

REVIEW ARTICLE

Knowledge, Attitude and Practice Scale of Medical Personnel on Smoking Cessation Guidelines: A Review on Associations and Questionnaires

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ABSTRACT

The number of active smokers in Malaysia is increasing despite the availability of stop smoking clinics and smoking cessation medications. Other than smokers' level of motivation to quit smoking, competency of the healthcare professionals involved in providing smoking cessation intervention using evidence-based guidelines needs to be considered. Hence, knowledge, attitude and practice (KAP) of the healthcare providers in relation to existing clinical practice guidelines on smoking cessation should be assessed. In this review, we look at the factors contributing to the KAP of medical personnel on the guidelines and also the previously available assessment tool, mainly in the form of a validated questionnaire, for the purpose of applying it to the context of the Malaysian healthcare providers.

INTRODUCTION

Globally, the prevalence of smoking is increasing in trend especially among adolescents, which led to the recent World Health Organization (WHO) action on enforcing bans on tobacco advertising, promotion and sponsorship, including the ban on selling cigarettes to minors¹. Smoking is generally five times higher among men than women; however, the gender gap declines with younger age². The number of smokers and number of cigarettes smoked worldwide have increased tremendously². This trend is comparable in Malaysia whereby the prevalence of current smokers has increased in trend from 21.5% in 2006 to 24.7% in 2011,

despite the trend reducing initially from 1996 to 2006³.

Cigarette smoking is one of the modifiable risk factors for chronic illnesses and mortality among humans⁴. Smoking reduces the quality of life and increases the risk of developing non-communicable diseases including coronary artery disease and chronic obstructive pulmonary disease⁴. Smoking also increases the risk to develop cancer of the lung, oropharynx, larynx and pancreas⁴. Furthermore, pregnant mothers who are active smokers will have higher chance to deliver low birth weight infants compared to non-smoker mothers⁵. Moreover, tobacco use increases economic and financial burden to the public and its country⁴. Worldwide, it causes more than half a trillion dollars of economic damage per year¹.

About 2.3 billion people worldwide are now covered by at least one tobacco control measure at the highest level of achievement. This is due to the actions taken by many WHO Member States to fight the tobacco epidemic. However, in Malaysia, even though smoking cessation programme already existed for the past decade, the outcome of such programme is still not encouraging⁶. The reason for such failure remains controversial either due to lack of awareness among the public or suboptimal knowledge and less action taken by the medical personnel.

Worldwide, smoking cessation guidelines have been implemented in order to encourage and help people to stop smoking^{4, 7}. It universally incorporated the 5A's and 5R's components. These components are important in initiating stop smoking among smokers and maintaining their abstinence. It can be delivered not only by the physician or medical officer, but by any medical personnel, who has been trained formally. It is found to be useful in daily busy outpatient clinic setting^{4, 7}. The 5A's components consist of 'ask', 'advise', 'assess', 'assist' and 'arrange' components which are useful on encountering any new patients⁶.

While, the 5R's components consist of 'relevant', 'risks', 'rewards', 'roadblocks' and 'repetitions' components. These are especially beneficial in convincing the unmotivated smoker to stop smoking^{4, 7}.

Even though these 5A's and 5R's components are simple and useful in stop smoking practices, the lack of its awareness and implementation is the major culprit in contributing to the increasing number of unmotivated smokers^{1, 7}. The factors associated could be due to lack of training or experience in working among the medical personnels⁹. So far, assessment regarding awareness and implementation of the guidelines among medical professionals in Malaysia is unknown. In addition, there is no valid questionnaire or tool available in our country to perform the assessment.

FACTORS ASSOCIATED WITH LEVEL OF KNOWLEDGE, ATTITUDE AND PRACTICE OF MEDICAL PERSONNEL ON STOP SMOKING MEASURE

Significant factors contributing to awareness and practices of smoking cessation services among medical personnel includes age, gender, profession, practice location, smoking status and history of attending formal stop smoking training. Nevertheless, having attended a smoking cessation training programme is the only significant predictor of a good practice score¹⁰. Indeed, formal training is the best way of overcoming barrier in providing stop smoking advice^{11, 12}.

