Pharmacy Education, 2015; 15 (1) 254 - 260

Smoking cessation in Malaysian Pharmacy Curricula: Findings from environmental surveys

SARASWATHI SIMANSALAM[1*], JOAN M. BREWSTER[2], MOHAMAD HANIKI NIK MOHAMED[1]

[1]*Kulliyyah of Pharmacy, International Islamic University of Malaysia, Pahang, Malaysia*

[2]*Dalla Lana School of Public Health, University of Toronto, Toronto, Canada*

Abstract

Background: Lack of comprehensive training focusing on smoking cessation in the local universities curricula may contribute to suboptimal smoking cessation counselling provision among pharmacists.

Aims: The main aim was to identify the gaps in smoking cessation training in pharmacy curricula. The secondary aim was to assess the pharmacy faculty members' practice and relevant determinants pertaining to smoking cessation counselling. The third aim was to compare the effect of training on these determinants.

Method: Key individuals were identified from pharmacy schools to obtain information on tobacco-related teaching. Self-administered questionnaire was distributed to pharmacy faculty members to assess their practice pertaining to smoking cessation counselling.

Results: Tobacco-related topics were part of core courses in 9 schools with a median teaching duration of 2.75 hours. Practice pertaining to smoking cessation counselling is limited and training has positive effect on practice.

Conclusion: A standard curriculum on smoking cessation training is needed to equip the pharmacy undergraduates and faculty members with necessary knowledge and skills.

Keywords: *Faculty Members, Malaysian Pharmacy Schools, Smoking Cessation Training, Tobacco-Related Topics*

Introduction

Smoking remains as the main preventable cause of diseases and premature deaths globally. In Malaysia, it claims approximately 20,000 lives annually and aggressive approaches to change the current smoking patterns are imperative considering there are about 4.7 million smokers at present (Global Adult Tobacco Survey Malaysia, 2012). The main aim of Malaysian National Quit Smoking Programme is to provide comprehensive support in helping smokers to quit (Zarihah, 2007). Smoking cessation services have profound effects in reducing smoking-attributed morbidity and mortality as well as the economical burden of a developing nation (Abdullah & Husten, 2004). Healthcare providers are to assist the nation's smoking cessation efforts and pharmacists, being one of the most accessible healthcare providers as well as knowledgeable in pharmacotherapy, are uniquely positioned to assist smokers to quit. However, it was reported that most Malaysian healthcare providers were inadequately trained for such task (Planning and Development Division, 2010). Lack of comprehensive tobacco-related courses and training in most local universities curricula was cited as a contributing factor in addition to lack of in-service training and continuing professional development (CPD) programs focusing on smoking cessation training for the healthcare providers in Malaysia (Awaisu *et al*, 2010). National Quit Smoking Programme has outlined its strategy to integrate smoking cessation training into all relevant health profession curricula to develop this necessary skill among the future healthcare providers (Zarihah, 2007). Little is known on the coverage of smoking cessation training in Malaysian pharmacy undergraduate curricula. An environmental scan was conducted to identify smoking cessation teaching and learning in Malaysian pharmacy curricula. A preliminary survey among the faculty members was also carried out to explore their practice and other associated determinants which may influence practice in terms of smoking cessation.

Method

There were two phases in this study; the first of which involved the environmental scan and the second phase was a preliminary survey among pharmacy faculty members. In the first phase, key individuals were identified from all pharmacy schools in Malaysia to obtain details on tobacco-related teaching for the academic year of 2010/2011. Only schools which offered undergraduate pharmacy programs were included. The key individuals were identified through phone calls made

[*]Correspondence: Saraswathi Simansalam, *PhD Candidate, Kulliyyah of Pharmacy, International Islamic University of Malaysia, Jalan Sultan Ahmad Shah,Bandar Indera Mahkota, 25200 Kuantan, Pahang, Malaysia. Tel: +6 0126329371. Email: srsthis@yahoo.com*

