

**DEVELOPMENT, IMPLEMENTATION, AND EVALUATION OF AN INTERACTIVE
SMOKING CESSATION INTERVENTION WORKSHOP FOR DENTAL STUDENTS
(SCIDS)**

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Abstract

Shifting from traditional classroom teaching to interactive-learning methods represents an essential component of current thinking in dental education. Considering this trend, an interactive workshop was conducted as part of the scheduled smoking-cessation activity in the dental curriculum. The objective of this study was to develop, implement, and evaluate an Interactive Smoking Cessation Intervention Workshop for Dental Students (SCIDs). A one-day workshop on Smoking Cessation Intervention for Dental Students (SCIDs) module was developed, validated by experts and conducted on fifty-three Year 4 dental students. Dental students' knowledge on smoking cessation was assessed pre-workshop via Kahoot! online game. Eleven questions were asked with 20 seconds time allotted for each question. Overall performance showed the total correct answers were 70.45%; total incorrect answers were 29.55% with an average score of 6164.04 points in Kahoot!. A post-workshop evaluation was also conducted. Most students agreed that the workshop content was relevant to them (95%); lived up to their expectations (95%); stimulated their learning (90%) and the workshop activities gave them enough practice and feedbacks (90%). The SCIDs workshop for dental students was successfully designed, implemented and evaluated. The workshop could

provide students with the support needed to acquire skills in conducting smoking cessation intervention to their patients.

Keywords: Dental students, Development, Evaluation, Implementation, Kahoot!, Smoking cessation, Workshop

1.0 INTRODUCTION

The Malaysian National Oral Health Plan (2011-2020) recommends dentists to advise their patients to stop smoking. Dentists' attitudes and behaviours can be influenced by variations in clinical practice, whether public or private (Oral Health Division, 2011). The World Health Organization's (WHO) Tobacco Free Initiative highlights the role of health professionals such as dentists in implementing smoking-cessation services. The 5A's approach to smoking cessation interventions is the gold standard for assisting in smoking cessation (Fiore et al, 2008). However, individual and environmental factors influence adoption and practice of smoking cessation counselling at both public and private dental practices (Kengne Talla et al, 2016). McGlone et al (2001) emphasized the importance of performing research on changing professional practice in the dental field in order to understand the mechanisms underlying the adoption of research findings in everyday dental care. However, to be competent in providing smoking-cessation interventions, dentists need to establish and demonstrate knowledge, skills, and confidence in this field including on the non-prescription nicotine-replacement therapies (NRT) available in hospitals. The knowledge-based nature of the dental profession necessitates that dentists maintain training in smoking cessation if they are to incorporate such activities in their practice. Knowledge and skills related to smoking cessation are important not only for practitioners but also for dental students. Active learning stimulates higher-order thinking, cultivates more thorough learning, and improves motivation to learn. Engaging students in their own learning process makes them more likely to apply the knowledge they gain to new contexts. As future dentists, they may find that the service-provision roles of their

profession are further evolving. Future practitioners may also encounter more unmanageable smokers who have tried but failed to quit smoking or are unable to quit without assistance. Yahya et al (2019) recommended a combination of online (theories and concepts) and clinical teaching for a dynamic teaching in dentistry. Dental students should receive a comprehensive skill-based training for assisting patients to quit smoking. Thus, the objective of this study was to develop, implement, and evaluate an interactive Smoking Cessation Intervention Workshop for Dental Students (SCIDs).

2.0 METHODOLOGY

2.1 Workshop module and design

The purpose of the SCIDs workshop was to improve dental students' knowledge, attitudes, and basic skills in smoking-cessation practice. The workshop was developed as part of the smoking cessation module in the undergraduate dental curriculum for the Faculty of Dentistry, The National University of Malaysia (UKM) which was conducted online via Massive Online Open Learning (MOOC). SCIDs workshop module was developed as part of the continuation of MOOC. Table 1 describes the educational objectives of the workshop module. The objectives consist on the knowledge of smoking and its oral health-related complications, the role of dentists in smoking-cessation interventions and the usage of nicotine replacement therapy (NRT). All workshop components were constructed to accomplish the learning objectives and to achieve the anticipated learning outcomes (Table 2). Students gain knowledge through learning objectives 1-5 and skills through objectives 6-10. Assessments were conducted via examinations, clinical competency tests and completion of clinical cases. Multiple learning formats layered within the workshop included games, clinical cases, small group discussions, and practical demonstrations (Table 3).

