A SURVEY ON KNOWLEDGE, INITIATION AND USAGE OF ELECTRONIC CIGARETTE AMONG STUDENTS IN A PRIVATE UNIVERSITY, KAJANG

BY

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A Research project submitted to the Department of Nursing

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ABSTRACT

BACKGROUND: Electronic cigarette, a relatively new device that produce vaporised nicotine has sparked throughout the world. The sudden increase in popularity and use of e-cigarette has become the most concerning aspects particularly among young adults, despite the safety and usefulness of e-cigarette are still remain unknown.

OBJECTIVES: The present study aim to determine knowledge, reasons for initiation, usage on e-cigarettes and the associations between the selected variables with e-smoking status among university students between the age of 18-24 years.

METHODOLOGY: This survey was conducted among the convenience sample of a private university, Kajang, Malaysia during the end of February to March 2020. In total of 312 participants were recruited using adapted and validated questionnaire. Data entry were done by Statistical Package for Social Sciences (SPSS) 23 and analysed using descriptive and inferential statistic.

RESULTS: Data revealed, 169 (57.5%), of participants had used e-cigarette and, 149 (50.7%), had good knowledge on e-cigarettes. Further findings showed the main reasons for initiations of e-cigarette were due to e-cigarettes are accessible, more acceptable to non-tobacco smokers, affordable and effective in quitting smoking. Chi square analysis reveals that there was an association between socio-demographic variables (faculty and cigarette smoking status) with e-smoking status, [$\chi 2$ (8, n=294) = 40.615, $p < 0.001$] and [$\chi 2$ (4, n=294) = 148.045,

$p < 0.001$] respectively. As for association between usage of e-cigarettes (ever usage, peer influence, frequency of using e-cigarettes) with e-smoking status it was similarly significant, [$\chi 2$ (4, n=294) = 249.000, $p < 0.001$], [$\chi 2$ (1, n=169) = 8.101, $p = 0.004$], [$\chi 2$ (1, n=169) = 175.085, $p < 0.001$] and [$\chi 2$ (1, n=169) = 33.409 $p < 0.001$]. However, for the association between knowledge with e-smoking status results was not significant.

CONCLUSIONS: E-cigarette use is prevalent among university students and it poses a significant health harm to the users. In view of the outbreak of vaping related lung injuries and potential nicotine addiction present study has highlighted the necessity for more useful research to prove the safety and effectiveness on e-cigarettes. Ongoing monitoring on the knowledge, latest usage trends and the reason for using are needed urgently.

Keywords: Eelectronic cigarette, vaping, knowledge, reasons for initiation, usage on e-cigarette and young adults

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FACULTY OF MEDICINE AND HEALTH SCIENCES UNIVERSITI TUNKU ABDUL RAHMAN

Date: 22 May 2020

PERMISSION SHEET

It is hereby certified that **LEE ZHI HAN** (ID No: 16UMB07247) has completed this Research project entitled 'A SURVEY ON KNOWLEDGE, INITIATION AND USAGE OF ELECTRONIC CIGARETTE AMONG STUDENTS IN A PRIVATE UNIVERSITY, KAJANG' under the supervision of Ms Shamala a/p Baskaran (Supervisor) and Ms Thavamalar a/p Paramasivam (Co-Supervisor) from the Department of Nursing, Faculty of Medicine and Health Sciences.

I hereby give permission to the University to upload softcopy of my final year project/dissertation/thesis* in pdf format into UTAR Institutional Repository, which may be made accessible to UTAR community and public.

Yours truly,

_____

(LEE ZHI HAN)

DECLARATION

I hereby declare that the Research project is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UTAR or other institutions.

Name: _____

(LEE ZHI HAN)

Date: 22 MAY 2020

APPROVAL SHEET

This Research project entitled '**A SURVEY ON KNOWLEDGE, INITIATION AND USAGE OF ELECTRONIC CIGARETTE AMONG STUDENTS IN A PRIVATE UNIVERSITY, KAJANG'** is prepared by LEE ZHI HAN and submitted as partial fulfilment of the requirements for the degree of Bachelor of Nursing (Hons) at Universiti Tunku Abdul Rahman.

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LIST OF ABBREVIATIONS

ABBREVIATION	MEANING
CDC	Centre for Disease Control and Prevention
CFS	Centre for Foundation Studies
FAM	Faculty of Accountancy and Management
FCI	Faculty of Creative Industries
FMHS	Faculty of Medicine and Health Sciences
GYTS	Global Youth Tobacco Survey
ITC	International Tobacco Control Policy Evaluation project
LKCFES	Lee Kong Chian Faculty of Engineering and Science
PATH	Population Assessment of Tobacco and Health
SPSS	Statistical Package for Social Sciences
UK	United Kingdom
UN	United State
WHO	Who Health Organization

CHAPTER ONE

INTRODUCTION

CHAPTER ONE: INTRODUCTION

1.0 CHAPTER OVERVIEW

This chapter reviews on the study background and current issues on the usage of electronic cigarettes, significance of the study, study objectives, conceptual and operational definition as well as the summary on this chapter.

1.1 BACKGROUND

The Centre for Disease Control and Prevention (CDC, 2016) described electronic cigarettes also known as e-cigarette, as a type of novel electronic nicotine delivery device that produce vaporized nicotine which allow users to inhale. It came in various forms namely ‘e-pipe’, ‘e-cigs’, ‘e-hookahs’, ‘mods’, ‘rechargeable e-cigarette’, ‘tank system’ and more commonly known as ‘vape’ by the public (CDC, 2016). Unlike traditional cigarettes which are only available with tobacco or menthol flavour, e-cigarette emerged with a wide range of interesting flavours such as mint, chocolate, fruit, beverages and tobacco. It also comes in various shapes, sizes and some even closely resemble regular cigarettes (Institute for Public Health, 2016). Currently, there are more than 400 different types of e-cigarettes models that can be easily accessible in the markets (Majeed, 2015).

E-cigarette were first introduced by a Chinese pharmacist, Hon Lik with the aim to provide a safe and harmless way of smoking particularly among adults (CDC, 2016). The first invention of e-cigarette managed to get public attention

especially among Chinese smokers due to its potential effect on smoking cessation (CDC, 2016). Its safety, portability, accessibility and affordability make e-cigarette more attractive and further increase the demands especially among the young population. The International Tobacco Control Policy Evaluation project (ITC) has reviewed on Malaysia and reported as highest prevalence (14%) on the use of e-cigarette among ten countries. Countries like Australia and Korea showed 7% each, United States (US) and United Kingdom (UK) at 6% and 4% respectively, Netherlands 3%, Canada 1% and China at 5% (Puteh, et al., 2018).

The high prevalence has raised concern on e-cigarette use over health issues of the users, increase usage among younger population, their effectiveness on smoking cessation, ability to initiate nicotine use among non-users and also the potential nicotine addiction particularly among the smokers (Vasconcelos and Gilbert, 2019). Although e-cigarettes are frequently cited as healthier, safer, and effective in quitting smoking, however studies suggested that the safety and effectiveness of e-cigarettes to aid smoking cessation are still remain inconclusive (Majeed, 2015; Puteh, et al., 2018). In Malaysia, there are still lacking of data on e-cigarette especially among university students. Hence, the present research is necessary to be conducted among university students to assess their knowledge, usage, reason for initiation on e-cigarettes in respect to their health consequences.

1.2 PROBLEM STATEMENT

According to CDC (2020), the use of e-cigarettes should be totally prohibited specially among youth and young adults due to the e-cigarettes may contain nicotine and this can affect their brain development and lung functions. However, they are still remaining popular and commonly used among young populations as a more fashionable alternative to traditional cigarettes. Recent literature suggests that use of e-cigarette may be the particular concern because of associations with later nicotine addiction and cigarette use (Majeed, 2015; Truman, Glover and Fraser, 2018). Besides, e-cigarette may serve as an entryway to initiate tobacco smoking behaviour (American Lung Association, 2019). In which, a non-user may experiment with e-cigarettes and the current e-cigarette user may become or return to a conventional smoker (Truman, Glover and Fraser, 2018). To date, there is still a lack of scientific evidence based on the safety and effectiveness of e-cigarette on smoking cessation (Majeed, 2015).

