Original Article

Perceived Effects of the Malaysian National Tobacco Control Programme on Adolescent Smoking Cessation: A Qualitative Study

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Abstract

Background: **The prevalence of teenage smoking has decreased over the past decade following the implementation of the national tobacco control programme. However, the effect of the programme on smoking cessation in teenagers has not been determined.**

Methods: **Twenty-eight participants (12 teenagers, 8 teachers, and 8 doctors) were interviewed using 5 in-depth interviews and 3 group discussions. Social cognitive theory (SCT) was applied as the theoretical framework. Semi-structured interview protocols were used, and thematic analysis and analytic generalisation utilising SCT were performed.**

Results: **The current national tobacco control programme was found to be ineffective in promoting smoking cessation among teenagers. The participants attributed the ineffective campaign to the followings: inadequacy of message content, lack of exposure to the programme, and poor presentation and execution. In addition, the participants perceived the developed tobacco control policies to be a failure based on poor law enforcement, failure of retailers to comply with the law, social availability of cigarettes to teenagers, and easy availability of cheap, smuggled cigarettes. This study highlighted that the programme-related problems (environmental factors) were not the only factors contributing to its perceived ineffectiveness. The cunning behaviour of the teenagers (personal factor) and poor self-efficacy to overcome nicotine addiction (behavioural factor) were also found to hinder cessation.**

Conclusion: **Tobacco control programmes should include strategies beyond educating teenagers about smoking and restricting their access to cigarettes. Strategies to manage the cunning behaviour of teenagers and strategies to improve their self-efficacy should also be implemented. These comprehensive programmes should have a foundation in SCT, as this theory demonstrates the complex interactions among the environmental, personal, and behavioural factors that influence teenage smoking.**

Keywords: *adolescent, health campaigns, qualitative research, tobacco cessation, tobacco smoking*

Introduction

In the last decade, the prevalences of teenage smoking in developed countries, such as the United States, England, and Australia, have decreased. The prevalences, however, have remained stable for the past few years (1–3). The decline in teenage smoking that has been observed over the last decade can be attributed to the implementation of comprehensive national tobacco control programmes in these countries (2–4).

These comprehensive programmes are characterised by an optimal combination of evidence-based and state-wide strategies. These strategies work effectively and synergistically to create smoke-free social norms, promote and assist smoking cessation, and prevent smoking initiation (5). These strategies include increasing the tobacco duty, enforcing policies that prevent youth from accessing tobacco, banning smoking advertisements, developing smoking restrictions in public places, creating effective media campaigns, and formulating other specific prevention and cessation programmes (4,5). A review by Wakefield and Chaloupka (4) showed reductions in teenage smoking in Massachusetts, Oregon, and Florida in the late 1990s as a result

of these comprehensive programmes. These findings were further supported by Nelson et al. (6), as they found a decrease in the prevalence of teenage smoking from 2003 to 2004 in the United States that coincided with the increase in the price of tobacco and the increase of anti-smoking advertisements directed at teenagers. In addition to the decrease in the prevalence of teenage smoking, public awareness of the danger of smoking has increased due to these programmes, and societal norms regarding cigarette smoking have also changed (4).

A similar decrease in the prevalence of teenage smoking has been observed in Malaysia through several national surveys in the past decade. In 2003, 19.9% of teenagers aged 13 to 15 years old were smokers (7). According to the latest National Health and Morbidity Survey III (NHMS III) in 2006, this percentage declined by more than half, as only 8.7% of teenagers aged 13 to 18 years old were smokers (8). This lower prevalence rate is inconsistent with a number of local studies conducted between 2000 and 2008 that demonstrated the prevalence of smokers to be between 14%–37% (9–16).

In Malaysia, a comprehensive tobacco control programme has existed since 1993 (17,18). This programme includes the Control of Tobacco Product Regulations and its enforcement, the tobacco duty, the national anti-tobacco campaign, school-based programmes, and the quit-smoking clinics. The tobacco control regulations are similar to those in developed countries and include the restriction of smoking in public places, advertisement regulations, display of health warnings on cigarette packs, provision of the tar and nicotine content, and regulation of the sale of tobacco products (17,18). Individuals younger than 18 years old are prohibited from smoking, chewing, buying, or possessing any tobacco products (19). In addition to this regulation, the Malaysian government has also increased the tobacco duty (18). In 2004, the largest national anti-smoking campaign, *Tak Nak* (Say No), was launched. The campaign aimed to educate the nation, especially the younger generation, on the health hazards of smoking through an integrated media approach using television, radio, billboards, and poster advertisements. The Ministry of Education Malaysia plays an important role in executing school-based programmes. These school-based programmes consist of health talks, exhibitions, activities, a peer counselling programme, and more. Despite these initiatives, studies examining their effectiveness in curbing teenage smoking and promoting complete abstinence are still lacking in Malaysia. However, the lower prevalence of teenage smoking reported by the NHMS III was postulated to be due to the effectiveness of the current programmes.

