

## ORIGINAL ARTICLE

## THE EFFICACY OF MALAYSIAN ONLINE SMOKING CESSATION WEBSITE BASED ON KUANTAN SMOKERS ASSESSMENT

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## ABSTRACT

Tobacco-related diseases are the leading causes of death worldwide. Tobacco use must be reduced and controlled. Due to its low cost, internet intervention has a high probability of attracting a large number of smokers, however, more research is needed to determine its most effective use. The purpose of this study was to analyze the efficacy of online smoking cessation websites in Malaysia based on assessment by Kuantan smokers. A cross-sectional study using a mix method was conducted among smokers in Kuantan, Pahang. The evaluation is divided into two phases: phase I is the selection of a website by a content expert, and phase II is the review of a selected local website by a local respondent. Random purposive sampling among 35 smokers were recruited in phase 2. There were predetermined criteria in both phase. Website search was conducted thru identified keyword using search engine google. In phase 2, the selected good score website will be assessed by local smokers based on validated checklist. Three websites which were JomQuit.com, Nicorette.com and Quit Smoking Clinic IJN was selected for the review. The website JomQuit.com was identified as comprehensive anti-smoking website in Malaysia. The Malaysian online smoking cessation was believed to be helpful to quit smoking, provide interesting content and information, increase awareness and increase promotion. Regular website assessments must be performed on a regular basis to ensure that the information on the website is applicable to local communities and for content improvement purposes.

**Keywords:** Smoking cessation, Quit smoking, Stop smoking

## INTRODUCTION

In many nations, smoking became a preventable cause of disease and premature death<sup>1</sup>. Around 1% of the more than 7000 chemical substances produced by burning tobacco are recognized as leading causes or reliable risk factors for smoking related diseases such as lung cancer and emphysema<sup>2</sup>. Following a steady decrease in global smoking, tobacco nevertheless kills more than 7 million people annually<sup>3</sup>. In 2015, approximately 22.8% of Malaysians were smokers, 43% of men and 1.4% of women smokers and only about 52.3% of smokers tried to stop smoking all year round<sup>4</sup>. However, Malaysia also faces challenges when it comes to reduce the prevalence of smoking.

According to the Institute of Public Health<sup>4</sup>, approximately 22.8 % of Malaysians smoked, with 43 % of men smoking and 1.4 percent of women smoking. The Institute for Public Health<sup>4</sup> also discovered that only about 52.3 % of smokers tried to quit smoking all year. The prevalence of smoking in Malaysia can be reduced by focusing on the high quality of smoking cessation program and encourage more smokers to join the program with the help of various parties. There are many smoking cessation programs organized by various parties including government and non-government organizations (NGO) aimed at helping smokers to quit smoking. However, this smoking

cessation programs will never stop until the world is free of cigarettes.

There are various ways to reduce the number of smokers and help smokers quit smoking<sup>5</sup>. One of them is through online smoking cessation websites that are increasingly used around the world. For instance, more than 12 million smokers in the United States went online in 2017 to search for information on quitting smoking<sup>6</sup>. According to Keane et al<sup>7</sup>, interactive online smoking cessation programs are being enhanced by increasing Internet access and use. In comparison, the online smoking cessation intervention was significantly less expensive and better known than quitline. Online smoking cessation website services are also easy for consumers and the content is available 24 hours a day.

Globally, millions of people use websites to help them quit smoking, but effectiveness tests have an average data retention rate of 34% and an average quit rate of 9%<sup>8</sup>. Smoking cessation was not an easy task for the smokers. It was a difficult and complex process and smokers used various methods and strategies to achieve the goal. Simultaneously, many smokers may take 30 or more attempts to quit before they can be successful for a year or longer<sup>9</sup>.

Taylor et al<sup>10</sup> shared that because of the low cost per user, the Internet is an appealing platform for helping people quit smoking, and it has the

potential to reach smokers who might not access support due to limited health care availability or stigmatization. Internet-based interventions could also be used to target young smokers or others who may not seek traditional smoking cessation methods<sup>10</sup>.

According to the Internet Users Survey 2018<sup>11</sup>, there are approximately 28.7 million internet users in Malaysia, up from 24.5 million in 2016. As a result, using the internet as a smoking intervention will speed up community health promotion about the dangers of smoking. Online smoking cessation websites that were interactive and customized to individual abilities led to higher quit rates than usual treatment or written self-help at six months or longer<sup>10</sup>. Smoking cessation websites programs were a promising delivery system for assisting smokers to quit, but further research was needed to identify smokers view on the effective use of websites.

