

# Quit rates at 6 months in a pharmacist-led smoking cessation service in Malaysia

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Supervising and managing smoking cessation clinics in both hospital and clinic settings since 2010 has provided us with opportunities to engage in research related to nicotine addiction. We wanted to take this chance to share our success in dealing with smoking cessation at one of the centres in Sabah, Malaysia.

*Depuis 2010, la supervision et la gestion des cliniques d'abandon du tabac à l'hôpital et en clinique nous ont donné la possibilité de participer à des recherches sur la dépendance à la nicotine. Nous tenions à profiter de l'occasion pour partager nos réussites en matière d'abandon du tabac dans l'un des centres situés à Sabah, en Malaisie.*

## ABSTRACT



**Background:** Smoking cessation clinics have been established in Malaysia since 2004, but wide variations in success rates have been observed. This study aimed to evaluate the proposed pharmacist-led Integrated Quit Smoking Service (IQSS) in Sabah, Malaysia, and identify factors associated with successful smoking cessation.

**Methods:** Data from 176 participants were collected from one of the quit-smoking centres in Sabah, Malaysia. Pharmacists, doctors and nurses were involved throughout the study. Any health care provider can refer patients for smoking cessation, and free pharmacotherapy and counselling was provided during the cessation period for up

to 3 months. Information on demographic characteristics, smoking behaviours, follow-up and pharmacotherapy were collected. The main outcome measure was the abstinence from smoking, which was verified through carbon monoxide in expired air during the 6-month follow-up.

**Results:** A 42.6% success rate was achieved in IQSS. Smoking behaviour such as lower cigarette intake and lower Fagerström score were identified as factors associated with success. On top of that, a longer duration of follow-up and more frequent visits were significantly associated with success in quitting smoking.

**Conclusion:** Collaboration among health care practitioners should be the main focus, and we need a combination of proven effective modalities in order to create an ideal smoking cessation module. *Can Pharm J (Ott)* 2016;149:303-312.

## Introduction

Tobacco use, in particular, cigarette smoking, is estimated to lead to 5 million premature deaths annually and is the major preventable cause of lung cancer and chronic obstructive pulmonary disease (COPD).<sup>1</sup> Globally, it has been estimated that there are more than 1 billion smokers, making this an important public health issue. The World Health Organization reports that tobacco kills 150 people every hour in the South East Asia region, and this prompted health ministers from 11 countries, including Malaysia, to sign a declaration pledging to accelerate “hard-hitting” measures to reduce tobacco use.<sup>2</sup> Malaysia is a

unique country in terms of its ethnic and religious composition, and so Western-based studies on smoking cessation might not be fully relevant there.<sup>3</sup>

In Malaysia, 39.9% of men, 0.7% of women and 20.9% of adults overall (4.3 million adults) currently smoke tobacco products such as cigarettes, cigars, pipes and shisha on a daily basis.<sup>4,5</sup> Annually, an estimated 10,000 Malaysian deaths are attributed to smoking-related diseases.<sup>6</sup> In an attempt to reduce consumption of tobacco products among Malaysians, antismoking campaigns such as “Tak Nak” (Say No) and provision of free smoking cessation services at government

## KNOWLEDGE INTO PRACTICE



- Pharmacists are effective at providing smoking cessation programs and contributing to patient quit rates.
- Pharmacist screening for chronic obstructive pulmonary disease and mental status during smoking cessation programs may detect early stages of disease for management by physicians.
- Knowledge of air-flow limitation and carbon monoxide levels may motivate smokers to quit and increase success rate and long-term cessation.
- Pharmacists can act as collaborators between physicians and patients in the management of smoking-related disease.
- Pharmacist-integrated smoking cessation can cultivate team building between nurses, physicians, pharmacists and other health care providers.

health clinics have been implemented.<sup>7</sup> However, a wide variation in success rates has been observed across quit-smoking services internationally. Using the United Kingdom as an example, 4-week biochemically verified quit rates ranged from 3% to 58%. Some of the variation will be due to differences in quit-smoking approaches adapted in different regions across the United Kingdom.<sup>1</sup>

