Prevalence of Smoking and Its Associated Factors among University Staff

[1]AA Fasoro, [1]L Rampal*, [2]MS Sherina & [1]MS Salmiah

[1]Department of Community Health, Faculty of Medicine and Health Sciences,
Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia
[2]Department of Psychiatry, Faculty of Medicine and Health Sciences,
Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia

ABSTRACT

Globally, one person dies every six seconds as a result of tobacco use. This makes tobacco use the cause of every one out of 10 deaths in adults and the single largest and leading cause of preventable death in the world. The objective of this study was to determine the prevalence of smoking among staff of Universiti Putra Malaysia. For the purpose of this study an analytical cross sectional study design was used and a standardized, pre-tested, while a validated well-structured questionnaire was used for data collection. The prevalence of smoking was found to be 10.0% (26.5% among males and 0.5% among females). In addition, significant associations were found between smoking and gender, religion, marital status, highest educational level, occupation, and family income ($p < 0.05$). In particular, gender and educational level were significant predictors of smoking. In conclusion, the prevalence of smoking among university staff was shown to be considerably lower than that stated for the national level. However, the University could aim at achieving zero prevalence in the years to come.

Keywords: Smoking, prevalence, factors associated, University staff

INTRODUCTION

Tobacco kills approximately six million people globally every year[1]. It is the leading cause of preventable death in the world. One person dies every six seconds as a result of tobacco use, and this makes tobacco use a cause of one in 10 deaths of adults. Meanwhile, half of current users of tobacco will eventually die from tobacco related diseases[1]. About 80% of tobacco related deaths occur in the developing countries[2]. About 71% of lung cancer, 42% of chronic respiratory disease and 10% of cardiovascular disease have been estimated to be attributable to smoking[3]. The 2004 Surgeon General's report on 'The Health Consequences of Smoking' concluded that there is sufficient evidence to infer a causal relationship between smoking and cancer. Cervical, bladder, oesophageal, kidney, laryngeal, leukaemia, lung, oral, pancreatic and stomach cancers have also been reported to have a causal link with smoking. Cardiovascular diseases caused by smoking according to the report include abdominal aorta aneurysm, atherosclerosis, coronary heart disease and cerebrovascular disease. Other diseases having a causal relationship with smoking reported in the 2004 Surgeon General's report included respiratory diseases (chronic obstructive pulmonary disease, pneumonia, impaired lung growth, coughing, phlegm, wheezing, dyspnea and asthma), reproductive effects (reduced fertility, foetal deaths and stillbirths, low birth weight, placenta abruption, preterm delivery and shortened gestation), and other effects such as cataract, diminished health status, hip fracture, low bone density and peptic ulcer disease[4].

Tobacco is the only legal consumer product that can harm everyone exposed to it – and it kills up to half of those who use it. Despite the harm it poses to its users, tobacco use is still common throughout the world due to low prices, aggressive and wide spread marketing, lack of awareness about its dangers, and inconsistent public policies against its use[5].

In Malaysia, tobacco use related diseases have been reported to account for 10,000 deaths annually since the 1980s[6]. In Malaysia, the prevalence of smoking among adults aged 18 years and above was 24.8% in 1996 (NHMS II) and 21.5% in 2006 (NHMS III)[7]. The most recent tobacco survey conducted in 2011 showed that 23.1% or 4.75 million Malaysian adults aged 15 years and above are current smokers of tobacco, out of which 43.9% (4.64 million) are men and 1.0% (0.10 million) are women. The highest prevalence of smoking was reported among those in the 25 – 44 age group[8]. The objective of the study was to determine the prevalence of smoking and its associated factors among University staff.

_____

*Corresponding author: *dr_rampal1@hotmail.com*

MATERIAL AND METHODS

Study Design

An analytical cross sectional study was carried out among University staff in Serdang. The calculation of the sample size was based on the criterion for estimating the required sample size for a study using the multivariate statistical procedure such as logistic regression[9]. The level of significance was set at 5%. Other adjustments such as the design effect for the study design, non-response and the expected proportion of eligible were also taken into consideration in determining the sample size. The estimated sample size was 733 respondents. A list of 4067 university staff was obtained from each faculty and from the institute's updated website. Both the academic and non-academic staff lists were obtained. A sampling with probability proportionate to size (PPS) was used for the selection of the faculties and institutes from where the respondents were to be picked. Seven clusters were needed in order to achieve the desired sample size. The clusters (faculties and institute) were selected using systematic sampling method. A proportionate allocation was used in determining the number of respondents needed from each cluster to make up the required sample size. A simple random technique was used to randomly pick the respondents from each faculty and institute's list of staff using the table of random numbers. Hence, the total number of respondents randomly selected from each faculty and institute was with respect to the proportionate allocation.