Smokers can now access a plethora of online smoking cessation websites via the Internet. At the same time, the abundance of websites makes it difficult for smokers to find the best and most effective site for references. Some websites have content that is similar to others, while others do not. The components in the websites are varies and is not standardized. Because of that, the standardization of component of the online smoking cessation websites will be effective in motivating and helping smokers to quit smoking and avoid relapse after treatment. Furthermore, no studies in Malaysia have yet examined the efficacy of online smoking cessation websites among smoker participants offered on the Internet, particularly smokers in Kuantan.

The goal of this research is to evaluate the efficacy of online smoking cessation websites among smokers in the Kuantan population by analyzing the perspectives of smokers participating in the smoking cessation program, thereby identifying important criteria needed to improve smoking cessation websites in Malaysia based on local needs. This study may assist Malaysian website developers in creating better and more effective smoking cessation websites for users who want to quit smoking by adding or improving essential elements to the websites. Analyzing and identifying the effectiveness of smoking cessation websites in Malaysia was critical for smokers participating in the program to ensure that their efforts to quit smoking are worthwhile and successful at the end of the program. Malaysian website reviews were conducted among the local respondent based on validated checklist and opinion will be gathered for improvement of the local website.

## METHODS

A mix method - cross-sectional study design was conducted among smokers in Kuantan, Pahang.

The evaluation involves two phases which were phase I - website selection by content expert and phase II - review on selected local website by local respondent.

### Phase I - Website selection by Content Expert

Prior to website review, there were a process selection of local website. This methodology was adapted from the study of Bock et al<sup>9,12</sup>.

The team consists of three reviewers were assigned for the review. No reviewer had consulted for or had any financial interest or involvement with any of the Web sites they were assigned to review. Four Web sites were reviewed for training purposes. After each training review, panel members met to discuss the review process, compare outcomes, and modify the assessment forms as needed (e.g., to improve clarity of instructions, ratings procedures, and ratings criteria).

Website searches were conducted by keyword search in 'smoking cessation Malaysia', 'quit smoking Malaysia' and 'stop smoking Malaysia' as the keywords into Google.com. According to the Alexa Top 500 Global Sites, Google.com is listed as the top most visited websites in Malaysia<sup>13</sup>. The keyword based on previous study by Bock et al<sup>9</sup>, however, due to website focused in Malaysia, the word Malaysia has been combined with the keyword. All websites found within the first two pages of search results were compiled as potential sites to review. However, websites that appeared in more than one search were removed from the list.

Websites that have been found using keywords were screening by titles and all criteria of inclusion and exclusion that not meet were rejected. It is because the main concerned is smoking cessation, the websites appeared which are not related to smoking cessation is immediately rejected. Websites were excluded from analysis if they meet one or more of the following criteria (i) Product sales only (Sale product for smokers to quit smoking); (ii) Libraries sites that contain articles about smoking cessation but provide no clear guidance for the smokers who wishes to quit; (iii) Advocacy and political action sites; (iv) Site content not tobacco related; (v) Sites that contain links to other sites; (vi) Clinic and practitioners advertising face-to-face service provided; and (vii) Dead websites.

Reviews for selected final each site were conducted independently by two reviewers assigned to each web site. Any disagreement will be forwarded to third reviewer for finalization.

The review based on element 10 elements which were (i) advice to quit; (ii) access readiness to quit; (iii) assist with quit plan, (iv) provide practical counselling; (v) provide intra treatment social support; (vi) recommended use of pharmacotherapy; (vii) arrange follow-up

therapy; (viii) enhance motivation, risk; (ix) enhance motivation, reward; and (x) enhance motivation, roadblock<sup>9</sup>.

The selection of website based on scoring mark as agree (7 - 10), natural (4 - 6) and disagree (0 -3). Only score "agree" will be proceeded to phase II.

The selected website will be reviewed by local participant based on validated questionnaires.

### Phase 2 - Review on selected local website by local respondent

The sampling technique used was a purposive random sampling for those eligible respondents around the study setting. The respondents were recruited based of the pre-determined inclusion criteria which were smokers who stayed in Kuantan, Malaysian, age between 18 to 60 years old and able to understand either Malay or English languages and internet literate. Respondents who are not Malaysians, do not complete the questionnaire, and do not cooperate well will be excluded from this study. The sample size in this study was based on by Lancaster, Dodd, & Williamson<sup>14</sup>, with his rule of thumb of using a sample size of 40 or greater to estimate a parameter in order to alleviate the under-powered problem. For this study, only 20% dropout will be permitted, implying that the minimum respondent number should be no less than 32.

The questionnaires in both language Malay and English have been reviewed and tested with Cronbach alpha 0.8. Participants were given validated questionnaires prior to the start of the session. They were informed regarding the study and written informed consent were obtained. Before the questionnaire given, the participants assessed the available online smoking cessation websites in the computer setting. A short briefing had been given to explain the purpose and objective of this study. The questionnaire consists of three parts.