Several studies in Malaysia found that the smoking cessation rate is greater than 10% and can reach as high as 40%, depending on the clinic setting and modality of the service used in assisting smokers to quit. Five clinics in an urban area involved in a study by Wee et al.<sup>3</sup> managed to achieve a 31.8% success rate using free nicotine-replacement therapy (NRT) and validated by 6-month carbon monoxide (CO) measurements. A study in 2 smoke-free universities with free NRT for 8 weeks and CO measurements confirmed 6-month abstinence rates of 13%,<sup>8</sup> while an observational study involved 8 clinics across different states in Malaysia reported 17.3% abstinence rates after a 6-month follow-up. Ezat et al.<sup>9</sup> used self-report as the main criteria to determine success and later verified with a CO analyzer. Comparisons between self-reported success and CO analyzer-verified abstinence resulted in success rates dropping from 17.3% to 15.3%. This shows the importance of an appropriate approach used to manage nicotine addiction and provides biochemical verification as a motivation for smokers to quit for healthy lungs. According to a meta-analysis

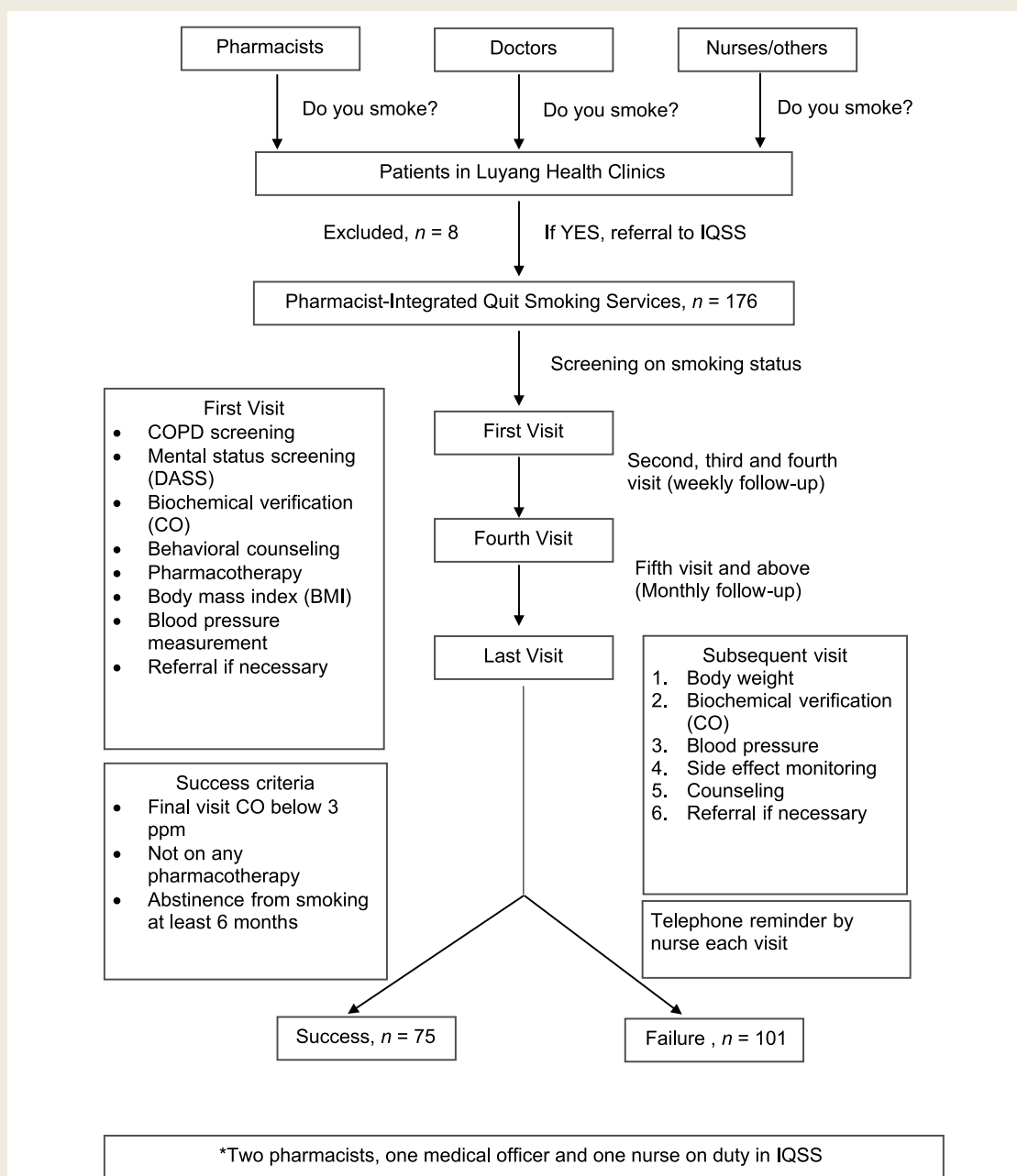
by Kottke et al.,<sup>10</sup> the most effective modality involves both physicians and nonphysicians in individualized face-to-face efforts and provides the motivational message on multiple occasions over the longest possible time. Numerous studies have addressed different approaches in order to enhance success rate, such as using biochemical verification of CO in expired air and screening air-flow limitation with a hand-held spirometer. Monitoring outcomes with CO devices is cheap and provides a better measurement of success rate than self-reports.<sup>11</sup> Górecka et al.<sup>12,13</sup> concluded that smokers, irrespective of their lung function, tried to modify their habit as the result of screening for COPD combined with smoking cessation advice. Another cross-sectional survey of smoking and mental illness by Lawrence et al.<sup>14</sup> found that mental illness is associated with both higher rates of smoking and a higher number of cigarette use among smokers. Thus, screening mental health status is a crucial part of any quit-smoking program.<sup>15</sup>

