COMMON FACTORS BLAMED FOR HIGH PREVALENCE OF SMOKING AMONG RURAL ADULT POPULATION IN MALAYSIA

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ABSTRACT

Background: The tobacco smoking epidemic has become an immense public health threat especially in developing countries. Tobacco smoking is risk factor toward many non-communicable diseases such as cardio-vascular diseases, cancer, respiratory diseases, peptic ulcers and other smoking-related conditions. Prevalence of tobacco smoking in rural areas in Malaysia has shown an increasing trend and had shown higher prevalence compared to general population and population in urban area.

Objective: The objectives o the study is to determine the prevalence and common factors associated with smoking among rural adult population in Malaysia.

Methodology: A cross-sectional study was carried out among 510 adults who are residing in a rural area in Malaysia. The respondents were selected randomly among rural population residing in a rural area in Negeri Sembilan, Malaysia. Face to face interviews were carried out validated questionnaire developed for this study.

Results: The response rate was 96.7%. Prevalence of non-smokers, those who ever smoked and current smokers were 57.3% (95% CI 53, 61.8), 8.5% (95% CI 6.6, 11.7) and 34.2% (95% CI 29.6, 38) respectively. Among this rural population smoking is significantly associated with gender (p=0.000), occupation (p=0.000), level of education (p=0.008), peer influence (p=0.000), family influence (p=0.000), level of stress (p=0.001) and level of knowledge (p=0.029). Age (p=0.215) and family income (p=0.464) were not significantly associated with smoking.

Conclusions: This study reveals a high prevalence of smoking among rural adults in Malaysia. Common factors associated with smoking among rural population in this study are common among men, occupational status, level of education, peer and family influence, stress and level of knowledge.

KEYWORDS: Prevalence, Factors, Smoking, Adults, Rural, Malaysia

INTRODUCTION

Smoking is the most common method of consuming tobacco through inhalation of the fumes of burning tobacco encased in cigarettes, pipes, and cigars. It is the single most important cause of death globally. World Health Organization estimated more than 5 million deaths per year due to smoking (WHO, 2010). In Malaysia smoking-related diseases are among the important public health problems where they were the main cause of mortality. Smoking accounts for at least 30% of all cancer deaths. Smoking is associated with most common cancer deaths such as cancers of the lungs, nasopharynx, nasal cavity, paranasal sinuses, lips, larynx (voice box), mouth, pharynx, oesophagus and bladder. It has also been linked to the development of cancers of the pancreas, cervix, ovary, colorectal, kidney, stomach, and some types of

leukaemia. Smoking is also associated with other diseases such as obstructive lung diseases, asthma, ulcers and cardiovascular diseases.

In Malaysia, the prevalence of smoking is increasing and smoking prevalence is still high. In the recent 2010-2011 Global Adult Tobacco Survey (GATS) Malaysia, it was reported that the percentage distribution of current smokers among Malaysians aged 15 years or older was 23.1% (i.e. 4.75 million people, highest among 25-44 years age group) and 43.9% (estimated about 4.64 million). More men smoke as compared to women. Lim et al (2013) revealed that almost half (46.5%) of men smoked, whereas fewer (1.6%) women do. Smoking accounted for one in every five deaths in Malaysia (Rashid et al., 2011). The prevalence of smoking is also highest among Malay 44.3% (GATS Malaysia, 2011). Thus the direct and indirect adverse health effects of smoking such as incidences of mortality and morbidity due to smoking related disease and exposure to secondary smoking are expected to be more prevalent among the Malays. Malay are majority population residing in rural of Malaysia.

Numerous studies have been conducted in Malaysia to determine the prevalence of smoking and to identify the associative causes of smoking. Much study had shown that prevalence of smoking associated with age, gender, level of education, family income and occupation, with the history of smoking in the family, peer influence, stress level and knowledge usually being described as some of the major risk factors. Lim et al (2010) demonstrated a positive relationship between the number of risk factors and the prevalence of smoking among the Malaysian population. Smoking is often considered as normal behaviour among male adults in Malaysia. It has been reported that prevalence of Malaysian males smoke is higher (45%, Haniza & Suraya, 1996) as compared to only 32% and 29% of their counterparts in Singapore and Britain/the United Kingdom respectively (Lopez, 1997).

Lim et al (2013) reported that among rural population the prevalence of smoking is principally younger Malay males, from a lower income group, and with less formal education. Study by Lim et al (2013) revealed that the prevalence of smoking among adult in Malaysia was 46.5% (95% CI: 45.5–47.4%), which showed slight reduction over a decade. Mean age of smoking initiation was 18.3 years, and mean number of cigarettes smoked daily was 11.3. Prevalence of smoking was highest among the Malays (55.9%) and those aged 21–30 years (59.3%).