Part A was the demographic data that consist of respondent's age, gender, occupation, salary,

level of education, marital status and race. Part B was about questionnaire of standardized checklist for websites assessment which consist of 10 questions. The questionnaire based on 10 elements which were (i) advice to quit; (ii) access readiness to quit; (iii) assist with quit plan, (iv) provide practical counselling; (v) provide intra treatment social support; (vi) recommended use of pharmacotherapy; (vii) arrange follow-up therapy; (viii) enhance motivation, risk; (ix) enhance motivation, reward; and (x) enhance motivation, roadblock<sup>9</sup>. The 10 elements will be grouped to 5 which were (i) preparation to quit (advise, access, assist); (ii) support (counselling, social support); (iii) medication; (iv) follow up; and (v) motivation (risks, rewards, roadblock). Part C was about open ended question of opinion and suggestion of the website.

The questionnaires were prepared in Malay and English form by considering the language used by the respondents. Respondent also has the right to withdraw from this research at any time without reason and the respondent will be anonymous. All information and data in this study were kept private and confidential.

### Statistical Analysis

The data was analysed using SPSS version 29. The descriptive analysis was used to determine the information needed to improve the most visited online smoking cessation websites in Malaysia from local smokers in form of frequency and percentage. The open-ended question at the end of the checklist was analysed based on thematic analysis related to data saturation.

## RESULTS

### Phase I - Website selection by Content Expert

Five websites were selected after thorough screening. The assessment on selected website will be conducted and score above 7 will be accepted.

**Table I: Selected online smoking cessation websites in Malaysia**

No	Website Name	URL	Score 1	Score 2
1	Jomquit.moh.gov.my	<a href="http://jomquit.moh.gov.my/">http://jomquit.moh.gov.my/</a>	10	10
2	Nicorette.com.my	<a href="https://www.nicorette.com.my/">https://www.nicorette.com.my/</a>	10	10
3	IJN Quit Smoking Clinic	<a href="https://www.ijn.com.my/specialty-clinic/quit-smoking-clinic/">https://www.ijn.com.my/specialty-clinic/quit-smoking-clinic/</a>	7	7
4	Myhealth.gov.my	<a href="http://www.myhealth.gov.my/en/quit-smoking-prime-years-2/">http://www.myhealth.gov.my/en/quit-smoking-prime-years-2/</a>	6	5
5	Quit Smoking Clinic- NCSM	<a href="https://cancer.org.my/get-screened/quit-smoking-clinic/">https://cancer.org.my/get-screened/quit-smoking-clinic/</a>	5	6

## Phase II - Review on selected local website by local respondent

In the phase II, findings will be divided into three part which were part A - Socio-Demographic, Part B - Website assessment (quantitative) and Part C - Website assessment (qualitative -open ended questionnaire).

### Part A : Socio-Demographic Data Characteristics

A total of 35 respondents had participated in this study. Majority of the respondent were from age category of 26-30 with 13 respondents (37.1%), followed by above 30 categories with 9 respondents (25.2%), 21-25 category with 8 respondents (22.9%) and the rest were 20 and below category with 5 (14.8%). Majority of the respondent were male which was 35 respondents (100%). In addition, most of the respondents were Degree student (57.1%), followed by Diploma (34.3%), SPM (5.7%), SRP or PMR level (2.9%) and

(0%) participated from Primary school, STPM, Matriculation and PHD respondent. This study also found that majority of the participate respondents were Officer (42.9%), followed by Professional (37.1%), student (14.3%) and unemployed (5.7%). Majority of the respondent had salary scale RM1000-RM5000 which was 48.6 % (17 respondents), scale RM 5000 and above was 25.7% (9 respondents), scale RM0 - RM1000 was 5.7% (2 respondents) and no monthly salary with 7 respondents (20%). This study recognized the majority of the respondents are married with 25 respondents (71.4%) and single with 10 respondents (28.6%). Furthermore, most of the respondent were Malay (97.1%), followed by others (2.9%) and (0%) from Chinese and Indian. All respondents were smoker (100%). Table II shows the detailed of socio-demographic data of the respondents.

**Table II: Socio-Demographic Data (n=35)**

Variables	Category	Frequency	Percentage (%)
Age	20 and below	5	14.3
	21-25	8	22.9
	26-30	13	37.1
	30 and Above	9	25.7
Gender	Male	35	100
	Female	0	0
Education	Primary school	0	0
	SRP/PMR	1	2.9
	SPM	2	5.7
	STPM	0	0
	Matriculation	0	0
	Diploma	12	34.3
	Degree	20	57.1
	PHD	0	0
Occupation	Officer	15	42.9
	Professional/Management	13	37.1
	Unemployed	2	5.7
	Student	5	14.3
Salary	RM0-RM1000	2	5.7
	RM1000-RM5000	17	48.6
	RM5000 and Above	9	25.7
	None	7	20
Marital Status	Single	10	28.6
	Married	25	71.4
	Divorce	0	0
	Widow	0	0
Race	Malay	34	97.1
	Chinese	0	0
	Indian	0	0
	Others (Melanau)	1	2.9
Smoker	Yes	35	100
	No	0	0

Part B : Determining information needed to improve the most visited online smoking cessation websites in Malaysia from local smokers based on standardized checklist form.

