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## ORIGINAL ARTICLE

### E-CIGARETTES PRACTICES AMONG YOUTHS IN A UNIVERSITY POPULATION

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#### ABSTRACT

**Background of the study:** Electronic cigarette or e-cigarette use has become a worldwide phenomenon since 2003. The literature review shows that not much is known about the effect of e-cigarettes on human health; many of the studies on the use of E-cigarettes effect on humans is under clinical trials.

**Objective of the study:** The study aimed to assess the practice regarding e-cigarette use among youths in one of the private University College in Negeri Sembilan, Malaysia. **Methodology:** This research adopted a cross-sectional survey design. Convenience sampling method was used in this study to collect the data from 100 respondents. Descriptive statistics were used for the data analysis. **Result:** The findings concluded that the growing demand for e-cigarettes is a serious matter of concern among the youths. The study findings concluded that 73% of the respondents have been using e-cigarettes. Majority of the e-cigarette users (56%) also responded that e-cigarettes were harmful but continued to use the e-cigarettes. The majority (96%) of the users are youths under the age of 24 years and had been influenced by the friends to use e-cigarettes. Another major reason for e-cigarettes over traditional cigarettes was the availability of different flavors of vape liquid to different suite preferences.

**Conclusion:** The study concluded that the trend of e-cigarettes usage is growing at an alarming rate. There are many factors facilitating the use of e-cigarettes among youths. It is recommended that serious regulatory measures are needed from various health sectors to raise awareness regarding the ill effects of e-cigarettes usage among the youths.

**Keywords:** Electronic cigarette, Human health, Harmful , Vape liquid

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## INTRODUCTION

An e-cigarette is a battery-powered device that generates the aerosol by heating the liquid that is typically composed of a solvent (usually propylene glycol or glycerol), nicotine, and flavorings that converts liquid nicotine into a mist, or vapor, that the user inhales. There is no fire, no ash, and no smoky smell. E-cigarettes do not contain all of the harmful chemicals associated with smoking tobacco cigarettes, such as carbon monoxide and tar<sup>1</sup>.

These devices are referred to, by the companies themselves, and by consumers, as "e-cigarettes," "e-cigs," "e-hookahs," "mods," "vape pens," "vapes," and "tank systems." In this report, the term "E-cigarette" is used to represent all of the various products in this rapidly diversifying product category. The terms may differ by geographic region or simply by the prevailing preferences among young users. E-cigarettes contain four parts being a cartridge that holds liquid, a heating element, a power source, and a mouthpiece. They come in many different sizes, such as pipes, cigars, or cigarettes<sup>2,3</sup>.



**Fig 1:** Different types of E-cigarettes



**Fig 2:** Different flavors of vape liquids

The Malaysian governments focus on smoking cessation services in parallel with the requirement for Health Vision 2020 to raise citizen's health status. Contrariwise, Electronic cigarette or e-cigarette use has become a worldwide phenomenon since 2007, mainly targeting the adolescent population and has equally influenced Malaysian adolescent population<sup>4,5</sup>.

**Background of study :** Electronic cigarettes, or e-cigarettes, are battery-operated devices that deliver nicotine via inhaled vapor. There is considerable controversy about the disease risk and toxicity of e-cigarettes and empirical evidence on short- and long-term health effects are minimal (Sutfin, McCoy, Morrell, Hoepfner & Wolfson, 2013).

The World Health Organization has urged marketers of e-cigarettes to halt their unproved claims about the therapeutic benefits of using e-cigarettes and has indicated that there is no reliable scientific evidence to confirm the product's safety and efficacy (Cho, Shin, & Moon, 2011). E-cigarettes are frequently marketed as 'safe' products. However, while the inhaled compounds associated with e-cigarettes may be fewer and less toxic than those from traditional cigarettes, data to establish whether e-

cigarette use as a whole is less harmful to the individual user than traditional cigarettes are not conclusive<sup>6,7</sup>.

Studies reviewed noted the following observed physiologic effects associated with acute exposure to e-cigarettes or e-cigarette aerosols such as mouth and throat irritating and dry cough at initial use, though complaints decreased with continuing use, no change in heart rate, carbon monoxide (CO) level, or plasma nicotine level, decrease in fractional exhaled nitric oxide (FeNO) and increase in respiratory impedance and respiratory flow resistance similar to cigarette use, no change in complete blood count (CBC) indices, no change in lung function, no change in cardiac function as measured with echocardiogram and no increase in inflammatory markers<sup>8,9</sup>.