Smoking was significantly associated with level of education (no education OR 2.09 95% CI (1.67–2.60), primary school OR 1.95, 95% CI (1.65–2.30), secondary school OR 1.88, 95% CI (1.63–2.11), with tertiary education as the reference group). Marital status (divorce OR 1.67, 95% CI (1.22–2.28), with married as the reference group), ethnicity (Malay, OR 2.29, 95% CI (1.98–2.66; Chinese OR 1.23 95% CI (1.05–1.91), Other Bumis OR 1.75, 95% CI (1.46–2.10, others OR 1.48 95% CI (1.15–1.91), with Indian as the reference group), age group (18–20 years OR 2.36, 95% CI (1.90–2.94); 20–29 years OR 3.31, 95% CI 2.82–3.89; 31–40 years OR 2.85, 95% CI (2.47–3.28); 41–50 years OR 1.93, 95% CI (1.69–2.20) ; 51–60 years OR 1.32, 95% CI (1.15–1.51), with 60 year-old and above as the reference group) and residential area (rural OR 1.12, 95% CI (1.03–1.22)) urban as reference.

The study on smoking in Malaysia mainly carried out among general population or among urban and sub urban population. Only a few studies conducted among rural population. This study is targeted at the rural population in Negeri Sembilan, Malaysia with the aim to determine the prevalence and common factors associated with smoking among rural adult population.

METHODOLOGY

This cross-sectional study was conducted in a rural area of Malaysia. A total of 510 adult respondents who fulfilled the inclusion and exclusion criteria were randomly selected and recruited into the study. The respondents were interviewed face-to-face using a questionnaire developed for the study. The questionnaire was pre-tested for validity and reliability. Stress level was assessed using aquestionnaire adopted from the Depression Anxiety and Stress Scale (DASS) with some modification to suit the local situation. Descriptive and appropriate analytical statistics were used to analyze the result. Statistical Package for Social Science version 21 was used to analyze the data. Ethical clearance was obtained from Universiti Putra Malaysia Ethical Committee for Research Involving Human Subjects.

Definitions: Current-Smoker: Smoked at Least Once in the Last 30 Days*

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Ever-smoker: Stopped smoking in the past month*

Non-smoker: Never smoked*

Adopted from Lim et al (2013)

RESULTS

Out of the 510 respondents invited into the study, 494 participated giving a response rate of 96.7%. The study shows that, among the respondents there were 284 (57.3%) non-smokers, 42 (8.5%) who ever smoked and 169 (34.2%) current smokers. For further analysis, non-smokers and those who ever-smoked were categorized into non-smokers, while current-smokers categorized as smokers.

Table 1 shows the summary of the results showing significant association between gender (p=0.000), education level (p=0.008) and occupation (p=0.000) with respondents'status of smoking. However, there were no significant association between age (p=0.215) and family income (p=0.464) with respondents' status of smoking

Table 1: Association between Status of Smoking and Socio-Demographic Characteristics (n=494)

Variable	Smoker	Non-Smoker	Total(100%)	Chi Square	P-Value
Age (n=494)					
20-30	47(35.7%)	84(64.3%)	131	5.797	0.215
31-40	11(43.5%)	14(56.5%)	25		
41-50	23(23.9%)	71(76.1%)	94		
51-60	70(36.5%)	121(63.5%)	191		
>60	18(33.3%)	35(66.7%)	53		
Gender (n=494)					
Male	169(62.4%)	102(37.6%)	271		0.000*
Female	0(0.0%)	225(100.0%)	223		
Education level (n=494)					
No formal education.	11(29.7%)	26(70.3%)	37	11.791	0.008
Primary level	42(31.6%)	91(68.4%)	133		
Secondary level	107(39.3%)	165(60.7%)	272		
Tertiary level	8(15.4%)	44(84.6%)	52		
Occupation (n=494)					
Unemployed	30(14.6%)	176(85.4%)	206	72.999	0.000
Agriculture and Elementary workers	115(52.5%)	104(47.5%)	219		
Management and professional workers	24(34.8%)	45(65.2%)	69		

Table 1: Contd.,				
Family income (n=494)				
≤ RM999	40(31.3%)	88(68.7%)	128	2.561	0.464
RM1000-RM1999	77(35.0%)	143(65.0%)	220		
RM2000-RM2999	32(33.0%)	65(67.0%)	97		
≥ RM3000	20(40.8%)	29(59.2%)	49		

*Fisher's Exact Test

Out of 494 respondents, 116 (23.5%) have friends who influenced them to smoke. Out of these 116 respondents, 73 (62.9%) of them ended up becoming smokers themselves while 43(27.1%) did not (Table 2). The finding shows an association between having friends who influence to smoke and the status of smoking of the respondents (p=0.000).