ISSN 1447-2701 online

to the administrators at each school to obtain the contact details, either e-mail addresses or phone numbers, of the faculty members who were involved in teaching tobacco-related and smoking cessation topics for the particular semester. In the event that no faculty member was involved in teaching tobacco-related and smoking cessation topics, Head of Department (HOD) for Pharmacy Practice, Clinical Pharmacy or Social Pharmacy was contacted. These departments were chosen as tobacco-related and smoking cessation topics usually come within the purview of the above-mentioned departments. Questionnaire was sent by e-mail to all the key individuals identified from all the sixteen pharmacy schools in Malaysia, with either B.Pharm or M.Pharm (U.K.) programs. Completed questionnaire was returned by e-mail to the main researcher. Particulars collected ranged from the courses in which topics related to tobacco use and smoking cessation are covered; course titles; topics and the learning outcomes of the topics covered, the semester and year of study in which the courses are offered; if the courses are core or elective; the credit hours of the courses; curriculum time devoted to these topics; the assessment mode to the references used in teaching tobacco-related topics. Data collection for the first phase was completed in December 2010 and analyses were initiated using SPSS Data Editor Version 18.0 software. Descriptive statistics were used and the median for tobacco-curricula hours in the core and elective courses were determined.

The second phase of the study involved the survey of faculty members. Key individuals identified in the first phase, or their representatives were invited for a two-hour workshop held on the last day of Malaysian Pharmaceutical Society Scientific Conference 2011 at Istana Hotel, Kuala Lumpur. A short discussion on smoking cessation coverage in pharmacy curricula at their respective schools took place before the questionnaire to assess faculty members' practice and other relevant constructs pertaining to smoking cessation counselling was distributed to the workshop participants. Questionnaires were also distributed through selected key individuals identified in phase one to other faculty members at their respective institutions. Cover letter explaining the purpose of the study and ensuring their anonymity for the study (not able to link information to respondent) as well as confidentiality was enclosed with the questionnaire. The main researcher personally collected the questionnaires from the key individuals and data collection was closed after two months. The 77-item questionnaire (available upon request) was developed based on literature review (Brewster *et al*., 2005b; 2005c; Ashley *et al*., 2006; Hudmon *et al*., 2006) and consists of six sections, namely socio-demographic and other relevant information (13 items), practice (16 items), knowledge (14 items), attitudes (8 items), pharmacists' role perception (9 items) and self-efficacy (17 items). Multiple choice formats were used to test the knowledge component, with one correct answer for each. Yes/No options were used for 14 practice-related statements and two qualitative items on counselling provision were included. For other relevant factors, 5-point Likert scale was used. The questionnaire was tested for its face validity among five faculty members from a private institution. The cut-off for Cronbach's Alpha was set at 0.7 and the values obtained for each scale were; 0.98 for self-efficacy (providing counselling); 0.97 for self-efficacy (teaching); 0.92 for positive attitudes; 0.77 for negative attitudes and 0.78 for perception on ideal pharmacists' roles.

Data collection was completed in December 2011 and analyses were initiated using SPSS Data Editor Version 18.0 software. The socio-demographic characteristics of the respondents in the faculty members' survey were summarised using descriptive statistics. The mean and standard deviation for practice and other relevant constructs were determined. Spearman bivariate correlations between practice and other relevant constructs were determined. Mann-Whitney U Test was used to compare the scores for practice and other determinants based on demographic data such as gender, academic position and involvement in teaching tobacco-related topics. Mann-Whitney U Test was also used to examine differences in terms of practice and other determinants in providing and teaching smoking cessation counselling between the group of faculty member who have previously received training on smoking cessation counselling and the group which did not receive any such training.

Results

Environmental Scan

All key individuals (n=16) identified from each pharmacy school responded to the requested information on topics for tobacco control and smoking cessation in their respective school curriculum (Table I). Three schools (18.8%) did not have tobacco-related topics in their curricula. Tobacco-related topics were part of core courses in 10 schools with median teaching duration of 2.75 hours. In three schools, topics were covered as part of elective courses with median teaching duration of two hours with one of these schools covered tobacco-related topics in core and elective courses. Teaching hours from two schools were unquantifiable as self-directed online learning and Problem Based Learning (PBL) were used. One school introduced tobacco-related topics in the first semester of the first year, six schools (46.2%) at the second year and another six in the third and final years. Lecture (75%) was the primary mode of delivery. Other modes of delivery included workshop and role-play. Ten (76.9%) schools used coursework and final examination as assessment method. Only three (23.1%) schools included Objective Structured Clinical Examination (OSCE) and role-play as part of assessment. In six schools (46.2%), tobacco-related topics were incorporated into courses on 'Drug Abuse', and the content covered included the concepts and theory on dependence and withdrawal symptoms and therapeutic intervention in abuse of nicotine. This course was offered as an elective in four schools and as the core subject in remaining two schools. Two schools included visit to Smoking Cessation Clinics as part of their program.

