (62.9%). Factors significantly associated with ever smoking were being male (AOR= 2.17, 95%CI: 1.07, 4.40), aged 11 years old (standard 5) (AOR= 2.05, 95%CI: 1.08, 3.86), having

5 and more siblings (AOR = 3.23, 95%CI: 1.41, 7.40), having father who is a smoker (AOR = 2.96, 95%CI: 1.57, 5.58), having mother who is a smoker (AOR = 7.12, 95%CI: 1.41, 36.04), having friends who smokes (AOR = 7.08, 95%CI: 3.74, 13.42), those who smoke if friends offered a cigarette (AOR = 7.16, 95%CI: 2.35, 21.80), and students with knowledge on smoking can cause bad breath (AOR = 3.37, 95%CI: 1.12, 10.08).

In conclusion, there is about one-tenth of Indian primary school students ever smoked in this study. Smoking behaviour among family members and friends were the important factors of ever smoking among Indian students in Tamil primary schools. Cohort study is needed to confirm the factors associated with the risk of smoking among Indian primary school students.

Key words: Smoking, Ever smoking, students, Tamil Primary schools, Kuala Lumpur

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk Ijazah Master Sains

FAKTOR YANG BERKAITAN DENGAN PERNAH MEROKOK DI KALANGAN PELAJAR DI SEKOLAH RENDAH TAMIL DI KUALA LUMPUR, MALAYSIA

Oleh

JIVITA THESTNAMOOTHI

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Kementerian Kesihatan Malaysia telah menjalankan Kempen Anti-merokok "Tak Nak" bertujuan bagi mencegah warga Malaysia terutama kanak-kanak sekolah dari merokok. Walau bagaimanapun, prevalens merokok adalah tinggi dikalangan pelajar sekolah menengah dan mereka selalu mula merokok ketika di sekolah rendah. Tetapi, kajian mengenai merokok adalah terhad dikalangan pelajar sekolah rendah. Oleh itu, kajian ini dijalankan bagi menentukan faktor-faktor yang berkaitan dengan pernah merokok (pernah merokok walaupun satu sedutan) di kalangan pelajar India di sekolah rendah Tamil di Wilayah Persekutuan Kuala Lumpur.

Satu kajian keratan rentas telah dijalankan dikalangan 665 pelajar India umur 10 dan 11 di tujuh buah sekolah rendah Tamil di Kuala Lumpur dengan menggunakan pensampelan berkelompok dari Julai hingga September 2014. Pengumpulan data menggunakan borang soal-selidik yang diisi sendiri secara berpandu. Bahagian A ditanya mengenai ciri-ciri responden, Bahagian B adalah latar belakang keluarga, Bahagian C mengenai faktor dipengaruhi, Bahagian D adalah sejarah merokok , Bahagian E mengenai pengetahuan mengenai merokok. 'Pernah merokok' ditakrifkan sebagai responden yang mempunyai sejarah merokok pada bila-bila masa tanpa mengira kekerapan atau jumlah walaupun satu sedutan atau jangka masa. 'Perokok semasa' telah ditakrifkan sebagai responden yang melaporkan merokok sekurang-kurangnya satu rokok setiap hari dalam seminggu. Pembolehubah tidak bersandar ialah ciri-ciri responden, latar belakang keluarga, faktor yang dipengaruhi, dan pengetahuan mengenai merokok. Data dianalisis dengan menggunakan International Business Machine Statistical Package For Social Science versi 21 (IBM SPSS). Analisa deskritif yang menggunakan kekerapan dan peratusan untuk merumus data kategori. Ujian Khi-kuasa dua atau ujian tepat Fisher digunakan untuk menentukan hubungan antara pembolehubah kategori dan pernah merokok. Regresi logistik berganda digunakan bagi menentukan faktor-faktor yang berkaitan dengan pernah merokok.

