ASM Sc. J., 13, Special Issue 5, 2020 for APRU2018, 51-59

What Predicts Smoking Cessation Intervention Among Healthcare Providers in Malaysia? The Importance of Attitude and Self-efficacy Characteristics

Siti Idayu Hasan[1,3*], Farizah Mohd Hairi [1,3,4] and Amer Siddiq Amer Nordin[1,2]

[1]*Department of Social & Preventive Medicine, Faculty of Medicine, University of Malaya, Lembah Pantai, 50603 Kuala Lumpur, Malaysia*

[2]*Department of Psychological Medicine, Faculty of Medicine, University of Malaya, Lembah Pantai, 50603 Kuala Lumpur, Malaysia*

[3]*Nicotine Addiction Research Group, University of Malaya Centre of Addiction Sciences, Level 21, Wisma R & D University of Malaya, Jalan Pantai Baharu, 59100 Kuala Lumpur, Malaysia*

[4]*Centre for Epidemiology and Evidence-based Practice, Department of Social & Preventive Medicine, Faculty of Medicine, University of Malaya, Lembah Pantai, 50603 Kuala Lumpur, Malaysia*

To determine the predictors for smoking cessation intervention behaviour among healthcare providers in Malaysia. A cross-sectional survey was conducted in Malaysia among 1004 healthcare providers from January until December 2016. A validated self-administered questionnaire, ProSCiTE, assessed individual factors, smoking cessation factors, cognitive and behavioural factors as well as behaviour on smoking cessation intervention, was distributed to the participants. Descriptive statistics were determined for all the variables and hierarchical multiple regression to examine the predictors for practice behaviour. Among 1004 invited healthcare providers, 934 completed the survey, yielding a 93.0% response rate. The majority of healthcare providers were female (61.8%). Smoking status (AOR = 2.17, 95% CI: 1.01 – 4.64), training in smoking cessation (AOR = 2.23, 95% CI: 1.66 – 3.17), attitude towards smoking cessation intervention (AOR = 1.67, 95% CI: 1.20 - 2.32) and self-efficacy (AOR = 5.61, 95% CI: 1.2 – 2.32) are the predictors which contributed to behaviour of smoking cessation intervention. The main significant factors for intervention behaviour were self-efficacy, training in smoking cessation, attitude towards smoking cessation intervention and smoking status. These findings provided local evidence, which supported our suggestion in emphasising on a skill-building approach among healthcare providers' education.

Keywords: smoking cessation; training; knowledge; attitude; self-efficacy; behaviour; healthcare providers

I. INTRODUCTION

Tobacco use is one of the leading, preventable causes of death and disease globally. Approximately six million people die from tobacco-related diseases every year and these cause one in 10 deaths among adults worldwide. More than 600,000 people die each year from exposure to second-hand smoke and it is estimated that by 2030, the annual death could rise to eight million (WHO, 2015). The 2014 report of the Surgeon General on ''The Health Consequence of Smoking – 50 Years of Progress'' concluded that smoking can cause cancer, respiratory disease, cardiovascular

*Corresponding author's e-mail: ayu_umcas@um.edu.my

disease, reproductive disease, dental disease, inflammatory bowel disease, diabetes and autoimmune disease (U.S. Department of Health and Human Services *et al.*, 2014). The current prevalence of tobacco use reported by the Global Adult Tobacco Survey (GATS) Malaysia 2015 was 22.8% which accounts for 4,991,458 Malaysian population aged 15 years and older as current smokers of tobacco. Out of this population, 43.0% (4.85 million) of them were men and 1.4% (143,566) of them were women (IPH, 2015). This current trend showed a decreasing proportion of smokers among the overall population (23.1%) and male (43.9%) compared to 2011. However, the proportion of female smokers is alarming high compared to 2011 (1.0%) (IPH, 2011). It is, therefore, very important to put effective measures to prevent people from smoking and treat smokers to reduce smoking-related morbidity and mortality in Malaysia.

