

Original Article

Tobacco use and attitudes towards tobacco control activities of Malaysian dental students

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Abstract Tobacco usage among dental students and the amount of training they received may have an impact on tobacco cessation activities undertaken for their patients. This study aims to assess Malaysian dental students' tobacco use, exposure to second-hand smoke and their attitude towards tobacco control activities and curriculum. This was a cross-sectional study using a self-administered questionnaire adapted from the Global Health Professions Students Survey (GHPSS). The questionnaire was distributed to all Malaysian fourth and fifth year dental students in four public dental schools (n=372), namely University of Malaya (UM), Universiti Teknologi Mara (UiTM), Universiti Kebangsaan Malaysia (UKM) and Universiti Sains Islam Malaysia (USIM). The data were analysed using descriptive and chi square tests. In total, (n=349) respondents completed the questionnaire, yielding a 93.8% response rate. Although the prevalence of Malaysian dental students who 'ever smoked' was 21.2%, the prevalence of current smokers was low (2.3%). About 62% and 39% of students reported having been exposed to second-hand smoke in public and at home, respectively. USIM students were significantly less likely to recall having received training about approaches to smoking cessation (52.9%, p<0.001). Significantly fewer smokers than non-smokers agreed on tobacco banning policy. Regardless of their smoking status, the majority of dental students showed positive attitudes towards dentists' role in tobacco cessation. Tobacco user among Malaysian dental students was low. There were statistically significant differences between ever smokers and non-smokers' attitudes towards tobacco banning policy. The majority of dental students showed positive attitudes towards dentists' role in tobacco cessation.

Keywords: Attitudes; GHPSS; public health; smoking; tobacco.

Introduction

Tobacco use has detrimental effects on health. Numerous tobacco-related diseases have been identified, which include cardiovascular diseases, respiratory problems and different types of cancers (Saha *et al.*, 2007; Yanbaeva *et al.*, 2007). In addition, overwhelming evidence indicates that tobacco can cause various oral health problems such as halitosis, periodontal diseases and oral cancers (Sham *et al.*, 2003; Malhotra *et al.*, 2010; Warnakulasuriya *et al.*, 2010). The association between tobacco usage and oral diseases emphasizes the need for dental health professional's involvement in

tobacco control and cessation activities (Mecklenburg, 2001; Tomar, 2001; Chowdhury *et al.*, 2010; Warren *et al.*, 2011a). Thus, dental personnel have a unique opportunity to be part of tobacco control activity by providing chairside smoking advise and reinforcement to their patients and to act as advocates for anti-tobacco legislation in their respective community (Mecklenburg, 2001; Afifah and Schwarz, 2008; Chowdhury *et al.*, 2010).

The prevalence of smoking among health professional students, particularly in developing countries, can be considered as high, bearing in mind that they should have some knowledge on the harmful effects of tobacco received through their

course of study. The Global Health Professions Student Survey (GHPSS) reported that the prevalence of smoking ranged between 10% to 34%, among the dental students in Myanmar, Pakistan, Saudi Arabia, and Indonesia (Centers for Disease Control and Prevention, 2015). This alarming number of smokers among dental students worldwide may have an impact on how much tobacco control activities they would conduct for their patients. Studies have shown that health professional students who were smokers were less likely to provide smoking cessation advices and lacked the ability to deliver a successful anti-tobacco message to patients (Warren *et al.*, 2008; Chowdhury *et al.*, 2010; Awopeju *et al.*, 2013).

Despite global efforts in collecting data regarding health professional students' tobacco use and attitudes towards tobacco control activities, there is lack of evidence documented among Malaysian dental students. Since 2010, dental schools in Malaysia have started introducing smoking cessation advice as part of their formal training component for dental undergraduates. In response to this initiative, this study was undertaken to assess the prevalence of tobacco use, exposure to second-hand smoke and attitudes towards tobacco control activities among fourth and fifth year dental students in four public dental schools in Malaysia, namely the University of Malaya (UM), Universiti Teknologi Mara (UiTM), Universiti Kebangsaan Malaysia (UKM) and Universiti Sains Islam Malaysia (USIM). These senior dental students were chosen as they would have completed their smoking cessation module and have gained adequate clinical exposure and patient contact. All four public dental schools in the Klang Valley, Malaysia were selected to represent the mix of new and established dental schools in Malaysia. Each school offer slightly different tobacco-related teaching approach, which allows comparison across schools. Findings from this study may be useful to improve tobacco curriculum standardization among Malaysian dental schools.