The sudden rise in use of e-cigarette has led to a substantial public health concern. American Lung Association (2019) revealed e-cigarette contain two harmful substances namely, propylene glycol and vegetable glycerine. This substance can cause toxicity to the users even just with one small dose of inhalation into the body. Moreover, they may also contribute to progressively lung damage and injuries. This similarly related to the emergence of e-cigarette, or vaping, product use associated lung injury (EVALI) cases which have been reported in the US (Layden, et al., 2019). In total, 68 deaths and 2,807 hospitalized EVALI cases have been confirmed and reported due to the inhalation of the chemical

substances produced by e-cigarette (CDC, 2020). The same issues have also been reported first in Malaysia during the recent month (Free Malaysia Today, 2019). Whereby, India which has the world's second-largest adult smoking population and other countries such as Australia, UK, Thailand and Vietnam have completely prohibited the sales of e-cigarette due to the concerns over the rise in use among young population and vaping-link death (Puteh, et al., 2018). Although e-cigarette is becoming increasingly popular, research on knowledge, initiation and the usage of e-cigarette particularly among university students are still very little and this will be the focus in this study.

1.3 SIGNIFICANCE OF THE STUDY

The usage of e-cigarettes among young adults in Malaysia has increased exponentially over the last decade and several cases revealing severe pulmonary complication due to e-cigarettes has been noticed (CDC, 2019). This study is important to be conducted particularly among the young population as they may still be in the stage of initiating e-cigarette use. Also, young people tend to try new things by taking up nicotine use without knowing the health consequences (Puteh, et al., 2018). Hence, study on the knowledge of e-cigarettes in both the non and current user is utmost important as this would lead them in initiating the habit of e-cigarettes smoking, develop addiction and later switch to a cigarette smoker. Reason on initiation and usage of e-cigarettes should be sought and to add in for future education in prevention on the use of e-cigarette among university students. Considering this issue, as a future health professional it is vital to have deeper understanding on the knowledge, initiation and usage of e-

cigarette among the younger generation as it might be valuable for future development of health education on tobacco prevention activities. Activities like promoting healthy habits and counselling the patients on the appropriate method to quit smoking can be integrated into it.

1.4 GENERAL OBJECTIVE

To determine the knowledge, initiation and usage of e-cigarette smoking among university students and associated factors.

1.5 SPECIFIC OBJECTIVE

1. To determine the number of students on e-cigarette smoking among university students.
2. To determine the knowledge level of e-cigarette smoking among university students.
3. To determine the reasons for initiation on e-cigarette among university students.
4. To determine the usage pattern of e-cigarette among university students.
5. To determine the association between socio-demographic variables (age, faculty and smoking status) and e-smoking status (current, former and never).
6. To determine the association between knowledge level of e-cigarettes and e-smoking status (current, former and never).
7. To determine the association between usage pattern of e-cigarette and e-smoking status (current, former and never).

1.6 RESEARCH QUESTIONS

1. What is the number of students on e-cigarette smoking among university students?
2. What is the knowledge of e-cigarette smoking among university students?
3. What are the reasons for initiation on e-cigarette among university students?
4. What is the usage pattern of e-cigarette among university students?
5. What is the association between socio-demographic variables (age, faculty, and smoking status) and e-smoking status (current, former and never)?
6. What is the association between knowledge level of e-cigarette and e-smoking status (current, former and never)?
7. What is the association between usage pattern of e-cigarette and e-smoking status (current, former and never)?

1.7 HYPOTHESIS

1.7.1 NULL HYPOTHESIS

H_o1: There will be no association between socio-demographic variables and e-smoking status.

H_o2: There will be no association between knowledge of e-cigarette and e-smoking status.

H_o3: There will be no association between usage of e-cigarette and e-smoking status.

1.7.2 ALTERNATIVE HYPOTHESIS

H_a1: There will be an association between socio-demographic variables and e-smoking status.

H_a2: There will be an association between knowledge of e-cigarette and e-smoking status.

H_a3: There will be an association between usage of e-cigarette and e-smoking status.

1.8 CONCEPTUAL AND OPERATIONAL DEFINITION

1.8.1 KNOWLEDGE ON E-CIGARETTE SMOKING

Knowledge referred to the understanding and awareness on e-cigarette. E-cigarette is an electronic nicotine delivery device that produces vaporized nicotine to allow users to inhale. Questions on knowledge assessment of e-cigarettes consist of 9 questions. Three options ‘yes', ‘no’ and ‘do not know’ were given to answer the questions. Answers collected would be grouped into ‘correct’ and ‘incorrect’ categories and presented with frequency and percentages. Data obtained was further categorised into poor and good knowledge groups according to Hafiz, Rahman and Jantan (2019). For participants who answered less than 4 questions correctly were classified as having poor knowledge whereas answered more than five questions correctly were considered as having good knowledge on e-cigarettes.

1.8.2 INITIATION OF E-CIGARETTE SMOKING

Initiation of e-cigarette smoking defined as the first reasons that motivate the use of e-cigarette products. Ten reasons have been chosen for the participants to rate on each statement from a five-point Likert scale whereby one indicates strongly disagree, two indicate disagree, three indicate neutral, four indicate agree and five indicate strongly agree. Results were presented with frequency and percentage. The reason with the highest numbers of agree and strongly agree would be considered as the top reason for initiation.

1.8.3 USAGE PATTERN OF E-CIGARETTE SMOKING

Usage on smoking e-cigarettes describes the respondent's pattern of e-cigarettes use. Researcher first assessed on ever usage of e-cigarette with the question, ‘have you ever smoked an e-cigarette’. While, for the next four questions it was designated only for participants who admitted as e-cigarette users. Questions were mainly assessed on age of initiation, present of influential companies that influence them into smoking e-cigarettes and frequency of using e-cigarette in the past 30 days and in one days.

1.8.4 PRIVATE UNIVERSITY STUDENTS

It refers to all the students who are currently pursuing a foundation and undergraduate program in a non-profit organisation governed by a private committee. Students socio-demographic data such as age, gender, educational level, faculty, ethnicity, e-smoking and cigarette status would be identified. E-

smoking or smoking status would be classified into current, former or never users. Never users were defined as participants who had never tried e-cigarettes or cigarettes. Current users were defined as participants who had used e-cigarettes or cigarettes at least once or more in the past 30 days while former users were defined as participants who had used e-cigarettes or cigarettes but not within the past 30 days.

1.10 SUMMARY

The increase in use of e-cigarettes particularly among young adults, as well as limited scientific evidence on the safety profile of e-cigarettes highlight the urgent need to reinforce education and knowledge on e-cigarette use. Moreover, through understanding students' knowledge, reason for initiation and usage might be valuable for developing future health education programs and appropriate measures can be taken accordingly. Lastly, the literature review on the knowledge, initiation and usage was further discussed in the following chapter.

CHAPTER TWO

LITERATURE REVIEW

CHAPTER TWO: LITERATURE REVIEW

2.0 CHAPTER OVERVIEW

Under this chapter, researcher will explain the process of literature search and identify the appropriate framework to be used as a role in guiding the whole research process. Moreover, the details of literature on knowledge, initiation and usage of e-cigarette among the young population will be further reviewed and discussed.

2.1 SEARCH STRATEGY

Research article for literature review was searched through four databases which are UTAR e-database, Science direct, Google Scholar and PubMed. Keywords like 'electronic cigarette,' 'electronic nicotine delivery system,' 'vaping,' 'knowledge,' 'initiation,' 'usage on e-cigarette' and 'young adults' were used together with the application of Boolean operators like 'AND', 'NOT', 'OR' and ("") to refine searching process and search for relevant articles. In order to be considered for inclusion, articles had to be: (1) published in English; (2) published during the year of 2013 to 2020 and (3) related to the awareness and use of e-cigarette among young adults or university students. Articles that meet the inclusion criteria was selected and further studies was done through searching the references list of the relevant article. The literature search strategy was shown in **Diagram 2.1.**