Although a considerable amount of research has been devoted to success in quitting smoking, rather less attention has been paid to combining different approaches to develop an ideal quit-smoking program to further enhance the success rate. The aim of this article is to evaluate the proposed integrated quit-smoking module and identify factors associated with success in smoking cessation. In this study, we used the Bedfont smokerlyzer<sup>16</sup> to measure CO level, hand-held spirometer Vitalograph COPD-6<sup>17</sup> to measure airflow limitation and the Depression, Anxiety and Stress Scale (DASS)<sup>18</sup> questionnaire to screen smokers' mental health status. Identifying factors associated with successful quitting might help to improve smoking cessation programs and the necessary interventions in Malaysia.

## Methods

### *Study design*

In an effort to evaluate the effectiveness of our Integrating Quit Smoking Service (IQSS), we collected 2 years of data from a primary care centre in Kota Kinabalu, Sabah, Malaysia. Data were collected between August 2010 and August 2012. This study was conducted in the largest quit-smoking centre in Sabah, Malaysia. All registered patients aged 18 and older during this period of time were recruited in the study. However, smokers who used tobacco preparations

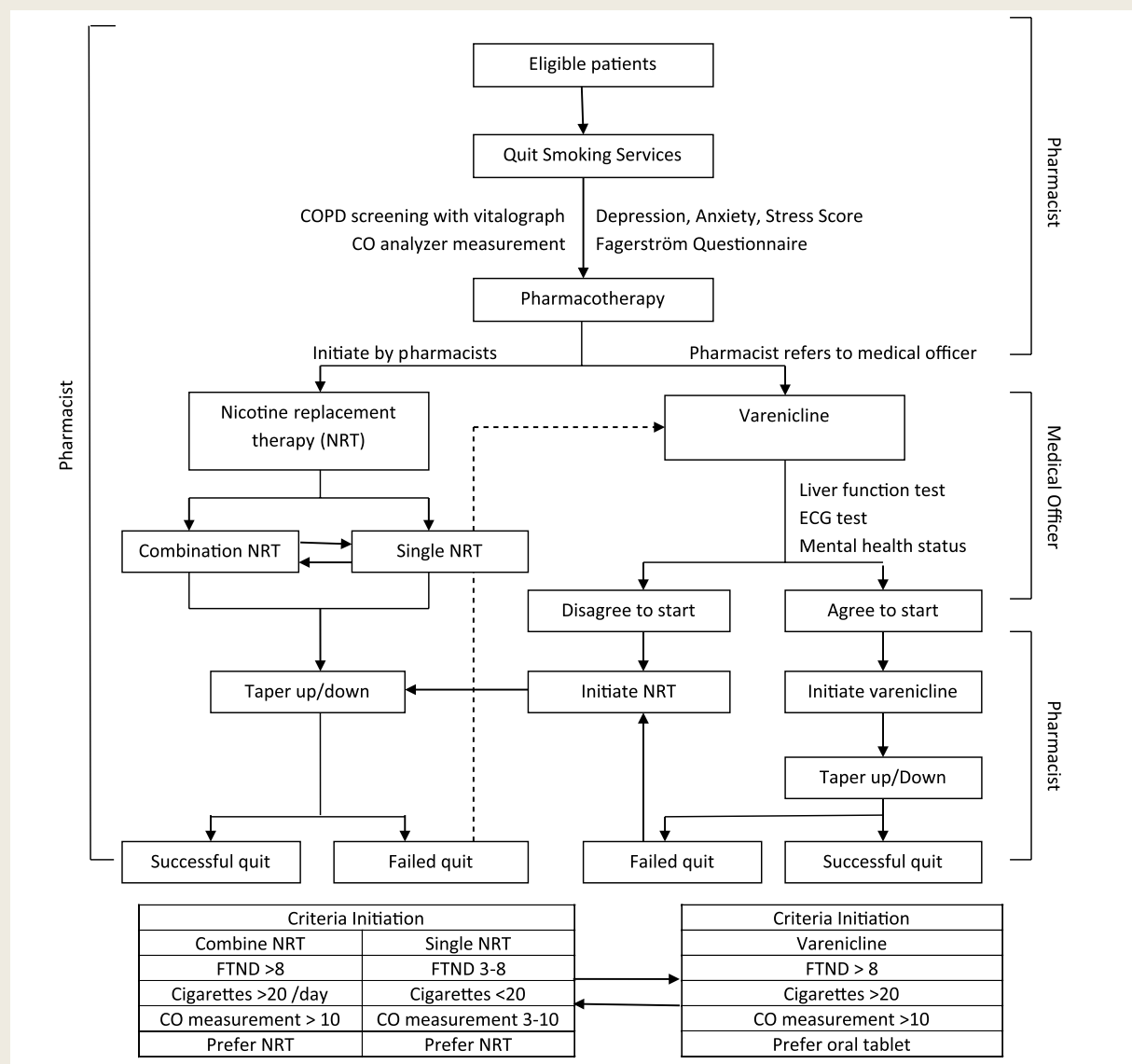
**FIGURE 1** Flow process of Pharmacist-Integrated Quit Smoking Services (IQSS) module

other than cigarettes, those who were pregnant or those who transferred out were excluded from our study.

#### Procedure

The procedure involved in this study is shown in Figure 1. Three groups of health care providers are involved in this IQSS—prescribers, a nurse and pharmacists. For pharmacists to run this clinic, they must first pass the “Certified Smoking Cessation Service Provider” test

in order to qualify as a quit-smoking service provider. Smokers who joined IQSS were those referred by any of the health care providers and screened by pharmacists before being registered as participants in the quit-smoking service. During the first visit, participants underwent Vitalograph COPD-6 screening for COPD to detect airflow limitation. The cutoff point for positive COPD was  $FEV_1/FEV_6 < 0.75$ . All participants with positive airflow limitation were referred to the medical officer for further examination. In

**FIGURE 2** Protocol pharmacotherapy initiation in pharmacist-led quit smoking service

\*NRT and varenicline are free of charge for patients registered with Integrated Quit Smoking Service.

addition, the DASS questionnaire was carried out to evaluate participants' mental health status before initiating any type of pharmacotherapy. On top of that, biochemical verification with a CO analyzer was performed on every single visit until the patient succeeded or was discharged. Participants also completed the Fagerström test for nicotine dependence (FTND) questionnaire in order to evaluate their level of addiction.<sup>19</sup>

