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ORIGINAL ARTICLE

Knowledge, Attitude, Perception & Willingness to Quit Vaping Among Student-Teachers in Selangor, Malaysia

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ABSTRAK

Di Malaysia, terdapat peningkatan ketara dalam kelaziman penggunaan vape di kalangan remaja, sekali gus muncul sebagai ancaman kesihatan awam. Data berkenaan dengan rokok elektronik adalah tidak mencukupi di Malaysia, terutamanya dalam kalangan pelajar universiti, kuhususnya pelajar pendidikan yang merupakan bakal pendidik. Kajian ini bertujuan untuk mengkaji tahap pengetahuan, sikap, persepsi terhadap vape dan kesediaan untuk berhenti vape di kalangan pelajar pendidikan yang sedang menggunakan vape di Selangor, Malaysia. Kajian kuantitatif dengan menggunakan reka bentuk tinjauan telah dijalankan terhadap 348 responden daripada Fakulti Pendidikan dengan menggunakan borang soal selidik secara atas talian yang terdiri daripada lima bahagian iaitu sosio-demografi, pengetahuan, sikap, persepsi dan kesediaan untuk berhenti vape. Majoriti responden (62.9%) lulus ujian pengetahuan mengenai vape, dengan sikap dan persepsi yang sederhana terhadap vape. Lebih daripada 60% responden mempunyai pemikiran dan niat untuk berhenti vape. Ujian MANOVA menunjukkan tiada perbezaan yang signifikan di antara tujuh program dalam fakulti terhadap pengetahuan, sikap, persepsi, dan kesediaan, $F (24, 640) = 1.239$, $p = .200$, partial $\eta^2 = .044$. Namun, ujian multivariat di antara program menunjukkan terdapat perbezaan yang signifikan dalam kesediaan untuk berhenti vape, $F (6, 160) = 2.641$, $p = .018$, partial $\eta^2 = .090$. Walaupun tahap kesedaran mengenai vape telah meningkat, kelaziman penggunaan vape masih membimbangkan. Langkah-langkah kawal seliaan seperti pelaksanaan denda terhadap penggunaan vape di peringkat universiti adalah penting bagi membanteras penggunaan vape. Selain itu, universiti juga seharusnya

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meningkatkan sokongan terhadap usaha pemberhentian menerusi program dan kempen berstruktur, serta menyediakan akses mudah terhadap rawatan berhenti vape bagi pelajar yang memerlukan bantuan.

Kata kunci: Kesediaan berhenti; pengetahuan; persepsi; sikap; vape

ABSTRACT

In Malaysia, there has been a notable increase in the prevalence of vape use among adolescents, thus emerges as a public health threat. Data concerning e-cigarettes are insufficient in Malaysia, particularly with a focus on university students, especially student-teachers who are future educators. This study aimed to examine the level of knowledge, attitude, perception of vaping and willingness to quit vaping among student-teachers who were currently vaping in Selangor, Malaysia. A quantitative survey design study was conducted among 348 respondents from the Faculty of Education using an online self-administered questionnaire. The questionnaire consisted of five parts: Socio-demographics, knowledge, attitude, perception and willingness to quit vaping. Majority of the respondents (62.9%) passed the test on knowledge of vaping, with moderate attitude and perceptions towards vaping. More than 60% of the respondents had thoughts and intention to quit vaping. The MANOVA analysis showed no significant differences among the seven programs within the faculty towards knowledge, attitude, perception, and willingness, F (24, 640) = 1.239, p = .200, partial η^2 = .044. However, the multivariate test between programs showed that there was a significant difference in willingness to quit vaping, F (6, 160) = 2.641, p = .018, partial η^2 = .090. While awareness about vaping has increased, its widespread use remains concerning. Regulatory measures, such as fines for vaping on university grounds, are necessary to deter usage. Moreover, the university should improve cessation support with structured programs and campaigns, providing easy access to cessation treatments for students to seek for help.

