Self-reported practice of smoking cessation intervention (SCI) among primary care doctors at public health clinics in Kuala Lumpur, Malaysia

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ABSTRACT

Background: Primary care doctors are responsible to provide smoking cessation intervention (SCI) to smokers in a community. This study aimed to assess the SCI practice among primary care doctors themselves and its associated factors.

Methods: This cross-sectional study was conducted from July to October 2016. All the 140 doctors in 12 public primary care clinics in Kuala Lumpur were invited to participate in this study. However, only 122 doctors (females, 82.8%) completed the self-administered questionnaire that assessed their demography, clinical experience, SCI practice and its barriers, self-efficacy in delivering and knowledge on smoking and SCI.

Results: Only 42.6% of the doctors had good SCI practice. Almost all doctors assessed the smoking status of their patients (98.4%) and advised them to quit (98.4%). However, lesser proportions of the doctors followed up the practice of patients (50.0%), taught smokers on various methods of quit smoking (46.70%) and discussed about the barriers and resources to quit prior to the quit date (27.9%). Less than one-fourth of the doctors were confident in providing SCI. Although 69.7% had previous training in SCI, many felt they had inadequate knowledge (56.6%) and skills (47.5%). Only 11.5% of doctors thought their previous training was enough. Having higher level of knowledge on smoking and SCI was significantly associated with good SCI practice [adjusted Odds Ratio (95% Confidence Intervals): 1.21 (1.02, 1.43), p=0.026].

Conclusion: The SCI practiced by the primary care doctors in this study was sub-standard, particularly in assisting smokers to quit and arranging follow up. Low self-efficacy in providing SCI was also common. These inadequacies may be due to poor knowledge and skills, which needs to be improved through effective clinical training.

KEY WORDS:
smoking cessation, practice, self-efficacy, knowledge, primary care

INTRODUCTION
Cigarette smoking is a major health threat causing various illnesses with high morbidity and mortality rate. Annually, about 5.4 million people die from lung cancer, heart disease and other smoking-related illnesses. This is expected increase to more than 8 million a year by 2030.[1] Despite these health hazards, more than 1.2 billion people worldwide are daily smokers.[2] It is reported that nearly five million or 22.8% of Malaysians aged 15 years and above are smokers.[3] In order to curb this problem, the Ministry of Health (MOH) Malaysia has carried out various strategies and extensive campaigns. In year 2005, the MOH had signed and ratified the World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC). Since then the government has managed to increase the excise duty for cigarette, ban tobacco advertisement, increase anti-tobacco campaigns and set up smoking cessation service at public primary care clinics across the country.[3]

Having smoking cessation service at primary care setting is practical as primary care doctors see many smokers in the community. Thus, they are able to provide smoking cessation intervention (SCI) effectively due to their close contact with the public.[4] Many guidelines have recommended for doctors to consistently assess the smoking status of patients and offer SCI at every opportunity during consultation.[5-10] They are expected to provide smoking cessation counselling using 5As approach (Ask about smoking status, Advise for quitting, Assess willingness to quit, Assist smokers to quit and Arrange follow up).[3,5-10] If the patients are not ready to quit, 5Rs approach (Relevance, Risks, Rewards, Roadblocks or barriers and Repetition) is be used to rationalise that quitting is better than smoking.[3,5-10]

Apart from having local guidelines, training is provided to the primary care doctors to ensure that they acquire satisfactory skills to a run quit smoking clinic and provide various SCI. Unfortunately, the proportion of smoking patients who received SCI is still low despite government efforts to improve the practice among doctors.[11] A systematic review examining 35 studies found that more than half of the primary care doctors frequently asked the smoking status of their patients and advised smokers to quit. However, other aspects of SCI such as 'Assess', 'Assist' and 'Arrange follow-up' was less common, and only 20-40% of the primary care doctors practiced these three components.[12]

In Malaysia, there are few published studies that examined knowledge, self-efficacy, barriers and actual practice of SCI of

doctors. There is one study conducted among junior doctors which found that 90% of the junior doctors regularly asked about the smoking status of their patients, but only 52% of them advised their patients to quit smoking.[13] The junior doctors were found to have insufficient knowledge and lack of confidence in assisting patients to quit smoking despite the fact that more than two-thirds of them had received training in smoking cessation during their medical school.[13] Therefore, there is a need to assess the SCI practice by healthcare providers especially primary care doctors. In this study, the SCI practice among primary care doctors who were working at public health clinics in Kuala Lumpur was assessed. The demography, clinical experience, barriers to practice SCI, knowledge on smoking and SCI, and self-efficacy in delivering SCI of doctors were also examined. Subsequently, the associations between SCI practice and these factors were determined. It is hoped that this study can provide a better picture on the SCI service and to recommend necessary steps in improving the service at primary care level.