The development of comprehensive tobacco control programmes has been based on various models of health behaviour, such as social cognitive theory (SCT), the health belief model, theory of reasoned action, and theory of planned behaviour (5,20). Many of these models have overlapping constructs or variables that are called different names (21). Among these models, SCT is the most comprehensive model; it describes the importance of how multiple factors (personal or cognitive, behavioural, and social) influence human health behaviour (Figure 1) (21,22). According to SCT, our motivations and actions are pre-conditioned by our cognition (knowledge, perception, and beliefs) (21,22). Therefore, in the context of smoking behaviour, smokers' motivations to quit are determined by their knowledge regarding the dangers of smoking, the perceived benefits of quitting, and their belief in their ability to overcome the barriers to quitting (Figure 1). SCT also explains that our cognition is highly influenced by social structural impediments (barriers) and facilitators, particularly through vicarious or observational learning (20–22). Thus, social factors such as the easy availability of cigarettes, the societal norms of smoking, and the approval of smoking among peers could influence smokers' intention and attempts to quit. Concurrently, perceived self-efficacy and adaptive skills for overcoming barriers are posited as the central factors of behavioural change (21,22). All of these factors reciprocally interact with each other (20,22).

In recent years, there have been many international studies on smoking cessation that have applied SCT as their theoretical framework (23). This suggests that SCT has become a fundamental resource for the development of interventions to curb teenage smoking. Therefore, the current study adopted SCT as its framework to help researchers accomplish the objectives of the study.

The purpose of our study was to determine whether teenagers (smokers and ex-smokers) and adults who were involved in the execution of anti-tobacco strategies (doctors and teachers) found these programmes to be effective for smoking cessation among teenagers. The study also examined the potential limitations of strategies that could hamper their effectiveness. Thus, strategies to improve the programmes could be developed.

Subjects and Methods

Overview of the design

The design of this qualitative research was multiple-case study. According to Yin (24), a case study is a comprehensive research inquiry that incorporates specific methods of data collection (theory-based with multiple sources of evidence) and explicit analysis (cross-case conclusion and analytic generalisation) (24,25). Thus, Yin (24) defines a case study as a systematic research strategy to investigate "a phenomena within its real-life context" rather than an individual object (25). When 2 or more cases are included within the same study, the design is called multiple-case study. In our multiple-case study design, 3 cases (teenagers, teachers, and doctors) were selected based on their roles within the smoking cessation strategies. The teenagers were meant to benefit from the strategies, and the teachers and doctors executed the strategies. The phenomenon of teenage smoking was studied in our research, with the specific context of smoking cessation strategies. In reality, strategies that ensure smoking cessation are not clearly distinguished from the equally important strategies for smoking prevention. Due to these unclear boundaries, a case study inquiry is suitable to obtain informative, in-depth, comprehensive findings.

This study was performed on 28 participants (12 teenagers, 8 teachers, and 8 doctors). The participants were interviewed between January 2008 and August 2009 through 5 in-depth interviews (IDI) and 3 group discussions.

Theoretical framework

SCT was chosen for this study's theoretical framework because of the theory's ability to describe the complex phenomenon of teenage smoking (22). The theory guided researchers in the selection of cases to be studied and in the creation of codes during data analysis (24). For example, during the selection of participants, adults who executed the anti-smoking strategies (acted as facilitators of the behavioural change) were recruited because SCT emphasises the important role of social and structural facilitators in influencing one's behaviour.