Materials and methods

Ethical approval to undertake this research was obtained from the Medical Ethics Committee of the Faculty of Dentistry, University of Malaya [DF CO1204/0072(U)] and permission to conduct the study in the selected universities were received from the Deans of the respective dental schools. Participation was entirely voluntary and anonymous. Written consent was obtained from all participants.

This was a cross sectional survey. A convenience sampling of all fourth and fifth year dental students in UM (n=152), UiTM (n=61), UKM (n=85) and USIM (n=51) were included in this study. This study involved a self-administered survey using a validated GHPSS questionnaire (English version) developed by the World Health Organization (WHO), Centers for Disease Control and Prevention (CDC) and Canadian Public Health Association (CPHA) (Centers for Disease Control and Prevention, 2005). This global survey instrument aims to gather information on tobacco use and cessation counselling among health professional students and was designed to overcome key weaknesses in many surveys of tobacco use, which lack standard definition for smoking status.

The core GHPSS consists of forty-two closed ended questions which were structured into six parts. Part one consists of three demographic items on age, gender and ethnicity; part two consists of eight questions that assess smoking habits and other form of tobacco use such as chewing tobacco, cigars and shisha (waterpipe); part three consists of four questions relating to exposure to environmental tobacco smoke (i.e. the extent of exposure to tobacco smoke at home or elsewhere); part four consists of eleven questions that assess students' attitudes towards tobacco control (i.e. support for banning of tobacco sales, banning of tobacco product advertisement); part five consists of eight questions that evaluate any smoking cessation attempt (i.e. smoking habit, desire of smoking cessations); and part six has seven questions on school course curriculum and training in providing tobacco cessation to patients (i.e. danger of smoking lessons,

received formal training in smoking cessation technique, tobacco cessation programs such as nicotine replacement therapy). In the present study, 'ever smoker' was defined as one who had smoked during one's lifetime and 'current smoker' was defined as those who had smoked tobacco product on one or more days in the preceding month of the survey (including daily or occasional smoker) (Warren *et al.*, 2008; Sreeramareddy *et al.*, 2010; Warren *et al.*, 2011b; Virtue *et al.*, 2017).

The questionnaire was face validated by three senior academic faculty members and pre-tested on ten UM third year dental students. Minor modifications were made to the questionnaire where appropriate. The modified questionnaire was then administered to the dental students in a lecture-room setting and collected immediately after the session.

Data were analysed using Statistical Package for Social Sciences (SPSS) version 23.0 (IBM SPSS Inc., Chicago, IL, USA). Descriptive statistics were used to describe dental students' tobacco use, attitudes towards tobacco-related curriculum, tobacco banning policy and perceptions of dental professional role in tobacco cessation. Bivariate analysis using Pearson's Chi-square and Fisher's Exact tests were employed to test the association between ever smokers and non-smokers. Significance level was set at $p < 0.05$.

Results

The overall response rate for the survey was 93.8% (349/372). Female students outnumbered male students in all schools with an overall ratio of about 3:1.

Table 1 shows the prevalence of tobacco use among senior dental students by school and gender. The overall prevalence of current smokers was 2.3% (during the preceding 30 days before completing the questionnaire) and the proportion of subjects who ever smoked was 21.2%. The majority of current smokers (87.5%) and ever smokers (52.7%) were males. None of the respondents were current user of any other tobacco products

such as bidi, betel quid, shisha (waterpipe), cigar or pipes. Out of those who ever smoked, 44.8% were males and 13.4% were females and the difference was statistically significant ($p < 0.001$). The variation in tobacco use by dental schools was not statistically significant ($p = 0.575$).