MATERIALS AND METHODS
This was a cross-sectional study carried out from July to October 2016 at 12 public health clinics in Kuala Lumpur. During that time, these clinics were the only public health clinics that provided the Quit Smoking Clinic service. In total, there were 155 primary care doctors registered under these clinics who could provide SCI to their patients. However, only 140 doctors were available during the data collection period; fifteen doctors were on a long leave or attending courses or meetings.

Data collection was done on separate days for each clinic. Doctors who were available during the data collection day were approached and invited to participate in this study. Those who agreed and gave their consent were briefed about the study protocol and requested them to answer a set of self-administered questionnaires. Completed questionnaires were collected by the attending researcher on the same day. Doctors who were absent during the session were contacted individually and appointments were made according to the convenience of the doctors.

The questionnaire used in this study had five sections. Section A examined the socio-demographic characteristics and clinical experience of the respondents including their gender, age, smoking status, highest qualification, duration of employment and number of patients seen in a day. Section B contained 27 items that assessed their knowledge on smoking and SCI with "yes", "no" or "do not know" responses and three items were based on clinical scenarios with multiple-choice answers. The assessed domains of knowledge were risks of smoking (5 items), benefits of quitting (3 items), nicotine addiction (9 items), treatment (7 items), determining factors for smoking cessation (3 items) and 5A/5Rs approach (3 items). A score of one was given to any correct answer and zero for an incorrect answer or don't know response. Thus the total score ranged between 0 and 30. Section C had nine items that assessed SCI practices based on 5A/5Rs approach which included assessing status of smoking (1 item), encouraging patient to quit (1 item), assisting patient on how to quit (6 items) and arranging follow up (1 item). All responses were in the form of "yes", "no" or "don't know".

Score of one was given to correct practice and zero for incorrect practice, which were determined by a panel of experts in smoking cessation, which consisted of two Family Medicine Specialists, a Psychiatrist and a Pharmacist. The total score ranged between 0 and 9. Section D had five items which assessed the self-efficacy of respondents in practicing SCI in terms of having adequate knowledge and training, and being able to administer counselling, prescribe pharmacotherapy and conduct behavioural intervention. These items had three response options of: "confident" (score of 2), "neutral" (score of 1) and "not confident" (score of 0). The total score ranged between 0 and 10. Finally, section E assessed eight barriers for SCI practice that hindered them from practicing SCI. They were allowed to select more than one answer.

Generally, this questionnaire was developed based on clinical guidelines,[5-9] literature review,[10,14,15] and discussions with experts in smoking cessation. Section C (practice of SCI) was adapted and modified from Eldein et al., after being reviewed by the panel of experts.[14] Permission from the original author was obtained prior to the amendment. The original questionnaire contained eight items in which one item was removed and two new items were added to suit the local practice. In addition, five items were rephrased to improve its comprehensibility. The items for section D (self-efficacy domain) were developed based on the Health Belief Model.[15] The questions for barriers of SCI practice was developed based on a focus group discussion with six primary care doctors. The FGD explored barriers to practice of SCI. The final questionnaires we reviewed by the same panel of experts for content validity and tested on six primary care doctors for face validity.

Data was entered into IBM SPSS Statistics version 23. The dependent variable was categorised into good and poor SCI practice based on the responses in Section C. The respondents who correctly performed at least seven out of nine practices were considered to have good SCI practice because this was the minimum number of practices that the primary care doctors should deliver as determined by the panel of experts. Those who scored ≤6 were regarded as having poor SCI practice. Bivariate analysis using chi-square test, independent t-test and Mann-Whitney test when appropriate were carried out in order to identify factors associated with good SCI practice. Subsequently, all variables with p-value of <0.25 were included in multiple logistic regression analysis using the 'enter' method. Statistical significance was set at p<0.05.