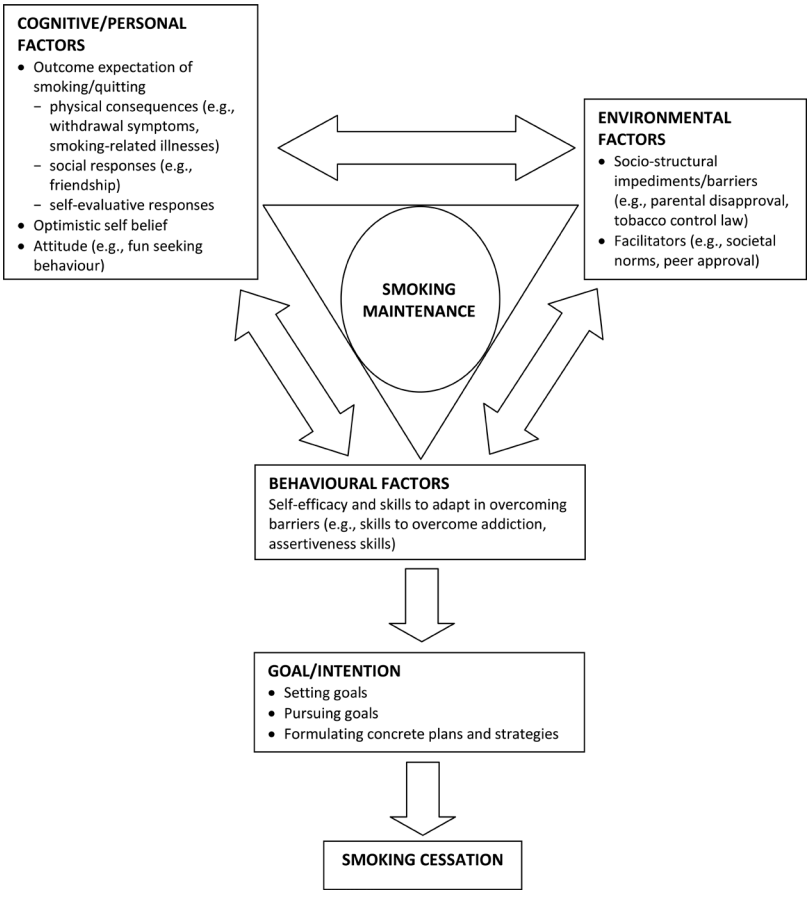

Figure 1: Smoking cessation framework based on social cognitive theory (20–22).

In addition, SCT was used as a template for analytic generalisation. This is a process of comparing the findings of case studies to a developed theory to either confirm replication or to show the need to modify the theory (24).

Sampling procedure

Based on pre-determined criteria, 12 teenagers, 8 doctors, and a school counsellor were selected through purposive sampling, and 7 teachers were recruited through snowball sampling (Table 1). The pre-determined criteria of the participants were teenagers who smoked or had experienced quitting (thus, they were more likely to know which strategies were useful based on their personal experience) (26) and adults (teachers and doctors) who had been involved in promoting strategies to help teenagers quit smoking. These criteria ensured comprehensive, in-depth, and holistic data related to the phenomenon in question.

Because teachers are involved in school-based anti-smoking activities and may have experience in dealing with students who are smokers, 8 teachers from a secondary school in Kuala Lumpur were selected. One of them was a school counsellor who provided counselling to problematic students, including those who smoked.

Similarly, because doctors in community health services commonly address adolescent patients who smoke, 7 primary care doctors from the Universiti Kebangsaan Malaysia Medical Centre were recruited. We thought that their experience in managing these teenagers and their training in general adolescent health would provide different points of view, thus enriching the findings of our study. Another doctor from the Tobacco Unit, Ministry of Health Malaysia, was purposely sampled because of her involvement in developing and implementing the National Tobacco Control Programme in Malaysia.

Twelve 16-year-old students (9 smokers and 3 former smokers) were recruited from the same school where the participating teachers worked. The school was selected due to the high level of anti-smoking activities that had been conducted there in recent years.

The school counsellor who participated in this study was appointed by the school's headmistress. He was recruited during an informal meeting with the main researcher in the study. During this meeting, the purpose of the study was explained, and consent was obtained. The school counsellor was also asked to enlist potential teachers and teenagers who met the pre-determined criteria. The school counsellor distributed letters to the teachers inviting them to participate in the study and to attend a scheduled group discussion. Seven teachers with varying smoking statuses and teaching experience came to the group discussion. This heterogeneity maximised the different perspectives within this group (27).

An informal meeting with the teenagers was subsequently arranged by the school counsellor to brief the students on the study. The main researcher assessed the suitability of the students in participating in the group discussion and IDI. The students were also given packages for their parents that included an acknowledgement letter, an information sheet, and a parental consent form. The parental consent forms were collected prior to the actual interviews.

All of the doctors were enrolled through invitational letters. However, the doctor from the Tobacco Unit, Ministry of Health Malaysia, was initially approached via telephone. Once verbal consent was obtained, a formal invitational letter was mailed to her, and a meeting was scheduled.