Increasing age is associated with more professional experience because of increasing number of job training and abundant continuous medical education sessions¹³. Therefore, years of practice contributes to a higher level of expertise, knowledge and capabilities^{8, 14}. Male doctors are more confident in managing the case especially at their own primary care level. However, female

medical personnel believe that they have higher confidence level and be excellent time managers while giving advice to patients¹⁵. Malay medical personnel are associated with higher prevalence of smokers in our country, in which their awareness may be low in giving stop smoking advice as well¹⁶.

Smoking will cause poor quality of life and health. Therefore, doctors who are active smokers will develop medical illness earlier. This will affect their daily performance as a medical doctor^{14, 17}. Doctors who smoke also will spend shorter duration of time in giving stop smoking counselling compared to non-smoker doctors as they feel uncomfortable talking about stop smoking and therefore results in poor practices score¹⁸. Area of practice also contributes to stop smoking advice¹⁴. Less number of smokers seen in the practising area makes the health providers more comfortable and confident in giving advice compared to the place where smoking is accepted to be normal¹⁹.

Location of the government health clinic either near or far from the city could also affect the awareness and implementation of stop smoking services among practitioners. At first glance, it may seem easier to deliver tobacco preventive measure to the rural community since their population is less than that in the urban area, but the challenges are still huge as number of smokers is basically concentrated in the rural area. Rural people usually have higher poverty level and poor insight to seek attention to stop smoking which may cause difficulties for the primary care to practice the stop smoking cessation advice²⁰.

Islam prohibits cigarette smoking and its related products. This decree or 'fatwa' can be used among Muslim doctors as the basis and fundamental input to increase the understandings and willingness of their Muslim patients to quit smoking^{21, 22}. Among all professions, family medicine specialists and trainees are competent enough to give

stop smoking advice at primary care levels²³. Nevertheless, in tertiary centres, internal medicine specialists are more commonly involved in stop smoking practice compared to other departments¹⁴.

QUESTIONNAIRES AS INSTRUMENT TOOL ON ASSESSING LEVEL OF KNOWLEDGE, ATTITUDE AND PRACTICE OF MEDICAL PERSONNEL ON STOP SMOKING MEASURE

We reviewed all questionnaires that had already been published in previous journals since 1990 till 2018 using keywords search of '5A's', '5R's', 'knowledge', 'attitude', 'practice' and 'questionnaire' from Google Search, Google Scholars, ScienceDirect, PubMed and other major search websites. These related articles later only will be selected if covers smoking cessation guidelines or training programme.

In Malaysia, for the past 40 years, the studies conducted thus far are mainly limited to smoking behaviour, attitude and opinions towards smoking habit and competency of giving stop smoking advice, rather than on the awareness and practices of both 5A's and 5R's framework^{16, 20, 24}. These studies also were mainly done among medical students. Furthermore, studies on the practice of smoking cessation counselling are mainly limited among dentists and nurses rather than on medical doctors^{25, 26}.

The common tool that was used in previous studies worldwide to assess knowledge, attitude and practice on stop smoking is mainly self-administered questionnaire involving cross-sectional study design^{22, 23}. Despite the lack of locally validated questionnaire, Ibrahim et al., in 2008 conducted a study on attitude and practice among dentists in Kelantan using a self-administered questionnaire²⁵. It gathered background data of the dentists, their attitude on smoking cessation, 5A's practices in smoking cessation and their barriers in smoking cessation

practices²⁶. However, the questionnaire did not include the knowledge and 5R's components of universal smoking cessation guidelines. The socioeconomic components were also inadequate in which the smoking status and background training of the respondents were not included. Similar studies have been done in our country by Vaithilingam et al., in 2012

utilizing a self-administered questionnaire that had been developed and validated by two Dental Public Health specialists and pre-tested with a sample of 10 dental lecturers from the University of Malaya²⁶. However, the questionnaire did not assess the knowledge of the dentists on 5A's and 5R's components in stop smoking measures (Table 1).