RESULTS
Among 140 primary care doctors who were approached, 122 doctors provided their written consent, thus the response rate was 91.7%. The median (IQR) age of the doctors was 32.0 (7.0) years (Table I). Majority of them were female (82.8%) and does not have a specialist qualification (87.7%). The median (IQR) duration of employment was 15.0 (12.3) years and the longest duration of employment was 21 years. None of them were current smoker and only three were former smokers. On average, the respondents saw about 10 smokers (patients) in a day. More than two-thirds (69.7%) of them had previous training in SCI.

Table I: Associations between practice of smoking cessation interventions (SCI) and characteristics of the primary care doctors

Variable	Total	SCI Practice		χ^2 or Z or t statistic	p-value
		Good (n=52)	Poor (n= 70)		
Age (years) [median (IQR)]	32.0 (7.0)	32.5 (8.0)	31.0 (5.0)	-2.34a	0.019
Gender [n (%)]					
Male	21 (17.2)	11 (52.4)	10 (47.6)	0.99b	0.320
Female	101 (82.8)	41 (40.6)	60 (59.4)		
Duration of employment (years) [median (IQR)]	6.0 (4.0)	7.0 (5.0)	6.0 (4.0)	-2.31a	0.021
No of smoking patients seen in a day [median (IQR)]	10.0 (10.0)	10.0 (10.0)	10.0 (9.0)	-0.92a	0.359
Level of self-efficacy (score 0-10) [median (IQR)]	4.0 (3.0)	5.0 (4.0)	3.0 (4.0)	-3.71a	<0.001
Previous training in SCI [n (%)]					
Yes	85 (69.7)	43 (50.6)	42 (49.4)	7.271b	0.007
No	37 (30.3)	9 (24.3)	28 (75.7)		
Level of knowledge in SCI (score 0-30) [mean (SD)]	17.0 (3.3)	18.5 (3.3)	15.9 (2.8)	-4.69c	<0.001

aMan-Whitney test; bChi-square test; cIndependent t-test
Significant p-value <0.05

Table II: Associations between practice of smoking cessation interventions (SCI) and the primary care doctors' perception on barriers to practice SCI

Variable	SCI Practice				
	Total	Good (n=52)	Poor (n= 70)	χ^2	p-value
Insufficient time [n (%)]					
Yes	105 (86.1)	44 (41.9)	61 (58.1)	0.16	0.690
No	17 (13.9)	8 (47.1)	9 (52.9)		
Lack of skills in counselling in general [n (%)]					
Yes	58 (47.5)	18 (31.0)	40 (69.0)	6.07	0.014
No	64 (52.5)	30 (46.9)	34 (53.1)		
Lack of knowledge in smoking cessation intervention [n (%)]					
Yes	69 (56.6)	19 (27.5)	50 (72.5)	14.78	<0.001
No	53 (43.4)	33 (62.3)	20 (37.7)		
Fear that discussing smoking will adversely affect doctor-patient relationship [n (%)]					
Yes	7 (5.7)	4 (57.1)	3 (42.9)	0.64	0.424
No	115 (94.3)	48 (41.7)	67 (58.3)		
Limitation of availability of pharmacological agent/s for smoking cessation [n (%)]					
Yes	28 (23.0)	13 (46.4)	15 (53.6)	0.22	0.643
No	94 (77.0)	39 (41.5)	55 (58.5)		
Patients are not motivated to quit [n (%)]					
Yes	91 (74.6)	37 (40.7)	54 (59.3)	0.57	0.452
No	31 (25.4)	15 (48.4)	16 (51.6)		
Patients are unable to come for regular follow-ups for smoking cessation interventions [n (%)]					
Yes	83 (68.0)	37 (44.6)	46 (55.4)	0.41	0.524
No	39 (32.0)	15 (38.5)	24 (61.5)		
Patients are not compliant to treatment [n (%)]					
Yes	65 (53.3)	30 (46.2)	35 (53.8)	0.71	0.400
No	57 (46.7)	22 (38.6)	35 (61.4)		

Significant p-value <0.05

Table III: Multiple Logistic Regression showing important factors for good practice of smoking cessation interventions (SCI)