In 2005, the World Health Organization-Framework Convention on Tobacco Control (WHO-FCTC) promoted several policies to tackle the tobacco epidemic, including Article 14, which directs countries to implement smoking cessation services and calls on healthcare providers and organisations to promote smoking cessation and offer support to tobacco users (WHO, 2005). The Malaysian Government signed the WHO-FCTC on 23 November 2003, and it was ratified and enforced on 16 September 2005. All the Contracting Parties are legally bound by the treaty's provision (WHO, 2019). Malaysian Government recommended healthcare providers to use evidence-based treatment of the Clinical Practice Guideline for Treatment of Tobacco Use Disorder to ensure higher quit smoking rates (MoH, 2016). The original and updated U.S smoking cessation clinical guideline also showed the brief 5A's model (Ask, Advice, Assess, Assist and Arrange) for smoking cessation intervention had been effective in both research and clinical practice (Siu, 2015, Fiore *et al.*, 2008).

Cochrane review among fifty trials showed that effective programs to stop smoking include counselling with follow-up support among hospitalised patients reported that between 60% and 70% of patients attempt to quit (Zack, 2002). This finding showed a similar trend among the population in Malaysia where the number of smokers who want to quit increased from nearly half (48.6%) in 2011 (IPH, 2011) to slightly more than half (52.3%) in 2015 (IPH, 2015). The magnitude of the overall quit ratio also showed an increasing trend in the United States population from 50.8% in 2005 to 59.0% in 2016 (Jamal A, 2018). This evidence showed that hospitals or clinics are important facilitating factors that provide treatment and support services for smokers. Healthcare providers play an important role in tobacco control and it showed that behavioural support by healthcare providers is likely to increase the chance of patients to quit smoking by about 10%-25% (Stead *et al.*, 2013). Thus, both the healthcare system and providers need to be equipped well to support the promotion and provision of smoking cessation intervention.

Previous research showed that smoking cessation intervention behaviour among healthcare providers could be affected by many factors including individual, smoking cessation, cognitive (knowledge and attitude) and behavioural factor (Smit *et al.*, 2011, Smit *et al.*, 2013) as well as organisational factors (Slattery *et al.*, 2016, Wye *et al.*, 2017, Thomas *et al.*, 2017). Evidence showed that positive attitude and higher self-efficacy associated with the intention to implement a smoking cessation program in practice (Puffer and Rashidian, 2004, Helmink *et al.*, 2012). However, there is little evidence to show how all these factors affect the smoking cessation intervention based on the 5A's brief model.

The independent associations of cognitive (knowledge and attitude) and behavioural factors with smoking cessation intervention as well as individual factors need to be explored in large, population-based samples of healthcare providers. Our primary purpose was to assess the predictors for smoking cessation intervention according to the 5A's brief model by cognitive and behavioural factors when further controlled for individual and smoking cessation factors.

II. MATERIALS AND METHOD

Healthcare providers (doctors, nurses, medical assistants and pharmacists) who enrolled in a smoking cessation training course were approached to participate in the present cross-sectional study. This training was an eight-hour course designed by the Nicotine Addiction Research Group, University of Malaya Centre of Addiction Sciences (UMCAS) for healthcare providers who work in public and private healthcare organisations. Convenience sampling technique was used, and recruitment was conducted through the course registration process immediately before starting the training. One thousand and four healthcare providers completed the paper-and-pencil questionnaire between January to December 2016. Seventy of the respondents returned the

incomplete questionnaire. Therefore, 934 participants (93.0%) completed the questionnaire.

A. Survey

A newly designed evaluation tool for smoking cessation training, Providers Smoking Cessation Training Evaluation (ProSCiTE) (Hasan *et al.*, 2018) was used to assess the demographic background, knowledge, attitude, self-efficacy, behaviour and barriers on smoking cessation intervention. Demographic characteristics assessed included age, gender, education level, working experience, smoking status and type of profession. Knowledge of smoking cessation withdrawal symptoms was assessed with 12 items with "Yes" or "No" responses. Knowledge on health effects of smoking was assessed with 20 items rated by a five-point Likert scale ranging from ''not agree at all" to ''absolutely agree". Attitude on smoking cessation intervention was assessed with eight items rated by a five-point Likert scale ranging from ''not agree at all" to ''absolutely agree". Self-efficacy on smoking cessation intervention was assessed with 13 items by five-point Likert scale ranging from ''not agree at all" to ''absolutely agree". Smoking cessation intervention behaviour was assessed with 19 items rated by a five-point Likert scale "never" to "always". Barrier on smoking cessation intervention was assessed with 15 items rated by four Likert scale ranging from "not a barrier to "Extreme barrier" (Hasan *et al.*, 2018).