Table 2 shows students' exposure to second-hand smoke, school policy and enforcement regarding ban on smoking. Overall exposure to second-hand smoke was higher in public places than at home. More than one third (UM: 34.9%, UiTM: 39.3%, UKM: 43.5%, USIM: 45.1%, overall: 39.3%) of the students reported that they have been exposed to second-hand smoke in their home in the past 7 days, whereas more than half (UM: 60.5%, UiTM: 59.0%, UKM: 62.4%, USIM: 66.7%, overall: 61.6%) reported that they have been exposed to second-hand smoke in public places in the past 7 days. Majority of the students reported that their dental schools have an official smoke free policy in the school buildings and clinics. More than two thirds of UiTM (78.7%) and USIM (94.1%) students reported that this policy has been strictly enforced whereas there was less enforcement reported in UM (58.6%) and UKM (62.4%). The differences in the enforcement reported was statistically significant ($p = 0.006$).

Table 3 shows students' recall on tobacco curriculum, their attitudes towards tobacco control and their perceptions on their future professional roles. There were some variations in terms of tobacco training received by the dental students in all schools but nearly all of them reported having learnt about the danger of smoking, the importance in recording tobacco use history, materials to support smoking cessation and nicotine replacement therapy. However, USIM students were significantly less likely to recall having received training about reasons for smoking, approaches to smoking cessation and usage of antidepressant (bupropion or zyban) in tobacco cessation. UiTM students (88.5%) were significantly more likely to recall having received training about antidepressant as pharmacotherapy in their tobacco cessation module compared to students in other schools ($p < 0.001$).

Table 1 Self-reported tobacco use among senior dental students by public dental schools and gender

Variables	Current smoker n (%)	Ever smoker [^] n (%)
Dental schools		
UM (n=152)	5 (2.3)	27 (17.8)
UiTM (n=61)	1 (1.6)	12 (19.7)
UKM (n=85)	2 (2.4)	15 (17.6)
USIM (n=51)	0	20 (39.2)
Overall (n=349)	8 (2.3)	74 (21.2)
Gender		
Male (n=87)	7 (8.0)	39 (44.8)*
Female (n=262)	1 (0.4)	35 (13.4)
Overall (n=349)	8 (2.3)	74 (21.2)

*Chi square, the variation in ever smoker by gender ($p < 0.001$) was statistically significant.

[^]Ever smoker refers to current and past smoker.

Table 2 Exposure to second-hand smoke (at home and in public places) and school policy regarding bans on smoking by dental schools

	Dental schools, (n%) who rated yes					p value ^a
	UM (n=152)	UiTM (n=61)	UKM (n=85)	USIM (n=51)	Overall (n=349)	
In the past 7 days, had someone smoked in your presence & your home	53 (34.9)	24 (39.3)	37 (43.5)	23 (45.1)	137 (39.3)	0.456
In the past 7 days, had someone smoked in your presence other than in your home	92 (60.5)	36 (59.0)	53 (62.4)	34 (66.7)	215 (61.6)	0.845
Is there an official policy that bans smoking in your school buildings and clinics	142 (93.4)	59 (96.7)	77 (90.6)	49 (96.1)	327 (94.0)	0.416
Is there an official policy enforcing the ban of smoking in your school buildings and clinics	89 (58.6)	48 (78.7)	53 (62.4)	48 (94.1)	238 (68.2)	0.006

^a Chi Square test

Table 3 Tobacco curriculum recall, attitudes towards tobacco banning policy and beliefs about professional role among senior dental students in Malaysian public dental schools