Variables	β	Wald (df)	Adjusted OR	95% CI	p-value
Age (year)	0.10	0.77 (1)	1.11	0.88-1.39	0.381
Duration of employment (year)	-0.15	1.09 (1)	0.86	0.65-1.14	0.297
Level of self-efficacy (score 0-10)	0.07	0.44 (1)	1.07	0.87-1.32	0.505
Received training in SCI (No training as reference)	-0.28	0.26 (1)	1.32	0.45-3.84	0.611
Perception of inadequate training (No perception as reference)	-0.07	0.02 (1)	0.93	0.31-2.75	0.896
Perception of inadequate knowledge (No perception as reference)	-0.62	1.20 (1)	0.54	0.18-1.62	0.273
Level of knowledge in SCI (score 0-30)	0.19	0.49 (1)	1.21	1.02-1.43	0.026

*Multiple Logistic Regression using Enter method, OR – Odds Ratio, 95%CI – 95% Confidence Interval, df – degree of freedom
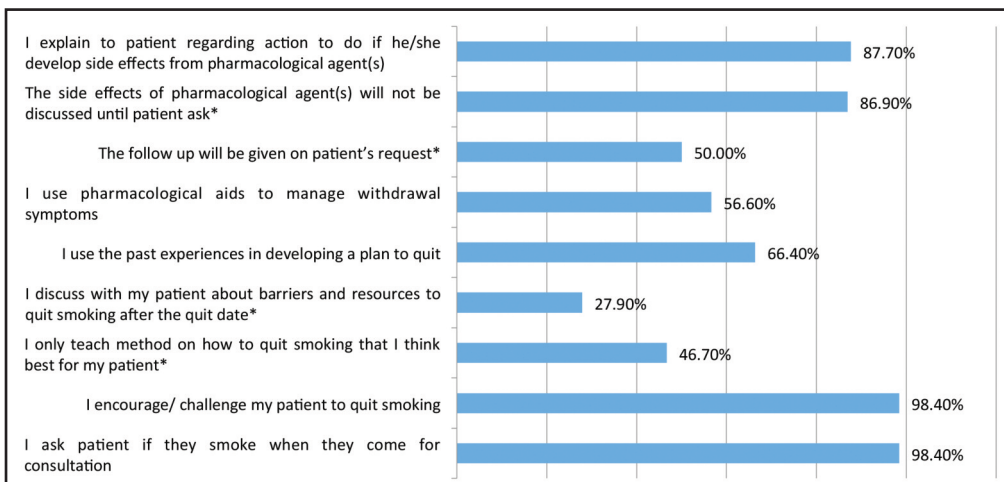
Fig. 1: Prevalence of correct smoking cessation interventions (SCI) practice by the primary care doctors
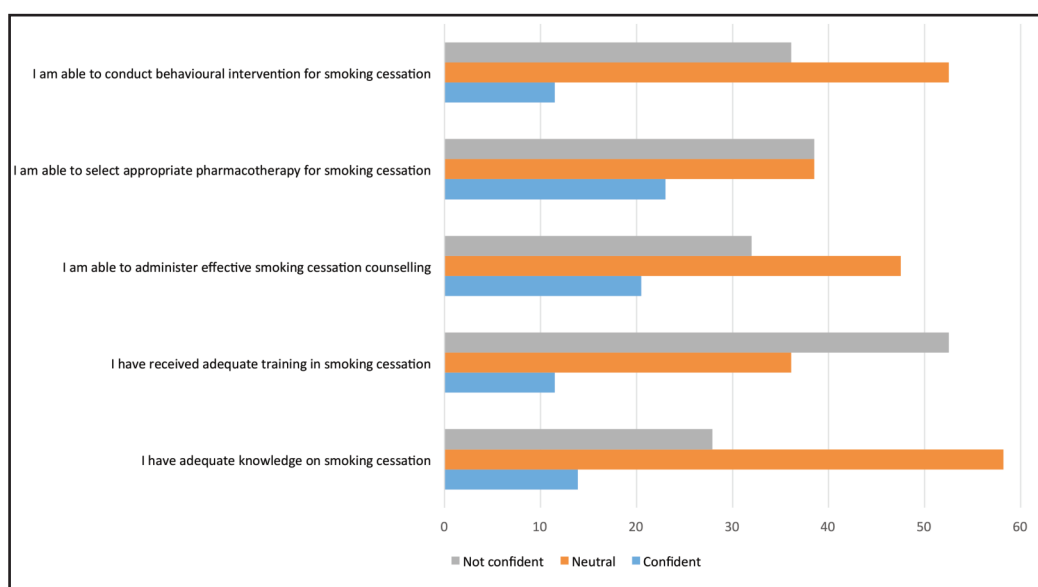*Negatively worded statement. Correct practice when participants answered 'No'