Table I: Tobacco-related topics coverage in undergraduate Pharmacy Curricula in Malaysia, n=16

Pharmacy schools	Courses with tobacco-related topics	Semester/ Year	Core/ Elective	Duration/ Mode of Teaching	Assessment
	Public Health Pharmacy	Sem1 / Yr 1	Core	1-hr lecture	Final exam
Public	Community Pharmacy Practice	Sem 1 / Yr 4	Core	2- hr lecture	Final exam
	Drugs of Abuse and Society	Sem 1 / Yr 3	Elective	3-hr lecture	Final exam
Public	Pharmacy Practice III	Sem 2 / Yr 3	Core	1-hr lecture & 2-hr workshop	Final exam
Public	Community Pharmacy	Sem 1 / Yr 4	Core	2-hr lecture	Role-play
Public	Drugs of Abuse	Sem 1 / Yr 2	Elective	PBL	Quiz/oral presentation
Public	Drugs of Abuse	Sem 2 / Yr 2	Elective	2-hr lecture	Final exam
Private	Respiratory System	Sem 1 / Yr 2	Core	3-hr lecture & 3-hr workshop	Final exam
Private	Drugs of Abuse & Society	Sem 1 / Yr 4	Core	3-hr lecture	Final exam
Private	Community Pharmacy Practice	Sem 1 / Yr 2	Core	3-hr workshop	Coursework /final exam
Private	Pharmacy Practice I	Sem 1 / Yr 2	Core	1-hr lecture	Coursework/final exam
	Therapeutics II	Sem 2 / Yr 4	Core	3-hr lecture	
Private	Professional Skills 2: Pharmacist-Patient Partnerships	Sem 2 / Yr 2	Core	2-hr lecture & 0.5-hr workshop	OSCE
Private	Drug of Abuse & Society	Sem 2 / Yr 3	Elective	2-hr lecture	Final exam
Private	Drugs of Abuse	Sem 1 / Yr 2	Core	2-hr lecture	Final exam
Private	Integrated therapeutics	Year 2	Core	Online module	Online quiz
No coverage in 3 private pharmacy schools					

In the most comprehensive coverage reported by one school, content included types of tobacco products; epidemiology; tobacco-related disease; tobacco control overview; nicotine pharmacology and addiction (dependence); withdrawal symptoms; drug-cigarette interactions; self-reported reasons for smoking; assessing dependence and motivation to stop; 'stages of change' model and helping individuals to stop and stay stopped: overcoming barriers; aids; post-cessation weight control in lecture format. In the workshop component, case-based discussions on approaches to smoking cessation; Fagerström test; nicotine replacement; motivational interviewing and counselling were included.

Survey of Faculty Members

The response rate was 21% with a total of 21 faculty members from 13 schools responded to the survey (Table II). Two-thirds of the respondents were female. Only one respondent reported as a smoker. Majority of the respondents were from the Clinical Pharmacy and Pharmacy Practice Disciplines. Most of the respondents had been in academia for ten years and less. Four had received formal training for teaching smoking cessation and were involved in teaching tobacco-related topics. Almost 50% of the respondents had received formal training for providing smoking cessation counselling previously. A majority, more than 60%, was not involved in teaching tobacco-related courses.