Table 1: The educational objectives of the SCIDs workshop module

Educational Objectives
1.To understand the significance of smoking and its oral health-related complications.

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- 2.To recognize the significant role of dentists in implementing up-to-date smoking cessation interventions.
 - 3.To understand the application of the “5As” of quitting smoking (i.e., Ask about current tobacco use to identify patients who smoke; Assess patients’ tobacco-related oral conditions, their level of nicotine dependence and willingness to quit; Advise smokers to quit; Assist patients with appropriate treatment and counselling; Arrange follow up to prevent relapse).
 - 4.To understand the pharmacokinetics of nicotine and pathophysiology of nicotine dependence.
 - 5.To understand the usage of nicotine replacement therapy (NRT) in terms of doses, adverse effects, contraindications, drug interactions, and instructions for use.
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Table 2: Learning outcomes of SCIDs module

No.	Learning Outcomes	Type of Curricular learning Assessment
1.	Able to list the major life-threatening and non-life-threatening diseases related to oral and general health caused by smoking and potential years of life lost.	1. Examinations 2. Clinical competency 3. Completion of clinical cases
2.	Able to describe the effects of passive smoking on adults and children.	
3.	Able to describe behavioural and pharmacological determinants of smoking behaviour.	
4.	Able to explain the benefits of quitting smoking.	
5.	Able to describe compensatory smoking in relation to reducing frequency of smoking or switching to lower tar cigarettes.	

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|------------|---|---------------|
| 6. | Able to ask about smoking in an appropriate way, to elicit an accurate response. | Skills |
| 7. | Able to record status and action taken in an appropriate computer or paper-based system. | |
| 8. | Able to ask appropriate questions to assess readiness to make a quit attempt. | |
| 9. | Able to assess a patient's nicotine dependence using an appropriate method. | |
| 10. | Able to demonstrate the use of the Carbon Monoxide (CO) monitor and saliva kit as motivational tools and as a means of assessing and validating smoking status. | |
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The content validity of the workshop's final module was done by experts in the area. The content of the workshop module was adapted from training modules developed for dentists (Yahya et al., 2015) and pharmacy students (Saba et al., 2013). Modifications were done on all activities to suit our target, which are dental students. Finally, the 4-hours workshop has 5 group activities (Table 3) which are; 1) Smoking Cessation Terms Trivia; 2) Clinical scenarios – enticing critical thinking; Group activity; 3) Introducing Dental Education Kit for Smokers (DEKS) - Practical demonstrations on carbon monoxide (CO) monitor and saliva kit; 4) Practical demonstration on Nicotine Replacement Therapy (NRT); and 5) Setting up a quit smoking clinic- Conceptualizing a professional service.

Table 3: Content and details of the SCIDs workshop

Activity	Description
Course Introduction: solidifying learning concepts	Ice-breaking. The workshop coordinator introduced key points covered throughout the workshop.
Group activity 1: Smoking Cessation Terms Trivia	Kahoot online game was used for this activity. Eleven questions on smoking cessation were asked with 20 seconds allotted for each question.
Group activity 2: Clinical scenarios – enticing critical thinking	<p>Each group of students were given 4 cases on different smoking-related clinical scenario that could be encountered in dental practice. They were given 30 minutes to read, discuss, and analyse the case, and propose an appropriate smoking cessation plan for their patient.</p> <p>Then, 50 minutes was allocated for presenting the 4 cases to their facilitator. The facilitator will guide the discussion by asking questions and stimulating queries. Discussions were focused mainly on key issues to consider when encountering a smoking patient, key recommendations, and key counselling points. All groups will be encouraged to take part in the discussion and provide input.</p>
Group activity 3: Introducing Dental Education Kit for Smokers (DEKS)- Practical demo on carbon monoxide (CO) monitor and saliva kit	30 minutes demo by speaker, 30 minutes discussions with questions and answers with facilitator.