Fig. 2: Prevalence of correct smoking cessation interventions (SCI) practice by the primary care doctors
*Negatively worded statement. Correct practice when participants answered 'No'

Practice of SCI
Less than half (42.6%, 52/122) of the doctors correctly performed at least seven of the nine SCI and were classified as having good SCI practice. The commonest incorrect SCI practice was discussing about barriers and resources to quit smoking after the quit date (72.1%). About 53.3% of them only taught method on how to quit smoking that they believed to be the best for their patients. The third commonest incorrect SCI practice was giving follow up upon patient's request (50.0%). Despite these practices, almost all of them asked their patients' smoking status (98.4%) or advised smokers to quit (98.4%) (Figure 1). More than four-fifths explained regarding side effects of pharmacological agents before being asked by the patients (86.9%) and actions to be taken if they developed side effects (87.7%).

Barriers to practicing SCI
More than two-thirds of the respondents felt that their patients were not motivated to quit (74.6%) or unable to come for follow-up (68.0%) (Table II). About 86.1% respondents perceived that they did not have much time for counselling, 47.5% felt they had lack of skills and 56.6% felt they had inadequate knowledge in SCI which hindered them from practicing SCI.

Self-efficacy in practicing SCI
The median (IQR) score for self-efficacy was 4.0 (3.0) which is below the mid-point of five (Table I). Figure 2 shows that less than a quarter of them were confident to provide effective smoking cessation counselling (20.5%) and select appropriate pharmacotherapy (23.0%). Only a small

proportion of them were confident to conduct behavioural intervention (11.5%), felt that they had adequate training (11.5%) and adequate knowledge (13.9%) on smoking cessation

Factors associated with the good SCI practice
The univariate analysis (Table II) showed that increasing age (p=0.019), longer duration of employment (p=0.021), higher level of self-efficacy (p<0.001), previous training in SCI (p=0.007) and higher level of knowledge on smoking and SCI (p<0.001) were associated with good SCI practice. The two barriers that were significantly associated with poor SCI practice (Table II) were perception of having inadequate skills (p=0.014) and insufficient knowledge in SCI (p<0.001). When all these significant variables were subjected to multivariate logistic regression analysis (Table III), only level of knowledge was significantly associated with good SCI practice [adjusted OR (95%CI): 1.21 (1.02-1.43)].

DISCUSSION
In general, the findings of this study suggest that the SCI practice among the primary care doctors from Government health clinics in Kuala Lumpur was suboptimal which may hinder the success of the smoking cessation service provided by these clinics. Even though the level of practice expected from these doctors was set high by the experts, the standard set was completely justified due to their important roles in smoking cessation. Out of nine assessed SCI practices, the respondents were expected to practice at least seven to be recognised as having good SCI practice. Only 42.6% of the primary care doctors in this study were found to have good SCI practice. This prevalence was quite similar with a study in Makkah, Saudi Arabia which showed 47.3% of 262 primary care doctors had good SCI practice.[16] However, most similar studies did not categorise the practice into good and poor thus comparison of prevalence could not be made.[16-21]