Self-efficacy for teaching ($U=19.5$, $p<0.05$) and practice ($U = 23$, $p < 0.05$) were significantly higher among HODs and Coordinators as compared to respondents who were not holding any such positions. Self-efficacy for providing counselling was significantly higher among

Table II: Demographic Profile of the Respondents, n=21

Characteristics	No. (*%*)
Gender	
Male	7 (*33.3*)
Female	14 (*66.7*)
Ethnicity	
Malay	8 (*38.1*)
Chinese	8 (*38.1*)
Indian	3 (*14.3*)
Other	2 (*9.5*)
Academic Level	
Lecturer	11 (*52.4*)
Senior lecturer	6 (*28.6*)
Assoc. Prof.	4 (*19.0*)
Final Degree	
M.Pharm	12 (*57.1*)
PhD	6 (*28.6*)
Other	3 (*14.3*)
Area of Expertise	
Pharmacy Practice	9 (*42.9*)
Clinical Pharmacy	9 (*42.9*)
Other	3 (*14.3*)
Position	
Coordinator	3 (*14.3*)
HOD	6 (*28.6*)
Other	12 (*57.1*)
Years in teaching	
Less than 3 years	5 (*23.8*)
3 – 10 years	14 (*66.7*)
More than 10 years	2 (*9.5*)
Years in tobacco-related teaching	
Never taught	13 (*61.9*)
Less than 3 years	3 (*14.3*)
3 years and more	5 (*23.8*)
Received prior training on…	
Teaching smoking cessation	4 (*19.0*)
Providing smoking cessation	10(*47.6*)

faculty members who were involved in teaching tobacco-related courses (U=19, $p<0.05$) compared to those who were not involved, and those who had PhD (U=9, $p<0.05$) compared to those who did not have PhD. Years in academic teaching (between above five years vs. five years and below), area of expertise (between Clinical Pharmacy vs. Pharmacy Practice), academic level (between Lecturers vs. Senior Lecturers and Associate Professors) and ethnicity (between Malays vs. Chinese) did not have any significant influence on the constructs measured in this survey.

The overall mean scores obtained for practice was only slightly above 50% of the possible maximum (Table III). The mean scores were the highest for positive attitudes, and high for perceptions on ideal pharmacists' roles. Scores obtained for self-efficacy in providing as well as teaching smoking cessation counselling were higher than 50% of the possible maximum. The mean score for knowledge in behavioural therapy component was below 50% of the possible maximum.

Table III: Mean Scores and Correlations for Practice and Determinants, n=21

Determinants	Mean score (SD)	Possible max score	Correlation[§], r_s
Practice			
Providing smoking cessation	4.9(3.01)	9	0.97**
Teaching smoking cessation	3.2(1.41)	5	0.87**
Attitudes			
Positive	18.5(2.58)	20	0.32 ns
Negative[†]	8.6(3.23)	4	-0.26 ns
Self-efficacy			
Providing smoking cessation	32.1(11.49)	50	0.77**
Teaching smoking cessation	22.1(8.01)	35	0.81**
Ideal pharmacist's role perceptions	41.0(3.96)	45	0.42ns
Knowledge			
Tobacco-related issues	4.00(1.38)	8	0.36ns
Pharmacotherapy	0.95(0.74)	2	0.23ns
Behavioural therapy	1.24(1.04)	4	0.46*

[§]Spearman's rho correlation between overall practice and other determinants

[†]Lower scores are better indicator of the attitudes toward providing and teaching smoking cessation counselling

[ns]Not significant,[*]Significant at $p< .05$ and [**]Significant at $p<.01$ (two-tailed),

Overall practice scores were significantly and positively correlated with faculty members' self-efficacy in teaching and providing smoking cessation counselling (Table III). Practice was also significantly and positively correlated with knowledge on behavioural therapy. Furthermore, knowledge was also correlated significantly with self-efficacy in teaching and providing smoking cessation counselling, Spearman's rho, rs=0.51, $p<0.05$ and rs=0.58, $p<0.01$, respectively. The other determinants, namely, attitudes and perceptions on ideal pharmacist's role were not correlated significantly with practice.

The scores obtained by respondents who had previously received training for providing smoking cessation counselling were significantly higher for knowledge on behavioural therapy, self-efficacy and practice scores, compared to respondents who had never received any such training (Table IV). However, the differences of scores for attitudes and perceptions between these two groups were not significant.

