

Between Two Worlds: Exploring Barriers and Motivations Influencing Cessation Among Adult Dual Users of E-Cigarettes and Conventional Cigarettes in Malaysia

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ABSTRACT

Objectives

Combined usage of e-cigarettes (ECs) and conventional cigarettes (CCs) may result in prolonged use of both products. The objective of this study is to explore dual EC and CC users' attempts, barriers, and reasons to quit.

Materials and methods

Twenty-seven dual users were recruited through snowball sampling, and data were collected via online focus group discussions using a validated open-ended interview guide.

Results and discussion

Participants provided contradictory responses, with some indicating attempts to quit but relapsing for a variety of reasons, while others reported making no attempt to quit. Barriers to quitting included social influences and EC dependence, while fear of health consequences, extrinsic motivation, financial cost, and intrinsic motivation emerged as sub-themes under reasons to quit. Utilising several types of nicotine have resulted in complicated patterns of transition and poly-use among various groups, which do not always result in smoking cessation behaviours, notably among dual users.

Conclusion

The current study provides novel insights regarding dual users in Malaysia, for targeted preventive, health promotion, and smoking cessation initiatives, as well as legislative recommendations for EC regulation in Malaysia.

Keywords

Dual use; smokers; qualitative study; e-cigarettes; cigarettes.

INTRODUCTION

In recent years, the use of electronic cigarettes (ECs) are extensive and has gained popularity both at a global scale and domestically in Malaysia. There is a substantial proportion of conventional cigarette (CC) smokers who are also currently smoking ECs as it mimics the sensation and feeling of smoking tobacco cigarettes¹. In Malaysia, multiple health promotion initiatives have been implemented by the Malaysian government along with strengthening tobacco control regulations to address the increasing trends of smoking within the country. Nevertheless, the evolving innovation of ECs has the potential to renormalize and glamorize smoking and may reverse ongoing public health initiatives².

In developing countries, dual users represent a complex type of smoking behaviour that has obtained little attention³. Additionally, individuals who begin taking ECs either out of curiosity or with the aim, and belief of quitting smoking may not succeed. This will eventually

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progress to long-term usage of both products (ECs and CCs), which, depending on the kind and generation of EC devices, increases the risk of health problems such as respiratory and heart diseases due to higher levels of nicotine and toxicant exposure⁴⁻⁶. The use of ECs have sparked controversy and debate among tobacco control advocates which includes practitioners, researchers, and policy makers as ECs are considered to be an effective approach to encouraging smoking cessation, but they also prompt concerns about potential increases in the uptake of ECs or re-normalization of smoking behaviour among young adults⁷⁻⁹. Previous evidence has reported that although ECs may be used as a cessation aid, EC users and non-users had the same intention to quit smoking¹⁰. Moreover, the findings also suggests that ECs can deter users from trying to quit. Research on dual use is still in its infancy, and recommendations for qualitative studies to further investigate dual users' contradictory behaviours, social influences as barriers, and motivations of quit intentions have not elicited a comprehensive response¹¹. While quantitative data gathering may indicate patterns, trends, and characteristics of dual users, a qualitative approach is required to further explore and contextualise the reasons for dual users' continued usage of ECs and CCs and their reasons to quit. This insight will be crucial in bolstering future tobacco damage reduction initiatives and legislation^{12, 13}. In real-world scenarios, a large number of smokers are adopting different vaping practices that result in a decrease in CC consumption. However, these habits do not necessarily lead to complete smoking cessation or the act of quitting smoking, which was the original and primary objective. In addition, there is a lack of information regarding the behavior change of individuals who use both substances. Exploring the behavioral traits that characterize the act of engaging in this risky behavior would help in developing interventions for future smoking cessation programs¹⁴. Prior research suggests that investigating the views of individuals who use both ECs and CCs can yield valuable insights into the actual usage of EC in real-life situations. This information is crucial for the development of targeted metrics and indicators to monitor and regulate these products. This necessitates a need to further clarify the understanding of this specific subgroup, who are more prone to developing a stronger reliance on nicotine. It is important to note that there is no amount of nicotine exposure that can be considered safe, and even individuals who smoke at low levels

have a higher likelihood of experiencing fatal outcomes¹⁵. Hence, the objective of this study is to qualitatively investigate the quitting behaviors of individuals who use both tobacco and electronic cigarettes, focusing on their attempts, obstacles, and motivations to quit. This research intends to fill the existing gap in information and provide insights to develop effective strategies for helping dual users transition to cessation in Malaysia.