	n (%) who rated yes					p value ^a
	UM (n=152)	UiTM (n=61)	UKM (n=85)	USIM (n=51)	Overall (n=349)	
Received training about						
Dangers of smoking	148 (97.4)	60 (98.4)	84 (98.8)	47 (92.2)	339 (97.1)	0.123
Reasons for smoking	130 (85.5)	54 (88.5)	80 (94.1)	37 (72.5)	301 (86.2)	0.005
Recording tobacco use history	146 (96.1)	60 (98.4)	85 (100)	50 (98.0)	341 (97.7)	0.262
Approaches to smoking cessation	133 (87.5)	56 (91.8)	82 (96.5)	27 (52.9)	298 (85.4)	<0.001
Material to support tobacco cessation	151 (99.3)	61 (100)	84 (98.8)	45 (88.2)	341 (97.7)	<0.001
Nicotine replacement therapy	148 (97.4)	60 (98.4)	83 (97.6)	48 (94.1)	339 (97.1)	0.550
Antidepressants (Zyban or bupropion)	57 (37.5)	54 (88.5)	21 (24.7)	8 (15.7)	140 (40.1)	<0.001
Attitudes towards banning						
Tobacco sales to adolescents	124 (81.6)	50 (82.0)	65 (76.5)	42 (82.4)	281 (80.5)	0.756
Advertising tobacco products	141 (92.8)	59 (96.7)	82 (96.5)	50 (98.0)	332 (95.1)	0.330
Smoking in restaurants	149 (98.0)	59 (96.7)	84 (98.8)	50 (98.0)	342 (98.0)	0.849
Smoking in discos/pubs/bars	119 (78.3)	41 (67.2)	67 (78.8)	44 (86.3)	271 (77.7)	0.106
Smoking in enclosed public places	147 (96.7)	56 (91.8)	83 (87.6)	49 (96.1)	335 (96.0)	0.309
Beliefs about dentists' roles						
Get specific training on tobacco cessation	142 (93.4)	60 (98.4)	84 (98.8)	50 (98.0)	336 (96.3)	0.103
Serve as role models	148 (97.4)	59 (96.7)	84 (98.8)	50 (98.0)	341 (97.7)	0.840
Routinely advise patients to quit	142 (93.4)	61 (100)	83 (97.6)	48 (94.1)	334 (95.7)	0.124
Giving tobacco cessation advice	150 (98.7)	61 (100)	85 (100)	50 (98.0)	346 (99.1)	0.501
Chances to increase smoking quits	135 (88.8)	58 (95.1)	78 (91.8)	45 (88.2)	316 (90.5)	0.482
Are dentists who smoke, less likely to advise patient to quit	120 (78.9)	52 (85.2)	72 (84.7)	36 (70.6)	280 (80.3)	0.159

^a Chi Square test

Table 4 Bivariate analysis between ever smokers and non-smokers attitudes towards tobacco banning policy and dentists' role in tobacco cessation

	n (%) who rated yes		p value
	Ever smokers [^] (n=74)	Non-smokers (n=275)	
Attitudes towards banning			
Tobacco sales to adolescents	53 (71.6)	228 (82.9)	0.030
Advertising tobacco products	67 (90.5)	265 (96.4)	0.039
Smoking in restaurants	69 (93.2)	273 (99.3)	0.006
Smoking in discos/pubs/bars	50 (67.9)	221 (81.5)	0.019
Smoking in enclosed public places	65 (87.8)	270 (80.6)	<0.001
Beliefs about dentists' roles			
Get specific training on tobacco cessation	70 (94.6)	266 (96.7)	0.338
Serve as role models	71 (95.9)	270 (98.2)	0.669
Routinely advise patients to quit	65 (87.8)	269 (97.8)	0.004
Giving tobacco cessation advice	68 (91.9)	259 (94.2)	0.472
Chances to increase smoking quits	68 (91.9)	248 (90.2)	0.243
Are dentists who smoke, less likely to advise patient to quit	51 (68.9)	229 (83.3)	0.023

[^]Ever smoker refers to current and past smoker.

Over 90% of students had positive perceptions towards tobacco banning policy such as the legislation of tobacco advertising and restriction of smoking at restaurants and enclosed public places. About 80% of students favoured banning of tobacco sales to adolescents. Students from UiTM (67.2%) were less likely to agree on the banning of smoking at social gathering places such as discos/ pubs/ bars. However, the variation was not statistically significant.