Even though the SCI practiced by the respondents was mostly sub-standard, almost all of them asked about smoking status of their patients and advised smokers to quit. Similar pattern was also found in recent studies conducted in Italy and the United State of America (USA) where 98% of the doctors did so.[22,23] However, a lower prevalence of these practices (67-85%) was found in studies conducted in Canada and countries in the Middle-East.[16,18-20] Comparing with a bigger multi-centre study conducted in 2006 involving 23,836 primary care doctors from 16 countries across the world, about 80% of doctors asked their patients about cigarette smoking, whereas 85% of them provided quit smoking advice.[21] These findings indicate that many primary care doctors do use the first two of the '5As' approach, which are: 'Ask' about cigarette smoking and 'Advice' smokers to quit. However, other '5As' like 'Assess' smokers' willingness to quit, 'Assist' smokers to quit and 'Arrange' follow up were less commonly practiced. Similarly, in this study, the doctors incorrectly provided assistance for smokers to quit and arrangement for follow up. These findings are supported by a review involving 35 studies on smoking cessation counselling by primary care doctors.[12] Unfortunately, if the counselling just involves asking about smoking status and giving advice to quit, it may not be effective as shown in a matched case-

control study involving 3336 smokers in the USA.[24] Only smokers who received assistance to quit or arranged follow-up were significantly more likely to quit compared to others.[24] Therefore, the SCI practiced by the primary care doctors in this study may be considered as sub-standard because the proportion of doctors who correctly assisted their patients to quit smoking was low.

In this study, many doctors only taught methods on how to quit smoking that they believed to be the best for the patients. Even though it is common for doctors to use their expert judgement to recommend the best treatment based on situation, the patients should be provided with various treatment options. The patients may choose to use any treatment that suits them. This practice of shared-decision making reflects a patient-centred approach which could increase the smoking cessation rate.[25] In addition, the doctors in this study were found to be less proactive in dealing with their smoking patients. They admitted to only discuss about barriers and resources to quit smoking once their patients have set the quit date. This passive approach may make the smokers to be less prepared and have no plan to overcome barriers during their quitting process, hence impairing their success in quitting smoking.[26]

The sub-standard practice of SCI among our primary care doctors was in agreement with their low self-efficacy in performing SCI. Only small proportions of doctors had confidence to assist smokers to quit using effective counselling, pharmacotherapy and behavioural intervention. Many felt that their skills and knowledge in SCI were inadequate and this perception had hindered them from practicing SCI. However, confidence among American primary care doctors on their own ability to counsel patients to quit was quite astounding,[18] perhaps due to their training. Even though two-thirds of our doctors had previous training in SCI, only 11.5% felt their training was adequate. Thus, inadequate training could be the main barrier for SCI practice as shown by a study in Jordan.[20] Amer Nordin et al., highlighted that basic theoretical training received during medical school was inadequate to ensure doctors to practice SCI confidently.[13] However, as this study did not identify the types of training that many of them received, it is difficult to judge on the completeness of their training. There is a possibility that the training was merely theoretical and not a hands-on clinical training. In view of this point, effective clinical training is needed to improve their knowledge, skills and self-efficacy in delivering SCI as trained doctors were more likely to practice SCI and have higher success rate.[27] Furthermore, a higher level of knowledge is required as it was shown to be the most important factor for good SCI practice among the doctors in this study.

Strength and limitations of the study
To our knowledge, there is no similar study conducted in Malaysia. Thus, this study could be the first initiative towards improving the SCI practice among primary care doctors in Malaysia. Another strength of this study was the use of originally developed questionnaire with the adapted and modified practice section that suits our local situation based on local guidelines. There are few limitations. The assessed SCI practice was self-reported practice thus it was susceptible

to response bias. Although it is better to assess doctors' practice through reviewing their real clinical practice, most similar studies also used the self-reported data and this allows comparison of the findings between studies. Since the study was only conducted among primary care doctors working at public health clinics in urban area, the finding cannot be generalised to all health care providers in Malaysia.

CONCLUSION
The SCI practiced by the primary care doctors in this study was sub-standard; particularly in assisting patients to quit smoking and arranging follow up. The doctors were not confident in providing effective counselling, pharmacotherapy and behavioural intervention, most likely because they did not have adequate knowledge and skills despite many had received training in the past. Since higher levels of knowledge regarding smoking and interventions of smoking cessation could lead to good SCI practice, there is a need for effective clinical training to improve their knowledge and skills. It is hoped that such a training could increase their self-efficacy and SCI practice.

ETHICAL APPROVAL
This study was approved by the Research Ethics Committee of Universiti Kebangsaan Malaysia (FF-2016-117) and the National Medical Research Registry (NMRR-16-276- 29319). All respondents gave their informed consent prior to their participation in this study.

CONFLICT OF INTEREST
The authors of this study declare that there is no conflict of interest.

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