Keywords: Attitude; knowledge; perception, willingness to quit; vaping

INTRODUCTION

E-cigarettes operate as battery-powered devices that employ an inhalation-triggered mechanism to heat a cartridge, generating vapours intended for inhalation by users. These cartridges are filled with liquid blends composed of varying combinations of propylene glycol, glycerine, nicotine, tobacco extracts, flavourings, and/or additional additives. Due to their reduced reliance on combustion in comparison to traditional cigarettes, both individuals who are actively using e-cigarettes and those passively

exposing to them encounter fewer harmful particles (Unger & Unger 2018). Referred to by a variety of terms including "e-cigs," "e-hookahs," "vapes," and "electronic nicotine delivery systems (ENDS)," e-cigarettes are categorised into three primary types: tanks or mods, rechargeable, and disposable. Although e-cigarettes have been regarded as less harmful than traditional cigarettes, they are not completely devoid of risk. Nonetheless, comprehensive long-term studies investigating the health effects of e-cigarette use have yet to be released. Despite the harmful components present in e-cigarette aerosols, there has been a notable increase in their usage, particularly among adolescents and young adults (Tehrani et al. 2022).

In Malaysia, a discernible uptick in the utilisation of e-cigarettes is evident through the growing prevalence of e-cigarette users in public spaces and the proliferation of stores vending e-cigarette products. The surge in popularity can be attributed to various factors, such as the relatively lower cost, attractive features, wide range of e-liquid flavours and increased convenience provided by e-cigarettes when compared to traditional tobacco cigarette. Additionally, extensive promotion of e-cigarettes on social media platforms has contributed to their attraction among adolescents (Chudech et al. 2021). According to Driezen et al. (2022), the prevalence of e-cigarette usage in Malaysia has escalated from 0.8% in 2011 to 4.9% in 2019, with 5.4% of Malaysian adults reporting daily e-cigarette use in 2020. Moreover, a survey conducted across 10 countries between 2009 and 2013 revealed that Malaysia ranked among the nations with the highest prevalence of e-cigarette users, approximately 14% (Gravely et al. 2014). A local survey involving 4288 Malaysian respondents indicated that the overall prevalence rates of current, ever, former, and dual e-cigarette users were 3.2%, 11.9%, 8.6%, and 2.3%, respectively (Ab Rahman et al. 2019).

The existing body of literature presents conflicting findings and insufficient scientific evidence regarding the health advantages of e-cigarettes, the relationship between perceived harm and e-cigarette usage and potential adverse effects (Callahan-Lyon 2014; Odum et al. 2012). Additionally, e-cigarettes have been found to produce toxic substances that do not present in traditional cigarettes (Blount et al. 2019). Some studies indicate that the perception of e-cigarettes as less harmful alternatives to regular cigarettes may influence their usage (Choi & Forster 2013). Conversely, other research has shown that individuals who smoke and use e-cigarettes for a brief period experience an increase in lung flow resistance (Vardavas et al. 2012).

Several countries, including Saudi Arabia, Canada and Australia, have implemented regulations limiting the use of e-cigarettes. Conversely, certain European nations, like Romania, have opted not to regulate e-cigarettes extensively, thereby allowing intensive sales, marketing and advertising (Adkison et al. 2013). In the United States, the level of regulation varies significantly across states, with some

categorising e-cigarettes as tobacco products while others classify them as 'alternative nicotine products' or 'vapor products' (Hampton 2014). In Malaysia, regulations pertaining to the sale, distribution, and advertising of e-cigarettes are delineated in the Control of Tobacco Product Regulations (CTPR) 2004, which are enforced by the Ministry of Health (MOH). Nevertheless, the recent decision by the government to exclude nicotine from the Poison Act 1952 came as a surprise, as it is likely to increase the availability and accessibility of nicotine-containing products, including e-cigarettes (Times 2023).

Previous research conducted in Sarawak, Malaysia, indicated that 54.3% of 232 adult participants possessed a good understanding of e-cigarettes (Hafiz et al. 2019). Conversely, Aghar et al. (2020) discovered that a lower level of e-cigarette knowledge was observed among 63.3% of 350 respondents in Lebanon. Similar results were found in Jordan, where the community exhibited limited knowledge regarding e-cigarettes (Abdel-Qader & Al Meslamani 2020; Barakat et al. 2021). The introduction of e-cigarettes has elicited both positive and negative reactions from society. A study by Aghar et al. (2020) revealed that only 20.3% of participants displayed a favourable attitude towards e-cigarettes. Additionally, 48.6% of participants believed that e-cigarettes were effective for smoking cessation, 53.9% perceived them as helpful in reducing or quitting smoking, and 44.3% felt that e-cigarettes should replace traditional cigarettes.