Construct validity based on eigenvalues and factor loadings to confirm the factor structure (knowledge, attitude, self-efficacy, behaviour and barriers) was acceptable at 0.5 and above. (MacCallum, 1999) The internal consistency reliability of factor construct was excellent for knowledge (α = 0.90), self- efficacy (α = 0.94) and practice behaviour (0.96) and good for attitude (0.89) and barriers (0.90). Scores for the knowledge, attitude, self-efficacy, intervention behaviour and barrier were later dichotomised as the '' below mean score" versus '' mean score and above".

B. Study Procedure

After explaining the study objectives and handling over the explanatory statements, the participants signed the Informed Consent Forms. The researchers distributed the ProSCiTE Tool among the healthcare providers and collected the tool upon completion. Approximately 15 – 30 minutes was necessary to complete the questionnaire.

C. Ethical approval

This study was approved by the Ministry of Health Malaysia (Reference number: NMRR-16-2144-32353 (IIR)) and Medical Ethics Committee University of Malaya (Reference number: UM.TNC2/RC/H&E/UMREC-118).

D. Statistical analysis

Descriptive statistics were calculated for all study variables. Chi-square analysis was used to compare healthcare intervention behaviour by healthcare providers factors (sex, age, education level, smoking status, years of working experience, type of professional groups and previous smoking cessation training), cognitive and behaviour factors (knowledge, attitude and self-efficacy) and barriers for smoking cessation intervention. The results were presented as numbers and percentages. We also used a Chi-square test to examine the association between practice behaviour and each variable of interest.

Hierarchical Binary logistic regression was performed to analyse the potential effect of cognitive and behavioural factors and smoking cessation factors as well as individual factors of the healthcare providers on the outcome (behaviour of smoking cessation intervention) among healthcare providers. Covariates were sequentially introduced into logistic regression models. The order of variable entry was done based on the principles of hierarchical modelling described in Cohen and Cohen (Cohen J, 1983).

Model I included these variables: age, gender, education level, profession type, smoking status and working experience. Model II included variables in Model I plus smoking cessation factors (smoking cessation training, interest to upgrade skill and barriers). Finally, Model III further included cognitive (knowledge and attitude) and behavioural factors (self-efficacy) in smoking cessation intervention to identify which variables were the main predictors of good intervention behaviour.

Scales were dichotomised as the "mean and above" and "below than mean". Standardised beta coefficients were reported to allow comparisons to be made between the predictor variables. The significant value was established as $p \leq 0.05$ (2-tailed). All analyses were performed using SPSS version 22.0 (SPSS Inc., Chicago, IL, USA).

III. RESULT

A. Healthcare Providers' Characteristics

Table 1 presents healthcare providers' characteristics, including demographics, professional and smoking cessation training factors, cognitive and behavioural factors as well as barriers in smoking cessation intervention. The nearly third quarter of healthcare providers were less than 35 years old with a mean age of 29.25 (2.92) years, female and having working experience equal or more than five years. The majority of healthcare providers reported that they are non-smokers. More than half reported no exposure to smoking cessation training before, but the majority expressed their interest to upgrade smoking cessation intervention skills. More than half of healthcare providers have good knowledge, attitude and self-efficacy. Slightly more than half (58.7%) reported having high barriers in smoking cessation intervention.

Table 1. Characteristics of the healthcare providers by independent variables

Variable	Category	Frequency (n)	Percentage (%)
Age	<35	628	67.2
	≥35	306	32.8
Gender	Male	357	38.2
	Female	577	61.8
Higher education level	Diploma	464	49.7
	Bachelor and above	470	50.3
Profession type	Paramedic	474	50.7
	Non-Paramedic	460	49.3
Smoking status	Current smokers	47	5.1
	Former smokers	77	8.4
	Non-smokers	795	86.5
Working experience	<5	320	34.3
	≥5	614	65.7
Smoking cessation	Yes	440	47.1
Training	No	494	52.9
Interest in smoking	Yes	863	92.4
cessation training	No	71	7.6
Knowledge	Poor	439	47.0
	Good	495	53.0
Attitude	Poor	462	49.5
	Good	472	50.5
Self-efficacy	Low	438	46.9
	High	496	53.1
Intervention behaviour	Poor	457	48.9
	Good	477	51.1
Barrier for smoking	Low	386	41.3
cessation intervention	High	548	58.7