Table 2: Association between Status of Smoking and Having Friends Who Influence to Smoke (N= 494)

Have Friends Who Influence to Smoke	Smoking Status		Total	P-Value
	Smokers	**Non-Smokers**		
Yes	73(62.9%)	43(27.1%)	116	0.000
No	96(25.4%)	282(74.6%)	378	

A total of 94 (19.0%) respondents have family members who are smokers (Table 3). Among this group of respondents 66 (75.2%) and 28 (24.8%) are smokers and non-smokers respectively. The finding shows an association between having family members who smoke and status of smoking of the respondents (p=0.000).

Table 3: Association between Status of Smoking and Having Family Members Who Smoke (N = 494)

Have Family Members Who Smoke	Smoking Status		Total	P-Value*
	Smokers	**Non-Smokers**		
Yes	66(75.2%)	28(24.8%)	94	0.000
No	103(25.8%)	297(74.2%)	400	

Table 4 shows that among respondents with normal stress levels, 123 (29.5%) of them are smokers. Whereas out of 38 (7.8%) respondents who have moderate and severe stress levels, 25 (65.8%) are smokers. The study shows a significant association between stress levels and smoking status (p=0.001).

Table 4: Association between Status of Smoking and Stress Levels (N=494)

Stress Level	Smoking Status		Chi Square	P-Value
	Smoker (n = 169)	**Non Smoker (n = 325)**		
Normal	123(29.5%)	294(70.5.4%)	17.117	0.001
Mild	21(53.8%)	18(46.2%)		
Moderate and severe	25(65.8%)	13(34.2%)		

Levene's test of homogeneity for the level of knowledge of the respondents reveals a p-value of 0.378. Since the p-value is more than 0.05, the assumption of equality of variance is met. Table 5 shows that, there is a difference in the mean knowledge score between smokers and non-smokers with p value of less than 0.05.

Table 5: Association between Status of Smoking and Knowledge Scores by (n=494)

Smoking Status		Mean	Std.Deviation	Std.Error Mean	P-value*
Smoker	169	6.196	3.741	0.298	0.029
Non-smoker	325	7.037	3.985	0.232	

DISCUSSIONS

Comparing the prevalence of current smokers among this rural population as shown in the findings of this study (33.7%), it is much higher compared to the figure obtained in other studies such as the prevalence of current smokers in urban and sub urban population of 21.7% (Rampal et al, 2004) as well as findings from a general population survey where

current smokers was cited at 22.9% (GATS, 2012). However, the prevalence of those who ever smoked among this study population was only 8.8%, which is lower thanthe figure of 28.8% that was found among urban and sub urban population (Rampal et al., 2004). The findings of this study is consistent with the findings of other studies which looked at the prevalence of smoking among rural populations in Malaysia such as Lim et al 2013 (46.5%) and Lim KH et al 201 (42.9%).These studies show a higher prevalence of smokers among the rural population.

The figure obtained in this studyamong adults in a rural area shows that the prevalence of smoking is higher in the younger age group. The study shows that, adults between the ages of 31 to 50 have a higher prevalence of smokers, with the age group of 31 to 40 showing the highernumber as compared to the age group of 41 to 50, with prevalence of 43.5% and 23.9% respectively. However there is no significant association between age and smoking (p=0.215) in this study.

A similar finding was also reported by Lim K.H. (2013), where the majority of the smokers were between 21–40 years of age. In contrast, among the urban and sub urban population, the prevalence of smoking increases with advancing age (Rampal et al., 2003). In the urban and sub-urban areas, Rampal et al reported that the prevalence of smoking was higher among respondents aged more than 50 years old and lower among respondents below 20. A study by Rampal et al (2003) also showed significant association between age and smoking (p < 0.01).61.9% of males in a rural area studied smoke, as compared to no female reported smoking, and there was significant association between gender and status of smoking (p=0.000). As reported in the Global Adults Tobacco Survey (GATS, 2012), the prevalence of smoking among the female population in Malaysia is low- less than 1%. In rural areas of Malaysia this may due to the persistence of local customs and religious unacceptance of women smoking which contributes to thelow prevalence of the behaviour. In other Asian countries, comparable smoking prevalence in adult males is reported such as in Thailand (45.6%), Vietnam (50%) and Philippines (53.8%).