The landscape of e-cigarette usage and perceptions is evolving, revealing gaps in current research. Moreover, the tobacco industry is targeting vulnerable young adults in its marketing campaigns, portraying their brands as aids for quitting traditional cigarettes, despite uncertainties surrounding the long-term health consequences of e-cigarettes. Due to the recent emergence of e-cigarettes and the lack of comprehensive understanding regarding their prolonged health effects, nationally representative data on e-cigarettes are inadequate in Malaysia, especially among university students in education faculties, as most studies have primarily focused on those in health sciences disciplines. In addition, student-teachers may become educators in the future, and hence important influencers of the next generation. Hence, our objective was to assess the level of knowledge, attitudes, perceptions and willingness to quit vaping among the student teacher community, specifically in the Selangor state.

MATERIALS AND METHODS

Study Design and Population

Between August 2023 and November 2023, a survey design study was conducted utilising a two-stage random sampling method with stratification. The research was carried out among students enrolled in the Faculty of Education at Universiti Teknologi MARA (UiTM), Malaysia.

Sampling Procedures

The study encompassed a total population of 2,276 students within the Faculty of Education as of August 2023. Utilising Morgan's (1970) sample size calculation method, along with an added 5% dropout rate, the determined number of respondents required amounted to 348 individuals. Inclusion criteria comprised undergraduate students enrolled in an education program who were current users of e-cigarettes. Exclusion criteria encompassed postgraduate students, those who were not enrolled in an education program, and individuals who did not consent to participate in the study.

Instrumentations & Data Collection Procedures

The study employed a set of self-administered questionnaires comprising of five parts. Part A covered demographic information. Part B comprised 9 items assessing respondents' knowledge on vaping (Hafiz et al. 2019), utilising a three-point scale (Yes, No, Unsure). One point was allocated for each correct answer, with a pass rate set at 55% (i.e., 5 out of 9 items answered correctly). Part C evaluated attitudes towards vaping with 8 items (Hafiz et al. 2019), while Part D gauged perceptions of vaping using 5 items (Al-Sawalha et al. 2021). Part E assessed the readiness to quit vaping using 4 items (Thapa et al. 2022), utilising a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). A pilot study indicated acceptable reliability values using Cronbach's alpha for knowledge (.58), attitude (.86), perception (.90), and willingness to quit (.91). Participants were briefed on the study's purpose, and enrolment occurred only after obtaining their agreement to participate. Anonymity was maintained, and consent was obtained before initiating the data collection process. The questionnaire was self-administered online using Google Docs.

Data Analysis

Descriptive analysis was performed using IBM SPSS (Version 27) to explore the levels of knowledge, attitudes, perceptions and readiness to quit vaping among student teachers at the Faculty of Education, UiTM. Frequency and percentage were used to describe categorical variables, whereas mean and standard deviation were employed to summarise continuous variables. The overall knowledge score for each student was computed based on the number of correctly answered questions, while scores for attitudes, perceptions, and willingness to quit were derived from Likert-scale responses. To compare differences between student teachers' programs (independent variables) across multiple dependent variables (knowledge, attitudes, perceptions, and willingness to quit vaping), a multivariate analysis of variance (MANOVA) was employed. Significant MANOVA results were determined using F statistics derived from Pillai's Trace. In cases where MANOVA

yielded significance, univariate analysis of variance (ANOVA) results was examined. Post hoc comparisons utilised the Bonferroni procedure. The interaction term between independent variables and model assumptions was evaluated. A significance level of $p \leq 0.05$ was deemed to be statistically significant.

Ethical Considerations

The study received ethics approval from the UiTM Research Ethics Committee, with reference number ED/REC/CF10478. Before participating, all students were given written consent forms, which they read, understood, and signed. Participants were explicitly informed of their option to decline participation or withdraw from the study at any point. Precautions were implemented to maintain the privacy and confidentiality of all gathered data throughout the study duration.

RESULTS

Table 1 summarised the findings from the online questionnaire, which was distributed to all faculty teachers, totalling 348 respondents. Of these, 167 responses were received, indicating a return rate of 48%. The lower return rate was attributed to the predominantly female student population in the faculty. Most respondents fell within the age range of 24 to 26 (49.7%), with male students comprising the majority (72.2%). The Physical and Health Education (PHE) program exhibited the highest enrollment rate (34.1%), while final semester students (29.3%) were identified as the primary users of vaping devices. A considerable proportion of students reported a family history of smoking (64.1%), and a significant portion (44.9%) initiated vaping within the past 12 months. Pods (45.5%) and disposable pods (38.9%) were the most commonly used vape types among students. Additionally, over half of the students change or refill vape flavors at least twice monthly, with 45.5% reporting moderate usage, consuming fewer than 170 puffs per day. Despite 77.8% of students attempting to quit vaping, a majority (84.4%) did not seek any treatment. Nevertheless, a notable portion (46.2%) had recently begun seeking treatment at government-based hospitals or clinics.