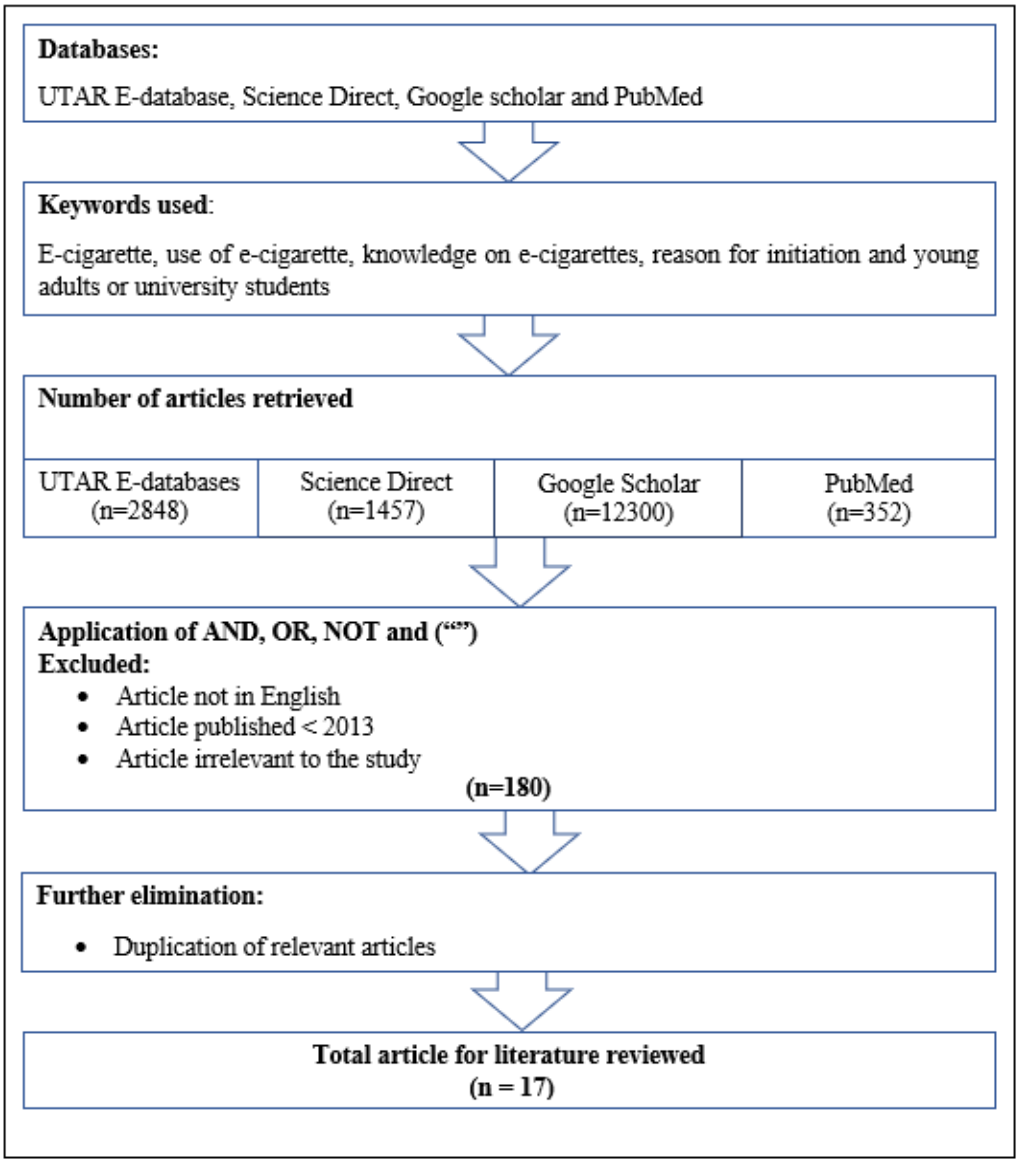

Diagram 2.1: Search strategy flowchart

2.2 REVIEW OF LITERATURE

In this section, literature review will be emphasized on knowledge on e-cigarette, reasons for initiation of e-cigarette and usage of e-cigarette.

2.2.1 KONWLEDGE OF E-CIGARETTE

E-cigarettes, the battery-powered devices that contain nicotine, propylene glycol, glycerine, flavourings and other chemicals have gained its popularity especially among young adults (American Lung Association, 2019). Generally, e-cigarettes are considered to be less harmful than cigarette smoking but given facts prove that e-cigarettes may contain potentially harmful chemicals as mentioned above (Case, et al., 2016). Being less harmful does not equate harmless. It necessitates thorough understanding the knowledge on e-cigarette among younger populations, considering the long-term effects of e-cigarettes are still unknown.

Greenhill, et al. (2016) summarised the findings from 21 cross-sectional and one cohort study on the use of e-cigarettes. Results revealed that respondents were nearing full awareness of e-cigarettes but the knowledge on the content of e-cigarettes were still lacking. The authors documented some of the participants were unaware of whether e-cigarette contain nicotine due to the limited publications and unreliable labelling indicator of nicotine content by the manufacturers (Greenhill, et al., 2016). Similar with Wadsworth, et al. (2016), study presented some participants were confused about the safety and harmfulness of e-cigarettes. Despite the uncertainty towards the content of e-

cigarettes, the issue of lack of knowledge on the health implications of using e-cigarettes has been raised by Vasconcelos and Gilbert (2019). In addition, e-cigarettes did not produce cigarette smoke hence is considered as safe to inhale by the users and this made the users to presume that e-cigarettes are acceptable to others (Vasconcelos and Gilbert, 2019; Wadsworth, et al., 2016).

In an interview conducted by Vasconcelos and Gilbert (2019), the respondent mentioned e-cigarettes are effective in smoking cessation compared to other nicotine replacement therapy. Although the effectiveness of e-cigarette has not been proved, the e-cigarettes users would still rather rely on the information provided by the e-cigarette companies than seeking professional advice on smoking cessation for healthcare providers (Vasconcelos and Gilbert, 2019). This may suggest that most participant lack of confidence on the health care provider and are unaware of where to get reliable information on e-cigarettes. Hence, to conclude the main concerns expressed were generally due to lack of knowledge and uncertainty towards the safety, contents and harmfulness of e-cigarettes.

2.2.2 REASON FOR INITIAION OF E-CIGARETTE

Existing research including those done in Malaysia declared the use of e-cigarette is due to various reasons among younger populations (Puteh, et al., 2018; Wadsworth, et al., 2016). The most frequent reason for initiation, to reduce or stop smoking was reported in several studies (Truman, Glover and Fraser, 2018; Nicksic, Snell and Branes, 2019; Wang, et al., 2019). In a Population Assessment of Tobacco and Health (PATH) study, researchers employed exploratory factor analysis on 13 reasons to use e-cigarettes among the youth and adults (Nicksic, Snell and Branes, 2019). Reasons cited for initiation were due to general interest, social influences and goal-directed reasons such as to quit smoking and being less harmful. However, the listed reasons for the use of e-cigarette were based on self-reported questions and it did not encompass all the possible reasons such as curiosity and family or peer influences which are reported as highly associated with the use of e-cigarette in the previous study (Pepper, et al., 2014). In addition, the question only consists of dichotomous responses (yes or no) on each of the important reasons while a rating scale would be more suitable (Nicksic, Snell and Branes, 2019).

Other reasons for initiation included influence by family, friends and advertisement on social media were also being reported (Truman, Glover and Fraser, 2018). This was further supported by Wang, et al. (2019) through a mobile app-based survey to examine the perceptions and use of e-cigarette in China among 10477 young Chinese adults. Results documented the culture of cigarette gifting and sharing among friends and colleagues created a social norm

of gifting-based relationship which is also employed in the context of e-cigarette (Wang, et al., 2019). This culture of e-cigarette gifting whether among friends, family members or others may have contributed to smoking behaviour among Chinese youth. Considering about the large smoking population in China and being the country that produces most of the e-cigarettes in the world, an online survey was being used as it enable the authors to reach a large scale of participants and data collected can be more generalisable.

2.2.3 USAGE OF E-CIGARETTE

Since the early 2000s e-cigarette have been introduced into the market and this has triggered a rise in the usage of e-cigarettes worldwide. Youth and US Department of Health and Human Services (2016) revealed, ever e-cigarette users in the US increased from 6.9% in 2011 to 14.3% in 2014 among the young adults' population, while current users increased from 5.1% (2014) to 7.6% (2018) (Dai and Laventhal, 2019). In New Zealand, the ever and current e-cigarette users were 13.1% and 0.8% respectively in 2014 (Li, Newcombe and Walton, 2015). Noteworthy, prevalence of current e-cigarette use in Great Britain has increased from 1.7% in 2012 to 7.1% in 2019. This represents 3.6 million of current e-cigarette users (Action on Smoking and Health (ASH), 2019). In view of this rising trend on e-cigarette use, it has caused serious concern as the overall impact of e-cigarette use still remains questionable and usage of e-cigarettes expected to rise as the advertisements on e-cigarette are ubiquitous.

A national survey in Malaysia revealed that among 4288 of the respondents, 23.4% of them were current e-cigarette users and being a male, young, more educated and staying urban area were reported as the characteristic of e-cigarette users (Ab Rahman, et al., 2019; Puteh, et al., 2018). As young people are keen to try new things and e-cigarettes are relatively new so they are frequently reported as e-cigarette users. Nevertheless, female smokers are low profile in Malaysia as according to Malaysian culture smoking among females is unacceptable (Ab Rahman, et al., 2019). This was further supported by a cross sectional study among 247 of young adults in Malaysia showed none of the female respondents were reported as current e-cigarette users (Boo, et al., 2018). However, due to small sample size and absence of current e-smoker or tobaccco smokers hence comparison on perception on e-cigarette cannot be drawn among users or non-users.