People nowadays believe that e-cigarette is less harmful compared to traditional cigarettes as their mechanism of smoking is entirely different and traditional cigarettes combusted smoke contains several cancer-causing elements and other harmful chemical compounds which are a severe threat to the smoker's body. E-cigarettes cost less than the traditional cigarettes, which will be considered by the smoker as one of the ways out to stop smoking and for financial problem<sup>10</sup>.

**E-cigarettes among Malaysians:** The popularity of electronic cigarettes in Malaysia has soared since it was introduced in 2003. The thriving growth of shops selling e-cigarette products, the familiar sight of users of various ages in public places in Malaysia, and coupled with several reporting of e-cigarette or vaping devices explosion incidents have drawn the authorities' attention to the regulate of the use of e-cigarettes (Wong, Alias, Agha Mohammadi, Ghadimi, & Hoe, 2017).

The purpose of the study was to determine e-cigarette practices among male youths in the University population.

## METHODOLOGY

**Research design:** For this study, a survey research design (descriptive quantitative approach) was employed to study the practices of youths regarding E-cigarettes usage. The practices were determined using a questionnaire.

**Research setting:** This study design had been carried out at a private University College in Negeri Sembilan, Malaysia. This college offers provided many healthcare-related courses.

**Study Sample:** One hundred (n=100) male students participated in this study. The samples were recruited using convenient sampling method from different programs like Nursing, Pharmacy, and Physiotherapy and Business studies.

**Ethical consideration:** In line with the proper protection of human rights, respondents were first asked for their willingness to participate in the study, and those who gave consents were used as respondents for the study. Privacy was assured, and all data provided by respondents were treated with a high degree of confidentiality and respect.

Respondents were informed that there was no reward for participating and so that they could opt-out if they so wish at any time. The informed consent contained an explanation of the study, information on confidentiality, requirements, and rights of the participants, and the risks and benefits of the study. The questionnaire was distributed to the consenting participants, and the same were retrieved after ensuring completeness.

**Instruments:** A self-developed and pretested questionnaire was used for the data collection purposes.

**Validity and reliability of the questionnaire:** Face and content validity were used to test the validity of the instrument. The questionnaire was stated in a clear and straightforward language to ensure consistency of response from the respondents. The actual questionnaire was administered to ten male students. The purpose of the pilot testing was to test whether the content of the instruments was relevant, and the wording is precise. Ten students volunteered to take part in this pilot testing for the language, aspect of the questionnaires as well as the suitability. The reliability analysis showed a Cronbach's alpha of 0.85.

**Data collection process:** The respondents were met at their various meeting venue to collect the data. After obtaining permission, the researcher introduced himself and the purpose of the study to the participants. The respondents are given 15 minutes to answer the questionnaire. The questionnaire was kept in an envelope to maintain confidentiality.

**Data analysis :** The data analysis was done using descriptive data analysis. Categorical variables are presented in frequency and percentage using SPSS version 20.0.

## RESULTS

The following details the demographic profile of the 100 respondents of this study.

Demographic profile		Frequency	Percent
Age(In years )	18-22	60	60.0
	23-27	37	37.0
	27-30	3	3.0
Ethnicity	Malay	72	72
	Chinese	10	10
	Indian	6	6
	Others	12	12
Religion	Islam	72	72
	Christian	12	12
	Hindu	6	6
	Buddha	10	10
Levelof education	Diploma	79	79
	Degree	21	21

**Table 1:** Demographic profile of the respondents (n=100)

Table 1.0 shows that 60% of respondent are from age 18-22 years old, 37% are from age 23-