Data Collection/Study Instrument

The data were collected between 12th September 2012 and 30th November 2012. The self-administered questionnaires were distributed to the respondents. The instrument of the study was a standardized, pre-tested and validated well-structured questionnaire. The questionnaire is in a bilingual form (English and Malay versions).

Smoking Status

In this study, a current smoker is a person who smokes daily or occasionally at the time of data collection. An ex-smoker is a person who either smoked daily or occasionally in the past but has quit smoking[10]. An ever smoker is a person who currently smokes or has quit smoking.

Ethics

Ethics approval to conduct the study was obtained from the Faculty of Medicine and Health Sciences, Universiti Putra Malaysia (UPM) Medical Research Ethics Committee. Prior to conducting this research, written approvals were obtained from the Deans and Director of the Faculties and Institute, respectively. Verbal and written informed consents were also obtained from each respondent before and/or during data collection. Confidentiality of the respondents' answers was guaranteed.

Data Analysis

The data were analyzed using Statistical Package for Social Sciences (SPSS) version 21. The normality of the data was checked using the Kolmogorov-Smirnov test of normality. The normality test showed that the data have a normal distribution. Meanwhile, categorical variables were tested for associations by using the Pearson's chi-square and Fisher's exact tests, and they were presented as frequencies and percentages. Continuous variables are presented as means with their 95% CI. Multivariate analysis was performed using multiple logistic regressions which controlled for cofounders. The results are expressed as odd ratio with their 95% CI. A two-sided p-value less than 0.05 is considered statistically significant.

RESULTS

The overall response rate for the study was 95.3%. The result showed that 63.5% of the respondents are female. The overall mean age was 36.09 (95% CI 35.37 – 36.82) years. As depicted in Table 1, majority of the participants are Malays (92.5%), Muslims (93.6%) and married (74.1%).

Prevalence of Smoking

The overall prevalence of smoking was 10.0%. Fifty three (77.9%) out of the 68 current tobacco smokers were daily smokers. In Table 2, it is shown that the prevalence of smoking was significantly higher in males (26.5%) than females (0.5%). The highest current smoking prevalence (12.5%) was observed among those in the 40 – 49 age

Table 1. Socio-demographic characteristics of the respondents

Characteristics	Frequency	Percentage
Gender		
Male	249	36.5
Female	434	63.5
Age group (Years)		
20 - 29	188	27.5
30 - 39	300	43.9
40 - 49	104	15.3
50 - 59	71	10.4
60 and above	20	2.9
Ethnicity		
Malay	632	92.5
Chinese	25	3.7
Indian	17	2.5
Others	9	1.3
Religion		
Islam	639	93.6
Christianity	13	1.9
Buddhism	11	1.6
Hinduism	13	1.9
Others	2	0.3
I don't have	5	0.7
Marital Status		
Single	163	23.9
Married	506	74.1
Divorced	7	1.0
Widowed	7	1.0
Highest Educational level		
SPM/STPM	212	31.0
Bachelor/Diploma	197	28.8
Master	104	15.2
PhD	170	25.0
Occupation		
Academic	282	41.3
Non Academic	401	58.7
Monthly Family income		
<2000	117	17.1
2000-3999	212	31.1
≥4000	354	51.8

group. The Malays had the highest prevalence of current smoking (10.4%). All current smokers are also Muslims. The prevalence of smoking among those single and ever married was 4.3% and 12.1% respectively. Staff with SPM/STPM qualifications had the highest prevalence of smoking (20.3%) as compared to those with tertiary education (16.0%). The prevalence of smoking was higher among non-academic staff (12.2%) as compared to academic staff (6.7%). The prevalence of current tobacco smoking (14.5%) was also the highest among the participants with low monthly family income than other family income groups.