[a]n=919

B. Smoking Cessation Intervention Behaviour According to Predisposing Factors

Table 2 showed, among 934 healthcare providers, more than half of male healthcare providers (51.1%) reported good intervention behaviour on smoking cessation. High education level, non-paramedic and non-smoker healthcare providers were significantly associated with good

intervention behaviour on smoking cessation compared to their counterparts.

Healthcare providers with exposure to smoking cessation training showed significantly good intervention behaviour than those with no previous training. Healthcare providers who expressed their interest to upgrade smoking cessation intervention skills also significantly showed good intervention behaviour. However, we found that none of the barriers showed a significant association with intervention behaviour.

All selected cognitive and behavioural factors of smoking cessation intervention showed significant associations with good intervention behaviour of smoking cessation.

Table 2. Smoking cessation intervention according to predisposing factors

Variables	Category	Intervention behaviour		chi-square	*p*-value
		Poor N=457 (48.9%) n (%)	Good N=477 (51.1%) n (%)		
Age	<35	312 (49.7)	316 (50.3)	0.43[a]	0.510
	≥35	145 (47.4)	161 (52.6)		
Gender	Male	165 (46.2)	192 (53.8)	1.70[a]	0.192
	Female	192 (50.6)	285 (49.4)		
Education Level	Diploma	250 (53.9)	214 (46.1)	9.04[a]	0.003
	Bachelor degree and above	207 (44.0)	263 (56.0)		
Profession	Paramedic	255 (53.8)	219 (46.2)	9.13[a]	0.003
	Non-Paramedic	202 (43.9)	258 (56.1)		
Smoking status	Current smokers	30 (63.8)	17 (36.2)	4.59[a]	0.010
	Former smokers	35 (45.5)	42 (54.5)		
	Non-smokers	386 (48.6)	409 (51.4)		
Working experience	<5	166 (51.9)	154 (48.1)	1.69[a]	0.194
	≥5	291 (47.4)	323 (52.6)		
Smoking cessation training	Yes	152 (34.5)	288 (65.5)	68.88[a]	<0.001
	No	305 (61.7)	189 (38.3)		
Interest to improve smoking cessation intervention skill	Yes	413 (47.9)	450 (52.1)	5.23[a]	0.022
	No	44 (62.0)	27 (38.0)		
Knowledge	Low	259 (59.0)	180 (41.0)	33.60[a]	<0.001
	Good	198 (40.0)	297 (60.0)		
Attitude	Poor	278 (60.2)	184 (39.8)	46.25[a]	<0.001
	Good	179 (37.9)	293 (62.1)		
Self-efficacy	Low	322 (60.2)	166 (39.8)	199.52[a]	<0.001
	High	135 (27.2)	361 (72.8)		
Barrier -patients	Low	457 (48.9)	477 (51.1)	-	
Barrier -healthcare providers	Low	211 (51.1)	202 (48.9)	1.38[a]	0.24
	High	246 (47.2)	275 (52.8)		
Barrier -system	Low	190 (52.6)	171 (47.4)	3.22[a]	0.072
	High	267 (46.6)	306 (53.4)		

C. Predictors for Smoking Cessation Intervention Behaviour

Table 3 displays hierarchical multiple regression analyses to determine factors influencing healthcare providers' intervention behaviour on smoking cessation. The multivariate models identified several independent effects associated with intervention behaviour.

The first model resulted in 58.4% of the variance in explaining smoking cessation intervention behaviour. In Model I, the only gender showed positive association with intervention behaviour. Being female was more likely to have good intervention behaviour (AOR=1.60; 95% CI =1.15, 2.21) compared to male. Other individual factors were not significant in predicting healthcare providers' intervention behaviour.

The introduction of smoking cessation factors in Model II increased the explained to 65.6% of the variance in the smoking cessation intervention behaviour. Being a female was positively associated with good intervention behaviour. In Model II, female was more likely to have good smoking cessation intervention behaviour (AOR = 1.49; 95% CI = 1.06, 2.10) compared to male. Being non-smokers were also significantly associated with good intervention behaviour (AOR = 2.609; 95% CI = 1.30, 5.23) compared to smokers.