27. Based on ethnicity, 72% of respondent are Malay, 10% of respondent are Chinese, 6% of

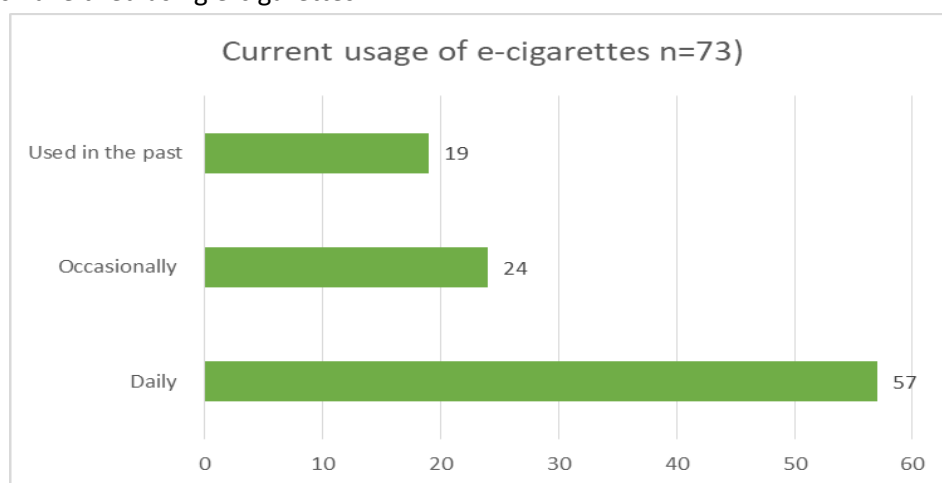
respondent are Indian, and 12% of respondent are other. Based on the religion of

practice, 72% of respondent are Islam and were enrolled in Diploma programs.

Questions	Yes/ No	Frequency	Percentage
Have you ever heard of electronic cigarettes or e-cigarettes?	Yes	93	93
	No	7	7
Have you ever tried an electronic cigarette?	Yes	73	73
	No	27	27

**Table 2:** Use of e-cigarettes (n=100)

Table 2 shows that 93% of respondent have heard about E-cigarettes. A total of 73% of the respondents have tried using e-cigarettes.



**Fig 3 :** Current Usage of E-cigarettes among the respondents

Figure 3 shows that respondent currently use e-cigarette daily are 57%, occasionally (not daily) are 24% and used in the past are 19%.

Age (Years)	Frequency	Percent
13-18	30	41
19-24	40	55
25-30	3	4

**Table 3:** Age at start smoking (n=73)

Table 3 shows that age of respondent start using e-cigarette. 41 % were aged 13-18 years

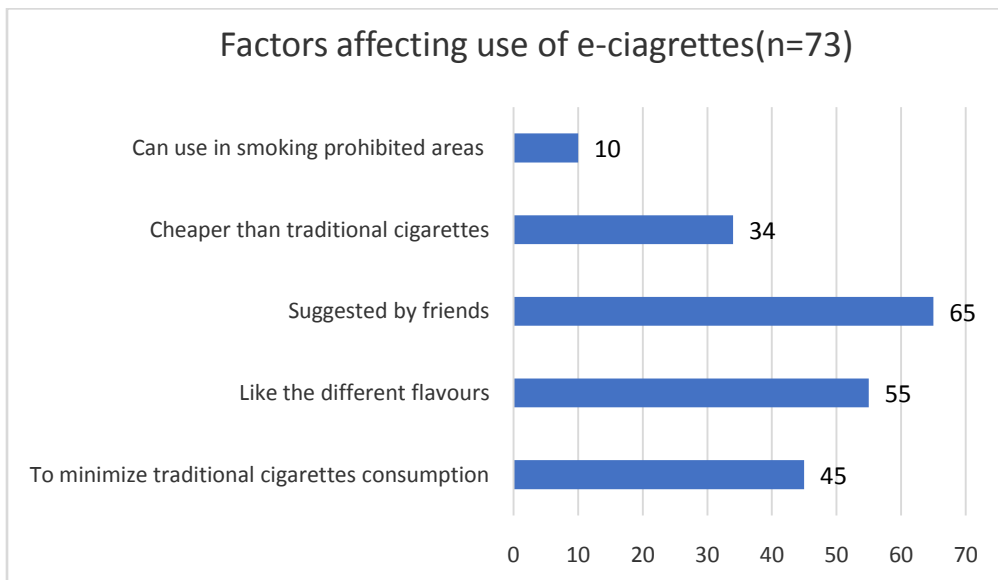
old, 55% were aged 19-24 years old and 4 % were from 25-30 years old.