Table III shows availability required information or element from local respondent review.

Table III : Availability required information from local review

No	Elements	Category	Website		
			Yes/No	Jomquit.moh.gov.my	Nicorette.com.my
1	Advice to Quit	Yes	32 (91.4%)	31 (88.6%)	29 (82.9%)
		No	3 (8.6%)	4 (11.4%)	6 (17.1%)
2	Assess readiness to Quit	Yes	32 (91.4%)	33 (94.3%)	29 (82.9%)
		No	3 (8.6%)	2 (5.7%)	6 (17.1%)
3	Assist with quit plan	Yes	33 (94.3%)	31 (88.6%)	29 (82.9%)
		No	2 (5.7%)	4 (22.4%)	6 (17.1%)
4	Provide practical counselling	Yes	27 (77.1%)	31 (88.6%)	28 (80%)
		No	8 (22.9%)	4 (11.4%)	7 (20%)
5	Provide intra-treatment social support	Yes	29 (82.9%)	27 (77.1%)	25 (71.4%)
		No	6 (17.1%)	8 (22.9%)	10 (28.6%)
6	Recommended use of pharmacotherapy	Yes	33 (94.3%)	29 (82.9%)	28 (80%)
		No	2 (5.7%)	6 (17.1%)	7 (20%)
7	Arrange follow up therapy	Yes	30 (85.7%)	21 (60%)	25 (71.4%)
		No	5 (14.3%)	14 (40%)	10 (28.6%)
8	Enhance motivation; Risk	Yes	27 (77.1%)	31 (88.6%)	30 (85.7%)
		No	8 (22.9%)	4 (11.4%)	5 (14.3%)
9	Enhance motivation; Reward	Yes	29 (82.9%)	28 (80%)	20 (57.1%)
		No	6 (17.1%)	7 (20%)	15 (42.9%)
10	Enhance motivation; Roadblock	Yes	27 (77.1%)	26 (74.3%)	25 (71.4%)
		No	8 (22.9%)	9 (25.7%)	10 (28.6%)

Table IV : Required variables to be added in the website

Variables	JomQuit	Nicorette.com.my	Quit Smoking Clinic IJN
	Frequency (Percentage %)	Frequency (Percentage %)	Frequency (Percentage %)
Provide Practical Counselling	8 (22.9%)	-	7 (20%)
Provide Intra-treatment Social Support	-	8 (22.9%)	10 (28.6%)
Recommended Use of Pharmacotherapy	-	-	7 (20%)
Arrange Follow up Therapy	-	14 (40%)	10 (28.6%)
Enhance Motivation: Reward	-	7 (20%)	15 (42.9%)
Enhance Motivation: Roadblock	8 (22.9%)	9 (25.7%)	10 (28.6%)
Enhance Motivation: Risk	8 (22.9%)	-	-

Table IV below show the elements in the checklist that must be add in the three websites available after being assess by thirty-five respondents. Only frequency of 7 onwards will be count as element that need to add up.

**Part C: Open-Ended Questions of Kuantan smoker's opinion related to the online smoking cessation websites that available in Malaysia.**

There are three open-ended questionnaires in part C about opinions on online smoking cessation websites available in Malaysia. Table V shows thematic analysis - verbatim transcriptions.

**Q1: Smoker's opinion regarding the online smoking cessation website based on the 3 websites given.**

Respondent shared opinion about online smoking cessation website based on three website given. Four themes were developed which were "good website"; "informative"; "easy to use/find/access"; and "useful and helpful".

Theme:

Theme I : Good website

Theme II : Informative

Theme III : Easy to use/find/access

Theme IV : Useful & helpful

**Theme I: Good website**

This study found that, thirteen respondents which were respondent number 3,6,7,8,9,10, 20,22,23,25,27,30 and 34 illustrated the websites as good. The respondents surely think the websites is very good in giving the right way for those who have an intention to quit smoking. They also think that the quit program offered in the websites is really good and valuable.

**Theme II: Informative**

This study found that, eleven respondents which were respondent number 1,5,7,9,13,17,18,21,25,29 and 31 identified the websites as an informative tool for them to seek the knowledge about consequences of smoking and way to stop smoking effectively.

**Theme III : Easy to use/find/access**

This study identified that six respondents which were respondent number 1,4,15,16,21 and 27 found the websites as an easy to use or find or access at any time. The respondents can found the websites easily in the internet and information given in the websites was very easy for them to understand.