The level of education has been associated with smoking in a large number of studies. In this study among rural adults we found that adults, who have no formal education and those with education up tothe secondary level showed the highest prevalence of smokers (29.7% and 58.2% respectively). This is in contrast toadults with a tertiary level education (15.4%).The study also shows a significant association between education level and status of smoking among this adult rural population (p=0.008). Lim K.H. (2013) reported that there were fewer smokers among those with higher education attainment (31.4%).This may represent the lack of perception of the harmful effects of tobacco amongst the Malaysian population, easy availability and accessibility to tobacco products, as well as lacking enforcement specially in the rural areas of Malaysia.

This study found a high prevalence of smoking among the working population, namely those in the agricultural sector and elementary workers (52.5%) as compared to those in the management and professional occupational class (34.8%). Non-working respondents (students or housewives) showed lower prevalence of smokers compared to non-smokers. The study also found significant association between the type of occupation with status of smoking (p=0.000). A study by Lim et al. (2013) showed that agricultural and elementary workers had a higher tendency to smoke compared to those in the management and other professional occupations where it has been postulated that lower level occupational groups face more physical and psychosocial stressors compared to the managerial and professional classes.

Looking at family income, our study showed that respondents earning more than RM3000 showed the highest prevalence of smokers (43.2%) as compared to those with income below RM999 who showed a lower prevalence (30.3%). The findings are different from findings by Rampal et al (2003) which showed that respondents with household income

less than RM2000 showed a high prevalence of smokers (38.7%) as compared to those with household income of RM2000 or more who showed lower prevalence (23.7%). However, this difference was not statistically significant (p >0.05). The study also showed that there was also no significant difference in the prevalence of current smokers between the different family income groups (Rampal et al, 2003). Similarly in this study, there is no significant association between family income and status of smoking among respondents (p=0.464).

From this study, a significant association was observed between peer influences with status of smoking among the respondents. From the study, 75.6% of respondents who have friends that influence them to smoke ended up becoming smokers themselves while 71.9% of respondents who do not have friends that influence them to smoke did not. It shows that influence from friends play an important role in determining whether they smoke or not.

This is consistent with the study conducted by Rampal et al (2003) that also revealed that 95% of smokers have friends who were smokers as compared to 56.3% of non-smokers whose friends smoke (Rampal et al., 2003). There was also significant association seen between friends' smoking habit and respondents' smoking status (p<0.01); similarly seen in our study which shows significant association between peer influence with smoking (p=0.000).

There is a significant association between having family members who influence to smoke and the status of smoking among respondents (p=0.000). Our study found that 75.0% of respondents who have family members that influence them to smoke ended up becoming smokers while 69.4% of respondents who do not have family members to influence them did not become smokers. This shows that family members also play an important role toward the smoking habit among the respondents. This is consistent with findings reported by Rashid et al. as they also found there were more current and ever smokers among those whose family members smoked (Rashid et al., 2011). They also stated that there was a significant association between smoking and family influence.

This study also showed a significant association between stress levels and smoking status (p=0.001) whereby a higher level of stress led to an increased prevalence of smoking. Those with normal stress levels have the lowest smoking prevalence (32.6%) while the highest prevalence was among those with severe stress levels where all of them smoke (100%). This finding is similar to that of Sami Abdo Rahman Al-Dubai et al. (2011). Their study indicated that stress plays a substantial role in the prevalence of smoking among medical students in Management and Science University. Another study, by Radi et al. (2007), conducted in Australia, also showed a high level of association between job strain and job pressure with status of smoking (Radi et al., 2007).

Based on the findings, there is also significant difference in mean knowledge score between smokers and non-smokers. The mean knowledge score is higher among non-smokers compared to the smokers. This shows that knowledge is an important factor that influences people to smoke. This finding echoes that of a study by Lim et al. (2009), which claims that the higher the knowledge, the more negative the attitude towards smoking (Lim, K.H. et al., 2009). The findings of this study are so similar to another one conducted among male physicians in China by Ceraso et al. (2009). Their study recorded that those who smoked had a more limited knowledge of smoking-related diseases (Ceraso et al., 2009). There was also significant association between level of knowledge with smoking seen in our study (p=0.029).

CONCLUSIONS

The study shows that there are 280 (57.5%) non-smokers, 43 (8.8%) ever smokers and 164 (33.7%) current smokers which reveals a high prevalence of smoking among rural population. The study also found that common factors of smoking showed significant association such as gender (p=0.000), education level (p=0.008) and occupation (p=0.000)

with status of smoking. Other associated factors such as peer influence (p=0.000), family influence (p=0.000), level of stress (p=0.001) and level of knowledge (p=0.029). However, there were no significant association between age (p=0.215) and family income (p=0.464) with status of smoking.

ACKNOWLEDGEMENTS

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