Group activity 4: Practical demonstration on NRT	
Group activity 5: Setting up a quit smoking clinic- Conceptualizing a professional service	15 minutes concepts by speaker, 45 minutes brainstorming, discussion and presentation to facilitator.

2.2 Workshop Implementation

We conducted this workshop during the first semester of the new academic session for Year 4 Dental Undergraduates. No lectures were given during this workshop as these students have had them during their Year 2 via MOOC. We started with ice-breaking; briefing about the objectives of the workshop. Forty-eight UKM and 7 from University of Lambung Mangkurat, Indonesia Year 4 dental undergraduates attended the workshop. Students were randomly allocated to 6 groups. Each group consisted of 9-10 students and was facilitated by a dental public health lecturer.

A 15-minute pre-workshop assessment of knowledge on smoking cessation was then administered to students using Kahoot! online game. Kahoot! Is a game-based learning platform, used as educational technology in schools and other educational institutions (Kahoot!, 2018). It uses multiple-choice quizzes that allow user generation and can be accessed via web browser or app. Eleven questions were constructed in English using Kahoot!. Time allotted for each question was 20 seconds. Face validity was done by 10 dental students who are not included in this workshop. Content validity was done by 2 experts in smoking cessation. Pretesting did not show any problems with the instrument.

A standard post-workshop questionnaire was adopted and used to evaluate the conduct of the workshop (Enhancing Education, 2018). The questionnaire was in English and

consisted of 13 structured questions on the participants' expectations of the workshop; relevancy of the workshop to their job; about the conduct of the activities, the level and appropriateness of the workshop; and feedback on facilitators assistance. The questionnaire responses were in 5-Likert scale: strongly agree (5), agree (4), neither agree nor disagree (3), disagree (2), and strongly disagree (1).

Descriptive statistics were used to describe the data. Frequencies and percentages were used for categorical data. Statistical analysis was conducted with SPSS, version 25.0 (IBM, Armonk, NY).

3.0 RESULTS

3.1 Knowledge on smoking cessation

Fifty-five students participated in Kahoot!. Overall performance showed the total correct answers were 70.45%; total incorrect answers were 29.55% with an average score of 6164.04 points in Kahoot. Table 4 shows the pre-workshop assessment of knowledge on smoking cessation. Fifty-three students responded the online Kahoot! game. Eight questions were answered correctly by more than half of the students; while 2 questions were answered incorrectly by more than half of the students (Table 4). The final question asked whether they were aware that smoking is decreed "haram"/ "forbidden" by most Malaysian Islamic authorities; 74.5% answered yes, 11.8% answered no, and 13.7% were not sure.

Table 4: Pre-workshop assessment of knowledge on smoking cessation (via Kahoot!)

No.	Questions	Correct answer	Incorrect answers	Total number of students who answered*
		n (%)		
1.	NRT is Nicotine Replacement Therapy	49	0 (0)	49 (100) *
		(100.0)		
2.	The stage when a smoker denies having a problem and has no intention to quit smoking is precontemplation.	35	15 (30.0)	50 (100) *
		(70.0)		
3.	Cold Turkey refers to: Abrupt, complete stop of the drug to which one is addicted.	28	21 (42.9)	49 (100) *
		(57.1)		
4.	Why is the 5Rs important in smoking cessation? Correct answer: To enhance patient's motivation to quit	28	25 (47.2)	53 (100) *
		(52.8)		
5.	4Ds aim to reduce the urge to smoke. Which of the following is not one of the 4Ds?	38	13 (25.5)	51 (100) *
		(74.5)		
		Correct answer: Damage cigarettes (offered by others)		

6.	5As in smoking cessation refer to Ask, Advise, Assist, Arrange and... Correct answer: Assess	41 (80.4)	10 (19.6)	51 (100) *
7.	Fagerström Test is useful for assessing... Correct answer: Patient's nicotine dependency level	45 (84.9)	8 (15.1)	53 (100) *
8.	Fear of failure, withdrawal symptoms, weight gain and stress are examples of: Correct answer: Roadblocks in smoking cessation	32 (64.0)	18 (36.0)	50 (100) *
9.	Carbon monoxide starts to leave your body and oxygen level return to normal after... Correct answer: 8 hours of the last smoke	21 (43.8)	27 (56.2)	48 (100) *
10.	Encouraging the patient to say why quitting matters (family, financial etc.) is which 5R? Correct answer: Relevance	23 (46.0)	27 (54.0)	50 (100) *