**Theme IV: Useful and helpful.**

This study found that, twelve respondents which were respondent number 1,4,8,11,12,21,25,26,29,32,33 and 35 pointed out that the websites was useful and helpful in guiding smokers to quit smoking effectively.

**Q2 : Smoker's ideas which they like to suggest in improving the quality of online smoking cessation website based on the 3 websites given.**

Respondents illustrated their idea in improving the quality of smoking cessation website based on the websites given. Two themes were developed for Q2 which were "improve content" and "boost advertisement and promotion".

Theme:

Theme V: Improve content

Theme VI: Boost advertisement and promotion

**Theme V: Improve content**

This study found that, fifteen respondents which were respondent number 1,2,4,5,13,15,16,18,20,21,25,26,27,30,31 and 34 expressed the idea to improve the content in the websites. The websites developer must put more effort in creating more interesting content such as put appropriate picture, add successful quit stories, videos, feedback from users, correct navigation, bilingual languages, minimal writing and put consequences of smoking.

**Theme VI: Boosts advertisement & promotion.**

This study found that, five respondents which were respondent number 5,7,17,28, and 29 expressed the idea to boost ads and promotion of the websites to public widely. Wide range advertisement and promotion of the smoking cessation websites through social media will grab more attention from public especially smokers to visit the websites.

**Q3: Smoker's hope for smoking cessation website in Malaysia in helping smoker to quit smoking?'**

In this Q3, the respondents expressed their hope for smoking cessation website in helping smoker to quit smoking. Four themes were developed for Q3 which were helpful to quit smoking; provide interesting content and correct info; smoker aware, use and visit the website; and increase ads and promotion.

Theme:

Theme VII : Helpful to quit smoking

Theme VIII: Provide interesting content & correct info.

Theme IX: Smoker aware, use & visit the website.

Theme X : Increase ads & promote.

**Theme VII: Helpful to quit smoking.**

Almost half of the respondents expressed the hope as websites was very helpful to quit smoking. The respondent which were respondent number 3,5,7,8,9,11,13,14,28,29,30,31,32 and 19 believed that the websites would help smoker to stop smoking and maintaining their healthy life style by accessing the websites just through smartphone.

#### **Theme VIII: Smoker aware, use and visit the website.**

Under Theme VIII, six respondents which were respondent number 6,7,10,17,29, and 35 expressed the hope as smoker should become more aware, use and visit the smoking cessation website available in Malaysia. Smoker should take the advantages of the websites by visiting or accessing the websites in order to help them quit smoking efficiently.

#### **Theme IX: Increase ads & promote.**

This study found that, four respondents which were respondent number 1,16,29 and 33 expressed their hope as the website will be increasingly promoted and advertised into social media. Social media play an important role to spread the websites widely to the public and grab more attention from smoker to join the quit smoking program offered in the websites.

#### **Theme X: Provide interesting content and correct info.**

This study found that, six respondents which were respondent number 21,24,25,26,27, and 34 identified their hope that the website will be featured more interesting content and providing correct information regarding the smoking and quit program. The respondent believed that interesting content in the websites will attract more attention from smoker to visit the website and join the quit smoking program.

### **DISCUSSIONS**

Based on the checklist's 10 elements, the elements will be grouped into 5 categories based on their stages. The five groups elements were (i) preparation to quit (Advise, Assess, Assist), (ii) support (counselling, social support), (iii) medication, (iv) follow up, and (v) motivation (Risks, Rewards, Roadblock).

In terms of quitting preparation, the website jomQuit.com received the highest percentage of respondents who agreed that the website advised smokers to quit smoking. In addition, when compared to other websites, JomQuit.com encourages internet users to quit smoking by displaying words like "quit smoking now and you will be healthier" on the front page of the website. However, the highest respondent agreed to the websites that assess readiness to quit smoking were Nicorette.com. This is because of Nicorette.com highlights smart ideas by placing an option button that says "get ready to quit" at the top of the website and a series of questions and answer will come out compared to other websites. Following that, the results revealed that JomQuit.com received the highest level of support from respondents when it came to websites that help people quit smoking, followed by Nicorette.com and Quit Smoking Clinic IJN. On the front page of their website, JomQuit.com made it very clear how to quit smoking.

The next stage was support session that consists of practical counselling and intra-treatment social support. The results showed that Nicorette.com had the highest number of respondents who agreed with the websites that provided practical counselling. In comparison to other websites, Nicorette.com provides a very clear strategy for dealing with cravings during the quit process. Surprisingly, the majority of respondents agreed that jomQuit.com was the best website for intra-treatment social support. Website JomQuit.com provides an info line call number as well as attachments to social media platforms such as Twitter and Messenger. The significance of existence support sessions is consistent with previous research that Wood & Smith<sup>15</sup> believed that virtual support groups and counselling, which can be accessed through computer-mediated communications, have several advantages over face-to-face support groups.