Kadar tindak balas keseluruhan bagi kajian ini adalah 86.6 %. Peratusan ‘pernah merokok’ adalah 10.5% (95% CI: 8.2, 12.8), manakala, peratusan ‘perokok semasa’ adalah 1.7% (95% CI = 0.7, 2.7). Median (julat antara kuartil) umur permulaan merokok adalah 9.00 (3.00). Sebab utama merokok ialah ingin tahu (62.9%). Faktor-faktor signifikan yang berkaitan dengan pernah merokok adalah sebagai lelaki (AOR = 2.17, 95% CI: 1.07, 4.40), berumur 11 tahun (AOR = 2.05, 95% CI: 1.08, 3.86), mempunyai 5 dan lebih adik-beradik (AOR = 3.23, 95% CI: 1.41, 7.40), mempunyai bapa yang merupakan seorang perokok (AOR = 2.96, 95% CI: 1.57, 5.58), mempunyai ibu yang seorang perokok (AOR = 7.12, 95% CI : 1.41, 36.04), mempunyai rakan-rakan yang merokok (AOR = 7.08, 95% CI: 3.74, 13.42), mereka yang akan merokok jika rakan-rakan menawarkan rokok (AOR = 7.16, 95% CI: 2.35, 21.80), dan pelajar dengan pengetahuan mengenai merokok boleh menyebabkan nafas berbau (AOR = 3.37, 95% CI: 1.12, 10.08).

Kesimpulannya, terdapat kira-kira satu per sepuluh daripada pelajar sekolah rendah Tamil pernah merokok dalam kajian ini. Amalan merokok dikalangan ahli keluarga dan kawan-kawan adalah faktor-faktor penting bagi penah merokok dikalangan pelajar India di sekolah rendah Tamil. Kajian kohot diperlukan untuk mengesahkan faktor yang dikaitkan dengan risiko merokok di kalangan pelajar India sekolah rendah.

Kata kunci: Merokok, pernah merokok , pelajar , Sekolah Tamil , Kuala Lumpur

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

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LIST OF ABBREVATIONS

AOR	Adjusted Odds Ratio
CDC	Centers for Disease Control and Prevention
CI	Confidence Interval
COPD	Chronic Obstructive Pulmonary Disease
CRP	C-reactive Protein
CVD	Cardiovascular Disease
ETS	Environmental Tobacco Smoke
IHBR	Institute for Health Behavioural Research
ICC	Intra-class Correlation Coefficient
IQR	Interquartile Range
GSHS	Global School-Based Student Health Survey
GYTS	Malaysian Global Youth Tobacco Survey
IBM SPSS	International Business Machine Statistical Package for Social Sciences
IPH	Institute for Public Health
LR	likelihood ratio
MOE	Ministry of Education
MOH	Ministry of Health
NHMS	National Health and Morbidity Survey
OR	Odds Ratio
RR	Relative Risk
ROC	Receiver Operating Characteristics
SCC	small cell cancer
SCLC	Small cell lung cancer
SD	Standard deviation
SJK	'Sekolah Jenis Kebangsaan'
UCDHHS	United State Department of Health and Human Services
UPM	Universiti Putra Malaysia
US/USA	United States of America
WHO	World Health Organization
YBRFSS	Youth Behaviour Risk Factor Surveillance

CHAPTER 1

INTRODUCTION

1.1 Background

Cigarette smoking is one of the most important causes of death worldwide, approximately six million people die each year from smoking related diseases (World Health Organization [WHO], 2011a, 2011b). In 2000, an estimated deaths of 4.8 million (2.4 million from industrialized countries and 2.4 from developing countries) are attributable to tobacco use globally, with 3.8 million deaths of males and 1.0 million deaths of females (Ezzati & Lopez, 2004). In year 2030, it is estimated that smoking related deaths may be the most essential cause of deaths and will increase tremendously to more than 8 million (WHO, 2011a). Most deaths caused by smoking occur in the low and middle income countries, with estimation of 80% deaths each year (WHO, 2011a, 2011c).

Cigarette smoking is attributed to death more than 480, 000 Americans each year, with more than 41, 000 of these deaths coming from exposure to secondhand smoke (United Stated Department of Health and Human Services [UCDHHS], 2014). In 2012, an estimated 18.1% (42.1 million) U.S. adults were current cigarette smokers (Centre for Disease Control [CDC], 2014). Of these 78.4% (33.0 million) smoked every day, and 21.6% (9.1 million) smoked some days (CDC, 2014).