Smoking cessation training also showed a strong significant factor in predicting healthcare providers' intervention behaviour. Healthcare providers with exposure to smoking cessation training were more likely to have good smoking cessation intervention behaviour (AOR= 3.39; 95% CI= 2.52, 4.55) compared to non-exposed healthcare providers.

Besides, interest to upgrade smoking cessation intervention skill also have a significant factor in predicting the healthcare providers' intervention behaviour. Healthcare providers who express their interest in improving their smoking cessation intervention skills were more likely to have good smoking cessation intervention behaviour (AOR = 1.845; 95% CI = 1.05, 3.26) compared to those who not express their interest. The final adjusted model for predicting intervention behaviour explained 72.6% of its variance. After adjustment for individual, smoking cessation, cognitive and behavioural factors in Model III, being non-smokers, exposed to smoking cessation training, good attitude and high self-efficacy were positively associated with good intervention behaviour. Among all the selected factors, self-efficacy was the strongest predictor for intervention behaviour among Malaysian healthcare providers. High self-efficacy showed significantly good intervention behaviour (AOR=5.608; 95% CI= 0.04, 7.79). In addition, a good attitude towards smoking cessation intervention significantly affects good intervention behaviour (AOR=1.667; 95% CI= 1.20, 2.32).

Table 3. Multivariate model predicting smoking cessation intervention among healthcare providers

Variables	B	Exp(B)	95% C.I. for EXP(B)		Sig.	B	Exp(B)	95% C.I. for EXP(B)		Sig.	B	Exp(B)	95% C.I. for EXP(B)		Sig.
			Lower	Upper				Lower	Upper				Lower	Upper	
Age	-0.027	0.974	0.69	1.37	0.878	-0.036	0.965	0.67	1.38	0.844	-0.084	0.919	0.62	1.36	0.674
Gender	0.467	1.595	1.15	2.21	0.005	0.399	1.49	1.06	2.10	0.022	0.363	1.437	0.99	2.09	0.059
Education	-0.188	0.828	0.40	1.72	0.612	-0.021	0.979	0.45	2.11	0.957	0.241	1.272	0.55	2.97	0.577
Profession	0.235	1.264	0.61	2.64	0.532	0.242	1.274	0.59	2.77	0.541	0.157	1.169	0.50	2.74	0.719
Smoking status					0.163					0.026					0.134
Former smokers	0.571	1.77	0.83	3.78	0.141	0.755	2.128	0.96	4.70	0.062	0.686	1.986	0.84	4.71	0.119
Non smokers	0.645	1.905	0.98	3.70	0.057	0.959	2.609	1.30	5.23	0.007	0.774	2.169	1.01	4.64	0.046
Working experience	0.187	1.205	0.87	1.67	0.265	0.116	1.124	0.80	1.59	0.508	0.075	1.078	0.74	1.57	0.696
Smoking Cessation Training						1.221	3.39	2.52	4.55	<0.001	0.83	2.293	1.66	3.17	<0.001
Interest to upgrade skills						0.613	1.845	1.05	3.26	0.034	0.285	1.329	0.72	2.47	0.368
Barriers - healthcare providers						-0.15	0.861	0.61	1.21	0.386	0.058	1.06	0.73	1.54	0.76
Barriers -system						-0.203	0.816	0.58	1.15	0.251	-0.359	0.698	0.48	1.02	0.066
Knowledge											0.237	1.268	0.82	1.97	0.288
Attitude											0.511	1.667	1.20	2.32	0.003
Self-efficacy											1.724	5.608	4.04	7.79	<0.001

Adjusted for individual (age, gender, education, profession, smoking status and working experience) and smoking cessation intervention factors (training, interest to upgrade skills and barriers).

IV. DISCUSSION

This study is the first comprehensive examination of smoking-related knowledge, attitude, self-efficacy, intervention behaviours and barriers among healthcare providers in Malaysia. Smoking prevalence among healthcare providers in this study is consistent to healthcare providers in Canada (Tremblay *et al.*, 2009) but was lower compared to that of the general population in Malaysia (IPH, 2015) and other countries such as Spain (24.3%), (Martínez *et al.*, 2017) Cyprus (28.2%) (Zinonos *et al.*, 2016), Italy (34.53%) (Pianori *et al.*, 2017) and Bosnia Herzegovina (45.0%) (Hodgetts *et al.*, 2004). This is an important factor as healthcare providers should be a role model for their patients.