Table IV: Comparison between Groups with and without Previous Training[‡]

Determinants	Received training, (n=10)	No training, (n=11)	Mann-Whitney U value
	Mean (SD)	Mean (SD)	
Practice			
Providing SCC	6.8(1.75)	3.3(2.97)	17.0*
Teaching SCC	4.2(0.92)	2.4(1.21)	13.0*
Attitudes			
Positive	19.3(1.34)	17.6(3.14)	40.5ns
Negative[b]	8.7(3.53)	7.7(3.04)	47.0ns
Self-efficacy			
Providing SCC	38.1(8.77)	26.7(11.26)	24.0*
Teaching SCC	25.8(5.29)	18.8(8.82)	24.5*
Perceptions on ideal pharmacist's role	43.0(2.91)	39.3(4.05)	26.5ns
Knowledge			
Tobacco-related issues	4.00(1.38)	4.00(1.38)	27.0 ns
Pharmacotherapy	1.00(0.74)	1.00(0.74)	28.5 ns
Behavioural therapy	1.00(1.04)	1.00(1.04)	23.0*

SCC =Smoking Cessation Counseling

[‡]Training to provide smoking cessation counseling

[ns]Not significant and [*]Significant at $p < .05$ (two-tailed), U Critical value =26

Discussion

The main objective of this paper was to explore the environmental factors in Malaysian pharmacy schools in terms of tobacco-related curricula. A preliminary survey to explore faculty members' practice pertaining to teaching and providing smoking cessation counselling and the determinants associated with practice was carried out.

Tobacco-related Curricula Hours

From the environmental scan conducted, the median duration for tobacco-related topics was 2.75-hour (165 minutes) for the core subjects. In exploring the coverage of tobacco-related curricula in the pharmacy schools, Hudmon *et al*. surveyed 83 schools in the U.S. and reported a median teaching duration of 170 minutes (Hudmon *et al*., 2005) whereas Nimpitakpong *et al*. reported a median of 198 minutes from 12 Thai schools (Nimpitakpong *et al*., 2011). Although our findings were comparable to the median duration from these studies, it is important to note that the findings on the U.S. curricula was reported before the launching of nationwide

breakthrough effort, 'Rx for Change', a program consists of eight-hour didactic teaching and role-playing as part of active learning for their pharmacy students. The 'Rx for Change' program was found to improve students' self-efficacy significantly (Hudmon *et al*., 2003; Corelli *et al*., 2005)

We found that tobacco-related topics were covered in the 'Drugs of Abuse' and 'Pharmacy Practice' courses in most of Malaysian pharmacy schools. The contents focused on the basic concepts of addiction, withdrawal symptoms and therapeutic intervention. Behavioural intervention has been incorporated minimally, less than 30-minute of teaching hour. Generally, the curricula hours were devoted to teaching the 'basic science' of tobacco-related topics than to teaching patient counselling techniques. This was contrary to the findings of Brewster et al. that more time was devoted to teaching patient counselling techniques than to individual tobacco-related topics in Canadian pharmacy schools (Brewster & Ashley, 2005a). It should be also emphasised that only 62.5% of Malaysian pharmacy schools offer tobacco-related topics as part of the core subjects suggesting scope for improvement in terms of upgrading the elective courses into core courses and introduce new course on smoking cessation counselling as a core subject in schools which do not have this topics covered in their syllabi.

Six schools were found to have integrated active learning strategies such as PBL, role-play and OSCE in either the delivery or assessment of tobacco-related topics. While this is encouraging, more initiatives to increase the duration and integrate active learning are indispensable. In conjunction with this, Nimpitakpong *et al*. recommended that pharmacy schools should include supervised practice (Nimpitakpong *et al*., 2011), to augment students' skill and confidence in smoking cessation counselling provision. It is imperative that faculty members are well equipped to provide as well as to teach smoking cessation counselling skills to the students to enable such supervision.

Survey of faculty members

To explore how well Malaysian faculty members are equipped in teaching smoking cessation counselling skills to the students, we carried out a survey among faculty members from selected disciplines, namely Clinical Pharmacy, Pharmacy Practice, and Social and Administrative Sciences of the pharmacy schools in Malaysia. The questionnaire was designed to capture the dual-role played by the faculty members, namely, pharmacists as well as pharmacy educators. The former role was deemed important as the faculty members are the role-models of the future pharmacists and the latter role was included to measure their 'readiness' in terms of teaching students. Our findings revealed that the overall practice scores which captured the dual-role of the educators were low. The practice scores on provision of smoking cessation counselling based on the 5A's (Ask about smoking, Advise to quit, Assess dependence, Assist with quit, Arrange for follow-up) approach were low, in-line with the findings reported by Taha & Tee, who conducted survey among community pharmacists from Northern part of Malaysia (Taha & Tee, 2014). The authors also reported positive attitudes among the respondents which are comparable to the findings of our study.