In the third stage, medication use of approved pharmacotherapy is required, as is the arrangement of follow-up contact. According to the findings, the website with the highest number of respondents who agreed to the use of pharmacotherapy was JomQuit.com. In practice, JomQuit.com provided Nicotine Replacement Therapy (NRT) to help smoker quit smoking that can increase chance of success as clearly compared to other websites. In relation with that, highest number of respondents agreed to the website that provide arrangement of follow up were JomQuit.com. In comparison to other websites, JomQuit.com provides an info-line call and also encourages smokers to do online registration for further treatment or a quit plan. Bock et al<sup>9</sup> stated that internet treatment should, at the very least, be responsive to changes in guidelines, treatment practice, known side effects, available medication, and other aspects of treatment that change over time.

In terms of follow-up, frequent follow-up is an essential component of tobacco addiction treatment. Most respondent agreed that Jomquit.moh.my provides essential component for follow-up.

In ensuring the sustainability of quit smoking, the important stage was motivation which consisting of enhance motivation of risk, enhance motivation of reward and enhance motivation of roadblock. The result showed the highest number of respondents agreed to the websites that provide motivation of risk was Nicorette.com. This is due to Nicorette.com provide an information about risk of smoking in the most interesting way and precise as compared to other website. Furthermore, the highest number of respondents agreed to the websites that provide motivation of reward was jomQuit.com because, when compared to other websites, JomQuit.com provides information regarding the benefits of

quitting smoking in a very interesting way by putting a few pictures and description. Lastly, the result showed the highest number of respondents agreed to the website that enhance motivation of roadblock were JomQuit.com. This is because, in comparison to other websites, JomQuit.com lists a few barriers that may occur during the quit phase, along with solutions, in very interesting and clear information.

Thematic analysis was conducted for part C: Open Ended questions. In question 1, smokers provide positive opinion towards selected three websites which were good website; informative; easy to use/find/access; and useful. This finding support info from Bock et al<sup>9</sup> that difficult websites may lose 40% of visitors who will not return. The ability to easily use and navigate internet sites is critical to the site's success<sup>9</sup>. Therefore, the website providers need to ensure the website in the good performances.

Findings from Bock et al<sup>9</sup> also indicated that majority of reviewed websites provide coverage for most key content areas identified as the core of smoking cessation treatment. This finding correlates with our smokers answer for question no 2. Respondents suggested website developer to be more creative in ensuring the content is more attractive for viewers. The respondents also suggested to use online platform for health promotion especially for smoking cessation campaign. A website need to have effective navigation as the ability to easily use and navigate internet sites is crucial to the successful use of the sites. Garret et al<sup>16</sup> mentioned that effective navigation is when the websites have consistent menu and navigation bars, search features and easy access to pages. If a website eases the user with effective navigation, users are likely to return for repeat visits thus enhance their willingness to stop smoking. In contrast, websites that are difficult to use can result in treatment failure if users cannot find the useful information to stop smoking.

According to a previous study by Spool<sup>17</sup>, 60% of the time, people cannot find the information they seek on a website. This resulted in lost time, increased frustration, and a failure to provide effective treatment. Website features that discourage repeat visits are a significant impediment to effective treatment. Similarly, if a website is simple to use and has useful and interesting features, users are more likely to return for additional visits, which may increase their chances of quitting smoking. The previous study also supported Garrett et al<sup>16</sup> findings that in order to attract repeat visitors, websites must provide quality and up-to-date information. Previous findings are consistent with our current respondent expectation. Respondents hope that the smoking cessation website in Malaysia is helpful; that it provides accurate and interesting content; that smokers are aware of its existence;

and that it is more widely advertised and promoted on social media. According Cutrona SL et al<sup>18</sup>, online intervention provides benefits but underused. Therefore, thru active promotion, online intervention will reach and benefited to large communities.

This study revealed that there were numerous opportunities to conduct a survey on how smokers evaluate Malaysian online smoking cessation websites. It was suggested that we conduct research on the efficacy of Malaysian online smoking cessation websites among Malaysian smokers periodically so that we can make improvements from time to time. The study's strength was that research on the efficacy of Malaysian online smoking cessation websites was very rare among Malaysians. The accuracy of the efficacy of Malaysian online smoking cessation websites can be measured using this study. There were several limitations to the study, which were limited by the data collection setting. This study was only carried out in one specific area of Kuantan. As a result, it may be inappropriate to generalize the findings as a whole for Kuantan. The second limitation was that it was difficult to approach smokers to participate in this study because they discovered that quitting smoking is a sensitive topic to discuss. The third limitation was the lack of previous research for further discussion and data comparison on the findings. The majority of researchers choose smoking as their research topic, but fewer do research on the effectiveness of Malaysian online smoking cessation websites.