In this study, more than half of the healthcare providers reported a good level of knowledge, attitude, self-efficacy and smoking cessation intervention behaviour. In addition, we observed that, intervention behaviour was associated with individual, smoking cessation, cognitive and behavioural factors of healthcare providers.

Our findings are important to understand the predictors that increase healthcare providers smoking cessation intervention behaviour. Hierarchical regression analysis revealed several factors that were significantly associated with their smoking cessation intervention behaviour, explaining 72.6% of the intervention behaviour. The strongest predictor involved in smoking cessation intervention was self-efficacy. Healthcare providers with higher self-efficacy were five times more likely to have good behaviour towards smoking cessation intervention. Consistent with previous studies of healthcare providers' intervention behaviour, we found that healthcare providers with higher self-efficacy showed good intervention behaviour (Applegate *et al.*, 2008, Sheffer *et al.*, 2011, Sheffer *et al.*, 2009, Zapka *et al.*, 1997). Similar to our study but reported results separately for each 5A's component, Spanish healthcare providers found that higher levels of confidence are related to higher performance of the 5A's (Martínez *et al.*, 2017).

Regarding cognitive factors, we found that having a good attitude is an important factor for smoking cessation intervention among healthcare providers. Healthcare providers with a positive attitude towards smoking cessation intervention showed significantly good intervention behaviour. This result is consistent with previous studies that reported a significant relationship between a positive view of smoking cessation intervention and intervention behaviour among healthcare providers in Mississippi (Applegate *et al.*, 2008).

Half of our healthcare providers showed a similar proportion of interest to upgrade smoking cessation skills and received smoking cessation training (Choi and Kim, 2016). This finding is higher compared to other studies where they reported only one in four had smoking cessation training (Martínez *et al.*, 2017). Consistent with other studies, we found that healthcare providers who were exposed to smoking cessation training have good smoking cessation intervention behaviour from those without training. This indicates that healthcare providers in Malaysia are similar to healthcare providers in other regions of the world (Pbert, 2003, Ockene, 1987, Kruse *et al.*, 2016, Cornuz *et al.*, 2002, Payne *et al.*, 2014). This finding provides important information for evaluating healthcare providers' training program in Malaysia and other countries.

One important individual predictor was being a non-smoker. Healthcare providers who did not smoke have good smoking cessation intervention behaviour compared to healthcare providers who are current smokers. Our finding is in line with a meta-analysis conducted among 14 studies, which suggested doctors who were current smokers had a 17% increased risk of not advising their patients to quit compared to non-smokers (Duaso *et al.*, 2014).

This study explores, for the first time in Malaysia, several individuals, smoking cessations, cognitive and behavioural factors related to smoking cessation intervention. However, this study had several limitations. First, this is a cross-sectional survey and precluded the ability to reach a direct causal relationship between variables. Second, this study relies on self-reported responses. Healthcare providers smoking cessation practices were not verified, thus they might over-report their actual intervention behaviour. It would be best to examine the actual practice of our healthcare providers. Third, the convenience sample used in this study from healthcare providers enrolled in smoking cessation training and may not be representative of the general characteristics of the healthcare providers in Malaysia limited

the generalizability of the results and may have been a source of selection bias. Further longitudinal prospective, multi-site studies are needed. Fourth, due to the convenient nature of our sample, we could have introduced compliance bias, as our participants could have more interest in smoking cessation practices and provide more responses that are positive.

V. CONCLUSION

This study highlights the importance of individual factors, smoking cessation factors as well as cognitive and behavioural factors in the implementation of smoking cessation intervention. Good attitude and high self-efficacy were predictors for smoking cessation intervention behaviour. Our result suggests that evidence-based training for healthcare providers could initiate and help the implementation of smoking cessation intervention, which will improve smoking cessation outcomes in the future. Tailored smoking cessation training emphasises on facilitating positive attitude and skill-building approach that includes case study, role play, observing video counselling and discussion sessions on how to manage different stages of change whether the smokers are ready or not to quit smoking, can improve their practical skills. All these factors should be taken into consideration to optimise smoking cessation intervention implementation in healthcare settings.