Data collection

Before each interview, participants completed written consents and self-administered questionnaires regarding sociodemographic variables. The interviews were guided by a semi-structured interview protocol (Table 2) and conducted mainly in Malay, depending on the comfort level of the participants. Each interview lasted less than 2 hours and was recorded using digital audio recorders. Visual recording was added in the group discussions to identify participants' voices in the audio recordings.

Table 1: The participants' type of interview and method of sampling

Parameter	Doctors		Teachers		Students	
	GD	IDI	GD	IDI	GD	IDI
Number of interviews	1	1	1	1	1	3
Number of participants	7	1	7	1	9	3
Method of sampling	Purposive	Purposive	Snowball	Purposive	Purposive	Purposive

Abbreviation: GD = group discussion, IDI = in-depth interview.

Data analysis

The audio recordings were transcribed into text. All transcripts were cross-checked against the recordings several times to maintain accuracy (24). Thematic analysis of the transcripts was performed using NVIVO 7 (QSR International Pty Ltd, Victoria, AU). The coding was subsequently reviewed by 2 experts in adolescent health to ensure the reliability of the process. The kappa value of agreement in the coding was also calculated using the Cohen kappa formula. The reliability index was maintained above 0.8. A cross-case conclusion was then drawn between the analyses of the cases. After the 7th interview, data saturation was reached. An analytic generalisation, which was performed by mapping the final pattern of findings against SCT, was also performed.

Ethical issues, reliability, and validity

Approval was obtained from the Research and Ethic Committee of the Universiti Kebangsaan Malaysia and the Ministry of Education Malaysia. Permission from the school authority figure was sought before interviewing the teachers and teenagers. In addition, all participants were required to provide written consent before the interviews. Parental consents were also obtained for the teenagers. The teenagers' smoking statuses were kept confidential.

Because converging evidence that was found through triangulation could verify the significance of the detected themes, 2 types of triangulation were performed in this study to increase the validity of the findings (24,25). Triangulation of the multiple sources of data (teenagers, teachers, and doctors) and triangulation of the different methods of data collection (questionnaire, group discussions, and IDIs) were performed. Other means to improve validity and reliability in this study included self-reflection, procedural validity, and good inter-coder agreement (reliability index of above 0.8). Self-reflection allowed the researchers to acknowledge that their own beliefs, perceptions, and past experiences could influence various aspects of the study and result in biases. Therefore, the researchers wrote down their reflections in a journal (28) to help them remain objective throughout the study. Meanwhile, the procedural validity was an interviewing process that ensured rich and unbiased answers from the participants through the intermittent rephrasing of questions, the clarification of statements, and minimal prompting, as necessary (28).

Results

Sociodemographic characteristics of the participants

Twelve students, 8 teachers and 8 doctors were interviewed. Every student was Malay and was 16 years old (Table 3). Nine of the students were male, and 3 were female. Two of the male students and 1 female student were former smokers. The other 9 students were smokers at the time of the study.

Seven of the teachers were Malay, and 1 teacher was Chinese. The teachers were between 23 and 54 years old (Table 3). All of them were male except for 1 female. Four of the teachers,

Table 2: Interview protocol used in the in-depth interviews and group discussions

INTERVIEW PROTOCOL
GOVERNMENT STRATEGIES
1. "What do you think our government has done to make teenagers to stop smoking?" Discuss the following strategies separately: a. campaign b. law and enforcement of law c. tobacco duty d. school-based programmes, etc.
2. "Do you think they are effective (to make teenagers to stop smoking)?"
3. "Why are they effective/not effective?"
a. "If they are not effective, what are the problems?" Explore any issues/ problems raised by the participants in detail
4. "Is there anything else you want to share?"

including the female teacher, were non-smokers; 3 of the teachers were former smokers, and 1 was a smoker at the time of the study.

Similar to the students, all 8 doctors were Malays. However, none of them were smokers or former smokers. The doctors were between 31 and 45 years old (Table 3); 6 were female, and 2 were male.

Participants' perception of the effect of the national tobacco control programme on the cessation of adolescent smoking

The majority of the participants agreed that the national tobacco control programme was ineffective in causing teenagers to quit smoking. This is clearly described by the following excerpts:

> "Putting up posters alone does not guarantee that the message really gets through." (Doctor, male, non-smoker)
>
> "Tobacco duty is not high enough to make teenagers quit smoking."
> (School counsellor, male, ex-smoker)
>
> "It does not matter. Even if the police arrest me, I will still continue smoking." (Teenager, male, smoker)

In fact, some of the teenagers admitted that nothing, except for themselves, could make them quit. One of them said:

> "Nothing [can make us stop smoking]."