## CONCLUSIONS

According to a standardized checklist of online smoking cessation websites assessed by Kuantan smokers, JomQuit.com had the highest efficacy of Malaysian online smoking cessation websites, followed by Nicorette.com, and the lowest quality was Quit Smoking Clinic IJN. The checklist can be used by website providers to ensure that an effective and comprehensive website is created.

The Malaysian online smoking cessation websites were found to be good, informative, easy to use, and useful for quitting smoking in this study. The study also revealed that Malaysian online smoking cessation websites need to improve their content as well as increase their advertising and promotion across the country. The Malaysian online smoking cessation was believed to be helpful to quit smoking, provide interesting content and information, increase awareness and increase promotion. Regular website assessment shall be reviewed periodically in order to ensure the information in the website relevant to apply for local communities and for content improvement purposes.



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## Conflict of interest

The authors have no conflict of interest to declare with regard to this work.

## Competing interests

The authors declare that they have no competing interests

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Table V shows thematic analysis - verbatim

Question		Q1				Q2			Q3	
Respondent	Theme I : Good website	Theme II : Informative	Theme III : Easy to use/find/access	Theme IV : Useful & helpful	Theme V : Improve content	Theme VI : Boost advertisement and promotion	Theme VII : Helpful to quit smoking	Theme VIII : Smoker aware, use & visit the website.	Theme IX : Increase ads & promote	Theme X : Provide interesting content & correct info.
1	-	Lots of useful info given to anyone who browses the site such as expenses used to buy cigarettes, the effects of smoking and the benefits of quitting smoking.	The website is easy to use and easy to access.	Lots of useful info given to anyone who browses the site such as expenses used to buy cigarettes, the effects of smoking and the benefits of quitting smoking.	Use more pictures or drawings that can interest the reader. Use sentences that are easy to understand. Do not use sentences that are as long as the third website.	-	-	-	Promoting more websites to more people is like spreading them on social media.	-
2	-	-	-	-	Organize the website in a more orderly manner and put up more stories regarding a smoker that actually quits.	-	-	-	-	-
3	Good and valuable.	-	-	-	-	-	Will help smokers to stop from smoking and maintain healthy lifestyle.	-	-	-

4	-		It's very easy to use and easy to understand.	The website is very useful for smokers who want to quit smoking. It's very easy to use and easy to understand.	Bilingual use. I believe that most of the program participants are seniors who may have difficulty understanding the questions being organized.	-	-	-	-	-
5	-	The website is very informative to quit smoking.	-	-	Include social share and follow buttons, Implement calls-to-action, Use the right images, Navigation must be correct, Use some money to promote in advertisement page.	Include social share and follow buttons, Implement calls-to-action, Use the right images, Navigation must be correct, Use some money to promote in advertisement page.	Increase successful rate of smoker that quit smoking.	-	-	-
6	The website provided is very good because it provides a platform for smokers to quit smoking.	-	-	-	-	-	-	So that this website is known by all Malaysians.	-	-
7	The 2nd and the 3rd web is quite good because they give enough information about their program and smoking.	The 2nd and the 3rd web is quite good because they give enough information about their program and smoking.	-	-	-	The website needs to advertise efficiently to attract people and aware them that they can get the counselling or join the program.	This will help the programs to be able reach the people who want to stop smoking	I hope people aware more about the existence of the website.	-	-

8	Very good. Help smokers to stop smoking.	-	-	Help smokers to stop smoking	-	-	Can help smokers to stop smoking for good and consistently.	-	-	-
9	It provide a good information about how to quit smoking	It provide a good information about how to quit smoking	-	-	-	-	I hope that this website will help a lot more smoker in quitting smoking	-	-	-
10	A good move for smokers in the age of technology and the internet, to easily browse the coverage of smoking cessation websites. Only smokers who browse the website to stop smoking must be honest, sincere and sincere.	-	-	-	-	-	-	It is hoped that the smoking cessation website can provide awareness on the benefits of quitting smoking and the disadvantages of continuing to smoke for smokers throughout Malaysia.	-	-
11	-	-	-	The content is great, the help about to be giver were excellent and i might consider quitting with such helps.	-	-	Keep your good work. Keep helping people. Keep educate. Dont stop	-	-	-
12	-	-	-	Very useful, beneficial	-	-	-	-	-	-

13	-	They provide complete and concise information about how to quit smoking and the risk of smoking.	-	-	Provide video presentation instead of text writing, include professional advices and tips regarding the way to stop smoking.	-	I hope they can help more and more smokers out there to quit smoking and an organization and initiative must be created to promote these websites to the smokers who don't know the existence of these websites to save smokers' life.	-	-	-
14							Really help.	-	-	-
15	-	-	From my point of view, the platform that have been provided for the smokers to quit can easily be found in the internet, brochures or in the media social	-	A more friendlier approach in the clinic via face-to-face with the smokers that have high awareness and spirit to quit is much more effective.	-				