Knowledge on Vaping among Student Teachers

When assessing the knowledge of vaping among the respondents (Table 2), it was revealed that 101 (60.5%) respondents were aware of the harmful effects of vaping on health. Furthermore, 75 (44.9%) disagreed with the notion that vaping was less harmful to health than a regular cigarette. Additionally, 71 (42.5%) respondents were aware that the health risks associated with vaping were comparable to those of regular cigarettes. Moreover, 83 (49.7%) respondents agreed that vaping contained the same chemicals as regular cigarettes, while 142 (85%) were aware that it contained nicotine. Concurrently, 140 (83.8%) respondents admitted to the addictive nature of vaping, and 119 (71.3%) were aware that vaping can potentially

TABLE 1: Demographic profiles

DEMOGRAPHIC		FREQUENCY (%)
Age	18-20	31 (18.6%)
	21-23	52 (31.1%)
	24-26	83 (49.7%)
	27 above	1 (0.6%)
Gender	Male	129 (72.2)
	Female	38 (33.8%)
Programs	TESL	25 (15.0%)
	Art	15 (9.0%)
	Physical and Health	57 (34.1%)
	Biology	13 (7.8%)
	Physics	26 (15.6%)
	Mathematics	16 (9.6%)
	Chemistry	15 (9.0%)
Semester	1	12 (7.2%)
	2	12 (7.2%)
	3	14 (8.4%)
	4	15 (9.0%)
	5	21 (12.6%)
	6	21 (12.6%)
	7	23 (13.8%)
	8	49 (29.3%)
Did any of your family members a smoker?	No	60 (35.9%)
	Yes	107 (64.1%)
When do you start vaping?	< 12 months	75 (44.9%)
	< 2 years	26 (15.6%)
	< 5 years	43 (25.7%)
	< 10 years	17 (10.2%)
	> 10 years	6 (3.6%)
What type of vape do you use?	Vape pen	10 (6.0%)
	Pod	76 (45.5%)
	Disposable pod	65 (38.9%)
	Mechanical mod	3 (1.8%)
	Others	13 (7.8%)
In the past month, how many times have you changed the vape, flavour, or refilled the vape?	Never	40 (24.0%)
	Once	54 (32.3%)
	2 times	44 (26.3%)
	3 times	19 (11.4%)
	> 4 times	10 (6.0%)
How often do you vape in a day?	Seldom < 70 puff	65 (38.9%)
	Sometimes 71-170 puff	76 (45.5%)
	Often > 171 puff	26 (15.6%)
Ever tried to quit?	No	37 (22.2%)
	Yes	130 (77.8%)
Have you sought treatment to quit before?	No	141 (84.4%)
	Yes	26 (15.6%)
Can you state where did you get your treatment?	Gov clinic/hospital	12 (46.2%)
	Private clinic/hospital	7 (26.9%)
	Self-treatment	5 (19.2%)
	Website	2 (7.7%)

TABLE 2: Knowledge on vaping

KNOWLEDGE		FREQUENCY (%)
Vaping is not harmful to health	No	101 (60.5%)
	Yes	34 (20.4%)
	Unsure	32 (19.2%)
Vaping is less harmful to health than normal cigarette	No	75 (44.9%)
	Yes	53 (31.7%)
	Unsure	39 (23.4%)
The health risk of vaping is the same as a normal cigarette	No	50 (29.9%)
	Yes	71 (42.5%)
	Unsure	46 (27.5%)
Vaping has the same chemicals as a normal cigarette	No	83 (49.7%)
	Yes	50 (29.9%)
	Unsure	34 (20.4%)
Vaping can contain nicotine	No	8 (4.8%)
	Yes	142 (85%)
	Unsure	17 (10.2%)
Vaping is potential cause of asthma attacks and allergies	No	15 (9.0%)
	Yes	119 (71.3%)
	Unsure	33 (19.8%)
Vaping is addictive	No	16 (9.6%)
	Yes	140 (83.8%)
	Unsure	11 (6.6%)
Vaping can be used at smoke-free places	No	82 (49.1%)
	Yes	57 (34.1%)
	Unsure	28 (16.8%)
Are you aware of any regulation by the gov on vaping?	No	42 (25.1%)
	Yes	91 (54.5%)
	Unsure	34 (20.4%)
Pass		105 (62.9%)
Fail		62 (37.1%)
Mean (S.D)		5.22 (2.16)