METHODS AND MATERIALS

Study Design

The study design is a basic interpretive qualitative study. A basic qualitative study is designed to understand how participants make meanings of a situation or phenomenon¹⁶.

Study Setting

The current study was conducted online using the Google Meet platform. Both the interviewer and participants were at their respective residence during the time of the online discussion. All the participants were interviewed after working hours due to their availability.

Study Population

The study population comprised of Malaysian self-reported current smokers who were currently smoking both CCs and ECs concomitantly.

Sample Size

The sample size for this study adopted the saturation principle. The saturation principle is defined as the absence of a new theme achieved with the sample's addition¹⁷. The data collection was discontinued when all the themes achieved their sub-themes. It has been previously recommended that qualitative studies require a minimum sample size of at least 12 to reach data saturation¹⁸. Therefore, a sample of 13 was deemed sufficient for the qualitative analysis. However, recruitment continued until data saturation was reached. Overall, about 27 dual users participated in this study whereby 3 to 4 participants were randomly assigned in each group. The identified participants fulfilled the inclusion and exclusion criteria and verbally consented to participate in this study.

Sampling method

Purposive sampling was conducted in the initial phase of data collection for the recruitment of the participants. The Snowball sampling method was then adopted subsequently to recruit participants for this study.

Inclusion criteria were smokers who are currently smoking both CCs and ECs concomitantly. Exclusion criteria were smokers who were unable to communicate in English or Malay language.

DATA COLLECTION

Data for this study was collected by conducting online focus group discussions (FGDs). The procedure that was carried out included the development of interview questions, a pilot study, participant selection and recruitment, and sessions of online FGDs via Google Meet. An interview guide was developed based on previously published qualitative research and the objectives of the study¹⁹. A semi-structured interview guide was developed by the researcher in English and then translated into Malay. All translations were conducted by a certified translator using Brislin's back-translation technique. For face and content validity, two experts in the field of tobacco control evaluated the interview guide and provided suggestions for further improvement before use for the study. The interview guide consisted of open-ended questions to encourage participants to provide in-depth information. Probing questions were also asked to encourage in-depth responses. A total of fourteen questions regarding the participants' intention to quit, barriers to quitting and reasons or motivations for quitting were constructed. Prior to conducting the actual study, a separate pilot interview was carried out to ensure that the interview questions were clear and relevant. A semi-structured interview questionnaire was tested on four dual users whose data was not included in the final analysis of the study. The inclusion and exclusion criteria for the sample used in the pilot interview were the same as the criteria for the actual interviews. The pilot interview indicated that the participants was able to understand and answer the interview questions clearly as per their experience. Therefore, the interview procedure and topic guide were maintained and used for subsequent interviews.

Participant Selection and Recruitment

During the recruitment stage, potential participants were contacted via the WhatsApp social media application. Information regarding their basic demographic characteristics and smoking profile was screened and participants were selected according to their inclusion and exclusion criteria of the study. Once all the information was obtained, potential participants were provided with an information sheet which consisted of

a brief background of the study, objectives, method of data collection and benefits and potential risks of the study. Once they had verbally agreed to participate in the study, each of the participants were given an appointment according to their availability for the FGD. Prior to the interview, a Google Meet link or meeting code was sent via WhatsApp for the participants to be able to join the session.

Focus Group Discussion

The session began with an ice-breaking session in which all the participants including the moderator were required to introduce themselves to the group. Participants were referred to by a pseudonym to ensure their privacy during the FGD sessions and in the transcripts. A total of 7 FGD sessions were conducted, and all the sessions were video recorded. The focus group discussion which consisted of 3 to 4 respondents was conducted in the Malay language based on majority preference with some using English terminologies. The interview session took approximately 1 hour and 15 minutes and was considered complete when the participants had answered all the questions by the moderator and had no additional information to add.

DATA ANALYSIS

Interviews from the video recordings and detailed notes were transcribed verbatim using Microsoft Word by the moderator. The transcriptions were cross-checked against the video recording and focus-group notes by the moderator. Next, the moderator and the note-taker reviewed the transcriptions, notes and discussed areas of consensus and discrepancies.