Table 1 Beliefs and practices components of questionnaire used in the study by Vaithilingam et al.²⁶

Components	Questions or statements	Answers or responses
Beliefs on smoking cessation intervention	1. Dentists should take a greater role 2. Role of dental auxiliaries 3. Smoke-free zone is effective	Agree / disagree
Practices	1. Record smoking status on first visit 2. Advice about smoking cessation to all patients who smoke 3. Advice patients on hazards of smoking and benefits of quitting the habit 4. Provide self-help material 5. Recommend nicotine replacement aids 6. Refer to smoking cessation clinic 7. Follow up patient on subsequent visit	Yes / no / sometimes

Worldwide, similar trend of questionnaires could be seen. Nagle et al. (1999) used a self-administered questionnaire which was piloted and validated to assess knowledge, attitude and practice of nurses on smoking cessation¹⁵. Although details regarding background of the nurses were not included, the questionnaire did include the enquiry of smoking cessation training. It assessed the knowledge of the nurses, not only on smoking but also on the cessation strategies and the appropriate pathway. However, it did not cover the 5R's components, which are vital in universal smoking cessation program.

About 10 years later, Yan et al. (2008) conducted a similar study using a self-administered questionnaire to all healthcare providers in Changsha City¹⁴. The questionnaire was developed and validated before the actual study. However, 5R's components were not included in the survey tool. Other studies that were subsequently done in China include the study by Jiang et al. (2007) and Klink et al. (2011)^{9, 23}. The assessment tool is

the validated questionnaire which is targeted to the physicians. Similar to the other studies, 5R's components were not included in the questionnaires.

In India, Singh et al. (2014) conducted a similar study using a validated self-administered questionnaire among medical students and young doctors who were working or trained at various medical colleges at Delhi University¹¹. It did cover the respondents' smoking status, history of receiving formal training in smoking cessation and general knowledge on smoking. However, the specific 5A's and 5R's components of smoking cessation were not clearly included in the knowledge, attitude and practice domains. The questions were mainly on the preparedness of giving smoking cessation advice and opinions on its enforcement¹¹.

In the Middle East, Sabra (2007) conducted a study on smoking attitude, behaviour and risk perception among primary healthcare personnel in four urban

family medicine centres in Alexandria, Egypt⁸. The study utilized a well-constructed questionnaire which was modified from available questionnaire (WHO Global Health Professionals Survey (GHPS)) and Queen's University Family Medicine Development Program in the Balkans Region. The questionnaire covered the demographic background of the healthcare personnel (including smoking status and stop smoking training) and the attitude of healthcare personnel on smoking cessation and their preparedness in giving service. However, the knowledge and practices of 5R's components were not included in this questionnaire. Similar questionnaire also had been adapted by Eldein et al. (2012) among family physicians in Suez Canal University, Egypt¹³.

Similar studies had been done in North American and African country. For example, Desalu et al. (2009) conducted a cross-sectional study on smoking cessation measures among physicians in Nigeria²⁷. Questions were mainly revolving at the mode of treatment given and barriers in implementing smoking cessation measures. Another similar study was done by La Torre et al. (2014) but enquired more on the use of antidepressants (Bupropion or Zyban[®]) and acetylcholine receptor partial agonists (Varenicline or Champix[®]) as part of smoking cessation intervention in the questionnaire²⁸.

In the western countries, a larger sample size was covered using well-structured questionnaire. In 2010, Tong et al. conducted a national survey in the United States on the

health professionals' smoking prevalence, smoking cessation practices and their beliefs on smoking cessation²⁹. This study used pretested questionnaire of 2002 New Jersey Health Care Provider Tobacco Study as their instrument tool. It consists of demographic data of the health professionals, their beliefs on the smoking cessation and their practices of 5A's components of stop smoking. Nevertheless, the knowledge on 5A's and 5R's components was not assessed. The attitude and practice of 5R's components were also not covered. Similar studies also had been done subsequently by Dymek in 2013 and Prucha et al. among pharmacists in Poland^{24, 30}. However, the questionnaires still have similar limitations.