Most of the students strongly supported dentists' role in tobacco cessation where over 90% of them agreed that dentists should serve as role models for their patients and the public; and should routinely provide tobacco cessation advice. Majority (91%) of the students believed that their efforts will increase the chance of patient to quit smoking. To function in this role, 96% of students agreed that dentist should get specific

training about tobacco cessation. There were fewer UM (78.9%) and USIM (70.6%) students as compared to UiTM (85.2%) and UKM (84.7%) students who perceived that health professionals who smoked are less likely to advise patients to quit. However, the variation was not statistically significant.

Data were further analysed to explore if there was any association between students' attitudes and their smoking status. Results indicate that there were significant differences between ever smokers and non-smokers attitudes towards tobacco banning policy (Table 4). Ever smokers were significantly less likely than non-smokers to indicate that tobacco sales and advertising tobacco products should be banned. Similarly, a significantly lower number of ever smokers than non-smokers agreed that smoking should be banned in restaurants, enclosed public places and discos/pubs/bars.

Regardless of their smoking status, the majority of the students were convinced about all the dentists' listed roles in tobacco cessation (Table 4). Significantly more non-smokers believed that dentists should routinely advise patients to quit and that dentists who smoked are less likely to advise patients to quit as compared to those who were ever smokers. However, among those who were ever smokers, almost 88 percent of them believed that dentists should routinely advise patients to quit although only about 69 percent of them perceived that dentists who smoke are less likely to advise patient to quit.

Discussion

Despite numerous literatures on tobacco use among health professional students, there is a gap of knowledge in this area among Malaysian dental students. There was not much variation in the response to some of the questions asked as almost all students responded negatively on items that evaluate smoking habits or responded positively on items that assessed their perceptions on tobacco banning policy and dentists' future roles. This may have accounted for the non-significant differences observed in the responses among students from all four universities. Findings from this study indicated that the rate of current smoker (2.3%) among the sample population was lower than the general adult population (46.4%) (Lim *et al.*, 2013) and medical students in Malaysia (22%) (Sreeramareddy *et al.*, 2010). The current smoker rate was similar with GHPSS based studies conducted on dental students in Thailand (2.5%) and Sri Lanka (1.0%) but is much lower than their counterparts in Myanmar (34.4%) and Indonesia (10.6%) (Centers for Disease Control and Prevention, 2015; Visalseth *et al.*, 2016). As reported in the other Asian countries, the prevalence of current smokers and ever smokers were higher among male students which probably suggest cultural reluctance for Asian females to smoke (Smith and Leggat, 2007b). Although the proportion of current smokers in this sample is relatively low, every effort should be made by the schools

to assist dental students to quit smoking. A study has reported that with increasing focus on tobacco-control activity, smoking rate among dental students has decreased in many developed countries such as Australia, United Kingdom, United States and Canada (Smith and Leggat, 2007a). Therefore, effort to advocate the need for health professional to be a tobacco-free model should be continued to ensure a more effective tobacco cessation counselling to their patient. This approach eventually offers an opportunity to lead by example with regards to healthy behaviour.

There were sizeable proportions of dental students in this study who were exposed to second-hand smoke, both at home and in public places. Second-hand smoke can be defined as "the combination of smoke from the burning end of a cigarette and the smoke breathed out by smokers" (Centers for Disease Control and Prevention, 2006). There are established evidence on the impact of exposure to second-hand smoke such as increase risk to various health problems such as respiratory infection, coronary heart disease and lung cancer (Davey Smith, 2003; Warren *et al.*, 2011a,b). Although the majority of the students reported that their dental schools had an official smoke free policy, UKM and UM students perceived that the regulations were not fully enforced. Findings in the present study support data reported by other dental schools in neighbouring South-East Asian countries like Indonesia and Myanmar (Centers for Disease Control and Prevention, 2015). Evidence has shown that smoke-free atmosphere can improve air quality, reduce tobacco exposure related problems, encourage cessation efforts and portray positive image to the public about the negative impact of tobacco (Warren *et al.*, 2011b). Thus, urgent attention should be given to improve enforcement of the policy within the dental schools in line with Malaysian Tobacco Control Law (Tobacco Control Laws, 2017).