However, a number of the participants felt that the anti-smoking campaign and tobacco duty might have positive effects on teenagers' smoking behaviour. They said:

> "They [disseminating knowledge about the impact of smoking] are effective [to teenagers]. If not for all, even if we can attract a percentage of students to stop smoking... those are still results"
> (School counsellor, male, ex-smoker)
>
> "The tax might have some effect in reducing the number of smokers."
> (Teacher, male, non-smoker)

Some participants believed that instead of leading active smokers to quit, the anti-smoking campaign could only prevent smoking initiation in those who had never previously smoked. For example:

> "The campaign is not effective [to cause teenagers to stop smoking], but if we want to prevent teenagers from starting to smoke... it is possible."
> (Teenager, male, ex-smoker)

Even though a number of adult participants felt that the tobacco duty was effective in curbing teenage smoking, the teenagers disagreed. One of them said:

> "Even if they [the Government] make it [the tobacco duty] high, people [teenagers] will still buy [cigarettes]."

Participants' opinions about problems with the anti-smoking campaign

The participants admitted that there were a number of problems with the anti-smoking campaign. These problems could be categorised into inadequacy of message content, lack of exposure to the programme, and poor presentation and execution.

According to the teenagers, repetitively displaying information about the health hazards of smoking through the campaign was not effective in making them quit. In fact, they believed that they were already well-informed about these

Table 3: Sociodemographic characteristics of the participants

Parameter	Doctors		Teachers		Students	
	GD	IDI	GD	IDI	GD	IDI
Age (years)	31–35	45	23–54	25	16	16
Gender						
Female	5	1	1	-	-	3
Male	2	-	6	1	9	-
Race						
Malay	7	1	6	1	9	3
Chinese	-	-	1	-	-	-
Smoking status						
Non-smoker	7	1	4	-	-	-
Smoker	-	-	1	-	7	2
Ex-smoker	-	-	2	1	2	1

Abbreviation: GD = group discussion, IDI = in-depth interview.

health hazards. More importantly, they felt that the campaign lacked information about how to quit.

> "[They do not show] how to quit smoking. They only… give talks… just talks… and put up posters [showing 'smoking is dangerous for your health']."

Consequently, the teenagers relied on methods suggested by their friends for quitting, and these were often ineffective. Several examples of these methods for quitting included drinking a lot of water, chewing gum, and eating sweets. One of the teenagers explained:

> "'You should do this… take sweets,' said my friend who taught me [how to quit smoking]… 'You should drink water… it will surely work.'"

Many of the participants thought the effort put into the campaign advertisements and activities was inconsistent. They felt that the strategies were not extensive and failed to reach all teenagers throughout the country. Examples of the excerpts are as follows:

> "We always concentrate on teenagers at school. We should not forget teenagers who do not go to school [drop-out and expelled teenagers]."
>
> (Doctor, male, non-smoker)
>
> "There are programmes specific for school students… but they need to be strengthened. A lot more need to be done. At this moment, the programmes are carried out only in selected states."
>
> (Doctor from the Tobacco Unit, female, non-smoker)

Additionally, the participants, particularly the teenagers, felt that the campaign advertisements and activities (mainly talks and exhibitions) were uninteresting. Therefore, the campaign did not attract the attention and participation of the participants. One of the teenagers said:

> "I felt sleepy when they were talking."

Similarly, some of the participants thought that the advertisement designs had flaws. They believed that the image of cigarettes in the advertisements could provide cues for smoking, thus further triggering their urge to smoke. One of the teachers who was an active smoker said:

> "Once, I actually stopped smoking for almost a week. But, when I saw an anti-smoking advertisement (with an image of cigarette), I felt the urge to start smoking again."

He highlighted that smokers would be drawn to images of cigarettes in advertisements but would ignore the images of smoking-related diseases.

> "[When I see an anti-smoking poster] I notice the disease that it's showing… but I notice the cigarette in the poster more. Other images become unnoticeable."

Participants' opinions about problems with the tobacco control regulations and enforcement

The majority of the participants could not see any benefit in restricting the accessibility of cigarettes to teenagers, as they believed that this strategy failed to cause teenagers to stop smoking. One teenager said:

> "Even if there is a police officer… we can ask someone older to buy cigarettes for us."