Duration	Frequency	Percentage
Less than a month	7	7
1-6 months	46	46
Over a year	14	14
Non-smoker	33	33

**Table 4:** Duration of E-cigarette usage(n=73)

Table 4 shows that 36% of respondents have been using e-cigarette over than six months, 33% of respondent are a non-smoker, 14% using an e-cigarette over

a year, 10% using an e-cigarette over a month and 7% using an e-cigarette less than a month.



**Fig 4:** Factors influencing use of e-cigarettes

Figure 4 shows the reason for using e cigarettes. Many of the respondents chose

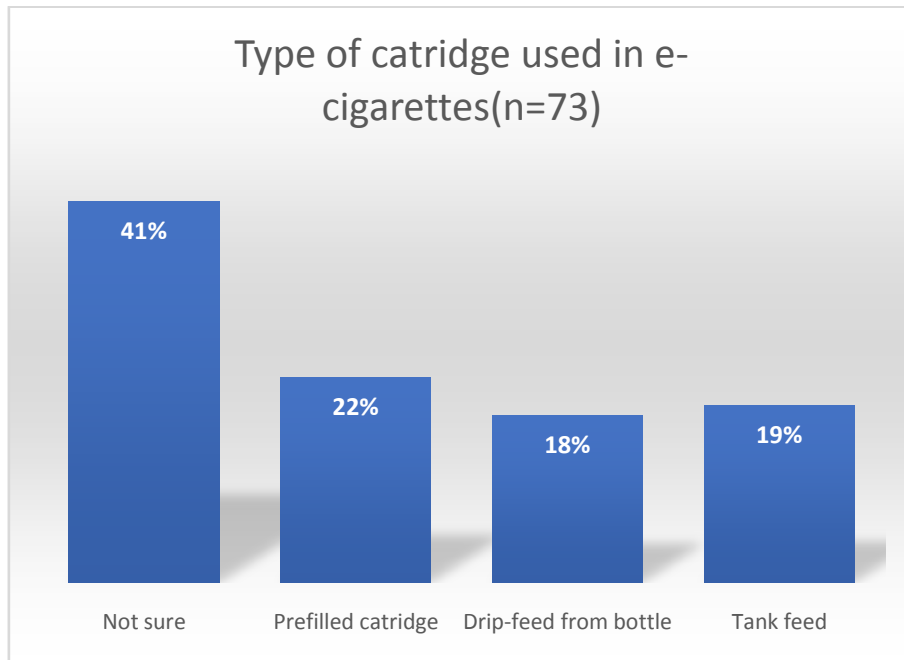
more than one factor to be responsible for the use of e cigarettes.

Questions	Yes/No	Frequency	Percentage
Do you have preferred type of e-cigarette (one that you currently use)	Yes	41	56
	No	32	44
Does your e-cigarette come with a choice of nicotine liquid strength/concentration	Yes	45	61
	Not sure	28	39

**Table 5:** Awareness regarding e-cigarettes (n=73)

Table 5 shows that 56% have their preferred choice of e-cigarettes. Sixty-one (61%) a percentage of the respondent was aware that

the e-Cigarettes are supplied with different nicotine liquid strength/concentration.



**Fig 5:** Type of cartridges (tank) do you use for your e-cigarette

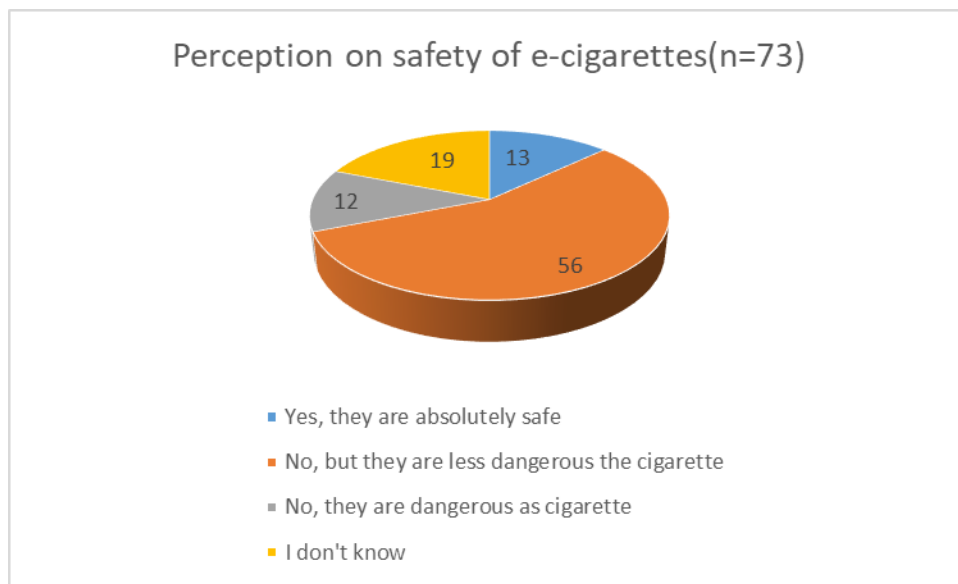
Figure 3 shows that 41% of respondent unsure of the type of cartridge they use, 22% of respondent choose prefilled cartridges, 19% of