The only questionnaire that includes both 5A's and 5R's components in its assessment is used by Alzoubi in 2010²². It had been developed and validated in a pilot study. However the questionnaire is rather superficial and unable to differentiate lies by the respondents as it gives feedback based on 'yes' or 'no' answers. This questionnaire also does not consist of all the three components of knowledge, attitude and practice²². The knowledge component only contains two simple questions of "Did you know 5A's" and "Did you know 5R's" which are indeed in a form of statement and thus was unable to assess overall knowledge. In addition, it is also unable to provide questions specific to the knowledge components of 5A's and 5R's. The questionnaire only highlighted the practice of the components without including the attitude domain (Table 2).

Table 2 Knowledge, 5A's and 5R's components of the questionnaire used in the study by Alzoubi et al.²²

Components	Questions	Answers
Knowledge	1. Are you concerned about the importance of cigarette cessation? 2. Do you know the 5A's of smoking cessation guidelines? 3. Do you know the 5R's of motivational interventions of smoking cessation guidelines?	Yes/ no/ somewhat
5As practices	1. Do you advise him/her to quit? 2. Do you assess his/her willingness to quit? 3. Do you assist him/her with a quitting plan? 4. Do you provide him/her with a supportive clinical environment while encouraging his/her quitting attempt? 5. Do you help the patient to develop social support for his/ her quitting attempt in his/her environment outside of treatment? 6. Do you recommend the use of effective pharmacotherapy that is available? 7. Do you arrange for follow-ups of his/her quitting?	Yes/ no/ somewhat
5R's practices	1. Do you promote motivation to quit? 2. Do you encourage him/her to indicate why quitting is personally relevant? 3. Do you ask him/her to identify any potential risks or negative consequences of smoking? 4. Do you ask him/her to identify or reward any potential benefits of quitting? 5. Do you ask him/her to identify barriers to quitting? 6. Do you ask him/her to identify any possible complications of treatment? 7. Do you maintain ongoing motivation for your patient every visit?	Yes/ no/ somewhat

As a whole, previous questionnaires lack a proper scoring system in terms of assessing the cumulative points for combination of knowledge, attitude and practices (KAP) domains of the stop smoking guidelines²². With the exception of the study done by Eldein

et al. in 2013, the other questionnaires only give results in terms of frequency rather than definitive value of high or low KAP score¹³. The major differences of previous questionnaires are summarized in Table 3.

Table 3 Differences of questionnaires done in previous study on smoking cessation measures

Questionnaire (Research Authors)	Demographic data	Presence of Knowledge, Attitude and Practice domain	5A's and 5Rs components coverage	Methods	Validated Questionnaire
Nagle et al. (1999) ¹⁵	Adequate	Yes	1. Ask smoking status 2. Take smoking history 3. Assess intentions to quit 4. Discuss how to quit	Study done in Australia among volunteered nurses using self-administered questionnaire	Yes
Yan et al. (2008) ¹⁴	Adequate	Yes	1. Ask smoking status 2. Assess willingness to quit 3. Advice smokers to quit 4. Arrange plan to quit	Using a self-administered questionnaire to healthcare providers in Changsha City, China.	Yes
Sabra (2007) ⁸	Yes	No knowledge domain	1. Ask smoking status 2. Assess intentions to quit 3. Advice smokers to quit 4. Discuss how to quit 5. Arrange plan to quit	Study on smoking attitude, behaviour and risk perception among primary healthcare personnel in four urban family medicine centres in Alexandria, Egypt	Modified from validated questionnaire
Ibrahim et al. (2008) ²⁵	No smoking status	No knowledge domain	1. Do you enquire about your patient's smoking status? 2. Do you offer smoking cessation counselling to your patients? 3. Do you explain to patients regarding the health risks due to smoking? 4. Do you provide advice or helpful hints to motivate patients to quit smoking? 5. Do you provide reading materials on smoking cessation in your waiting area?	Study on attitude and practice among dentists in Kelantan using a self-administered questionnaire	Yes
Desalu et al. (2009) ²⁷	Yes	No knowledge domain	No	A cross-sectional study on smoking cessation measures among physicians in Nigeria	No
Alzoubi et al. (2010) ²²	Yes	Superficial knowledge domain, no attitude domain	Items of ask, advice, assess, assist, arrange, relevance, risks, rewards, roadblocks and repetition	A cross-sectional study using self-administered questionnaire among healthcare providers in Jordan.	Yes