* *Denominators vary as some students did not attempt all the questions in Kahoot!*

3.2 Post-workshop evaluation

A post-workshop evaluation was conducted after one month. The response rate was 72.7%. Overall, most of the mean scores for all questions were more than 4 (agree or strongly agree) (Table 5). Most students were well informed (50%) and were clear (52.2%) about the objectives of the workshop. Most of them felt that the content of the workshop was relevant to

their job (65%). The activities stimulated their learning (52.5%) and the pace of the workshop was appropriate (60%). The students felt that the facilitator was helpful (65%) and well prepared (65%). The students agreed that the workshop was a good way for them to learn smoking cessation (70%).

Table 5: Post-workshop evaluation by participants

No.	Questions	Frequency N (%)	Mean (SD)
	I was well informed about the objectives of this workshop.		
	<i>Strongly agree</i>	20 (50.0)	4.43
	<i>Agree</i>	17 (42.5)	(0.64)
	<i>Neither agree nor disagree</i>	3 (7.5)	
	<i>Disagree</i>	0 (0)	
	<i>Strongly disagree</i>	0 (0)	
	This workshop lived up to my expectations.		
	<i>Strongly agree</i>	19 (47.5)	4.42
	<i>Agree</i>	19 (47.5)	(0.59)
	<i>Neither agree nor disagree</i>	2 (5.0)	
	<i>Disagree</i>	0 (0)	
	<i>Strongly disagree</i>	0 (0)	
	The content is relevant to my job.		
	<i>Strongly agree</i>	26 (65.0)	4.60
	<i>Agree</i>	12 (30.0)	(0.59)
	<i>Neither agree nor disagree</i>	2 (5.0)	
	<i>Disagree</i>	0 (0)	
	<i>Strongly disagree</i>	0 (0)	
	The workshop objectives were clear to me.		

<i>Strongly agree</i>	21 (52.5)	4.48
<i>Agree</i>	17 (42.5)	(0.60)
<i>Neither agree nor disagree</i>	2 (5.0)	
<i>Disagree</i>	0 (0)	
<i>Strongly disagree</i>	0 (0)	
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The workshop activities stimulated my learning.		
<i>Strongly agree</i>	21 (52.5)	4.43
<i>Agree</i>	15 (37.5)	(0.68)
<i>Neither agree nor disagree</i>	4 (10.0)	
<i>Disagree</i>	0 (0)	
<i>Strongly disagree</i>	0 (0)	
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The activities in this workshop gave me sufficient practice		
and feedback.	15 (37.5)	4.25
<i>Strongly agree</i>	21 (52.5)	(0.71)
<i>Agree</i>	3 (7.5)	
<i>Neither agree nor disagree</i>	1 (2.5)	
<i>Disagree</i>	0 (0)	
<i>Strongly disagree</i>		
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The difficulty level of this workshop was appropriate.		
<i>Strongly agree</i>	15 (37.5)	4.27
<i>Agree</i>	21 (52.5)	(0.64)
<i>Neither agree nor disagree</i>	4 (10.0)	
<i>Disagree</i>	0 (0)	
<i>Strongly disagree</i>	0 (0)	
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The pace of this workshop was appropriate.		
<i>Strongly agree</i>	24 (60.0)	4.55
<i>Agree</i>	14 (35.5)	(0.60)