In Malaysia, approximately 20% of all deaths annually are due to smoking related illnesses, which are almost 10000 deaths in the region (Disease Control Division, 2003; Tan, Yen, & Nayga, 2009). Ministry of Health Malaysia [MOH] (Institute for Public Health [IPH], 2008) reported that almost a quarter (23%) of the total adult populations in Malaysia is smokers, and majority of them are males. According to Youth Behaviour Risk Factor Surveillance [YBRFSS] 2010, the overall percentage of ever smoker was 9.1%, where male (17.6%) smoked higher compared to female (3.9%). Furthermore, the overall percentage for current smoker was 8.7%, where male smokers (14.6%) were higher compared to female smokers (2.0%) (Institute for Health Behavioural Research [IHBR], 2011).

Cigarette smoking leads to many chronic diseases such as heart diseases, stroke, chronic obstructive pulmonary disease (COPD), peripheral vascular disease, periodontal disease, pneumonia, oral and lung and cancer (Lung, Kelleher, Porter, Gonzalez, & Lung, 2005; Bauer, Briss, Goodman, & Bowman, 2014). Approximately 4 out of every 5 reported lung cancer cases and 42% of the chronic respiratory disease worldwide are caused by smoking (WHO, 2011c; Siegel, Ma, Zou, & Jemal, 2014). In terms of economic burden, the Malaysian government is spending more than RM 3 billion a year on treating smoking related diseases (Tan et al., 2009).

Adolescence is known as a transition period between childhood and adulthood mostly during schooling environment. Adolescent or young adult can further be divided into 3 subgroups that is early adolescence group from 10 to 13 years old, mid adolescence aged from 14 to 15 years old and later adolescence from 16 to 19 years old (WHO, 2016). At this period of time, changes will occur in biologic, social and psychological part of the youth (Lim et al., 2010; Crockett and Beal, 2012; Lim et al., 2013). This period is the point at which an individual is most likely involving in high risk behaviors, including smoking (Santrock, 2005).

Majority of smokers initiate smoking in adolescence. Age of smoking initiation occurs primarily between 10 and 20 years of age (CDC, 1994). The Third National Health and Morbidity Survey (NMHS III) conducted in 2006 showed that national mean initiation age was at 18.6 years old (IPH, MOH, 2008). There is an urgency to stop these young adolescent from smoking. One of the reason is that those who did not smoke in adolescence are unlikely to smoke as adults (Lim et al., 2010). Another reason to curb this behavior is that the earlier the children start to smoke, the lesser chance they will quit smoking habit (Storr, Reboussin, & Anthony, 2004). Based on Centers for Disease Control and Prevention (1994), the development and onset of tobacco use among young people are described with five stages. Stage one is attitude formation and tobacco beliefs. Stage two is tobacco trials while stage three is experimenting with it. Stage four is regular usage and five is addiction (CDC, 1994; Nuno et al., 2011).

The Second National Health and Morbidity Survey (NHMS II) on 1996 reported that the prevalence of smoking in Malaysian adolescents aged 18 years and above was 24.8%, whereas report from NHMS III survey in 2006 showed a decrease in the prevalence of smoking to 21.5% (IPH, MOH, 1997, 2008). In light of the most recent National Health and Morbidity Surveys (NHMS) study in 2011, it was shown that 23.1% Malaysian adolescents aged 15 years and above were current smokers where 43.9% are male and 1.0% are female (IPH, MOH, 2012; Lim et al., 2013). Almost forty to fifty people smoke everyday (Lim et al., 2013). According to NHMS II, the mean number of cigarettes smoked per person per day is 13.3 sticks, with equal proportions of respondents in the light, moderate and heavy smoking categories (IPH, MOH, 1997).