The teenagers claimed that they could easily purchase cigarettes from local stores, and one of them stated:

> "[When you wear a school uniform] you cannot buy [cigarettes]. When you wear casual attire… you can buy cigarettes."

A number of factors were suggested as possible reasons for this:

(a) Failure of retailers to comply with the law, as voiced by one of the teenagers:

> "People said that retailers could only sell cigarettes to those above 18 years old… but we always see… young kids [buying cigarettes from them]."

The participants felt that retailers' ignorance was related to their priority of making a profit from selling cigarettes to all customers, regardless of their age. As one of the teenagers said:

> "Surely retailers will not obey the law [that against the sale of cigarettes to minors]… they want profits."

(b) Poor enforcement of the law, as one teenager described:

> "Nothing (not afraid of buying cigarettes from retailers who put up signs against the sale of cigarettes to minors). No one… no one would enforce the law."

This poor law enforcement was thought to be due to the followings:

a) Poor resources

> "Our enforcement officers… they are not just enforcing tobacco policies… it is impossible to enforce the policies against selling cigarettes to minors every day. You cannot be everywhere at all times."
>
> (Doctor from the Tobacco Unit, female, non-smoker)

b) Lack of public co-operation in ensuring law compliance by retailers

> "When the retailer sold cigarettes to the young kids, other adults [who were there] just watched. No one said anything."
>
> (Teenager, female, smoker)

c) Current law deficiency in only allocating the enforcement of power to certain bodies (mainly police officers, health officers, and custom officers):

> "Outside the school compound... the enforcement power belongs to police officers. Teachers are not allowed [to enforce law against tobacco in the community]." (Teacher, male, non-smoker)

Some of the teenagers in this study conveyed the idea that because of addiction, "no matter how strong the law is enforced, they will always find ways to obtain cigarettes", as shown by the following excerpts:

> "[We] steal their [friends'] cigarettes."
>
> "[I] try to find [cigarettes] until I get them. Get from friends."

The availability of cigarettes from social sources (friends and siblings) was also a hindrance and made the high tobacco duty ineffective for restricting the accessibility of cigarettes to teenagers. The teenagers declared that they could always share the cost of cigarettes with their friends, as one of them said:

> "We shared our money to buy cigarettes."

Furthermore, the teenagers claimed that cheap, smuggled cigarettes were easily obtained, thus making cigarettes more affordable to them. This was supported by many adult participants who agreed that illegal smuggling of cigarettes was an important barrier to curbing smoking problems in Malaysia.

> "Malaysia is exposed to smuggling. So when we raise the price of tobacco, smuggling will take advantage."
>
> (Doctor from the Tobacco Unit, female, non-smoker)

Discussion

In general, the majority of the participants in this study believed that the national and local tobacco control programmes were ineffective in promoting smoking cessation among teenagers. This negative perception is comparable to the findings of other studies (29–31). Only a small number of the participants believed that some of the strategies could trigger their desire to quit, reduce their cigarette consumption, and make them quit. This is consistent with a number of studies (32–34) that showed certain strategies, which were part of the comprehensive anti-tobacco programmes, were effective in curbing teenage smoking. These comprehensive strategies included mass media campaigns, school and community programmes, the youth access law and its enforcement, and a high tobacco duty.

In many studies in western countries (35–38), anti-smoking campaigns have been shown to be effective in reducing the prevalence of teenage smoking, decreasing the cigarette consumption of teenagers, reducing the rate of progression to chronic smoking, preventing smoking initiation and relapse, and increasing the number of quit attempts. However, the majority of the participants in this study agreed that the campaign could not ensure successful quitting among teenagers, as was also found in other studies (29–31). The participants suggested a number of reasons for this, which included an inadequacy of the message content, a lack of exposure to the campaign, and poor presentation and delivery.

In Malaysia, the main message that is highlighted in the anti-smoking campaign is the adverse health risks related to smoking. This message is delivered through advertisements, particularly on posters and billboards. Previous studies showed that this strategy was effective in preventing smoking behaviour and causing smoking cessation (32,39). However, the participants in our study believed that they were already well-informed about the health risks, so repetitively showing them such information was futile. The participants thought that the campaign lacked vital information regarding how to quit. Because most teenagers are unfamiliar with effective methods for quitting (30), the teenagers relied on those methods suggested by their friends. These methods included drinking a lot of water, chewing gum, and eating sweets. Hence, the combination of emotional jolting, which is associated with the health risks of smoking, and supportive messages in anti-smoking campaigns might be effective in increasing smokers' intentions and attempts to quit (32,35,39).