2.3 THEORETICAL FRAMEWORK

Theoretical framework serves as a demonstrator to describe the relationship among a set of concepts and it plays an essential role in guiding the whole process of the research. Heale and Noble (2019) suggested a theoretical framework must be able to represent the whole study through identifying the variables and relationship. In the present study, the researcher implemented the Capability, Opportunity, Motivation and Behaviour (COM-B) Theory by Michie, Van Stralen and West (2011).

In this theory, there are three components: Capability (C), Opportunity (O) and Motivation (M) are interrelated and influence each other to generate behaviour. Pertaining to the topic of the study, the behaviour refers to the use of e-cigarettes. While under capability, it referred to the individual physical and physiological capacity to engage in e-smoking activities. This includes having the necessary skills or knowledge which will be further assessed in this study. Opportunity is defined as all the physical and social reasons that lead to initiation of e-smoking behaviour. In terms of motivation, it consists of automatic and reflective. Automatic motivation refers to the feelings and impulses that affect the use of e-cigarette. This can be due to previous experience on using e-cigarettes, curiosity, enjoyment, and e-cigarette smell good. While reflective motivation refers to an individual belief, self-conscious decision making and reasoning that affect the use of e-cigarette. As an example, same people may perceive e-cigarette can help to quit smoking. Hence, they started to use e-cigarette.

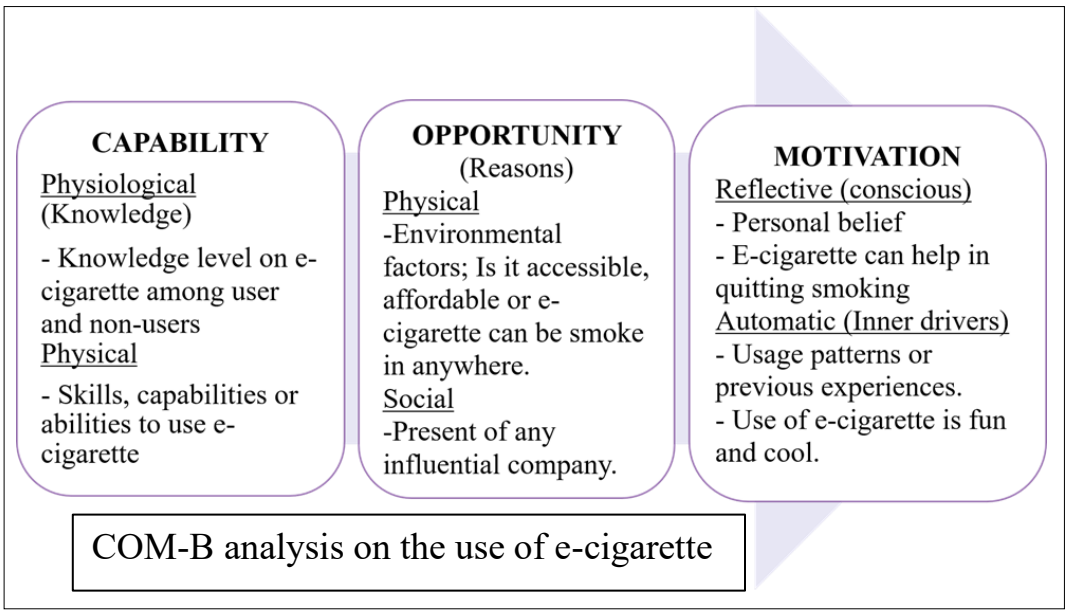

Diagram 2.2 Capability, Opportunity, Motivation and Behaviour (COM-B) Theory of behaviour change (Michie, Van Stralen and West, 2011).

2.4 SUMMARY

Through the literature review, it allows researcher to have better knowledge on e-cigarettes related issues, identify research gaps and indicate the method used in conducting the study. As a conclude, a survey is the most commonly used method in study related to e-smoking and the major concern reported was generally lack of knowledge on e-cigarettes. Without proper knowledge on e-cigarette subsequently it may affect the usage of e-cigarettes.

CHAPTER THREE

METHODOLOGY

CHAPTER THREE: METHODOLOGY

3.0 CHAPTER OVERVIEW

Chapter 3 explains the research design, setting, population, sampling criteria, variables, instruments, validity, reliability, pilot study, data collection procedure, ethical consideration and consent information.

3.1 RESEARCH DESIGN

Researcher employed a descriptive survey to conduct this study. Descriptive survey is a type of study method that allows researcher to have better understanding towards a phenomenon of interest that occurred in a natural setting through the self-administered questionnaire (Burns and Grove, 2017; Polit and Beck, 2017). Questionnaires were distributed to the sample of the designed population to elicit responses on the study issues. As the study aims to determine knowledge, initiation and usage of e-cigarette among university students without any intentional intervention and correlate between variables, hence the best design to achieve the objective of the study is by using descriptive study. The flow chart of the research design for this study as in **Diagram 3.1.**

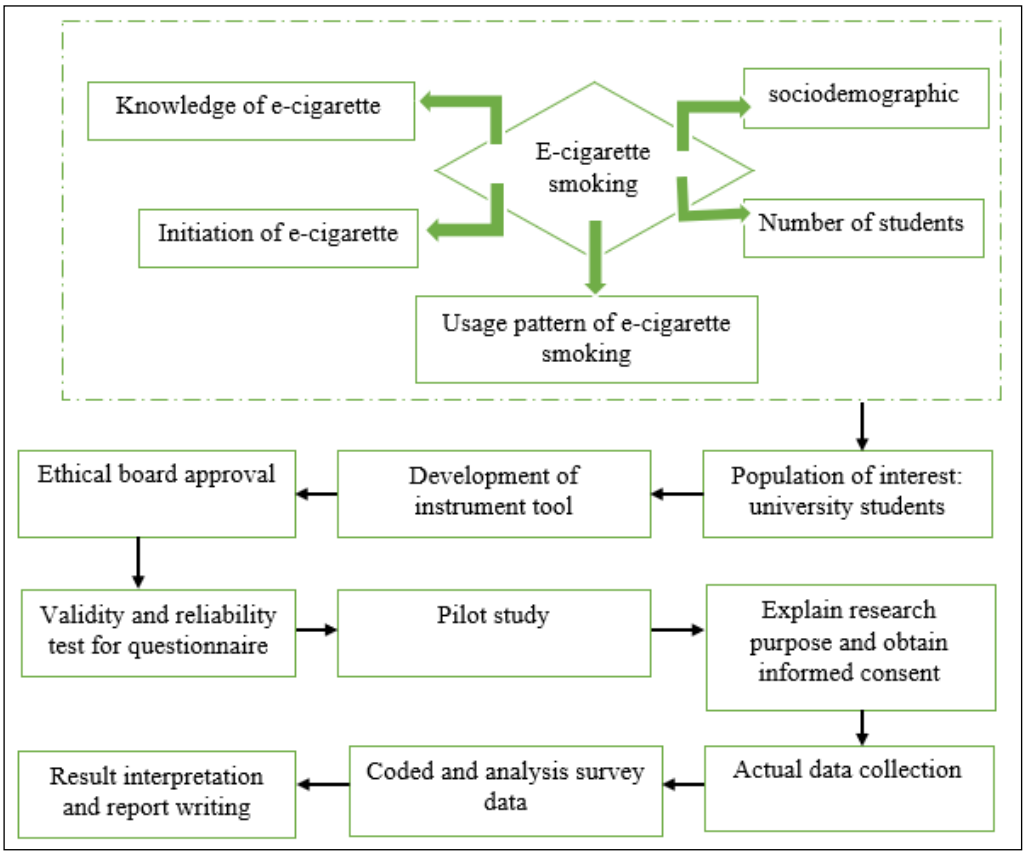

Diagram 3.1: Research flow chart

3.2 STUDY SETTING

Study was conducted in a private university in Sungai Long, Kajang, Malaysia. It is a non-profit university that has developed since 2002. Currently there are a total of 26,000 student enrolled in different faculties such as Faculty of Lee Kong Chian Faculty of Engineering and Science (LKCFES), Faculty of Accountancy and Management (FAM), Faculty of Medicine and Health Sciences (FMHS), Faculty of Creative Industries (FCI) and Centre for Foundation Studies (CFS) in this university.