Table 2.   Association between respondents' socio-demographic characteristics and smoking

Variables	Current smoker n	Current smoker %	Non smoker n	Non smoker %	χ^2/Fisher's exact	p value
Overall	68	10.0	615	90.0		
Gender	66	26.5	183	73.5	119.7	<0.001*
Male	2	0.5	432	99.5		
Female						
Age group						
20 – 29	15	8.0	173	92.0	1.6	0.655
30 – 39	31	10.3	269	89.7		
40 – 49	13	12.5	91	87.5		
50 and above	9	9.9	82	90.1		
Ethnicity						
Malay	66	10.4	566	89.6	2.2	0.135
Other ethnic groups	2	3.9	49	96.1		
Religion						
Islam	68	10.6	571	89.4		0.016*
Other religions	0	0.0	44	100.0		
Marital status						
Single	7	4.3	156	95.7	7.7	0.006*
Ever Married	61	12.1	459	88.3		
Highest educational level						
SPM/STPM	43	20.3	169	79.7	37.7	< 0.001*
Bachelor/Diploma	7	3.6	190	96.4		
Master/PhD	18	6.6	256	93.4		
Occupation						
Academic	19	6.7	263	93.3	5.6	0.018*
Non academic	49	12.2	352	87.8		
Monthly family income						
<2000	17	14.5	100	85.5	10.0	0.007*
2000 – 3999	28	13.2	184	86.8		
≥4000	23	6.5	331	93.5		
Family member(s) smoker						
Yes	48	10.7	399	89.3	0.9	0.347
No	20	8.5	216	91.5		

*Significant at p value < 0.05

Factors Associated with Smoking

Table 2 also shows a significant association between smoking and gender, religion, marital status, highest educational level, occupation, and family income (p < 0.05). Nonetheless, no significant association was found between smoking and age, ethnicity and having family members who smoke (p > 0.05).

About 72.7% of the ever smokers were with friends, 25.5% were alone and 1.8% were with family members when they initiated smoking. The mean age of smoking initiation was 18.2 (95% CI 17.5 – 18.9) years. Majority of the ever smokers (64.5%) initiated smoking because they had tried it for fun (Table 3). Among the female ever smokers, 83.3% and 16.7% stated that they had initiated smoking because they tried if for fun and friends asked them to try it, respectively. The two major reasons ex-smokers quit smoking were they felt nice for not smoking (64.3%) and their health reason (28.5%). The mean years of quitting smoking was 12.0 (95% CI 9.0 – 14.9) years, whereas the mean age of quitting smoking was 31.2 (95% CI 27.9 – 34.5) years.

Logistic Regression Analysis

A multivariate analysis was carried out to determine the predictors of smoking while controlling for confounders. Nine variables were selected to be entered into the model. A univariable analysis using a simple logistic regression

Table 3.   Smoking accomplice at initiation, reasons for initiating, and quitting smoking by gender

Variables	Overall		Male		Female	
	n	%	n	%	n	%
Smoking accomplice at initiation						
With one friend	33	30.0	30	28.8	3	50.0
With many friends	47	42.7	45	43.3	2	33.3
Alone	28	25.5	27	26.0	1	16.7
With family members	2	1.8	2	1.9	0	0.0
Reasons for initiating smoking						
Tried if for fun	71	64.5	66	63.4	5	83.3
To release tension	18	16.4	18	17.3	0	0.0
Friend asked me to try	13	11.8	12	11.5	1	16.7
I think it is stylish	6	5.5	6	5.8	0	0.0
My parents smoke, so I smoke	1	0.9	1	1.0	0	0.0
Others	1	0.9	1	1.0	0	0.0
Reasons for quitting smoking[1]						
I feel nice for not smoking	27	64.3	24	63.2	3	75.0
My health life	12	28.5	11	28.9	1	25.0
I am ill	1	2.4	1	2.6	0	0.0
Others	2	4.8	2	5.3	0	0.0