respondent choose tank feed, and 18% of respondent choose drip-feed from the bottle.

	YES/NO	Frequency	Percentage
Does your family members use e-cigarettes?	Yes	31	31
	No	69	69

**Table 6:** E-cigarettes use by family members (n=73)

Table 6 shows that 69% of respondent are choose no and 31% are choose yes for family member also use e-cigarette.

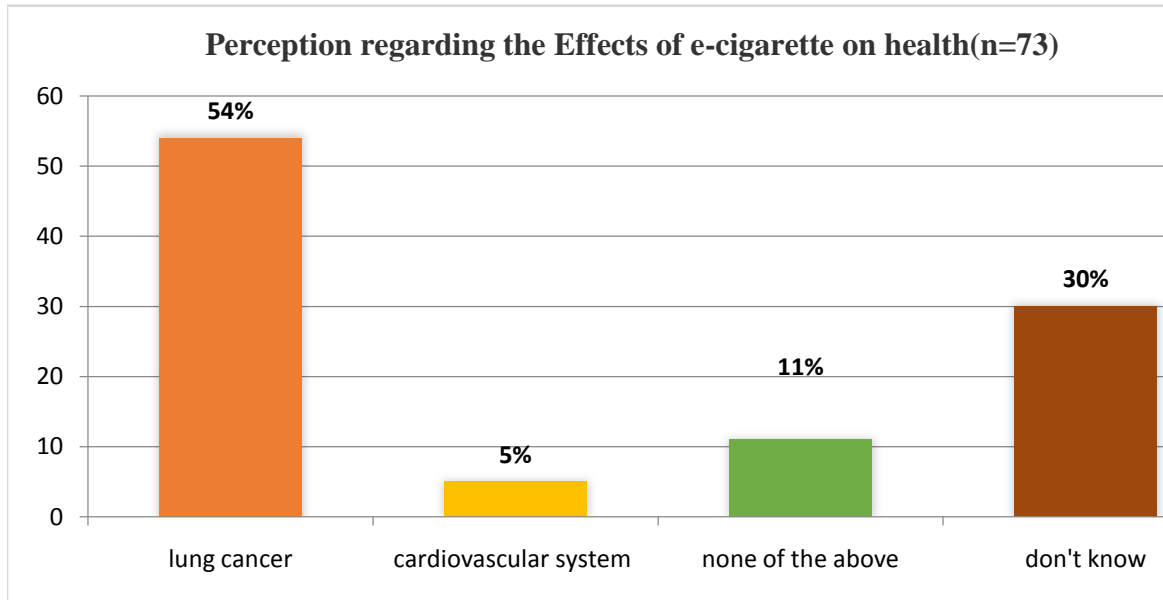


**Fig 6:** Perception regarding safety of e-cigarettes (n=73)

Figure 6 shows safety awareness regarding the use of e-cigarettes. For 56% of respondent answered that they are less dangerous the cigarette, 19% chose not sure (I do not know),

13% rated as absolutely safe and 12% stated that e-cigarettes are as dangerous as a cigarette.





**Fig :7** Perception regarding the effects of E-Cigarettes on health

Figure 7 shows that 54% of respondent think that e-cigarette can cause lung cancer, 30% of respondent choose do not know, 11% of

respondent choose none of the above, and 5% of respondent choose the cardiovascular system that effects from the e-cigarette.