16	-	-	Secondly, I find that the template for Nicorette are quite pleasing and easy to navigate through.	-	-	Provide an easy tracking-like apps?? for user to easily key in their achievement/improvement for the day to keep them on track and motivated.	-	-	-	To utilize all platform available such as social media to have a more wide range target as websites are rarely visited by people	-
17	-	They have enough information on the how and whys to quit smoking.	-	-	-	More advertisements about the websites	-	-	I hope they get more recognition from people, especially from them who is using vapes and other alternatives without consulting anyone to quit smoking.	-	-
18	-	In my opinion, the site has delivered very concise and concise info.	-	-	-	May add feedback from people who have stopped smoking from the site. For two to three examples of lifestyle people who quit smoking.	-	-	-	-	-
19	-	-	-	-	-	-	-	Smoker start to reduce.	-	-	-
20	Good websites.	-	-	-	-	Make a video.	-	-	-	-	-

21	-	Full of information that is easy to understand and can help smokers to quit smoking	Full of information that is easy to understand and can help smokers to quit smoking	Full of information that is easy to understand and can help smokers to quit smoking	Add more pictures to help readers understand and get a sense of what is being discussed.	-	-	-	-	My hope is that smokers in Malaysia get the right information about cigarette use and be able to choose the right decision to quit smoking.
22	Good.	-	-	-	-	-	-	-	-	-
23	Website is very good.	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	Maintain the website with good enough research and development.
25	Good website. Provide enough information, useful tips and advices provided by them.	Good website. Provide enough information, useful tips and advices provided by them.	-	Provide enough information, useful tips and advices provided by them.	Add more consequences of smoking so that people will be afraid to smoke.	-	-	-	-	Provide more information about the smoking, how to stop, where to seek help etc.
26	-	-	-	Very helpful and user friendly.	Put some videos regarding bad effect of smoking or else. Sometimes people tend to hear and look than read.	-	-	-	-	Hopefully, this kind of website will keep improving on their contents and could inspire others to quit smoking.



27	Good. Enough information and advices provided by them. Got some useful tips too. Thank you very much.	-	Good. Enough information and advices provided by them. Got some useful tips too. Thank you very much	-	Put consequences of smoking so that people will be afraid to smoke again. Add more pictures to get people attentions	-	-	-	-	Give more information about the smoking and how to stop and where to seek help.
28	-	-	-	-	-	Always promote to the public, because many still do not know about this.	To continue this (develop more websites) to encourage smokers to quit smoking.	-	-	-
29	-	Lots of useful info given to anyone who browses the site such as expenses used to buy cigarettes, the effects of smoking and the benefits of quitting smoking.	-	Smoking cessation websites are very helpful for hard core smokers to start quitting.	-	Among the suggestions I think is that such websites need more attention in terms of advertising and promotion.	I hope that this kind of website can help young people to quit smoking nowadays because young people are more comfortable with their smartphones and it is not wrong for them to take the time to access such websites for themselves.	I also hope that this website can strive to get more visitors from smokers in Malaysia by doing more ads and promotions.	I also hope that this website can strive to get more visitors from smokers in Malaysia by doing more ads and promotions.	-
30	Good initiatives to give a chance for the smokers to quit smoking by giving various	-	-	-	If possible, try not to use the damaged health pictures like lung cancers and abnormal new-born because it is too common and some of the smokers really do not care. Instead,	-	I'm hoping that the websites will no matter to continuously support the effort of the smokers to quit.	-	-	-

	methods to do it.				use more uplifting spirit pictures.				
31	-	For me, the second website is the best as it is simple but the information needed are there.	-	-	Make it simple, less wordy with good design to attract people to read more and give morale for the smoker to stop smoking.	-	There should be more websites to help the smoker which can make it easier for them to seek for the help when they wanted to stop smoking. To help the smokers with a healthy lifestyles.	-	-
32	-	-	-	It is very convenient and helpful for the smokers.	-	-	-	-	-
33	-	-	-	This website is very helpful for hard-core smokers to stop smoking user-friendly funds.	-	-	-	Stop smoking websites must always promoting this program into social media.	-
34	In my opinion, smoking cessation website is good for those who want to quit smoking.	-	-	-	Provide video that related with dangerous of smoking.	-	-	-	My hope is we must do something to attract smoker to stop smoking like providing something more interesting and easy to grab public attention.

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In my opinion, the websites is really useful because it is as a support to be closed with smoker in website relationship or social.

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I hope more people is going to use the websites and product to quit smoking.

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