trigger asthma attacks and allergies. Furthermore, the data indicated that 82 (49.1%) of the respondents answered negatively regarding the use of vaping in smoke-free places, and 91 (54.5%) were aware of government regulations regarding vaping. In conclusion, it can be inferred that most respondents possess knowledge about vaping and its associated consequences yet choose to vape despite this awareness. Out of the respondents, 105 (62.9%) passed the knowledge test, with mean scores of 5.22 (2.16).

Attitude towards Vaping among Student Teachers

The results indicated that respondents' attitudes can be classified into positive, negative, and uncertain categories (Table 3). Most respondents agreed that vaping was enjoyable, perceived as stylish, provided pleasure, aided in smoking cessation, and alleviated stress, leading to an overall negative attitude toward vaping. On the other hand, some respondents expressed positivity, suggesting that vaping did

TABLE 3: Attitude of the respondents

ATTITUDE		FREQUENCY (%)
Vaping is fun	Strongly Agree	28 (16.8%)
	Agree	40 (24.0%)
	Not sure	49 (29.3%)
	Disagree	22 (13.2%)
	Strongly Disagree	28 (16.8%)
Vaping looks cool and stylish	Strongly Agree	25 (15.0%)
	Agree	34 (20.4%)
	Not sure	47 (28.1%)
	Disagree	23 (13.8%)
	Strongly Disagree	38 (22.8%)
Vaping gives pleasure during its usage	Strongly Agree	29 (17.4%)
	Agree	45 (26.9%)
	Not sure	42 (25.1%)
	Disagree	20 (12.0%)
	Strongly Disagree	31 (18.6%)
Vaping helps to cut down cigarette smoking	Strongly Agree	50 (29.9%)
	Agree	40 (24.0%)
	Not sure	34 (20.4%)
	Disagree	13 (7.8%)
	Strongly Disagree	30 (18.0%)
Vaping relieves stress	Strongly Agree	49 (29.3%)
	Agree	42 (25.1%)
	Not sure	39 (23.4%)
	Disagree	13 (7.8%)
	Strongly Disagree	24 (14.4%)
Vaping enhances performances	Strongly Agree	27 (16.2%)
	Agree	18 (10.8%)
	Not sure	47 (28.1%)
	Disagree	32 (19.2%)
	Strongly Disagree	43 (25.7%)
Vaping increase concentration	Strongly Agree	22 (13.2%)
	Agree	27 (16.2%)
	Not sure	44 (26.3%)
	Disagree	29 (17.4%)
	Strongly Disagree	45 (26.9%)
Vaping should be banned in Malaysia.	Strongly Agree	30 (18.0%)
	Agree	24 (14.4%)
	Not sure	51 (30.5%)
	Disagree	17 (10.2%)
	Strongly Disagree	45 (26.9%)
Mean (S.D)		20.94 (8.17)

not improve performance or aids concentration. However, the majority were uncertain or disagreed on whether vaping should be prohibited in Malaysia, with a mean score of 20.94 (8.17).

Perception towards Vaping among Student Teachers

Table 4 presented the respondents' perceptions regarding vaping. The majority disagreed with the notion

TABLE 4: Perception towards vaping

PERCEPTION		FREQUENCY (%)
Vaping is less dangerous than smoking cigarettes.	Strongly Agree	21 (12.6%)
	Agree	34 (20.4%)
	Not sure	45 (26.9%)
	Disagree	26 (15.6%)
	Strongly Disagree	41 (24.6%)
Vaping aerosol is less harmful than cigarette aerosol.	Strongly Agree	18 (10.8%)
	Agree	34 (20.4%)
	Not sure	58 (34.7%)
	Disagree	20 (12.0%)
	Strongly Disagree	37 (22.2%)
Vaping is less addictive than smoking a cigarette	Strongly Agree	22 (13.2%)
	Agree	43 (25.7%)
	Not sure	40 (24.0%)
	Disagree	24 (14.4%)
	Strongly Disagree	38 (22.8%)
Vaping is an effective way to quit smoking a cigarette.	Strongly Agree	32 (19.2%)
	Agree	47 (28.1%)
	Not sure	41 (24.6%)
	Disagree	21 (12.6%)
	Strongly Disagree	26 (15.6%)
Vaping is less common than smoking cigarettes.	Strongly Agree	23 (13.8%)
	Agree	43 (25.7%)
	Not sure	47 (28.1%)
	Disagree	25 (15.0%)
	Strongly Disagree	29 (17.4%)
Mean (S.D)		12.78 (4.81)