VI. REFERENCES

Applegate, B. W., Sheffer, C. E., Crews, K. M., Payne, T. J. & Smith, P. O. 2008. A survey of tobacco-related knowledge, attitudes and behaviours of primary care providers in Mississippi. Journal of Evaluation in Clinical Practice, 14, 537-544.

Choi, S.-H. & Kim, Y.-H. 2016. Factors Affecting Korean Registered Nurses' Intention to Implement Smoking Cessation Intervention. Osong Public Health and Research Perspectives, 7, 63-70.

Cohen J, C. P. 1983. Applied Multiple Regression/ Correlation Analysis for the Behavioral Sciences. Hillsdale, NY: Lawrence Erlbaum Associates.

Cornuz, J., Humair, J.-P., Seematter, L., Stoianov, R., Van Melle, G., Stalder, H. & PeìCoud, A. 2002. Efficacy of Resident Training in Smoking Cessation: A Randomized, Controlled Trial of a Program Based on Application of Behavioral Theory and Practice with Standardized Patients. Annals of Internal Medicine, 136, 429-437.

Duaso, M. J., Mcdermott, M. S., Mujika, A., Purssell, E. & While, A. 2014. Do doctors' smoking habits influence their smoking cessation practices? A systematic review and meta-analysis. 109, 1811-1823.

Fiore, M. C., Jaén, C. R. & Baker, T. B. 2008. Treating Tobacco Use and Dependence:2008 Update. Clinical Practice Guideline, Rockville, MD, U.S. Department of Health and Human Services. Public Health Service.

Hasan, S. I., Mohd Hairi, F. & Amer Nordin, A. S. 2018. Construct Validity and Internal Consistency Reliability of Providers Smoking Cessation Evaluation (ProSCiTE) Tool. 12th Asia Pacific Conference on Tobacco or Health (APACT).

Helmink, J. H. M., Kremers, S. P. J., Van Boekel, L. C., Van Brussel-Visser, F. N. & De Vries, N. K. 2012. Factors determining the motivation of primary health care professionals to implement and continue the 'Beweegkuur' lifestyle intervention programme. Journal of Evaluation in Clinical Practice, 18, 682-688.

Hodgetts, G., Broers, T. & Godwin, M. 2004. Smoking behaviour, knowledge and attitudes among Family Medicine physicians and nurses in Bosnia and Herzegovina. BMC family practice, 5, 12-12.

IPH 2011. Report of the Global Adult Tobacco Survey (GATS) Malaysia, 2011, Ministry of Health Malaysia

IPH 2015. National Health and Morbidity Survey 2015 – Report on Smoking Status Among Malaysian Adults, Ministry of Health Malaysia.

Jamal A, P. E., Gentzke As, Homa Dm, Babb Sd, King Ba, Neff LJ 2018. Current Cigarette Smoking Among Adults — United States, 2016. MMWR Morb Mortal Wkly Rep 2018, 67, 53-59.

Kruse, G. R., Rigotti, N. A., Raw, M., Mcneill, A., Murray, R., Piné-Abata, H., Bitton, A. & Mcewen, A. 2016. Tobacco Dependence Treatment Training Programs: An International Survey. Nicotine & Tobacco Research, 18, 1012-1018.

Maccallum, R. C., Widaman, Keith F., Zhang, Shaobo, Hong, Sehee 1999. Sample size in factor analysis. Psychological Methods, 4, 84-99.

Martínez, C., Castellano, Y., Andrés, A., Fu, M., Antón, L., Ballbè, M., Fernández, P., Cabrera, S., Riccobene, A., Gavilan, E., Feliu, A., Baena, A., Margalef, M. & Fernández, E. J. T. I. D. 2017. Factors associated with implementation of the 5A's smoking cessation model. Tobacco induced diseases, 15, 41.

MOH, M. 2016. Clinical Practice Guideline on Treatment of Tobacco Use Disorder

Ockene, J. K. 1987. Smoking intervention: the expanding role of the physician. American Journal of Public Health, 77, 782-783.