	Frequency	Percent
Yes, as addictive as cigarette	20	20.0
yes, but less addictive than cigarette	50	50.0
no, they are not addictive	10	10.0
i don't know	20	20.0

**Table 7:** Perception of addictive nature of e-cigarettes (n=73)

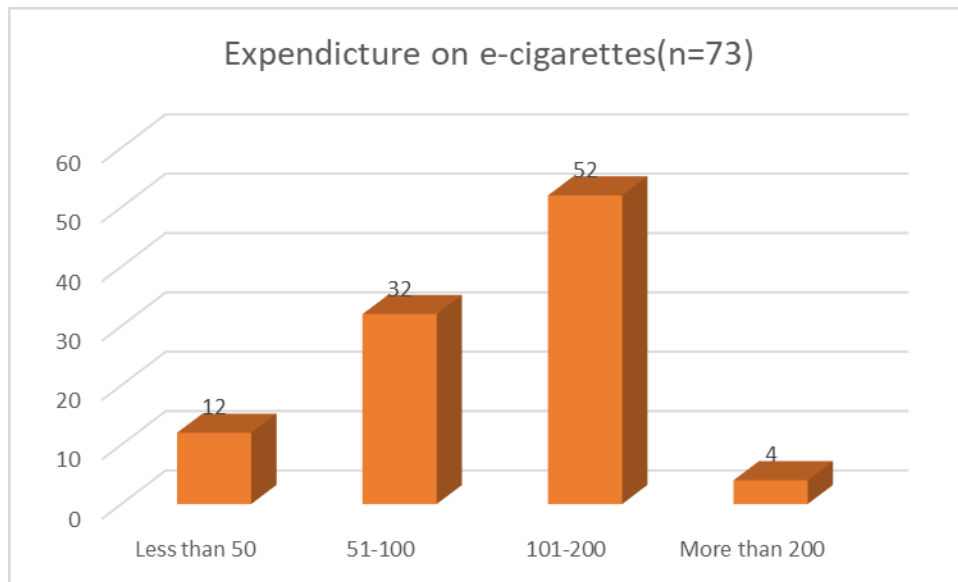
Table 7 shows 50% of respondent choose e-cigarettes are addictive but less addictive than a cigarette, 20% of respondent choose that e-cigarettes are as addictive as

traditional cigarettes, and 10% of respondents answered they are not addictive.

Income(RM)/month	Frequency	Percent
100-200	24	24.0
300-400	63	63.0
400-500	13	13.0

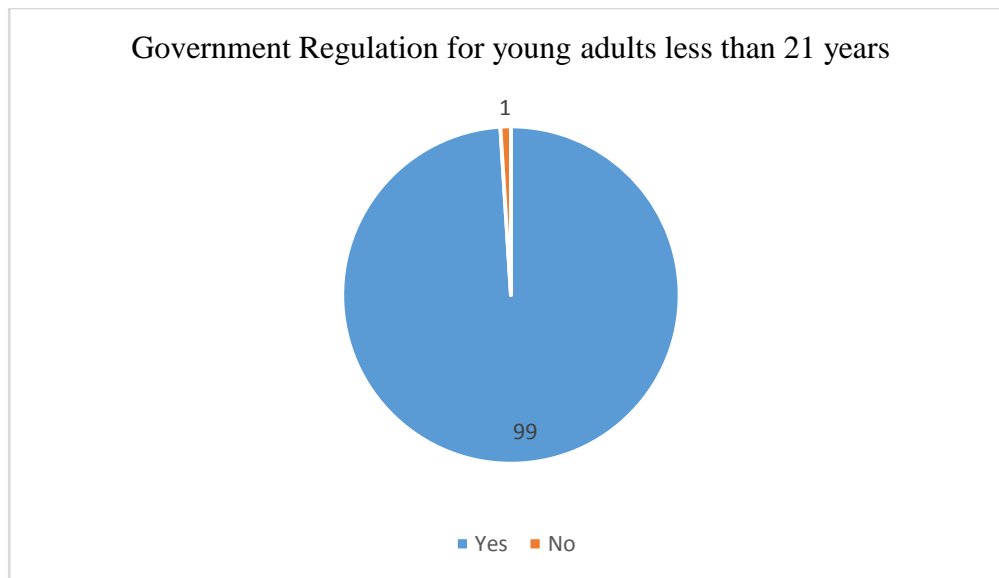
**Table 8 :** Monthly income of the respondents

Table 8 shows 63% of respondent have 300-400 income per month, 24% have 100-200 income per month, 13% have 400-500 income per month.