The researcher conducted all the coding using the NVivo software, thereby ensuring that the coding frame adequately describes the intentions and content of the interviews. The themes obtained were reviewed and verified by independent researchers who are experts in the field of tobacco control to increase the validity of the findings. Any coding discrepancies were resolved by consensus. Thematic data analysis using a deductive approach was adopted with pre-determined themes. Quotations by respondents were edited on a limited basis to omit speech disfluencies such as unnecessary filler words, false starts, stutters, repetitions and to correct for grammar. An ellipsis mark was used to note the removal of such extraneous content. Square brackets were used in quotations to supply words omitted by the speaker or to replace sensitive information where names were

mentioned. Discrepancies of the themes were discussed with other researchers, who did not participate in moderation or data collection.

Ethical clearance:

This study was approved by the UiTM Research Ethics Committee (Ref. No. REC/04/2021 (MR/241) Universiti Teknologi Mara (UiTM).

RESULTS

Participants Demographic of the Qualitative Study

A total of fifty-three smokers were approached and twenty-seven agreed and was recruited for the FGD which consisted of eighteen male participants and nine female participants who were all current dual users of CCs and ECs. Participants reported to be dual users of CCs and ECs with a majority of them aged 25-34 years (63%), university level of education (74.0%), and smoked between 1-10 cigarettes per day (85.2%). Tables 1.1 summarizes and describes the demographic details of the participants that took part in the qualitative survey.

Table 1.1 Participants general characteristic for the qualitative study (N=27)

Socio-demographic detail	N (%)
Age	
18-24	10 (37.0)
25-34	17 (63.0)
Gender	
Male	18 (66.6)
Female	9 (33.3)
Race	
Malay	20 (74.1)
Chinese	1 (3.7)
Indian	6 (22.2)
Employment status	
Working	16 (59.3)
Self-employed	4 (14.8)
Not working	7 (25.9)

Socio-demographic detail	N (%)
Educational level	
Secondary School	6 (22.0)
Certificate	1 (4.0)
University	20 (74.0)
Cigarettes per day	
1-10	23 (85.2)
11-20	4 (14.8)

Themes and Sub-themes

The findings of this qualitative study were to explore the intention to quit, barriers and reasons to quit among dual users. From the thematic analysis, three themes and eight sub-themes were identified. Table 1.2 summarizes the list of themes and sub-themes derived from the study.

Table 1.2 List of themes and sub-themes

Theme	Sub-theme
Quit attempts among dual users	Temporary abstinence but eventual relapse
	No prior attempts to quit
Barriers to quitting dual use	Social influences
	EC dependence
Motivations to quit dual use	Fear of health impact
	Extrinsic Motivation
	Financial cost
	Intrinsic motivation

Theme 1: Quit Attempts Among Dual Users *Quit Attempts*

Participants were asked if they had any attempts to quit either CCs or ECs in their lifetime. Majority of the participants provided mixed responses with some reporting attempts to quit however had relapsed due to various reasons whilst other dual users had not attempted to quit smoking. Overall, for this specific theme, there was a total of two sub-themes which were

temporary abstinence but eventual relapse, and no prior attempts to quit.

Sub-theme: Temporary abstinence but eventual relapse

Many participants reported trying to quit smoking but relapsing after a period of abstinence, often due to social triggers.

“I also have tried to quit...for like three to four months...during my exam break...that was when I was at home. If I am back at the university and surrounded by my friends that smoke, I relapse back to smoking.” (P1, 25)

Sub-theme: No prior attempts to quit

For this specific sub-theme, some participants had not made any concrete attempts to quit smoking yet. However, participants are trying to reduce the consumption of CCs smoked.

“As for me, so far; I have not tried to quit smoking.... however; right now I am actually in the process of trying.... maybe after this I won't be buying anymore cigarettes.” (P26, 24)

Theme 2: Barriers to quitting dual use

Participants were asked regarding the challenges they face in quitting CCs or ECs. Some participants claimed that smoking abstinence was achieved however the duration was temporary due to various factors. Overall, for this specific theme, there is a total of two sub-themes which were social influences and ECs dependence.

Sub-theme: Social influences

Majority of the participants reported that quitting CCs or ECs was difficult mainly due to peer and social pressures.

“As for me...personally...when I'm hanging out with people around me that smoke cigarette, then I will smoke again just because we want to get along.” (P2, 25)

Sub-theme: e-cigarette dependence

Half of the responses from the participants had acknowledge that abstaining or making an attempt to quit smoking or vaping was hard due to their dependence towards ECs. Dependence and cravings for ECs presented a major barrier, even if cigarette smoking

is decreased.