<i>Neither agree nor disagree</i>	2 (5.0)	
<i>Disagree</i>	0 (0)	
<i>Strongly disagree</i>	0 (0)	
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The facilitator was well prepared.		
<i>Strongly agree</i>	26 (65.0)	4.63
<i>Agree</i>	13 (32.5)	(0.54)
<i>Neither agree nor disagree</i>	1 (2.5)	
<i>Disagree</i>	0 (0)	
<i>Strongly disagree</i>	0 (0)	
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The facilitator was helpful.		
<i>Strongly agree</i>	26 (65.0)	4.63
<i>Agree</i>	13 (32.5)	(0.54)
<i>Neither agree nor disagree</i>	1 (2.5)	
<i>Disagree</i>	0 (0)	
<i>Strongly disagree</i>	0 (0)	
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I accomplished the objectives of this workshop.		
<i>Strongly agree</i>	19 (47.5)	4.43
<i>Agree</i>	19 (47.5)	(0.59)
<i>Neither agree nor disagree</i>	2 (5.0)	
<i>Disagree</i>	0 (0)	
<i>Strongly disagree</i>	0 (0)	
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I will be able to use what I learned in this workshop.		
<i>Strongly agree</i>	23 (57.5)	4.53
<i>Agree</i>	15 (37.5)	(0.60)
<i>Neither agree nor disagree</i>	2 (5.0)	
<i>Disagree</i>	0 (0)	
<i>Strongly disagree</i>	0 (0)	

The workshop was a good way for me to learn smoking cessation.	28 (70.0)	4.68
<i>Strongly agree</i>	11 (27.5)	(0.53)
<i>Agree</i>	1 (2.5)	
<i>Neither agree nor disagree</i>	0 (0)	
<i>Disagree</i>	0 (0)	
<i>Strongly disagree</i>		

4.0 CONCLUSION

The smoking cessation lecture series were given to them earlier during their 2nd year of dental undergraduate course. This workshop was a refresher course for the Year 4 dental students before starting their preventive clinic for that semester. Each student is required to conduct 2 clinical cases on smoking cessation as part of their continuous assessment for clinical prevention. Lack of training was found to be the most cited barriers for dentists who wish to provide smoking cessation (Filoche *et al.*, 2010). During this workshop, the students get to engaged fully in the activities by using the diagnostic tools to assist them in advising patients to quit smoking. Students interact freely with their facilitators as the workshop was conducted in small groups. With a small number of students in a group, we hoped that it would increase their confidence in asking questions and discuss issues pertaining to smoking with their group mates and facilitator. Davis *et al.* (2010) identified that the limited training of dental students reflected the continuing report of dentists offering incomplete tobacco interventions and proposed a paradigm shift in how the intervention be incorporated into existing curricula. The author also suggested a careful consideration of the level of competency training; establishing rapport through good communication skills; the core knowledge level; suggested instructional and assessment strategies for tobacco use prevention and cessation.

The Kahoot! online game results showed that 5 questions were answered correctly by

most of the students. These questions were basic theories on smoking cessation which were normally asked during exams. However, the remaining 5 questions such as “carbon monoxide starts to leave your body and oxygen level return to normal after 8 hours of last smoke” or “encouraging the patient to say why quitting matters is which 5R?” needed more clinical engagement with patients in order to understand the theory clearly. It is vital for dental students to understand the role of interpersonal interaction in smoking cessation. Offering brief advice along with an appropriate understanding of smoking cessation modalities, provides a greater chance for a smoker to quit (Keat et al., 2018).

Most dental undergraduates felt positively about the workshop and it's relevant to their role in assisting patients to quit smoking. The workshop was well organized with clear objectives. The activities of the workshop stimulated the students' learning and the facilitator was helpful and well prepared. The workshop was a good way for them to learn about smoking cessation interventions. Tobacco cessation program in dental schools was proven successful and effective in preventing smoking initiation among patients who smokes (Gelskey, 2002; Ramseier *et al.* 2013; Haresaku *et al.*, 2010).

Assessment of the effectiveness of the workshop was the limitation of this study. Further research is required to assess the effectiveness of this workshop particularly when the students are in their final year. Evaluating their knowledge, attitudes and capabilities for providing smoking cessation counselling would be valuable information to know.

5.0 CONCLUSION

The SCIDs workshop for dental students was successfully designed, implemented and evaluated. Overall positive responses were reported by the students regarding the workshop. We would recommend this workshop as an additional clinical training in smoking cessation intervention, a continuation of online or offline courses which imparts mainly on theories and

concepts of the subject. SCIDs workshop could provide students with the support needed to acquire skills in conducting smoking cessation intervention to their patients.

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