The participants also suggested that the lack of exposure to the campaign programme, which was due to infrequent campaign advertisements and activities, was a cause of its ineffectiveness. The campaign failed to reach out to teenagers throughout the country, and the participants believed that the limited budget and resources were the underlying reasons (39). Because high exposure of a campaign is crucial for ensuring that it has a substantial impact on teenage smoking (37,39), strategies to increase the frequency, duration, and coverage areas of the campaign should be implemented. Exposure to the campaign could also be enhanced by increasing the collaboration between organisations within the local communities in conducting anti-smoking

activities, such as promotions, contests, and No Tobacco Days (39).

In this study, the participants believed that problems with the execution and presentation of the advertisements were responsible for the ineffective campaign. These problems included uninteresting activities and advertisements that failed to attract the teenagers' attention (11,40,41). Because the appropriate use of language and graphics in campaigns are important for ensuring the teenagers' ability to relate to the campaigns (38), teenagers should be included in the planning and execution. Through this participation, more appealing and effective programmes may be created.

A number of participants also considered the design of the campaign advertisements to be flawed because of the inclusion of cigarette images on the advertisements. The participants believed that the image could trigger teenagers to increase their smoking habits. This smoking cue reactivity is common among smokers and has been demonstrated by a number of experimental studies (42–44). Through functional magnetic resonance imaging, these studies have demonstrated increased neural responses in the addiction centres of the brain among deprived smokers when presented with images of smoking (42,43). Along with smoking cue reactivity, our study highlighted the presence of an attention bias for smoking-related images among smokers. This attention bias phenomenon was demonstrated by Bonitz and Gordon (45). Their study showed that smokers selectively attended to smoking-related objects when presented with various scenes (45). Therefore, to minimise the effects of smoking cue reactivity and attention bias, images of cigarettes should be excluded in any advertisements. This has just recently been realised in Malaysia.

The majority of the participants in this study did not believe that the youth access law and the tobacco duty were effective for making teenagers quit and preventing them from obtaining cigarettes. However, the impacts of these strategies on teenage smoking in other studies (4,34,46) conflict with our findings. A number of contributing factors were suggested by the participants, including a failure of retailers to comply with the law, poor law enforcement, the accessibility of teenagers to cigarettes via social sources, and easy availability of cheap, smuggled cigarettes.

The easy commercial access of teenagers to cigarettes that was highlighted by this study was also found in previous studies (7,14,47). The participants in our study felt that this could be attributed to retailers' ignorance and their desire to profit from selling cigarettes to all customers, regardless of their age. Furthermore, the non-compliance of these retailers to the law may be related to poor law enforcement (4).

Poor law enforcement was believed to be caused by poor resources, the lack of public co-operation in ensuring retailers' compliance with the law, and the current deficiency in the law regarding the allocation of the enforcement of power to only certain people. To decrease the accessibility of teenagers to cigarettes, multiple strategies have been suggested. These strategies include increasing merchant compliance checks at retail outlets and allocating the enforcement of power to other local bodies. However, statements made by the teenagers, such as "no matter how strong the law is enforced, they will always find ways to obtain cigarettes", should raise questions about the effectiveness of the youth access law even if this law is strongly enforced. The ineffectiveness of some of the enforcement strategies has been shown by recent studies (4,48). In these studies, a high level of tobacco retailers' compliance was not associated with a change in teenagers' perception of cigarette accessibility. This is because teenagers can obtain their cigarettes from friends, family members, and other social sources (49,50), as was also described by the teenagers in our study.

Participants in our study believed that the social sources of cigarettes decreased the effect of a tobacco duty on teenage smoking. The ineffectiveness of the tobacco duty may also be due to the teenagers' practice of sharing the cost of cigarettes with their friends. Because western studies (4,32) have demonstrated that a tobacco duty can reduce both teenagers' consumption of cigarettes and their smoking prevalence, the findings of this study may imply that the current tobacco duty might not be high enough to have a similar impact on these teenagers. However, the participants thought that the positive effects of a high tobacco duty would be difficult to achieve because of the rampant, illegal cigarette smuggling in Malaysia (18).

In summary, the majority of the participants believed that the national tobacco control programme in Malaysia was ineffective in advocating smoking cessation among teenagers. Various factors were found to impair the effectiveness of the programme and consisted not only of problems with the programmes but also teenagers' cunning behaviour (personal factor) and their poor efficacy to overcome nicotine addiction (behavioural factor). This complex interaction between environmental, personal,

and behavioural factors was supported by SCT, which could explain teenage smoking in Malaysia. Therefore, multiple strategies beyond educating teenagers about the dangers of smoking and restricting cigarettes to teenagers should be implemented to ensure smoking cessation (Figure 2). Because this study has shown the suitability of SCT in our local context, SCT could be used as the foundation in the development of comprehensive strategies.