#### Pharmacotherapy initiation

In our IQSS setting, pharmacists decide the initial treatment to assist participants in quitting smoking (Figure 2). Pharmacotherapy is provided free of charge to all participants who join

our quit-smoking service. NRT can be prescribed by a pharmacist, whereas to start with varenicline, patients need to be referred to a physician for further assessment before the pharmacist is allowed to dispense to the patient. NRT available included chewing gum 2 mg and 4 mg, inhaler 10 mg and patch 5 mg, 10 mg, and 15 mg. Available dosages of varenicline included a 2-week starter pack (0.5 mg and 1 mg) and a 4-week maintenance pack (1 mg). Dose adjustment of the pharmacotherapy is performed by pharmacist at each follow-up according to patient withdrawal symptoms and CO level. The treatments at the clinic followed the evidence-based recommendations set forth by the Malaysian clinical practice

guidelines and required smokers to come for weekly follow-up in the first 4 weeks, followed by monthly follow-ups.

## Results

Among the 176 participants in the IQSS, most were male, married, employed and had at least 1 concurrent illness. The mean age at which participants starting smoking was 18 years, which is the legal age to purchase cigarettes in Malaysia. In addition, participants smoked about 20 cigarettes a day (cigarettes are sold in packs of 20 in Malaysia). Almost 80% of the participants had attempted to quit at least once before joining IQSS. Their mean smoking period was 26 years. Most of the participants were followed up at least 6 times, and the mean duration of follow-up was about 21 weeks (5 months). A 42.6% CO-verified success rate was achieved in IQSS (Table 1).

Sociodemographic characteristics showed no difference between the success and fail groups (Table 2). Successful participants smoked a significantly fewer number of cigarettes/day, had a lower FTND score, a longer duration of follow-up and a higher frequency of follow-up than the failing group (Table 3). The pharmacotherapy used most by participants was NRT, such as chewing gum alone ( $n = 49$ ), nicotine patch alone ( $n = 11$ ), nicotine inhaler alone ( $n = 21$ ) and combination NRT ( $n = 64$ ). Fewer than 20% of smokers were prescribed nonnicotine replacement therapy (varenicline).

## Discussion

Our pharmacist-led quit-smoking service IQSS module managed to achieve a higher success rate compared with other quit-smoking modules in Malaysia. Studies by Wee et al.<sup>3</sup> and Yasin et al.<sup>8</sup> showed success rates of about 31.8% and 13%, respectively. This specific module targeted nicotine addiction and offered behavioural counselling, with additional monitoring and screening with a CO analyzer plus hand-held Vitalograph COPD-6. We also screened participants' mental health status using the DASS questionnaire. Numerous studies have shown that biochemical verification of smokers using a CO analyzer may increase the success rate compared with self-reported success rates.<sup>20</sup> With the CO analyzer, participants can see their smoking status on every visit, and the decreasing levels of CO analyzer readings provide extra motivation for participants to continue smoking cessation.

## MISE EN PRATIQUE DES CONNAISSANCES



- Les pharmaciens sont des prestataires efficaces de programmes d'abandon du tabac et ils contribuent aux taux d'abandon des patients.
- Le dépistage de la maladie pulmonaire obstructive chronique et l'évaluation de l'état mental par le pharmacien au cours des programmes anti-tabac permet parfois de détecter des maladies au stade précoce devant être traitées par le médecin.
- La prise de conscience de la limitation du débit d'air et des concentrations de monoxyde de carbone peut motiver les fumeurs à arrêter et améliorer les taux de réussite et l'abandon à long terme.
- Le pharmacien peut jouer un rôle d'intermédiaire entre le médecin et le patient dans la prise en charge des maladies liées au tabagisme.
- L'intégration du pharmacien dans le processus d'abandon du tabac peut favoriser le travail d'équipe entre le personnel infirmier, les médecins, les pharmaciens et les autres professionnels de la santé.