that vaping was less dangerous than smoking cigarettes. Additionally, 57 (34.2%) respondents disagreed with the idea that vaping was less harmful than cigarette aerosol, while 58 (34.7%) expressed uncertainty, reflecting a mixed perception. However, respondents held a negative perception regarding vaping's addictive nature compared to smoking cigarettes, its effectiveness as a smoking cessation aid, and its prevalence compared to traditional cigarettes. The overall mean score of the respondents' perception was 12.78 (4.81).

Willingness to Quit Vaping among Student Teachers

Table 5 presented the respondents' readiness to quit vaping. More than half of the respondents agreed that they often thought about quitting vaping and would like to quit vaping. They also agreed that quitting vaping would be good for their health, as well as their finances. Overall, the respondents exhibited a strong willingness to quit vaping with a total mean score of 12.92 (3.38).

TABLE 5: Willingness to quit vaping

WILLINGNESS		FREQUENCY (%)
I have often thought about quitting vaping	Strongly Disagree	11 (6.6%)
	Disagree	13 (7.8%)
	Not sure	38 (22.8%)
	Agree	43 (25.7%)
	Strongly Agree	62 (37.1%)
I would like to quit vaping	Strongly Disagree	11 (6.6%)
	Disagree	13 (7.8%)
	Not sure	36 (21.6%)
	Agree	41 (24.6%)
	Strongly Agree	66 (39.5%)
Quitting vaping will be good for my health	Strongly Disagree	7 (4.2%)
	Disagree	4 (2.4%)
	Not sure	27 (16.2%)
	Agree	34 (20.4%)
	Strongly Agree	95 (56.9%)
Quitting vaping will be good for my finances	Strongly Disagree	6 (3.6%)
	Disagree	7 (4.2%)
	Not sure	24 (14.4%)
	Agree	30 (18.0%)
	Strongly Agree	100 (59.9%)
Mean (S.D)		12.92 (3.38)

The Level of Knowledge, Attitude, Perception and Willingness to Quit Vaping among Student Teachers' Programs

A normality test was conducted and presented as normality based on the stem and leaf plot, normal Q-Q plot, detrended normal Q-Q plot, and boxplot for knowledge, attitude, perception and willingness to quit vaping. A one-way MANOVA was used to compare the student teachers' knowledge, attitude, perception and willingness to quit vaping based on their programs (Table 6). Based on Pillai's Trace, overall, it showed no significant differences among the seven programs towards knowledge, attitude, perception, and willingness, $F(24, 640) = 1.239$, $p = .200$, partial $\eta^2 = .044$. Nevertheless, the multivariate test between programs showed that there was a significant difference in willingness to quit vaping $F(6, 160) = 2.641$, $p = .018$, partial $\eta^2 = .090$ with PHE program as the highest considerable willingness to quit vaping ($M = 13.94$, $SD = 2.70$).

DISCUSSION

The aim of this study was to examine the knowledge levels, attitudes, perceptions and readiness to quit vaping among student teachers at a Malaysian university. The popularity of using pod and disposable pod was the highest with an average usage of less than 170 puffs in a day. Majority of the respondents demonstrated an excellent level of knowledge towards vaping with moderate attitude and perceptions towards vaping. Nevertheless, majority

TABLE 6: Multivariate test and test of between programs effects of knowledge, attitude, perception, and willingness among the respondents

MULTIVARIATE TEST						
Programs	Pillai's Trace	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
		1.239	24.000	640.000	.200	.044