The majority of students from all dental schools demonstrated strong support towards tobacco control strategies from tobacco sales to adolescents to banning of smoking in all enclosed public

places. However, UiTM students (67.2%) were less likely to agree on banning of smoking in pubs/discos/bars and their perceptions is in concordance with the Malaysian Tobacco Control Law that permits smoking in pubs/discos/bars (Tobacco Control Laws, 2017). A similar finding was reported among health professional students in Nigeria (Awojobi and Croucher, 2012). Adolescents may perceive social gathering places as private spaces and hence think that they should be exempted from the ban. The UK Health Act 2006 considers public spaces as any premises that allow public, or a section of the public, to have access to the area. These premises are required by the UK law to be a smoke free zone. As exposure to second-hand smoke in enclosed spaces is hazardous, there is a need for the Malaysian government to review their smoking policy in such places (Barbry *et al.*, 2015).

Although there were statistically significant differences between ever smokers and non-smokers in their attitudes towards banning policy, most (>80%) of both smokers and ever-smokers support the banning policy of tobacco advertisements, the sales of tobacco products to adolescents and smoking in enclosed public spaces. The support showed among smokers of the current study is consistent with similar studies conducted in Georgia (Bakhturidze *et al.*, 2013) and the USA (Rigotti *et al.*, 2003). This somehow indicates that smoking has become an unacceptable social practice, a notion that is supported by both smokers and non-smokers, based on their responses. However, it is interesting to note that only less than 70% of 'ever-smokers' felt that smoking should be restricted in discos, pubs or bars. Smokers may feel that there should be at least a place where they can smoke freely in public spaces (Rigotti *et al.*, 2003). In spite of 88 percent of those who were ever smokers believed that dentists should routinely advise patients to quit, only about 69 percent of them perceived that dentists who smoked are less likely to advise patient to quit. It cannot be discounted in this study that the higher proportion of ever smokers who believed that dentists should routinely advise patients to quit may have responded in the manner

normally expected of them as health professional students. Students were mostly supportive towards dentists' role in tobacco cessation activities regardless of their smoking status. These findings differ from previous data reported in Bangladesh (Chowdhury *et al.*, 2010) and Nigeria (Awopeju *et al.*, 2013).

In comparison with other dental students in the present study, USIM students were significantly less likely to recall having received training about approaches to smoking cessation, material to support tobacco cessation and usage of antidepressant in tobacco cessation. This finding reflects the teaching activities undertaken by the respective dental school. Although students in USIM received less exposure compared to students in other schools, they showed positive attitudes towards dentists' roles in tobacco cessation. This is contrary to existing evidence which suggest that lack of training in cessation counselling may hinder health professionals from functioning effectively in their role (Awojobi and Croucher, 2012) and those who received training in smoking cessation were more likely to embrace smoking cessation activities as part of comprehensive oral health care for their patients (Smith and Leggat, 2007a; Chowdhury *et al.*, 2010; Virtue *et al.*, 2017). This finding also suggests a need to streamline the tobacco control curriculum among dental schools in Malaysia for students to achieve a minimum level of competency in the tobacco cessation activity. International recommendation also suggests multilevel model for tobacco education for dental curricula which is classified into basic (brief intervention), intermediate (brief intervention and cessation medication) and advanced care (intensive intervention with detailed quit plan and pharmacotherapy) (Davis *et al.*, 2010). This guideline can be used and appropriately modified to suit the cultural and social context in Malaysia.

Conclusion

There was a low prevalence of current tobacco use but a high exposure to second-hand smoke especially in public places, among dental students in Malaysian public

dental schools. Lack of enforcement on the banning of smoking in UM and UKM's premises was reported by the respective dental students. There are some variations in terms of training provided by each dental school. However, no significant association was found between amount of training received and their attitudes towards tobacco control activities. There were statistically significant differences between ever smokers and non-smokers attitudes towards tobacco banning policy. Regardless of their smoking status, majority of the students showed positive attitudes towards dentists' role in tobacco cessation.

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Conflict of interest

The authors declare that there is no conflict of interest.

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