Our findings were positively overwhelming for self-efficacy in providing as well as teaching smoking cessation counselling, positive attitudes and perception of the ideal pharmacists' roles in smoking cessation counselling. However, improvement is deemed necessary in terms of knowledge and self-efficacy in teaching behavioural topics. Our findings corroborate the findings of Brewster et al. on lack of faculty 'expertise' in behavioural topics (Brewster & Ashley, 2005a).

Saba *et al*. reported that in their study, the smoking cessation educators obtained significantly high mean scores of 77.8%+6.3 (n=20) in tobacco-related knowledge component, represented by a group of trainers who provide smoking cessation training as well as conduct smoking cessation-related studies and clinical trials (Saba et al., 2013). One possible reason for the low knowledge scores, 44.2%+17.3%, obtained in our study is that more than 60% of the respondents were not involved in teaching tobacco-related topics.

The findings from our study revealed that self-efficacy and knowledge had significant correlation with practice, and group of faculty members who had received training previously had significantly higher scores for knowledge, self-efficacy and practice pertaining to providing as well as teaching smoking cessation counselling. This may imply the significance of training for faculty members in terms of knowledge, self-efficacy and practice. Moreover, Corelli et al. reported self-efficacy for teaching smoking cessation counselling improved from pre-training level of 2.65+1.03 to 4.31+0.59, $p< 0.001$ at post-training among the faculty members who participated in the Train-the-Trainer Program for Tobacco Cessation (Corelli, 2007).

Muramoto & Lando (2009) emphasised the importance of faculty members' development in smoking cessation for sustainable training programs, and shift of professional and societal norms towards smoking cessation in developing countries like Malaysia, where smoking is seen as a norm. The authors further stressed that faculty members' development promotes the ability to establish smoking cessation training not only among students but community practitioners as well (Muramoto & Lando, 2009).

Initiatives by pharmacy schools to provide appropriate incentives to faculty members to participate in trainings as well as to practice acquired skills will ascertain faculty development. 'Smoking Quit Clinic' was established by one of the premier pharmacy schools in Malaysia and this initiative can be followed by other schools to provide avenues for the faculty members along with their students to practice, in addition to encouraging smokers from the institutions and the neighbourhood communities to quit.

Limitations

The findings of the environmental scan were based on the information provided by the key individuals and no documents were reviewed physically to confirm the information obtained. However, efforts were made to verify the information obtained during the workshop discussion session. Taking into account the low response rate and small sample size, as well as the self-report method, interpretation of these findings need to be done with great care. Data collection from a larger sample is warranted.

Conclusion

A curriculum on smoking cessation training with an emphasis on the behavioural therapy is needed and incorporating active learning strategies would be of value. Accordingly, faculty members should be well equipped to play an imperative role in supervising the students and providing constructive feedbacks during active learning strategies which can significantly increase students' competency. More awareness should be created among faculty members by encouraging them to receive training on smoking cessation counselling as it is essential for sustainable training programs as well as to provide comprehensive support for nation's tobacco control efforts.

Acknowledgements

The authors would like to thank the key individuals and workshop participants for their contribution and Malaysian Pharmaceutical Society for its support.

Authors' contributions

SS was the lead for the research. All authors contributed to the concept, design of the study and manuscript.

Conflict of interest

The authors have no competing interests to declare.

References

Abdullah, A.S.M. & Husten, C.G. (2004). Promotion of smoking cessation in developing countries: A framework for urgent public health interventions. *Thorax*, **59**(7), 623-630.

Ashley, M.J., Brewster, J.M., & Victor, J.C. (2006). Pharmacists' smoking cessation practices: Relationship to their knowledge and skills, attitudes, and perceptions of roles. *Journal of American Pharmacists Association*, **46**(6), 729-737.