According to our findings, weekly follow-up in the first 4 weeks of quitting and then monthly follow-up subsequently leads to high cessation rates. The rationale behind this approach is that the first 4 weeks of quitting is the most challenging period, as smokers usually experience the greatest symptoms of withdrawal then. This finding is supported by Malaysia<sup>21</sup> and Singapore clinical practice guidelines.<sup>22</sup> In the first week of quitting, smokers tend to develop a lot of unwanted withdrawal symptoms that may be directly due to depreciation of nicotine levels in the dopamine receptor. Common withdrawal symptoms due to nicotine deprivation include sleep disturbance, increased appetite, respiratory symptoms, severe cravings and emotional disturbance.<sup>23</sup> These symptoms may last for a month or more, depending on the individual. However, pharmacotherapy treatment such as NRT and nonnicotine replacement therapy may help ease or reduce the severity of the withdrawal symptoms. Pharmacists in IQSS tailor nicotine doses according to participant needs and also based on breath CO levels, which leads to fewer cravings and relapses within the first month. According to a randomized trial with 6987 smokers, pharmacist counselling plus NRT provided a greater success rate than the control group without NRT.<sup>24</sup> The pharmacist-led quit-smoking approach not only provided sophisticated pharmacotherapy counselling on NRT but also targeted patient health problems caused by chronic smoking, which eventually led to higher success rates.<sup>25-27</sup>

**TABLE 1** Sociodemographic characteristics of smokers registered at the IQSS of Luyang Health Clinic ( $n = 176$ )

Characteristic	<i>n</i>	%	Mean (SD)
Gender			—
Male	162	92	
Female	14	8	
Age (years)			43 (13.9)
18-30	38	21.6	
31-40	34	19.3	
41-50	53	30.1	
51-60	30	17.1	
>61	21	11.9	
Ethnicity			—
Sabah native	95	54	
Chinese	66	37.5	
Malay	9	5.1	
Others	6	3.4	
Marital status			—
Married	132	75	
Single	44	25	
Occupation			—
Employed	139	79	
Nonemployed	37	21	
Concurrent illness			—
With concurrent illness	106	60.2	
Without concurrent illness	70	39.8	
Age at smoking start	—	—	18 (13)
Previous quit attempts			—
≥1	140	79.5	
0	36	20.5	
FTND score	—	—	5.43 (2.7)
Ranking FTND			—
Low-medium (0-5)	130	73.9	
High-very high (6-10)	46	26.1	
Number of cigarettes smoked per day	—	—	19.57 (13.1)

(continued)

TABLE 1 (continued)

Characteristic	<i>n</i>	%	Mean (SD)
Duration of follow-up	—	—	20.53 (14.09)
Frequency of follow-up	—	—	6.16 (3.09)
Smoking duration (years)	—	—	26 (13.2)
Outcome			—
Success in quitting	75	42.6	
Failure to quit	101	57.4	

IQSS, Integrated Quit Smoking Service; FTND, Fagerström test for nicotine dependence.

TABLE 2 Association between characteristics of smokers and outcome analysis

Variable	Success group (%)	Failed group (%)	<i>p</i> value
Gender			
Male	68 (38.6)	94 (53.4)	0.560
Female	7 (4.0)	7 (4.0)	
Ethnicity			
Sabah natives	46 (26.1)	49 (27.8)	0.092
Others	29(16.5)	52 (29.5)	
Occupation			
Employed	56 (31.8)	83 (47.2)	0.227
Unemployed	19 (10.8)	18 (10.2)	
Marital status			
Single	17 (9.7)	27 (15.3)	0.538
Married	58 (33.0)	74 (42)	
Previous quit attempt			
≥1	58 (33.0)	82 (46.6)	0.531
0	17 (9.7)	19 (10.8)	
Ranking of FTND score			
Low-medium (0-5)	61 (34.7)	69 (39.2)	0.052
High-very high (6-10)	14 (8.0)	32 (18.1)	
Concurrent illness			
With concurrent illness	43 (24.4)	63 (35.8)	0.499
Without concurrent illness	32 (18.1)	38 (21.6)	

FTND, Fagerström test for nicotine dependence.