“It is quite scary because I need to feel that it is in my hand all the time. I am not sure how to stop smoking e-cigarettes. It feels good and it is quite difficult to quit” (P17, 27)

Theme 3: Motivations to quit dual use

For this specific theme, participants were asked regarding their specific motivational factors to quit smoking CCs or ECs. There was a total of four sub-themes derived which were fear of health impact, extrinsic motivation, financial cost and intrinsic motivation.

Sub-theme: Fear of health impact

Majority of the participants had discussed that one of the most important reasons to quit smoking would be due to the worrying health side effects associated with smoking. Some had highlighted concerns about long-term health consequences like infertility, breathing difficulties and their overall health in general.

“It would be due to health reasons...if we vape, it will be difficult to get pregnant if we are heavy smokers...it may affect or cause infertility. Since we ladies may want to have families later.” (P6, 27)

Sub-theme: Extrinsic motivation

Some participants have expressed reasons or motivations to quit smoking will be primarily due to personal commitment and responsibilities as they embark in new phases of their life milestones like marriage and parenthood.

“Later, coming soon, if we want to get married. Maybe the family will feel uncomfortable, that's a problem (laughs) because I think later if the children see the father is smoking or vaping, they will be influenced too. Be addicted as well. Like father like son (laughs).” (P3, 31)

“Sometimes I feel pressured to quit ECs from others such as my family members or my friends who are non-smokers...they don't approve of it, but I can see why though...” (P15, 27)

Sub-theme: Financial cost

Some participants discussed on financial factors as one of the reasons or motivations to quit smoking CCs and ECs. The expense of dual use motivated them to quit.

“A good reason to stop is due to financial factors...uhm... At one moment I started thinking like...It’s not new or anything...Apart from me that’s just wasting my money. So, I think that I have reached that stage.” (P11, 23)

Sub-theme: Intrinsic motivation

Participants provided their views on another factor that was important in making a quit attempt which was their own intrinsic motivation to quit smoking. Majority of them expressed that one’s own internal willpower and determination to quit were viewed as key.

“I can conclude that it depends on willingness. Many people said just do it cold turkey since it’s just a habit that you, yourself should decide to stop, it’s either you’re ready or not ready yet.” (P15, 27)

DISCUSSION

Overall, there were two overarching sub-themes that portrayed participants’ viewpoints which were temporary abstinence but eventual relapse and no prior attempts to quit. Dual use presents unique challenges for smoking cessation. Temporary abstinence is achievable for some dual users, but relapse remains common, indicating the need for tailored interventions within this sub-group of smokers. Social and environmental cues wield a strong influence on dual use behaviours therefore, more research on countering the impact of peer influences and social norms favouring dual use is warranted. Dependence on ECs is emerging as a substantive barrier to quitting among this population. Thus, the long-term health impacts of prolonged EC use require further investigation. Health concerns such as infertility and respiratory-related diseases motivated quite attempts, highlighting the need to increase awareness through targeted health education among dual users. Important life milestones like marriage and parenthood are pivotal moments to encourage cessation by leveraging internal motivations. Financial costs may incentivize quitting cigarette smoking but not necessarily ECs given the differential pricing. The findings were also consistent in another study, whereby the top three main motivations to quit were due to health concerns, financial aspect, and to reduce the risk of getting infected with COVID-19²⁰. Further development of policy strategies needs to be in place that could help reduce affordability.

From the viewpoints expressed by the participants, some

of them did not have the intention to quit smoking in the immediate future and it also seemed that their attitude on their continued smoking was ambivalent. This was also presented in a previous study in which participants were “pro-smoking” and not motivated to quit²¹. In a qualitative study that was conducted in the US, readiness to quit for some participants was low as some dual users expressed that they were not able to give up smoking and ECs as there was an element of superiority and tactile sensation when using ECs as compared to other pharmacological support. Furthermore, the participants had no intention to quit as they had a personal belief that current smoking cessation methods had a lack of sensory stimulation suggesting that sensory experiences may be the missing link for effective smoking cessation methods²².