Although this study could provide insight about possible problems with the national tobacco control programme in Malaysia, the limitations of our study should not be overlooked. Many of the limitations are related to the methodology of the study, and thus, careful consideration must be taken before implementing the findings into practice. The purposive-sampling method, which allowed us to recruit participants who had certain characteristics (e.g., mainly 16-year-old Malay teenagers from urban areas), limits the generalisation of our findings to other populations. For example, the opinions of the teenagers in our study who were from one urban, public day-school might not be comparable to the opinions of those from boarding schools, who have different exposure to anti-smoking strategies. Thus, before applying these findings to practical use, the similarity between the study's context and the existing situation should be confirmed. Future research is also required to confirm the significance of the highlighted problems of the national tobacco control programmes.

Conclusion

The comprehensive national tobacco control programme is required to ensure smoking cessation in teenagers. The programme should include multiple strategies that can overcome the identified problems, as highlighted by this study. Improving the content, presentation, and execution of the anti-tobacco campaign and increasing the campaign's exposure to

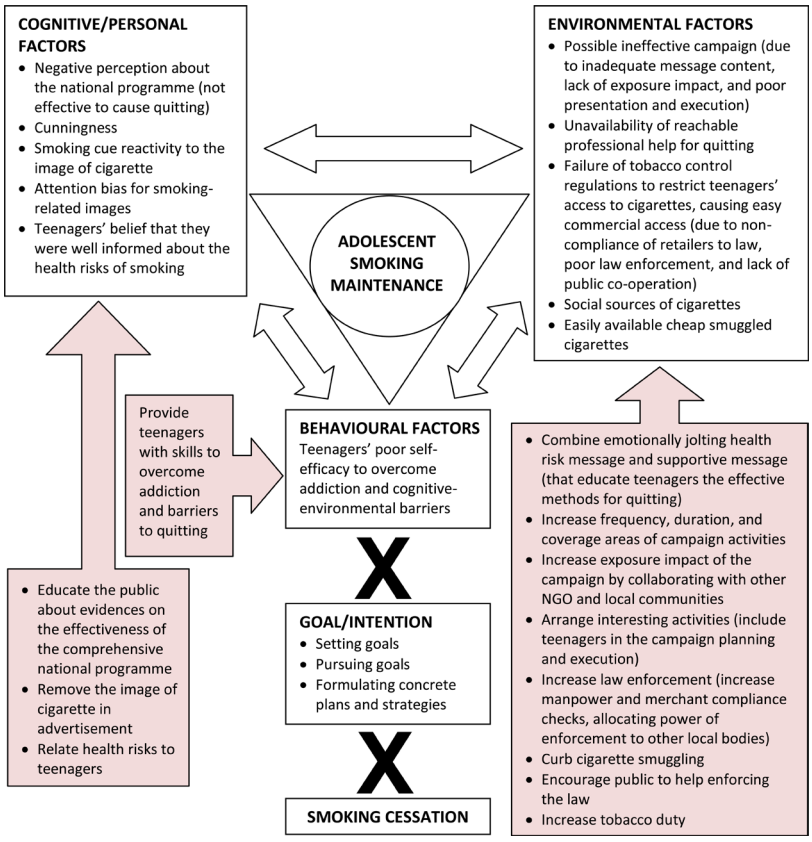

Figure 2: Application of the study's findings using SCT as the background framework. Shaded boxes contain practical recommendations. Abbreviation: NGO = non-governmental organisations.

teenagers could increase smoking cessation among teenagers. Moreover, enhancing law enforcement, increasing the tobacco duty, finding better strategies to curb cigarette smuggling, and providing self-efficacy skills could also improve the smoking cessation rate among teenagers. In addition, a good theoretical framework that is as comprehensive as SCT should be the foundation of the programme, as this allows for holistic management in ensuring smoking cessation among teenagers.

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Authors' Contribution

Conception and design, analysis and interpretation of the data: HT, NMI, NAM, KO
Obtaining of funding: HT, KO
Provision of study materials, collection and assembly of the data: HT, NMI
Drafting and critical revision of the article, : HT
Final approval of the article: HT, FNMA, AEAA
Administrative, technical, or logistic support: KO

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