TEST OF BETWEEN PROGRAMS EFFECTS							
Source	Dependent Variables	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Programs	Knowledge	45.123	6	7.521	1.655	.135	.058
	Attitude	497.675	6	82.946	1.253	.282	.045
	Perception	102.460	6	17.077	.731	.626	.027
	Willingness	171.277	6	28.546	2.641	.018	.090

exhibited an excellent willingness to quit vaping. When comparing the prevalence of vaping usage with data from the Southeast Asian region, this study revealed a higher occurrence. The lifetime and current prevalence in a study from South Korea showed 11% and 2%, respectively (Lee et al. 2016); 2.1% in Chinese participants (Wang et al. 2019); and 4.3% current prevalence in Japanese adolescents (Okawa et al. 2020). A study from the Saudi Arabian region has reported a current prevalence of 10% and 12% among medical students from different universities in the central region (Almutham et al. 2019; Habib et al. 2020). When comparing with available data, the findings indicate a rising prevalence of vaping among young Malaysian adults in comparison to other global regions.

This study revealed that the respondents' level of knowledge towards vaping was good with more than half of the respondents' passed the test. The results were consistent with several previous local and international studies. As the respondents are student-teachers, one of the possibilities would be to acquire the knowledge from the subjects and exposures in the university setting about vaping. Education significantly impacts vaping awareness, as seen in studies by Yong et al. (2019). Most respondents correctly recognised health effects, including the notions that vaping is not harmful to health, is less harmful than traditional cigarettes, carries equivalent health risks to regular cigarettes, and may potentially trigger allergies and asthma attacks. This demonstrates that they are aware of the possible consequences of vaping, which is a positive sign. However, a significant number of respondents lacked of understanding on the chemical composition, and it shares similar chemicals with regular cigarettes. This gap is concerning, suggesting a tendency to overlook risks despite understanding them. Although scientific evidence regarding the safety of e-cigarettes is still inconsistent, manufacturers maintain that e-cigarettes are relatively safe to use and, in recent years, they

have embarked on more aggressive marketing campaigns worldwide (Bahl et al. 2012; Kuschner et al. 2011; Lee et al. 2011).

Thus, this translates the finding of the study whereby despite good level of knowledge acquisition, the usage of vaping is still high among the respondents. Aside, a significant agreement on vape is addictive. When someone is addicted to something, it makes it difficult to recognise the potential danger of their habits (Anzilotti 2022). This lack of awareness is concerning as they may know the consequences of vaping, but they tend to ignore and keep vaping despite understanding the risks. There is a growing public health concern that the use of these new products for smoking could hamper efforts to combat smoking and diminish the effectiveness of recommended strategies aimed at discouraging adolescents from smoking. Moreover, this may serve as a 'gateway' for non-smokers and encourage them to start smoking or prevent regular smokers from quitting (Aqeeli et al. 2020).

The findings also showed an equal split between positive and negative attitudes towards vaping among the respondents. The majority agreed that vaping is fun, cool, and stylish, gives pleasure, alleviates the stress level, and helps to cut down traditional cigarettes smoking. Similar findings by Baobaid et al. (2021) show the reasons for vaping were pleasure, cessation, and social factors driving vaping. Research showed that some people believe that e-cigarette is less harmful than a cigarette, it does not contain any or only limited amounts of nicotine (Gorukanti et al. 2017) and help to quit smoking conventional cigarette (Aghar et al. 2020; Gorukanti et al. 2017). Respondents, however, oppose vaping in enhancing performance and boosting focus. Additionally, most of the respondents in this study expressed a strong attitude that the government should control the use of e-cigarettes. They are also optimistic that vaping should be prohibited in Malaysia. A positive attitude to banning vaping in Malaysia may stem from a desire to safeguard public health aside from their role as a future educator which holds the responsibility to promote healthier generation in supporting the end game policy (Wan Mamat et al. 2024). A similar finding was reported in America, in which participants were more supportive of restricting e-cigarette policies to protect youth (Sanders-Jackson et al. 2016). Kennedy et al. (2017) reported that 22 countries globally had regulated e-cigarettes using existing regulations, 25 countries had enacted new policies to regulate e-cigarettes, 7 countries had amended existing legislation; 14 countries applied a combination of new or amended and existing regulations. It shows that a variety of legal mechanisms can be applied to control the e-cigarette and the implementation of the regulation depending on the country such as regulations on marketing and advertising age restrictions on purchasing e-cigarettes, and taxation on these products to discourage use.