Tong et al. (2010) ²⁹	Yes	No knowledge domain	<ol style="list-style-type: none"> 1. Ever ask if patient smokes. 2. Advises smokers to stop smoking. 3. Assesses smokers if interested in quitting. 4. Assists smokers to quit. 5. Sets quit date. 6. Refer cessation program. 7. Provides material with quit-line information 8. Discuss medication 9. Arranges follow-up 	National survey in the United States on the health professionals' smoking prevalence, smoking cessation practices and their beliefs on smoking cessation.	Yes
Klink et al. (2011) ²³	Yes	No knowledge domain	Items of ask, advice, assess, assist, arrange,	Cross-sectional study using validated questionnaire targeted to the community healthcare providers in China.	Modified from validate questionnaire
Vaithilingham et al. (2012) ²⁶	Adequate	No knowledge domain	<ol style="list-style-type: none"> 1. Able to ask about smoking in an appropriate way. 2. Able to advice patient to quit smoking. 3. Able to ask appropriate questions to assess readiness to make a quit attempt 4. Able to assist patient to quit smoking 5. Able to arrange proper follow up with patient 	Cross-sectional study using self-administered questionnaire among periodontists and dentists that had been developed and validated by two Dental Public Health specialists and pre-tested with a sample of 10 dental lecturers from the University of Malaya.	Yes
Dymek et al. (2013) ²⁴	Yes	Yes	No	Cross-sectional study assessing knowledge of pharmacist in Poland.	No
Eldein et al. (2013) ¹³	Yes	Yes	Self-reported frequency of use of the 5 As tobacco cessation guidelines – ask, advice, assess, assist and arrange.	A cross-sectional study among family physicians in Suez Canal University, Egypt.	Yes
Singh (2014) ¹¹	Yes	Yes	No	Study using a validated self-administered questionnaire among medical students and young doctors who were working or trained at various medical colleges at Delhi University India.	Yes

La Torre et al. (2014) ²⁸	Yes	Yes	No	Assessing use of antidepressants (Bupropion or Zyban®) and acetylcholine receptor partial agonists (Varenicline or Champix®) as part of smoking cessation intervention among public health trainees in Italy.	Yes
Prucha et al. (2015) ³⁰	Yes	Yes	<ol style="list-style-type: none"> 1. Do you ask about tobacco use? 2. Do you advise patients to quit using tobacco? 3. Do you advise female patients to quit using tobacco if they are pregnant? 4. Do you advise patients if you think an illness is related to tobacco use? 5. Do you advise patients to have smoke-free homes? 6. Do you advise patients to have smoke-free vehicles? 7. Do you advise patients to quit using tobacco if they are healthy? 8. Do you assist tobacco users to quit? 9. Do you advise patients if you do not think an illness is related to tobacco use? 	Study using self-administered questionnaire on knowledge, attitude and practice among healthcare workers in Republic Dominican.	No

CONCLUSION

The main obstacle and difficulty of measuring knowledge, attitude and practice (KAP) of medical personnel on smoking cessation guidelines are basically lack of an accurate and comprehensive assessment tool in the form of questionnaire. Most available questionnaires do not include the 5R's components (relevance, risks, rewards, roadblocks and repetition) in their items and lack of proper cumulative values in order to interpret the KAP score. The 5R's components are indeed

important in motivating the unmotivated smokers to quit. Meanwhile, low KAP scores are mainly contributed by lack of available smoking cessation training or programme in their centres. Therefore, we suggest new questionnaire development consisting of knowledge, attitude and practice domains of smoking cessation guidelines including all 5A's and 5R's components. Furthermore, more smoking cessation training programme and continuous education session on smoking should be provided to medical personnel.

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CONFLICT OF INTEREST

The authors declare that they have no competing interests in publishing this article.

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