**TABLE 3** Comparison of age, number of cigarettes, smoking duration, FTND score and follow-up between the success and fail groups

Group (n)	Mean (SD)	Mean differences (95% CI)	t-stat (df)	p value
Age (years)				
Success (75)	43.76 (14.5)	0.393 (−3.793, 4.580)	0.186 (174)	0.402
Fail (101)	43.37 (13.5)			
Age when started smoking (years)				
Success (75)	18.6 (5.347)	0.818 (−0.730, 2.365)	1.043 (174)	0.298
Fail (101)	17.78 (4.987)			
No. of cigarettes/day				
Success (75)	17.21 (9.849)	−4.113 (−8.018, −0.208)	−2.079 (174)	0.039
Fail (101)	21.33 (14.879)			
Years of smoking				
Success (75)	25.80 (13.875)	0.354 (−3.264, 4.333)	0.176 (174)	0.861
Fail (101)	25.45 (12.724)			
FTND score ranking				
Success (75)	4.93 (2.527)	−0.859 (−1.654, −0.064)	−2.132 (174)	0.034
Fail (101)	5.79 (2.725)			
Frequency of follow-up				
Success (75)	7.73 (2.479)	2.733 (1.918, 3.548)	6.621 (171.844)	<0.001
Fail (101)	5.00 (2.990)			
Duration of follow-up (weeks)				
Success (75)	32.33 (9.136)	20.779 (17.893, 23.664)	14.231 (174)	<0.001
Fail (101)	11.55 (9.914)			

FTND, Fagerström test for nicotine dependence.

Integration of quit-smoking clinics and primary care clinics could be another potential step for the success of quit-smoking programs.<sup>28</sup>

One limitation of this study is that we did not report the measurement of the CO levels, airflow limitation or DASS scores but rather focused on smoking behaviour characteristics, based on FTND score and ranking. Without these data, we cannot be certain whether the combined modality will actually increase the success rate or vice versa. Our findings may not be generalizable to other smoking cessation clinics because of our small sample size, short follow-up time and the fact that our study enrolled participants from a single

primary health centre. Notwithstanding its limitation, this study does suggest including screening of airflow, mental health status and biochemical verification in order to enhance success rate.

## Conclusion

We conclude that the pharmacist-led IQSS module managed to achieve a higher success rate compared with other quit-smoking modules in Malaysia—collaboration between health care providers is essential to its success. Pharmacists involved in delivering smoking cessation services should focus on methods to increase the frequency and duration of follow-up. ■



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**Author Contributions:** S. C. Fai initiated the study. G. K. Yen wrote the protocols and managed the literature searches. Statistical analysis was done by S. C. Fai and N. Malik, with the assistance from the Clinical Research Centre, Kota Kinabalu, Sabah. S. C. Fai wrote the first draft of manuscript, and it was edited and revised by G. K. Yen and N. Malik. All contributed to and have approved the final manuscript.