**Fig 8:** Expenditure on e-Cigarettes

Figure 8 shows 52% of respondent choose RM 101-200 budget for e-cigarette per month, 32% of respondent choose 51-100 budget for e-cigarette per month, 12% of respondent choose less than 50 budget for e-cigarette per month, 4% of respondent choose more than 200 budget for e-cigarette per month as expenditure for e-cigarettes.



**Fig 9:** Government regulation on e-Cigarettes for youths below 21 years.

Figure 9 shows that what their opinion on should e-cigarette regulated by government agencies and sold only for customers aging 21 and above. For 99% of respondent choose that there should be government regulation on sales and purchase of e-cigarettes.

## DISCUSSION

This study aimed to assess the practice regarding e-cigarette among young adult in a private University College. The factor young adult nowadays choose e-cigarette more than traditional cigarette because of e-cigarette fewer costs than a traditional cigarette. There is no fire, no ash, and no smoky smell. Vaping device may have the following characteristics: 1) no nicotine, tobacco flavor; 2) no nicotine, non-tobacco flavor; 3) moderate nicotine concentration, tobacco flavor; or 4) moderate nicotine concentration, non-tobacco flavor<sup>11</sup>.

The findings show that 61% of the respondents were aware that the e-cigarettes are supplied with different nicotine concentration. However, the youths believe that e-cigarettes do not contain all of the harmful chemicals

associated with smoking tobacco cigarettes, such as carbon monoxide and tar. The findings revealed that the youths believe that the e-cigarette is less harmful than a traditional cigarette. According to Rachel( 2018), the use of e-cigarettes has become ubiquitous, due in large part to extensive tobacco industry marketing of them as a safe alternative to smoking traditional cigarettes and as a useful tool for smoking cessation<sup>12</sup>.

Schneider, Sven, Diehl, and Katharina (2016) stated that the use of e-cigarettes among youth had increased exponentially. Many users of e-cigarettes have never used traditional cigarettes before (Grana, Benowitz, Glantz, 2014).The reason behind the use of e-cigarettes among the youth is unclear (Zhong, 2016). Moreover, the less social and behavioral Stigma attached to the use of e-cigarettes may increase the prevalence of e-cigarette use among the youths<sup>13,14</sup>.

A review of the literature shows that the studies related to e-cigarettes are scarce and are mainly under clinical trial, and there is no

proven evidence regarding the ill effects of E-cigarettes in general.

Majority of the youths are not using e-cigarettes intending to quit smoking. The factors which enhance the use of e-cigarettes include Vigorous marketing and advertising campaigns that showcase celebrities, popular activities, evocative images, and pleasing flavors, such as cotton candy (Dinakar, Chitra, Longo, Dan, O'Connor, George, 2016). Thus is it imperative to have government regulations on sales and purchase of e-cigarettes for the use<sup>15,16</sup>.

### Recommendations

- Organize awareness campaign on dangers of e-cigarettes usage.
- Strict enforcement of government policies require to limit of e-cigarette use of and prevent selling it to young adult aged less than 18 years old.
- Support services for those who want to quit from consume e-cigarette.
- Conduct similar studies using larger sample size.

### CONCLUSION

Based on study findings, the majority of a young adult who consumes e-cigarette are mostly ex-smoker who is trying to quit from smoking a traditional cigarette. The majority are aware of the side effect of a traditional cigarette, and they changed to an e-cigarette as a better option. Young adult is nowadays eager to try something new like e-cigarettes. They try to consume e-cigarette because influenced by their friends and surroundings. In conclusion, it is essential to emphasize the hidden and unknown dangers of e-cigarettes to the youths.

**Ethical Clearance:** An initial application was addressed to Research Ethics Committee, KPJ Healthcare University College, Nilai, Malaysia and approval received for conduct of this study.

**Conflict of interest:** There was no conflict of interest on conduct of this study.

**Fund for the study:** It was a self financed study.

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