Payne, T. J., Gaughf, N. W., Sutton, M. J., Sheffer, C. E., Elci, O. U., Cropsey, K. L., Taylor, S., Netters, T., Whitworth, C., Deutsch, P. & Crews, K. M. 2014. The impact of brief tobacco treatment training on practice behaviours, self-efficacy and attitudes among healthcare providers. International Journal of Clinical Practice, 68, 882-889.

Pbert, L. 2003. Healthcare Provider Training in Tobacco Treatment: Building Competency. The American Journal of the Medical Sciences, 326, 242-247.

Pianori, D., Gili, A. & Masanotti, G. 2017. Changing the smoking habit: prevalence, knowledge and attitudes among Umbrian hospital healthcare professionals. Journal of preventive medicine and hygiene, 58, E72-E78.

Puffer, S. & Rashidian, A. 2004. Practice nurses' intentions to use clinical guidelines. Journal of Advanced Nursing, 47, 500-509.

Sheffer, C. E., Barone, C. & Anders, M. E. 2011. Training Nurses in the Treatment of Tobacco Use and Dependence: Pre- and Post-Training Results. Journal of advanced nursing, 67, 176-183.

Sheffer, C. E., Barone, C. P. & Anders, M. E. 2009. Training health care providers in the treatment of tobacco use and dependence: pre- and post-training results. Journal of Evaluation in Clinical Practice, 15, 607-613.

Siu, A. L. 2015. Behavioral and pharmacotherapy interventions for tobacco smoking cessation in adults, including pregnant women: U.s. preventive services task force recommendation statement. Annals of Internal Medicine, 163, 622-634.

Slattery, C., Freund, M., Gillham, K., Knight, J., Wolfenden, L., Bisquera, A. & Wiggers, J. 2016. Increasing smoking cessation care across a network of hospitals: an implementation study. Implementation science: IS, 11, 28-28.

Smit, E. S., Fidler, J. A. & West, R. 2011. The role of desire, duty and intention in predicting attempts to quit smoking. Addiction, 106.

Smit, E. S., Vries, H. & Hoving, C. 2013. Determinants of practice nurses' intention to implement a new smoking cessation intervention: the importance of attitude and innovation characteristics. 69, 2665-2674.

Stead, L., Diana, B., Nataly, P., Guillermo, S., Jamie, H.-B. & Tim, L. 2013. Physician advice for smoking cessation. Cochrane Database of Systematic Reviews, 5.

Thomas, D., Abramson, M. J., Bonevski, B. & George, J. 2017. System change interventions for smoking cessation. Cochrane Database of Systematic Reviews.

Tremblay, M., Cournoyer, D. & O'loughlin, J. 2009. Do the correlates of smoking cessation counselling differ across health professional groups? Nicotine & Tobacco Research, 11, 1330-1338.

U.S. Department of Health and Human Services, C. F. D. C. A. P., National Center for Chronic Disease Prevention and Health Promotion, O. O. S. & Health, A. 2014. The health consequences of smoking – 50 years of progress: a report of the Surgeon General.

WHO 2005. Guidelines for implementation of Article 14.

WHO 2015. WHO global report on trends in prevalence of tobacco smoking 2015.

WHO 2019. WHO Framework Convention on Tobacco Control, Reporting on the implementation of the Convention, Parties' reports.

Wye, P. M., Stockings, E. A., Bowman, J. A., Oldmeadow, C. & Wiggers, J. H. 2017. Effectiveness of a clinical practice change intervention in increasing the provision of nicotine dependence treatment in inpatient psychiatric facilities: an implementation trial. BMC psychiatry, 17, 56-56.

Zack, E. 2002. Smoking Withdrawal and Prolonged Hospitalization. Clinical Journal of Oncology Nursing 6, 7 - 11.

Zapka, J. G., Fletcher, K. E., Ma, Y. & Pbert, L. 1997. Physicians and Smoking Cessation: Development of Survey Measures. Evaluation & the Health Professions, 20, 407-427.

Zinonos, S., Zachariadou, T., Zannetos, S., Panayiotou, A. G. & Georgiou, A. 2016. Smoking prevalence and associated risk factors among healthcare professionals in Nicosia general hospital, Cyprus: a cross-sectional study. Tobacco induced diseases, 14, 14-14.