3.3 POPULATION

3.3.1 TARGET POPULATION

Target population included all the foundation and undergraduate students in the private university.

3.3.2 ACCESSIBLE POPULATION

Accessible population included all the foundation and undergraduate students that are attended during data collection.

3.4 SAMPLING

3.4.1 SAMPLE

The sample were the students aged 18-24 and currently pursuing foundation and undergraduate programmes in private university, Kajang.

3.4.2 SAMPLING TECHNIQUE

Convenient sampling technique was used to recruit participants for this study. According to Dudovskiy (2019) convenient sampling techniques is a non-probability sampling technique. This sampling technique is the easiest and ideal sampling method for study with a large population and most likely can be used for surveys (Burns and Grove, 2017). As the present study is a survey and involves large sample size this is a suitable technique to be used. Also, it is fast,

cost effective and the subjects are easily accessible (Dudovskiy, 2019; Burns and Grove, 2017).

3.4.3 SAMPLE SIZE

In this study, sample size was calculated by using formula from Kish (Kish, 1965) as shown below:

$$N = \frac{(Z_{1-\propto})^2 \;\; P(1-P)}{D^2}$$

N = Estimated sample size

$(Z_{1-\propto})$ = confidence interval of 1.96

P = Prevalence from previous study (Puteh, et al., 2018)

D = allowable error 5% = 0.05

After applying Kish L, 1965 formula,

$$N = \frac{(1.96)^2 \;\; 0.749(1-0.749)}{0.05^2} = 288$$

N = 289 + 0.2 (289) = 347

The prevalence of e-cigarette use among university students in Malaysia was 74.9% according to Puteh, et al. (2018) in Malaysia. Estimated sample was 288 and a 20% attrition rate was added in the sample size. Hence, after adding the final sample size required was 347.

3.4.4 SAMPLING CRITERIA

Sampling criteria such as inclusive and exclusive would be used to recruit participants in this study. Criteria were listed out as shown below.

3.4.4.1 INCLUSION CRITERIA

- Students age 18-24 years old.
- Currently pursuing a foundation and undergraduate programme.

3.4.4.2 EXCLUSION CRITERIA

- Participants without providing consent.
- Postgraduate students which include Master and Doctor of Philosophy.

3.5 VARIABLES

According to Price, Jhangiani and Chiang (2016), most surveys are non-experimental studies and only describe single variables. However, Price, Jhangiani and Chiang (2016) also suggested statistical relationships between variables can be assessed in a survey. Thus, according to the research questions number five until seven where the researcher looks into associations. So, there are independent and dependent variables in this survey.

The independent variables in this research were socio-demographic variables, knowledge and usage of e-cigarettes. While the dependent variable was e-smoking status.

3.6 INSTRUMENT

Quantitative instrument tool was used in present study and the questionnaire consists of 31 questions and divided into four sections as explained below (Attached in **Appendix A**).

3.6.1 SECTION A: SOCIODEMOGRAPHIC QUESTIONNAIRE

This section consists of three close-ended questions and three multiple choice questions. The questionnaire begins with obtaining participants' sociodemographic data which are age, gender, educational level, faculty of study, ethnicity and e-smoking and cigarette smoking status. The data were for analysis to answer research questions one and five, attached in **Appendix A**.

3.6.2 SECTION B: KNOWLEDGE ON ELECTRONIC CIGARETTE

Section B consists of 9 questions that are specifically allocated to test participants' knowledge on e-cigarette. Participants were required to answer either 'yes', 'no' or 'do not know'. The collected data would be classified into either 'correct' or 'incorrect' session in accordance to the nature of the questions, attached in **Appendix A**.

3.6.3 SECTION C: USAGE ON ELECTRONIC CIGARETTES

Section C consists of three open-ended and two close-ended respectively as in **Appendix A**. This section assessed ever usage of e-cigarettes, participants' age of initiation and frequency in using e-cigarette. Moreover, the presence of influential companies would be identified, as the study mentioned family members or friends are one of the contributing factors on usage of e- cigarette among youth (Pentz, et al, 2015).

3.6.4 SECTION D: REASONS OF INITIATION

Section D consisted of ten questions and used to answer research question number 3 as in **Appendix A**. Five-point Likert scale was used to measure the reasons of initiation on e-cigarette. Participants are required to select any of the options from the five-points Likert scale. The options are given points from one to five; whereby one is strongly disagree, two is disagree, three is neutral, four is agree and five is strongly agree. Examples of questions are e-cigarette are safe, effective on quitting smoking and easy to find.

3.7 VALIDITY AND RELIABILITY

Validity refers to the extent where a study instrument is accurately measured and reliability refers to the consistency of a measure in a quantitative study (Burns and Grove, 2017). Questionnaire used in this study was adopted from Global Youth Tobacco Survey (GYTS) (WHO and CDC, 2011). GYTS is a standard and globally used survey. This survey was designed by a group of international

experts and the test and pre-test was done before finalized to standardize core questions. Public are given permission to use and adapt the survey. Permission letter to request for the use of questionnaire was attached in **Appendix B**. While content validity of the questionnaire was done after ethical approval from UTAR Ethical Board. The questionnaire was sent to two lecturers who are subject experts and have either midwifery or community-based expertise. Letter for establishing content validity of instrument tool was attached in **Appendix C**. Slight amendment was done according to the suggestions given by them in terms of the wordings used in the questionnaire and the arrangement of the questions.

Reliability test for internal consistency of the questionnaire was tested for the variables, reasons of initiation with Cronbach alpha 0.805 and this value was indicating good and reliable. As according to a rule of thumb for interpreting results of Cronbach alpha a score of more than 0.7 is considered acceptable and a score in between the range of 0.8-0.9 is considered good (Stephanie, 2014).

3.8 PILOT STUDY

Pilot study is essential to carry out to assess the feasibility of the study design and amendment can be done accordingly if any problems are identified from the pilot study (Burns and Grove, 2017). Pilot study was done after obtaining approval from UTAR Ethical Board during February 2020. Sample size for the pilot study was 10% from the main study, hence 35 participants were recruited and these participants were excluded in actual study. Participants have been

reminded to inform if they received the same questionnaire during actual data collection to prevent duplication in pilot and actual study.

There were a few problems identified during the pilot study. First, the issue related to a question asking about ‘are you a e-smoker’ and participants are required to answer either ‘yes’ or ‘no’. However, one of the participants was confused on which answer to select as a former e-smoker. To solve this issue few options have been added under e-cigarette and cigarette user’s status which are current, never or former users. Second, one of the questions from Section B which was initially designated to assess participants' knowledge on e-cigarette has been removed as it is not relevant to allocate under this section. Lastly, as some of the questions were not related to non-e-cigarette users hence researcher rearranged the questions according to the flow of the questionnaire and specific instructions were added to allow them to skip the particular questions.

3.9 DATA COLLECTION PROCEDURE

Data collection process was started in February until March 2020 after approval obtained from the UTAR ethical board and departmental approval. During data collection, a self-administered questionnaire attached together with consent form was distributed to the participants via face-to-face methods. Generally, a survey conducted through a face-to-face method has the greater sample coverage properties, highest response rate and researchers can be present throughout the process to guide the participants (Jong, 2016).

Besides that, researcher employed two different ways to approach the targeted populations which include gathering all the students in a lecture hall with the present of the subject lecturer and second was to approach the participant randomly. Upon approaching the participants, explanations on the research details such as the title, purpose of the study, protection of participants' privacy and confidentiality together with the briefing on their consent to participate in this study was given. This is to ensure participants were fully understood on study details and consented their participation.

Researcher also would ensure that all the participants are first time being approached to answer the survey questions to prevent the same participants involved in both pilot and actual study. Adequate time was given to answer the questions and participants were given opportunity to ask questions. Lastly, researcher would counter check on questionnaires to ensure participants completed all the questions. However, due to time constraints, researcher was unable to perform checking on the completion of data for a group of students.

3.10 ETHICAL CONSIDERATION

Application for ethical approval was done after submission of research proposal to university ethical board in January 2020 and ethical application form, attached in **Appendix D**. Results for ethical approval was obtained a few weeks after trimester started and the ethical approval letter attached in **Appendix E**.

Permissions and arrangement to conduct data collection process were obtained from the faculties deans as attached in **Appendix F**.

In order to protect participants privacy and confidentiality, informed consent was taken before data collection (Consent form attached in **Appendix G**). Furthermore, the collected data was kept anonymous throughout the study and all data was in a locked cabinet while documents in the computer were encrypted with a password which is only accessible to the researcher. Lastly, data collected will be disposed of after 5-7 years.