Awaisu, A., Mohamed, M.H.N., Noordin, N.M., Aziz, N.A., Sulaiman, S.A.S. & Muttalif, A.R., *et al* (2010). Potential impact of a pilot training program on smoking cessation intervention for tuberculosis DOTS providers in Malaysia. *Journal of Public Health*, **18**(3), 279-288.

Brewster, J.M. & Ashley, M.J. (2005a). On the front line of smoking cessation: Survey and workshop for faculty. *Canadian Pharmaceutical Journal*, **138**(3), 24-25.

Brewster, J.M., Ashley, M.J., Laurier, C., Dioso, R., Victor, J.C. & Ferrence, R., *et al* (2005b). On the front line of smoking cessation: Pharmacists' practices and self-perception. *Canadian Pharmaceutical Journal*, **138**(3), 32-38.

Brewster, J. M., Victor, J. C., Ashley, M. J., Laurier, C., Dioso, R. & Ferrence, R., *et al.* (2005c). On the front line of smoking cessation: Education needs of community pharmacists. *Canadian Pharmaceutical Journal*, **138**(3), 26-31.

Corelli, R.L., Fenlon, C.M., Kroon, L.A., Prokhorov, A.V. & Hudmon, K.S (2007). Evaluation of a train-the-trainer program for tobacco cessation. *American Journal of Pharmaceutical Education,* **71**(6), Article 109.

Corelli, R.L., Kroon, L.A., *et al*. (2005). Statewide evaluation of a tobacco cessation curriculum for pharmacy students. *Preventive Medicine*, **40**(6), 888-895.

Global Adult Tobacco Survey Malaysia (2012). Fact sheet of Malaysia (on-line). Available at: http://www.moh.gov.my/images/gallery/Report/GATS_Malaysia.pdf. Accessed 13th May, 2013.

Hudmon, K.S., Bardel, K., *et al*. (2005). Tobacco education in U.S. schools of pharmacy. *Nicotine & Tobacco Research*, **7**(2), 225-232.

Hudmon, K.S., Corelli, R.L., Chung, E., Gundersen, B., Kroon, L.A., Sakamoto, L.M., *et al*. (2003). Development and implementation of a tobacco cessation training program for students in the health professions. *Journal of Cancer Education*, **18**(3), 142-149.

Hudmon, K.S., Kroon, L.A., Corelli, R.L., Saunders, K.C., Spitz, M.R., Bates, T.R., *et al*. (2004). Training future pharmacists at a minority educational institution: Evaluation of the 'Rx for Change' tobacco cessation training program. *Cancer Epidemiology, Biomarkers & Prevention*, **13**(3), 477-481.

Hudmon, K.S., Prokhorov, A.V. & Corelli, R.L. (2006). Tobacco cessation counselling: Pharmacists' opinions and practices. *Patient Education & Counselling*, **61**(1), 152-160.

Muramoto, M.L. & Lando, H. (2009). Faculty development in tobacco cessation: Training health professionals and promoting tobacco control in developing countries. *Drug and Alcohol Review*, **28**(5), 498-506.

Nimpitakpong, P., Chaiyakunapruk, N. & Dhippayom, T. (2011). Smoking cessation education in Thai schools of pharmacy. *Pharmacy Education*, **11**(1), 8-11.

Planning and Development Division, MOH. (2010). Country Health Plan, 10th Malaysia Plan, 2011-2015 (on-line). Available at: http://www.wpro.who.int/health_services/malaysia_nationalhealthplan.pdf. Accessed 5th October, 2013.

Saba, M., Bittoun, R., Kritikos, V. & Saini, B. (2013). Smoking cessation in community pharmacy practice - A clinical information needs analysis. *SpringerPlus*, **2**(1), 1-13.

Taha, N.A. & Tee, O.G. (2014). Tobacco cessation through community pharmacies: Knowledge, attitudes, practices and perceived barriers among pharmacists in Penang. *Health Education Journal*. DOI: 10.1177/0017896914558643

Zarihah, Z. (2007, May). Malaysian smoking cessation programme and smoke-free air laws. Paper presented at Asia Pacific Regional Conference, Kuala Lumpur.