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## References

1. Brose LS, West R, McDermott MS, et al. What makes for an effective stop-smoking service? *Thorax* 2011;924-6.
2. Bagcchi S. Eleven Asian countries pledge tougher action on tobacco. *BMJ* 2015;351:h4896.
3. Wee LH, Shahab L, Bulgiba A, West R. Stop smoking clinics in Malaysia: characteristics of attendees and predictors of success. *Addict Behav* 2011;36(4):400-3.
4. Omar A, Yusoff MF, Tee GH, et al. Methodology of Global Adult Tobacco Survey (GATS), Malaysia, 2011. *Int J Pub Health Res* 2013;3(2):297-305.
5. Lim HK, Ghazali SM, Kee CC, et al. Epidemiology of smoking among Malaysian adult males: prevalence and associated factors. *BMC Pub Health* 2013;13(1):1.
6. ITC Project. *ITC Malaysia national report: findings from wave 1 to 4 surveys (2005–2009)*. Waterloo (Ontario): University of Waterloo; Universiti Sains Malaysia, Pulau Pinang, Malaysia; and Ministry of Health, Putrajaya, Malaysia; March 2012. Available: [www.itcproject.org/files/Malaysia\\_Project\\_Report\\_Mar102012-FINAL-web.pdf](http://www.itcproject.org/files/Malaysia_Project_Report_Mar102012-FINAL-web.pdf) (accessed Jul. 12, 2016).
7. Lee MY, Tam CL. Smoking and burden of ill health: a review of the Malaysian context. *Int J Coll Res Int Med Pub Health* 2014;6(7):190-8.
8. Yasin SM, Retneswari M, Moy FM, et al. Predictors of sustained six months quitting success: efforts of smoking cessation in low intensity smoke-free workplaces. *Ann Acad Med Singapore* 2013;42(8):401-7.
9. Ezat WS, Selahuddeen AA, Aljunid SM, Zariah Z. Patterns and predictors of smoking cessation among smokers attending smoking cessation clinics in Peninsular Malaysia. *J Kesihatan Masyarakat* 2008;14(1):17-23.
10. Kotke TE, Battista RN, DeFries GH, Brekke ML. Attributes of successful smoking cessation interventions in medical practice: a meta-analysis of 39 controlled trials. *JAMA* 1988;259(19):2882-9.
11. Ferguson J, Bauld L, Chesterman J, Judge K. The English smoking treatment services: one-year outcomes. *Addiction* 2005;100(s2):59-69.
12. Górecka D, Bednarek M, Nowinski A, et al. Diagnosis of airflow limitation combined with smoking cessation advice increases stop-smoking rate. *Chest* 2003;123:1916-23.
13. Górecka DM, Bednarek M, Puscinska E, et al. Smoking cessation in COPD patients with newly diagnosed airflow limitation: a real life approach. *Chest* 2003;124:230S-b.
14. Lawrence D, Mitrou F, Zubrick SR. Smoking and mental illness: results from population surveys in Australia and the United States. *BMC Pub Health* 2009;9(1):1.
15. Mykletun A, Overland S, Aarø LE, et al. Smoking in relation to anxiety and depression: evidence from a large population survey: the HUNT study. *Eur Psychiatry* 2008;23(2):77-84.
16. MacLaren DJ, Conigrave KM, Robertson JA, et al. Using breath carbon monoxide to validate self-reported tobacco smoking in remote Australian Indigenous communities. *Popul Health Metr* 2010;8:2.
17. Sui CF, Ming LC, Neoh CF, Ibrahim B. VitalQPlus: a potential screening tool for early diagnosis of COPD. *Int J Chron Obstruct Pulmon Dis* 2015;10:1613.
18. Crawford JR, Henry JD. The Depression Anxiety Stress Scales (DASS): normative data and latent structure in a large non-clinical sample. *Br J Clin Psychol* 2003;42(part 2):111-31.
19. Heatherton TF, Kozlowski LT, Frecker RC, Fagerström KO. The Fagerström test for nicotine dependence: a revision of the Fagerström Tolerance Questionnaire. *Br J Addict* 1991;86(9):1119-27.
20. Wee LH, West R, Mariapun J, et al. Should the threshold for expired-air carbon monoxide concentration as a means of verifying self-reported smoking abstinence be reduced in clinical treatment programmes? Evidence from a Malaysian smokers' clinic. *Addict Behav* 2015;47:74-9.
21. Mahayiddin HA, Mazlan M, Bakar SA. *Clinical practice guidelines on treatment of tobacco use and dependence 2003*. Putrajaya (Malaysia): Ministry of Health Malaysia; 2003.
22. Smoking Cessation: *Clinical practice guidelines*. Singapore: Ministry of Health; 2002.

23. Breslau N, Kilbey MM, Andreski P. Nicotine withdrawal symptoms and psychiatric disorders: findings from an epidemiologic study of young adults. *Am J Psychiatry* 1992;149(4):464.
24. Costello MJ, Sproule B, Victor JC, et al. Effectiveness of pharmacist counseling combined with nicotine replacement therapy: a pragmatic randomized trial with 6,987 smokers. *Cancer Causes Control* 2011;22(2):167-80.
25. Hudmon KS, Hemberger KK, Corelli RL, et al. The pharmacist's role in smoking cessation counseling: perceptions of users of nonprescription nicotine replacement therapy. *J Am Pharm Assoc* 2003;43(5):573-82.
26. Dent LA, Harris KJ, Noonan CW. Randomized trial assessing the effectiveness of a pharmacist-delivered program for smoking cessation. *Ann Pharmacother* 2009;43(2):194-201.
27. Halapy H, MacCallum L. A pharmacist-run smoking cessation program. *Can J Diabetes* 2006;30(4):406-10.
28. Su TT, Sallehuddin BA, Murniati HH, et al. Factors associated with success or failure of quit attempts: a clinical approach for lung cancer prevention. *Asian Pac J Cancer Prev* 2012;13(1):175-9.