[1] Reported among ex-smokers only

was also carried out, and out of the eight variables, six were selected as the most important variables to be entered into the logistic model. The six variables were the ones showing statistical significance when the p value was set at 0.25. This p value was recommended by Hosmer and Lemeshow[11] because they discovered that the use of the traditional level (p < 0.05) has often failed to identify some variables known to be of importance. Table 4 shows the results of the multivariable analysis. In particular, males were about 80 times more likely to smoke than females (AOR = 80.58, 95%CI 19.30 – 336.52). Meanwhile, SPM/STPM holders were about five times more likely to smoke than those with tertiary education. Nevertheless, there were no interactions between the variables and the Hosmer-Lemeshow test used for accessing the goodness of fit showed no significant difference (p = 0.763) between the observed and expected probabilities. The Nagelkerke R^2 (0.461) showed that 46.1% of the variations in the

Table 4.   Multiple logistic regression analysis of predictors of smoking

Variables	β	AOR	95%CI	p value
Gender				
Female		1		
Male	4.39	80.58	19.30, 336.52	<0.001*
Ethnicity				
Other ethnic groups		1		
Malay	1.31	4.12	0.82, 16.81	0.090
Marital Status				
Single		1		
Ever married	0.83	2.30	0.86, 6.16	0.98
Highest educational level				
College/University degree		1		
SPM/STPM	1.57	4.82	1.88, 12.37	0.001*
Occupation				
Academic		1		
Non academic	-0.64	0.53	0.18, 1.54	0.242
Monthly family income				
≥4000		1		
2000 – 3999	0.69	2.00	0.79, 5.04	0.142
<2000	0.70	2.01	0.65, 6.16	0.224

*Significant at p < 0.05; Nagelkerke R^2 = 0.461; Hosmer-Lemeshow test, p = 0.763; Overall percentage = 91.5%; Area under ROC curve = 0.906

smoking status could be explained by the logistic model. The area under the ROC curve 0.906 (95%CI: 0.876 – 0.937, p < 0.001) shows that the model can discriminate 90.6% of the cases.

DISCUSSION

In Malaysia, national studies carried out on smoking showed a prevalence of 24.8% in 1996, 24.9% in 2004, 21.5% in 2006 and 23.1 in 2011[7, 8, 12, 13]. In this study, the prevalence of smoking among university staff of Universiti Putra Malaysia (10.0%) was found to be considerably lower than that stated for smoking at the national level. This could probably be due to the fact that the university is an academic environment where more staff would likely be educated about the health hazards of smoking. However, it was higher compared to the 5.7% (14.3% for males and 2.2% for females) prevalence of smoking among the staff of University of West Indies (UWI), Cave Hill campus, Barbados[14]. In a survey carried out among medical students in Malaysia, India, Pakistan, Nepal and Bangladesh, the overall prevalence of the ever smokers and current smokers was 31.7% and 13.1%, respectively. Malaysia ranked second with a prevalence of 34.5% for ever smokers and fourth with a prevalence of 11.0% for current smokers[15]. The prevalence was significantly higher in males as compared to females (AOR = 85.89, 95%CI 20.59 – 358.23). Majority of the smokers are Malays who are also Muslim. The prevalence was significantly associated with educational level and family income. These could likely be the reasons why there were many smokers among the non-academic staff as compared to the academic staff. Several other studies have also reported associations between smoking and gender, age, marital status, educational attainment, family income[16, 17, 18]. In this study, gender and educational level were significant predictors of smoking, which some other studies had also reported[16]. The significant difference observed in gender might be due to the norm that the Malaysian society sees smoking as a socially unacceptable practice for women. Also, people with lower educational attainment may be unaware of the health hazards they are exposed to while smoking or they may weigh the benefits above the health risks. It is suggested that academic staff have leading roles to play in moulding the lives of students and also in tobacco control. They should not only target students but also the non-academic staff in tobacco control. In addition, the university authorities and policy makers can play significant roles in ensuring that comprehensive smoke-free policies are implemented. For this reason, we recommend that the University come up with smoking cessation clinic for staff who are current smokers but are willing to quit. Nicotine replacement therapy should be readily accessible to both staff and students in the university health clinic as it has been found out that age, gender, marital status and educational level are not related consistently to quit attempts or quit successes[19]. Meanwhile, education and awareness campaigns can be a vital tool in curbing the smoking menace. The university should incorporate training on smoking cessation interventions in the academic curricula for medical and health sciences undergraduate and postgraduate students. The university should also strengthen its smoke-free policy by prohibiting smoking at all places within the campus.