3.11 SUMMARY

Research methodology is a vital step to structure a study and to obtain relevant information to answer all the research questions. It also enables the readers to have a better understanding of study designs and how the data was obtained in this study. The use of appropriate study design, sampling methods, study instruments and data analysis are essential in conducting meaningful research and maintaining the accuracy of the results obtained.

CHAPTER FOUR

DATA ANALYSIS AND RESULTS

CHAPTER FOUR: DATA ANALYSIS AND RESULT

4.0 CHAPTER OVERVIEW

In this chapter, the data collected were entered into IBM SPSS 23 and analysed according to the statistical test that is required for each research questions. The detailed explanations of the results were explained using tables. The explanation starts with data distribution, socio-demographic, number of participants using e-cigarette, knowledge of e-cigarette, reasons for initiations, usage pattern of e-cigarettes and the association between variables.

4.1 DATA DISTRIBUTION

After completion of data collection, researcher coded all the questionnaires accordingly before entering it into IBM SPSS version 23. This is to prevent double entry of data and data could be easily to retrieve back if there are any error or missing data. In total 312 participants were recruited through self-administered questionnaires. The response rate for this study was 100%. However, there were 5.8% of missing data due to incompletion of questionnaire and age was not within the required range. The researcher was not able to check the forms on submission due to the time factor and this caused the missing data. However, 294 collected data were analysed in this study.

4.2 ANALYSIS OF DATA

Collected data were analysed using descriptive and inferential analysis in accordance with the research objectives. In this study, the first until the fourth specific objectives were to determine the number of participants using e-cigarette, knowledge on e-cigarettes, reasons for initiation and usage pattern of e-cigarette smoking. Categorical data was presented in frequency and percentages while continuous data was presented with mean and standard deviation.

Next, in order to study the association between variables, inferential analysis tests were used. However, normality test was not performed as all the studying variables were categorical data (Statistics How To, 2017). Specific objectives number five to seven were to determine the association between socio-demographic variables, knowledge on e-cigarette and usage pattern of e-cigarette with e-smoking status. Chi square test (χ^2) was used to examine the association between categorical variables (Laerd Statistics, 2018). Results were statistically significant if the level of significant p value showed less than tabulated value, 0.05.

4.3 RESULTS

4.3.1 SOCIO-DEMOGRAPHIC CHARACTERISTIC

In this part, the socio-demographic variables which are age, gender, educational level, faculty, ethnicity and cigarette smoking status were presented in frequency and percentages.

Table 4.1: Frequency and percentage of participants' socio-demographic characteristics (N=294)

Socio-demographic Variables	Frequency (f)	Percentage (%)
Age		
≤ 20 years	103	35.0
>20 years	191	65.0
Gender		
Male	216	73.5
Female	78	26.5
Educational level		
Foundation	62	21.1
Undergraduate	232	78.9
Faculty		
Lee Kong Chian Faculty of Engineering and Science (LKCFES)	91	31.0
Faculty of Accountancy and Management (FAM)	50	17.0
Faculty of Medicine and Health Sciences (FMHS)	49	16.7
Faculty of Creative Industries (FCI)	42	14.3
Centre for Foundation Studies (CFS)	62	21.1
Ethnicity		
Malay	9	3.1
Chinese	248	84.4
Indian	31	10.5
Others	6	2.0
Cigarette smoking status		
Current user	41	13.9
Former user	65	22.1
Never user	188	63.9

Table 4.1 displays the frequency and percentage of socio-demographic data. Only major findings will be described in this section and the rest of the findings are documented in **Table 4.1**. Age had been categorized into two groups which were ≤ 20 and >20 years old. More than half of the participants, 191 (65.0%), were in the age group of above 20.

Gender was categorised as male and female. Male participants were nearly three quarter, 216 (73.5%), in this study. As in the education level, participants were grouped into foundation and undergraduate category. Results illustrated that more than three quarter of participants, 232 (78.9%), were pursuing undergraduate programs. There were five faculties in this study which are LKCFES, FAM, FHMS, FCI and CFS. Participants from LKCFES was nearly one third, 91 (31.0%) and the least was from FCI. Ethnicity was grouped into four and majority were Chinese, 248 (84.4%). All the participants were similarly grouped to either smokers or non-smokers and more than one third, 106 (36.0%), were smokers.

4.3.2 NUMBER OF PARTICIPANTS USING E-CIGARETTE

This section displayed the number of participants using e-cigarettes in accordance to their e-smoking status including current, former and never users. Results obtained were used to answer research question number one.

Table 4.2: Frequency and percentages of participants using e-cigarettes (N=294)

Socio-demographic Variables	Frequency (f)	Percentage (%)
E-smoking status		
Current user	85	28.9
Former user	84	28.6
Never user	125	42.5

Based on **Table 4.2**, the results highlight that more than half of the participants, 169 (57.5%), were e-cigarette users while the remaining participants, 125

(42.5%), never used e-cigarettes. Whereas, among all the e-cigarette users, half of them admitted as current users while the rest were former users.

4.3.3 KNOWLEDGE ON E-CIGARETTE SMOKING

There were nine questions specifically designed to assess participants knowledge on e-cigarettes. Data collected were categorised into correct and incorrect group. Those who answered the first seven questions as ‘yes’ were in the correct group, whereas, those answered as ‘no’ and ‘do not know’ were in the incorrect group. As a negative answer for the last two questions, participants who answered ‘no’ were categorized into correct group while those answered ‘yes’ and ‘do not know’ were categorised an incorrect group. Frequency and percentage of the knowledge on e-cigarette were stated in **Table 4.3** and **4.4**.

Table 4.3: Frequency and percentage of knowledge of e-cigarette (N=294)

Item of questions	Frequency (%)	
	Correct	Incorrect
E-cigarettes are addictive.	150 (51.0)	144 (49.0)
E-cigarettes may contain nicotine.	227 (77.2)	67 (22.8)
Health risk of e-cigarette is the same as normal cigarettes.	125 (42.5)	169 (57.5)
E-cigarettes have the same chemicals as normal cigarettes.	69 (23.5)	225 (76.5)
Are you aware of any regulation by the government on e-cigarettes?	142 (48.3)	152 (51.7)
Are you aware of any alternative nicotine delivery system for substitution of e-cigarette smoking?	124 (42.2)	170 (57.8)
E-cigarettes are less harmful to health than normal cigarettes.	124 (42.2)	170 (57.8)
E-cigarettes are not harmful to health	239 (81.3)	55 (18.7)
E-cigarettes are not prohibited in smoke free areas.	150 (51.0)	144 (49.0)

Table 4.3 reveals frequency and percentage of participant's knowledge on e-cigarettes. The first question on 'e-cigarettes are addictive', half of the participants, 150 (51.0%), was able to answer it correctly while the rest reported to the contrary. Secondly, more than three quarter of participants, 227 (77.2%), agreed on e-cigarettes may contain nicotine. As for the third question on 'health risk of e-cigarette is same as normal cigarettes', more than half of the participants, 169 (57.5%), has no knowledge about the question. The fourth question was about 'chemicals contained in e-cigarette is same as normal cigarettes' and more than three quarter participants, 225 (76.5%), were not able to correctly answer it. 'The presence of any regulation by government on e-cigarette' which was the fifth question shows more than half of the participants, 152 (51.7%), were not aware of it. The sixth and seventh question, 'awareness of any alternative nicotine delivery system as a substitution to e-cigarette' and 'e-cigarettes are less

harmful compared to normal cigarettes', more than half of the participants, 170 (57.8%), answered incorrectly for both the questions. Majority of the participants, 239 (81.3%), stated that e-cigarettes were harmful to health and, 150 (51.0%), were aware that e-cigarettes is prohibited in smoke free areas. Based on the answers by the participants, it is revealed that majority of them do not have knowledge on e-cigarette specifically when come in comparison with normal cigarettes.

Table 4.4 Frequency and percentages of knowledge level of e-cigarette (N=294)

Variables	Frequency (f)	Percentages (%)
Knowledge level of e-cigarettes		
Poor (0-4)	145	49.3
Good (5-9)	149	50.7

Table 4.4 illustrates the frequency and percentages of the participants knowledge level on e-cigarettes. Based on **Table 4.3**, data collected were further categorised into poor and good knowledge group. Participants who were answered less than 4 questions correctly were classified as poor knowledge group and those who answered correctly for more than five questions were in good knowledge group. According to the above table, results showed the number of participants who were either in poor or good knowledge group are almost equivalent. 145 (49.3%), had poor knowledge whereas, a slightly higher number of participants were in the good knowledge group, 149 (50.7%).