The Malaysian Global Youth Tobacco Survey (GYTS) conducted in 2009 found that overall prevalence of students who smoked cigarette at least 1 day is 18.2% where significantly higher rate found in males (30.9%) than females (5.3%) (CDC, 2009). A study in 2010 on prevalence of smoking among form four students in Petaling District, Selangor, Malaysia found that overall prevalence of current smokers was 14.3% where it was higher among male students (22.3%) compared to females (5.5%) (Lim et al., 2010). Most of these smokers were smoking l to 2 cigarettes a day. Most smokers started smoking in the company of friends (62.0% of boys and 63.0% of girls) followed by in the company of relatives (15.7% of the boys and 18.5% of girls). Normally, prevalence of smoking was highest among Malay then followed by Indian and Chinese (Lee, Paul, Kam, & Jagmohni 2005; Al-Naggar, Al-Dubai, Al-Naggar, Chen, & Al-Jashamy, 2011). This is similar to the national prevalence of smoking

among adolescents from NHMS II where Malay has the highest prevalence (20.6%) followed by Chinese (8.6%) and Indians (7.9%) (IPH, MOH, 1996). In addition, indigenous Sabahan and Sarawakians (9.1%) were significantly more susceptible to smoking compared with Malays (5.9%) or Chinese (4.5%) (Lim, Chong, Khoo, & Kaur, 2014).

The important factors associated with smoking among adolescents in secondary schools include having a smoking family member (Lim et al., 2010), poor academic achievement (Lim et al., 2006), peer influences (Lim et al., 2010), magazines (Lim et al., 2006) and advertisements (Lim et al., 2006). On the other hand, factors associated with smoking among primary school students include living in deprived areas and in low income household (Milton, Cook, Dugdill, Porcellato, Springett, & Woods, 2004), children who have unemployed fathers (Peter, Aedley, Lam, Betson, & Wong, 1997), working mothers (Peter et al., 1997), friends who smoke (Peter et al., 1997), and less educated parents (Milton et al., 2004). Apart from that, curiosity and the thought that others already tried smoking also initiate children to smoke. Even though many factors are associated with adolescent and children to smoke, peer influence is the leading correlate and cause of smoking initiation as well (Beal, Ausiello, & Perrin, 2001). Good knowledge on smoking effects will prevent a person from smoking.

1.2 Problem statement

Currently, the mean smoking initiation age became younger from secondary school students to primary school students. In Nairobi, secondary school students began to try smoking at the youngest age of 5 years old and they regulate smoking at the age of 10 years old, the mean age of smoking initiation was 16.7 years (Kwamanga et al., 2003). In Malaysia, the youngest age of smoking initiation among male secondary school students was 5 years old, and the mean age was 16 years old (Lim et al., 2010). Another study has reported that secondary school students in Malaysia initiate smoking at the age of 10 years old or younger age (5.8% of male students and 3.6% of female students) (Lee et al., 2005).

Worldwide, there are only few reports on smoking among primary school students. The studies related to smoking prevalence among primary school students approximately ranged from 10% to 27% at most of the countries such as Turkey, England, and China (Zhu, Liu, Shelton, Liu, & Giovino, 1996; Milton et al., 2004; Uncu et al., 2006; Wang, Ho, Lo, & Lam, 2011; Kırıs, Muderris, Kara, Bercin, Cankaya, & Sevil, 2012).

In Turkey, the mean initiation age of smoking among primary school students is 11.7 (varying between 7 and 16 years old) (Uncu, Irgil, & Karadag, 2006). In Malaysia, a survey among primary school students from Tumpat, Kelantan has reported that the youngest age to start smoking is at 6 years old and mean age of initiation is at 9.58 years old (Norbanee, Norhayati, Norsa'adah, & Naing, 2006). Children who initiate smoking during primary school could be more likely to become regular smoker as

adults compared to smokers who begin at older ages (Fidler, Wardle, Brodersen, Jarvis, & West, 2006; Riggs, Chou, Li, & Pentz, 2007).