Moreover, the findings depicted that there are misconceptions about vaping among respondents. Despite evidence

to the contrary, many believe vaping is less addictive than smoking and an effective way to quit. This can be seen when they agreed that vaping is less addictive than smoking a cigarette, is an effective way to quit smoking a cigarette, and is less common than smoking cigarettes, although this was incorrect. These perceptions are supported by other findings by Al-Sawalha et al. (2021), Ali et al. (2022), and Franks et al. (2017). Past research has yielded conflicting findings regarding perceptions of e-cigarette use to reduce tobacco dependence. While some studies align with our results, others present starkly contrasting perspectives. Data from a medical school in the United States reported that males who have tried tobacco smoking usually support the use of e-cigarettes for smoking cessation, while non-smokers did not favour this view (Hinderaker et al. 2018). Almutham et al. (2019) also demonstrated similar findings, expressing disagreement regarding considering e-cigarettes as an alternative to traditional smoking. E-cigarette use has been associated with a higher smoking cessation rate and less severe withdrawal symptoms when compared to nicotine replacement therapy (Hajek et al. 2019). This may account for the significant portion of students in our study who hold the belief that e-cigarettes are either effective or more effective than nicotine replacement therapy for quitting cigarette smoking. This remains a subject of uncertainty and dispute, since substantial evidence has not yet been generated highlighting the risks versus benefits of e-cigarette use in smoking cessation (Aqeeli et al. 2020). Furthermore, students' perceptions are swayed by marketing assertions that promote e-cigarettes as a healthy alternative, fostering biased perspectives. However, the majority of students do not believe that vaping is less harmful than smoking cigarettes, indicating their awareness. This highlights a tendency to prioritise perceived advantages over recognised risks.

Besides, it illustrates that most respondents have considered quitting vaping, a positive trend given their role as future educators. Majority acknowledged the health and financial benefits of quitting, aligning with studies emphasising health concerns as a primary motivator for quitting vaping (Amato et al. 2021; Unger et al. 2020). These findings suggest that quitting vaping can enhance well-being and set a healthier example for students. Despite high knowledge levels about vaping, attitudes remain mixed, with misconceptions persisting regarding its harmlessness compared to smoking. Social influences and perceptions of vaping as stylish contribute to this gap. Nonetheless, motivations to quit reflect a desire for improved health and finances. Lastly, this study yielded no differences in the knowledge, attitude, perception, and willingness toward vaping among the different programs of student teachers. Respondents from the Chemistry programs acquired the highest scores in all four variables as compared to the Art programs with the lowest scores. However, in quitting vaping, the Physical and Health programs

exhibited the highest willingness. As opposed to the highest prevalence of vape users among the respondents, thus the desire to quit would be high among them. In addition, subjects related to health promotions and basic sciences are covered by science-based programs, as such they are expected to be more knowledgeable which explains the better acquisition of knowledge, attitude, and perceptions towards vaping (Aqeeli et al. 2020; Franks et al. 2017).

The swift surge in vaping's popularity, coupled with heightened marketing of flavoured pods, has notably impacted adolescents and young people worldwide, including those in Malaysia, leading them to explore e-cigarettes, including undergraduates. The findings were a point of concern since the present study focused on student teachers with a high prevalence of vaping. Student teachers play a huge role in shaping the future youth. As potential teachers following graduation, the image portrayed by them as vape users would eventually create a negative image and set a bad example for the school students. These findings underscore a growing necessity for regulatory measures, beginning with the implementation of fines for possessing and using vapes within the university premises as an initial measure to discourage vaping among university students. In promoting cessation, the university should also develop more structured cessation programs and campaigns, which would serve as a gateway for the students to seek proper help for cessation treatment. The study's limitations include data collection from a single faculty at one university in Malaysia, limiting generalisability. Additionally, the low response rate, with only 48% due to a higher proportion of non-vaping female students at the faculty may skew the results. Also, the study relied on self-reporting via Google Forms, possibly presenting inaccuracies due to respondents' misunderstanding or guessing answers. These factors collectively affect the study's reliability and the broader applicability of its findings.

CONCLUSION

The study concludes that while participants demonstrate awareness and knowledge of vaping, their attitudes remain neutral with underlying misperceptions. Many express intentions to quit vaping for health and financial benefits. The emerging trend of e-cigarette use among Malaysian youth warrants the dissemination of accurate information regarding vaping risks. The findings underscore the importance of education and awareness campaigns, especially among future educators, to reshape perceptions and behaviours toward vaping.

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CONFLICT OF INTEREST

None declared.

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