4.3.4 REASONS FOR INITIATION OF E-CIGARETTES

The reasons for initiation of e-cigarette has ten questions. The answers were measured using five points Likert Scale range from strongly disagree, disagree, neutral, agree to strongly agree. The data presented in frequency and percentage while the reason with highest frequency would be identified as the main reason.

Table 4.5: Frequency and percentage on reasons for initiation of e-cigarettes (n=169)

Reasons for initiation	Frequency (%)				
	Strong disagree	Disagree	Neutral	Agree	Strongly agree
Safe to use	31 (18.3)	54 (32.0)	65 (38.5)	12 (7.1)	7 (4.1)
Effective in quitting smoking	18 (10.7)	30 (17.8)	50 (29.6)	46 (27.2)	25 (14.8)
Accessible	12 (7.1)	11 (6.5)	21 (12.4)	73 (43.2)	52 (30.8)
Affordable	26 (15.4)	23 (13.6)	48 (28.4)	55 (32.5)	17 (10.1)
Attractive advertisement	27 (16.0)	50 (29.6)	52 (30.8)	34 (20.1)	6 (3.6)
Can be used in smoke free area	52 (30.8)	47 (27.8)	36 (21.3)	21 (12.4)	13 (7.7)
More acceptable to non-tobacco users	17 (10.1)	19 (11.2)	39 (23.1)	67 (39.6)	27 (16.0)
Less harmful than cigarettes	30 (17.8)	25 (14.8)	57 (33.7)	37 (21.9)	20 (11.8)
People who are important to me use e-cigarettes	18 (10.7)	33 (19.5)	61 (36.1)	39 (23.1)	18 (10.7)
Don’t smell	41 (24.3)	24 (20.1)	31 (18.3)	35 (20.7)	28 (16.6)

Table 4.5 illustrates ten reasons for initiation. Participants who were answered for agree and strongly agree are considered agree with the reasons for initiation. Whereas for participants who do not agree answered as strongly disagree, disagree and neutral.

As for the first question ‘safe to use’, 19 (11.2%), felt they started using e cigarette due to this but more than half, 85 (50.3%) did not agree about it. Nearly half of the participants, 71 (42%), started e-cigarette smoking as they felt it helps in quit smoking and nearly another half, 48 (28.5%), felt that, that was their reason for smoking. The next question was accessibility being a reason in initiating e-smoking and nearly three quarters of the participants, 125 (74%), were agreeable to it. Majority of the participants, 72 (42.6%), similarly stated that affordability was one of the reasons they started smoking e-cigarette. However, more than one quarter, 48 (28.4%), were neutral in this and, 49 (29%), were not agreeable to it. Only, 40 (23.7%), of the participants agreed they started using e-cigarettes due to attractive advertisement but nearly half of the participants, 77 (45.6%), did not agreed on this reason.

The question pertaining to ‘e-cigarettes can use in smoke free area’, only minority of participants, 34 (20.1%), started using e-cigarettes due to this reason whereas another half of the participants, 99 (58.6%), were totally disagreed. The next question highlights that, 94 (55.6%), of the participants first used of e-cigarettes were due to e-cigarettes more acceptable to non-tobacco users. Another, 57 (33.7%), of participates reported agreed to ‘e-cigarettes pose less harm compared to normal cigarettes’ and ‘someone important to them are using e-cigarette’ hence these have led them to the use of e-cigarettes. However, the results showed the number for agreed were almost equivalent to number who disagreed and neutral. In the last question, 63 (27.3%), of the participants agreed with e-cigarette do not produce any smell whereas another 65 (44.4%), of the

participants think that e-cigarettes are smelly, this indicating it might not be the preferable reason for them to initiate e-cigarettes. As a conclusion, the main reasons of picking up e-cigarettes were due to e-cigarettes are accessible, more acceptable to non-tobacco smokers, affordable and effective in quitting smoking.

4.3.5 USAGE PATTERN OF E-CIGARETTE

This section data was analysed according to research question four, 'what is the usage pattern of e-cigarette among university students?' The results were presented in frequency and percentage.

Table 4.6 Frequency and percentages on usage pattern of e-cigarettes (N=294)

Usage	Frequency (f)	Percentage (%)
Ever smoked E-cigarette (n=294)		
Yes	169	57.8
No	125	42.5
Age for first tried on E-cigarette (n=169)		
≤ 20	126	74.6
>20	43	25.4
Present of influential company (Friends) (n=169)		
Yes	89	52.7
No	80	47.3
Use of e-cigarette for the past 30 day(s) (n=169)		
Never used	84	49.7
1-9 days	14	8.3
10-19 days	5	3.0
20-29 days	2	1.2
All 30 days	64	37.9
Use of e-cigarette in one day (n=169)		
Tried only once	50	29.6
Occasionally (<20 times)	72	42.6
Often (≥20)	47	27.8

Based on **Table 4.6**, explanation on usage pattern of e-cigarettes were answered using five questions. As for the first question ‘ever smoked e-cigarette’ more than half of the participants, 169 (57.8%), responded as they do. The next question was ‘at what age they tried e-cigarette’ and it was noted that nearly three quarter of them, 126 (74.6%), started when they were less than 20 years old. The third question was ‘is there any influential company that influenced the participants into e-smoking behaviour’ and majority, 89 (52.7%), mentioned friend was the influencer to their behaviours.

The last two questions were related to frequency of using e-cigarettes in the past 30 days and on daily usage. The main findings displayed approximately half of the participants, 84 (49.7%), never used e-cigarette at all in the past 30 days and two fifths of the participants, 64 (37.9%), were frequent users as they used e-cigarette daily over the past month. While the rest of the results were highlighted in **Table 4.6**. As for usage of e-cigarettes on daily basis, results were grouped into ‘tried only once’, ‘occasionally’ and ‘often’. Most of the participants, 72 (42.6%), claimed to be occasional users as they used e-cigarettes less than 20 times a day, while, 50 (29.6%), mentioned tried only once. The least was those who smoked e-cigarettes very often in which they used e-cigarettes more than 20 times a day.

4.3.6 ASSOCIATION BETWEEN SOCIO-DEMOGRAPHIC VARIABLES AND E-SMOKING STATUS

This section, utilised Chi square test to determine the association between sociodemographic data including age, faculty and cigarette smoking status with e-smoking status.

Table 4.7: Frequency, percentage and chi square test for the association between socio-demographic variable and e-smoking status (N=294)

Socio-demographic Variables	E-smoking status Frequency (Percentage) f (%)			Chi Square test (χ^2)	p value
	Current	Former	Never		
Age					
≤ 20	22 (21.4)	32 (31.1)	49 (47.6)	4.427	0.109
>20	63 (33.0)	52 (27.2)	76 (39.8)		
Faculty					
Lee Kong Chian Faculty of Engineering and Science (LKCFES)	40 (44.0)	24 (26.4)	27 (29.7)	40.615	<0.001*
Faculty of Accountancy and Management (FAM)	16 (32.0)	18 (36.0)	16 (32.0)		
Faculty of Medicine and Health Sciences (FMHS)	6 (12.2)	8 (16.3)	35 (71.4)		
Faculty of Creative Industries (FCI)	9 (21.4)	8 (19.0)	25 (59.5)		
Centre for Foundation Studies (CFS)	14 (22.6)	26 (41.8)	22 (35.5)		
Cigarette smoking status					
Current user	33 (80.5)	8 (19.5)	0 (0.0)	148.045	<0.001*
Former user	31 (47.7)	33 (50.8)	1 (1.5)		
Never user	21 (11.2)	43 (22.9)	124 (66.0)		

***Significance level at p < 0.05**

Table 4.7 shows the frequency, percentages and chi square results for the association between socio-demographic data and e-smoking status. However, the gender, educational level and ethnicity were excluded in this part as to prevent results bias due to majority were male, undergraduate students and Chinese populations. In addition, the comparison between these variables and e-smoking status would not be valid as number of participants were not equally distributed.

Based on the above table, results revealed that most participants, 115 (60.2%), who used e-cigarettes were above 20 years old. Whereas, 54 (52.5%), of the participants who reported as e-cigarettes users were aged 20 and below. However, the p value, 0.109, was greater than the tabulated value, 0.05. This shows that, there is no statistically significant association between age groups and e-smoking status, [$\chi 2$ (2, n=294) = 4.427, p = 0.109].