Another main concern related to smoking at young age is the fact that it could lead to other health risk behavior such as drug and alcohol consumption. Association between early smoking and continuing heavy smoking habit followed by used of drugs have been found by multiple literature (Edvardsson and Hakansson, 2000; Vittetoe et al., 2002; Sharma, 2006). Being a gateway to illicit drug use (Lau and Kan, 2010; Pengpid and Peltzer, 2013), smoking can lead to immediate adverse health effect such as depression and interpersonal violence. Sometimes smoking among adolescents will be coupled with drinking alongside use of illegal substances. This lead to more health hazards, for example depression, vehicle crash and drowning, high risk sexual behavior, interpersonal violence and suicidal conduct (Hanna et al., 2001; Miller et al., 2001). Adolescent who smoke occasionally can escalate unto frequent smokers when they drink alcohol and involved in deviant behavior (Yu and Whitbeck, 2016). This continuous usage of tobacco also increases the chance of adopting other risk behavior at later stage in life including various substance use, violence and delinquency (Ellickson et al., 2001). In Malaysia, smoking had been found to be statistically significant with risk taking behavior such as drunk driving, not using seatbelt, carrying a weapon, physical fighting, alcohol and drug usage (Lee et al., 2005).

Among Malaysian population, cardiovascular diseases account for one third of years of life lost and a fifth of the disability adjusted life years (Yusoff et al., 2005). The relevance is when smoking had been found to be associated closely with heart disease, stroke, chronic lung diseases, lung and other types of cancer (U.S Department of Health and Human Services, 2010). In fact, smoking had been the single most important risk factor for non-communicable chronic medical condition (Rudatsikira et al., 2008).

To the best of our knowledge, however, only one study is currently available on smoking among primary school students in Malaysia. The prevalence of the study for ever and current smokers was 11.8% and 3.8% respectively among standard one to six students. The factors associated with smoking were being boys, increasing age, being at second school level (standard 4, 5, 6) and having other family members (except father) who smoked (Norbanee et al., 2006).

Since the behaviors and knowledge's adopted in early adolescence (or late childhood) predict future smoking, it is essential to understand regarding smoking and other knowledge of children aged 12 and younger in order to design successful and effective intervention strategies for this age group. This study focuses to younger age group (10 and 11 years) and specifies into Indian group of primary school children to identify the extent of smoking problems in Indian community in Malaysia. Furthermore, previous study in Malaysia among primary school students was conducted among Malay students only and there is no data for Indian students yet. Thus, this study will be focused on smoking among Indian students.

1.3 Significance of the study

The result of this study will provide the prevalence of smoking among Indian students from Tamil primary schools. The result of this study will deliver a better understanding of distribution on smoking and factor associated among Indian students in primary schools. Only one study has been done on smoking among Indian students from Tamil primary schools and can be utilized by other researchers. The findings from this study will add new knowledge in the respective field and will provide helpful information in term of future investment by government in reducing smoking among school children. The information available can be used to plan intervention or campaign targeting school children in order to modify smoking behavior.

1.4 Study objective

1.4.1 General objective

The general objective of this study is to determine factors associated with ever smoking (ever smoked even for a puff) among Indian students at Tamil primary school in Federal Territory of Kuala Lumpur.

1.4.2 Specific objectives

The specific objectives of this study are as follow:

i. To determine the characteristics of respondents, family background, influence factors and knowledge on smoking among students in Tamil primary school.
ii. To identify the percentage of ever smoking among students in Tamil primary school.
iii. To determine the association between characteristic of respondents (age, gender, performance in the class, weekly pocket money) and ever smoking among students in Tamil primary school.
iv. To evaluate the association between family background (parent's occupational status, parent's education level, number of children in family and sibling order in family) and ever smoking among students in Tamil primary school.
v. To identify the association between influence factors (peer influence, father influence, mother influence, siblings influence, media influence, role of school) and ever smoking among students in Tamil primary school.
vi. To determine the association between level of knowledge and ever smoking among students in Tamil primary school.
vii. To identify the predictors of ever smoking among students in Tamil primary school.

1.5 Hypothesis

The alternate hypotheses are:

H_1: There is a significant association between characteristic of respondents (age, gender, performance in the class, weekly pocket money) and ever smoking among students in Tamil primary schools.

H_2: There is a significant association between family background (parent's occupational status, parent's education level, number of children in family and sibling order in family) and ever smoking among students in Tamil primary schools.

H_3: There is a significant association between influence factors (peer influence, father influence, mother influence, siblings influence, media influence, role of school) and ever smoking among students in Tamil primary schools.

H_4: There is a significant association between level of knowledge and ever smoking among students in Tamil primary schools.

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