CONCLUSION

The prevalence of smoking among UPM staff (10%) is much lower than that stated for the national level (23.1%). Gender and educational level are significant predictors of smoking. A strict smoke-free policy needs to be enacted by the University authority. The University authority should also provide resources needed for both educational and behavioural interventions on smoking cessation. Education and awareness programmes on the health hazards of active and passive smoking are important for both students and staff of the University.

REFERENCES

[1]   World Health Organization. Media Centre; Fact sheets on tobacco, May 2012. Retrieved 20 July 2012 from *http://www.who.int/mediacentre/factsheets/fs339/en/index.html*

[2]   World Health Organization. World Health Statistics; WHO Press: France 2008.

[3]   World Health Organization. Global status report on non-communicable diseases 2010; WHO Press: Italy 2011.

[4]   U.S. Department of Health and Human Services. The Health Consequences of Smoking: A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; Washington D.C. 2004.

[5]   World Health Organization. WHO Report on the global tobacco epidemic, 2008: The MPOWER package. WHO Press, Brazil 2008.

[6]   Disease Control Division, Ministry of Health Malaysia. Clinical Practice Guidelines on Treatment of Tobacco Use and Dependence 2003.

[7]   Institute for Public Health, National Institutes of Health, Ministry of Health Malaysia. The Third National Health and Morbidity Survey 2006 (NHMS III) – Smoking 2008.

[8]   Institute for Public Health, Ministry of Health Malaysia. Report of the Global Adult Tobacco Survey (GATS) Malaysia, 2012.

[9]   Aday LA, Cornelius LJ. Designing and Conducting Health Surveys: A Comprehensive Guide. Third Edition. USA: Jossey-Bass, 2006.

[10]   Global Adult Tobacco Survey (GATS) Collaborative Group. Tobacco Questions for Surveys: A Subset of Key Questions from the Global Adult Tobacco Survey (GATS), 2nd Edition. Atlanta, GA: Centers for Disease Control and Prevention, 2011.

[11]   Hosmer DW, Lemeshow S. Applied Logistic Regression (Second edition). A Wiley-Interscience publication, John Wiley & Sons, Inc. 2000.

[12]   Shafey O, Eriksen M, Ross H, Mackay J. The Tobacco Atlas, third edition, The American Cancer Society Inc, 2009.

[13]   Rampal L, Rampal S, Azhar MZ, Sherina MS, Mohamad T, Ramlee R, Ahmad J. A national study on the prevalence and factors associated with smoking amongst Malaysians aged 18 years and above. Malaysian J of Med and Health Sciences 2008; 4 (2): 41-53.

[14]   Morris E, Unwin N, Ali E, Brathwaite-Graham L, Samuels TA.Chronic non-communicable disease risk factor survey 2010 among university of the West Indies staff at Cave Hill, Barbados 2011. West Indian Med. J. 60 (4): 452-458.

[15]   Sreeramareddy CT, Suri S, Menezes RG, Kumar HNH, Rahman M,Islam MR, Pereira XV, Shah M, Sathian B, Shetty U, Vaswani VR.Self-reported tobacco smoking practices amongmedical students and their perceptions towardstraining about tobacco smoking in medicalcurricula: A cross-sectional, questionnaire surveyin Malaysia, India, Pakistan, Nepal, and Bangladesh. Substance Abuse Treatment, Prevention, and Policy 2010, 5: 29.

[16]   Sreeramareddy CT, Ramakrishnareddy N, Kumar HNH, Sathian B,Arokiasamy JT. Prevalence, distribution and correlates of tobacco smoking and chewing in Nepal: A secondary data analysis of Nepal Demographic and Health Survey – 2006. Substance Abuse Treatment, Prevention, and Policy 2011; 6: 33.

[17]   Sun J, Buys N, Stewart D, Shum D, Farquhar L. Smoking in Australian university students and its association with socio-demographic factors, stress, health status, coping strategies, and attitude. Health Education 2011; 111(2):117-132.

[18]   Swe KMM, Bhardwaj, A. Knowledge and practice of first year medical students about smoking. International Journal of Collaborative Research on Internal Medicine & Public Health 2012; 4 (5): 785-795.

[19]   Vangeli E, Stapleton J, Smit ES, Borland R, West R. Predictors of attempts to stop smoking and theirsuccess in adult general population samples:A systematic review. Addiction 2011; 106: 2110-2121.