Social influences and EC dependence were an interesting sub-theme that emerged under the theme of barriers to quitting. The issue of dependence has always been related to the use of CCs and previous studies regarding EC dependence as being the main barrier were sparse. A study with similar methodological methods had conceptualized those barriers to quitting included social stigma and nicotine addiction and difficulty with cravings and viewed that it was just a matter of switching to another form of nicotine although reduction of CCs is present²³. Although EC dependence was not expressed frequently in previous literature, the intensity of addiction towards EC was associated with the frequency and intensity patterns of EC use¹⁵. However, studies regarding the intensity of addiction have diverged towards the youth population, disregarding the existing addiction and dependence on ECs among current adult smokers⁷. As ECs continue to evolve in terms of its design and new user-friendly features, EC dependence may also escalate depending on the type of EC which may be more efficient in its nicotine delivery²⁴. In the current study, sub-themes for reasons to quit CCs and ECs were varied and the majority of the participants expressed that quitting both products required concrete reasons such as important life milestones. This was contradictory with a previous study as smokers expressed reasons to quit smoking would primarily be due to quotidian and minor concerns as compared to concerns about long-term health consequences such as the remaining bad odour on hair and clothes, burn holes in clothing and furniture, and the feeling of uncleanliness inside the home and one’s transport²⁵. Another previous study also presented

alarming results as the vast majority of participants (96.9%) reported they had no intention to quit vaping as for the past year they had experienced a decrease in their tobacco consumption therefore strengthening the belief that ECs were an effective method for smoking cessation purposes ²⁶.

Sub-themes from the current study that emerged were consistent with the findings from a prior study that found that a large percentage of young adults quit smoking mostly due to overall health concerns ²⁷. The previous study found no significant extrinsic motivation, which might be because of the cultural dynamics of the various geographic areas where the sample was gathered. For instance, most of the young Asian people in the present study indicated that significant life events like marriage and parenting are important opportunities to use internal motives to promote cessation. This is influenced by current religious beliefs on laws and practices pertaining to the formation of marriages, which in turn reflects the cultural norms of the community in which they were nurtured ²⁸.

The current study illustrated that the willingness and determination to quit was one of the motivations to quit smoking CCs. This was inconsistent with prior literature as social norms played a significant role in the continued use of ECs affecting one's own determination to quit ²⁹. The differences in the results might be explained by the frequency of EC usage reflecting the individuals who use ECs for goal-oriented purposes as opposed to those who use them for non-goal-oriented purposes ^{29,30}. This was proven in previous studies, when daily dual users of CCs and ECs reported higher levels of motivation to stop smoking and successful cessation at follow-up than did occasional dual users of both drugs ³¹.

There are several limitations of the current study that merit mention. First of all, the qualitative research is vulnerable to researcher bias because it used non-probability sampling techniques including snowball and purposive sampling. Nevertheless, the topic of purposive sampling was not a significant limitation for this study because the participants were chosen according to well specified criteria that can get over this restriction. Secondly, the study was carried out virtually by conducting online FGDs instead of face-to-face focus groups (FTFs) which provides a more fluid debate. Despite this limitation, participants valued the convenience of participating in an online FGD at

their own time and place. Furthermore, the anonymity of online FGDs may cause participants to feel more comfortable expressing their views. This also highlights the important role of the moderator as the current study involves questions or statements that provoke discussion enabling a more constructive discussion.

CONCLUSION

The current study provides notable findings in a few aspects related to the dual use of ECs and CCs. Although the majority of the dual users claimed a reduction in their consumption of CCs, the current study presented a distinct sub-theme which was EC dependence which highlights the potential likelihood of current EC users becoming long-term EC users. Exploring the beliefs among dual users provides a better understanding of the behavioural aspect of this sub-group of smokers which can contribute to the development of future health education and health promotion programs focusing on beliefs and/or poly-tobacco use rather than just a single tobacco product. Designing more targeted approaches would be beneficial in ensuring more smokers quit smoking as previous studies have found that targeted interventions among dual users resulted in smoking abstinence of 5-10 percentage points as compared to the control group within 18 months ³². The current study provides novel insights regarding dual users in Malaysia, for targeted preventive, health promotion, and smoking cessation initiatives, as well as legislative recommendations for EC regulation in Malaysia.

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Conflict of Interest

None declared.

Authors' contribution

ANMR: Data gathering and idea owner of this study, study design, editing and gathering, writing and submitting manuscript.

BT: Data gathering and idea owner of this study, study design, writing, editing and approval of the final draft.

All authors contributed to this work and read and approved the final version of the manuscript.

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