In term faculty of study, nearly one third of participants were from LKCFES and out of it, 40 (44.0%), were current e-cigarette users, 24 (26.4%), were former users while the rest were never users. As for participants from FAM, 16 (32.0%), 18 (36.0%), and, 16 (32.0%), were reported as current, former and never users respectively. Most of the participants from health science faculty were never e-cigarettes users, 35 (71.4%), and nearly one third of the participants, 14 (28.5%), were e-cigarettes users. In addition, participants from FCI comprised of one third of e-cigarettes users, 17 (40.4%), and one half of never users, 25 (59.5%).

Among all the participants from CFS, current users were nearly one fifth, 14 (22.6%), and there were two fifth of former users. Results clearly illustrated that participants from non-health science faculties were more likely to smoke e-cigarette compared to participants from health science faculty. Hence, this signifies that faculty of study was statistically associated with e-smoking status as p value showed less than tabulated value, [$\chi 2$ (8, n=294) = 40.615, $p < 0.001$].

There was in total of 41 participants who were current cigarette smokers and most of them, 33 (80.5%), were currently using e-cigarettes and only one fifth, 8 (19.5%), were former e-cigarette users. Whereas, there was another, 64 of the participants admitted as former cigarette users. Among all the former cigarette users, nearly two fifth, 31 (47.7%), one half, 33 (50.8%), and, 1 (1.5%), were current, former and never e-cigarettes users respectively. As for never cigarette users, less than one fifth, 21 (11.2%), of them were currently using e-cigarettes and one fifth, 43 (22.9%), of the participants were former e-cigarettes users. Participants who never smoked both conventional cigarettes and e-cigarettes were, 124 (66.0%). The results revealed there was a statistically significant association between cigarette smoking status and e-smoking status where p value, <0.001 is lesser than the tabulated value, [$\chi 2$ (4, n=294) = 148.045, $p < 0.001$].

As a conclusion, two out of three socio-demographic variables have statistically significant associated with e-smoking status. Hence, alternative hypothesis one was accepted as there was an association between socio-demographic variables with e-smoking status.

4.3.7 ASSOCIATION BETWEEN KNOWLEDGE OF E-CIGARETTE AND E-SMOKING STATUS

This part focused in answering research question six, 'What is the association between knowledge level on e-cigarette and e-smoking status?' The findings were presented in details using Chi square.

Table 4.8: Frequency, percentages and chi square test for association between knowledge and e-smoking status (N=294)

Variables	E-smoking status Frequency (%)			Chi Square test ($\chi 2$)	p value
	Current user	Former user	Never user		
Knowledge on e-cigarette					
Poor (0-4)	38 (26.2)	40 (27.6)	67 (46.2)	1.737	0.420
Good (5-9)	47 (31.5)	44 (29.5)	58 (38.9)		

*Significance level at $p < 0.05$

Table 4.8, illustrates the findings for the association between knowledge and e-smoking status. The above table shows nearly one half of the participants were having poor knowledge on e-cigarettes, out of it, one fifth of the participants, 38 (26.2%), were current e-cigarette users, nearly another one fifth, 40 (27.6%), were former users and the rest were never users. Whereas for participants who were having good knowledge on e-cigarette, the number of current, former and

never users were, 47 (31.5%), 44 (29.5%), and, 58 (38.9%) respectively. The findings showed there was no statistically significant association between knowledge level on e-cigarettes and e-smoking status as the p value, 0.420 is higher than tabulated value, [$\chi 2$ (2, n=294) = 1.737, p = 0.420]. Hence, null hypothesis two was accepted.

4.3.8 ASSOCIATION BETWEEN USAGE ON E-CIGARETTE AND E-SMOKING STATUS

The findings for the association between usage pattern on smoking e-cigarette and e-smoking status were explained using Chi square test. Results tested were illustrated in **Table 4.9** and **4.10.**

Table 4.9: Frequency, percentages and chi square test for association between usage on e-cigarette and e-smoking status (N=294)

Usage of e-cigarettes	E-smoking status Frequency (%)			Chi Square test (χ^2)	p value
	Current user	Former user	Never user		
Ever smoked e-cigarette					
Yes	85 (50.3)	84 (49.7)	0 (0.0)	249.000	<0.001*
No	0 (0.0)	0 (0.0)	125 (100.0)		

***Significance level at p < 0.05**

Table 4.9 displayed the results for the association between usage pattern and e-smoking status. The first question revealed more than half of the participants, 169 (57.2%), ever smoked an e-cigarette and from that, 85 (50.3%), were reported as current e-cigarette users. It was clearly stated that there was an

association between ever smoked an e-cigarette with the e-smoking status when p value <0.001 was less than tabulated value, [$\chi 2$ (4, n=294) = 249.000, p < 0.001].

Table 4.10: Frequency, percentage and chi square test for the difference between usage of e-smoking status and usage pattern (n=169)

Usage on e-cigarettes	E-smoking status Frequency (%)		Chi Square test (χ^2)	p value
	Current user	Former user		
Age for initiation				
<= 20	65 (51.6)	61 (48.4)	0.330	0.565
>20	20 (46.5)	23 (53.5)		
Present of influential company (Friends)				
Yes	54 (60.7)	35 (39.3)	8.101	0.004*
No	31 (38.8)	49 (61.3)		
Used of e-cigarette for past the 30days				
Not using	0 (0.0)	84 (100.0)	169.000	<0.001*
1-9 days	14 (100.0)	0 (0.0)	15.085	<0.001*
10-19 days	5 (100.0)	0 (0.0)	5.092	0.024*
20-29 days	2 (100.0)	0 (0.0)	2.000	0.157
All 30 days	64 (100.0)	0 (0.0)	101.798	<0.001*
Used of e-cigarette in one day				
Only once	8 (16.0)	42 (84.0)	33.409	<0.001*
Occasionally (<20 times)	38 (52.8)	34 (47.2)	0.309	0.578
Often (≥20 times)	39 (83.0)	8 (17.0)	27.819	<0.001*

***Significance level at p < 0.05**

Table 4.10 illustrated the frequency and percentage of the usage on e-cigarettes among participants who were e-cigarettes users. Results showed the number of current and former users who first use of e-cigarette at the age of 20 and younger were three times higher, 126 (76.6%), compared to the users age above 20. Thus, the result revealed age groups for initiation has no association with the e-smoking status as p value, 0.565 was more than the tabulated value, [χ^2 (1, n=169) = 0.330, p = 0.565].

Present of influential companies influencing an individual to initiate e-smoking behaviours and it was further proven in this study. Most of the current e-cigarette users, 54 (32%), in this study claimed that friends were the main influential company. Although the presence of influential companies is lesser among former users, 35 (20.7%), but they still exist. Hence, the results showed there was a statistically significant association between the presence of influential companies among current and former e-cigarette users as the p value 0.004 was less than tabulated value, [χ2 (1, n=169) = 8.101, p = 0.004].

Based on the frequency of using e-cigarette on the past 30 days, study found all the former smokers never smoked e-cigarette at all during the past one month. While among all the participants who reported as current users, 14 of them smoked e-cigarettes for the past 1-9 days, 5 of them smoked e-cigarettes for 10-19 days, 2 of them smoked e-cigarettes during the past 20-29 days and, 64 of them smoked e-cigarettes every day in the past one month. Results highlighted

there was a statistically significant association between the used of e-cigarette in the past 30 days with the e-smoking status , [$\chi 2$ (1, n=169) = 175.085, p < 0.001], [$\chi 2$ (1, n=169) = 5.092, p = 0.099] and [$\chi 2$ (1, n=169) = 101.798, p < 0.001].

Lastly, for the usage of e-cigarettes on daily basis only a few of the current users, 8 (16.0%), and nearly four fifth of the former users, 42 (84.0%), had smoked e-cigarettes only once. Whereas for occasionally users, it was one half of the current users, 38 (52.8%), and two fifth of the former users, 34 (47.2%). In total of 47 participants smoked e-cigarettes very often and out of it mostly were current users, 39 (83.0%) and less than one fifth were former users. Based on the above table, result showed there was a statistically significant association between the usage of e-cigarettes on daily basis with e-smoking status as the p value, <0.001 were lesser than tabulated value, [$\chi 2$ (1, n=169) = 33.409 p < 0.001] and [$\chi 2$ (1, n=169) = 27.819, p < 0.001].

In view of most of all the variables found have statistically significant associated with e-smoking status thus alternative hypothesis three was accepted hence there was a statistically significant association between usage of e-cigarettes with e-smoking status.

4.4 SUMMARY

The results from the data analysis was presented in table forms and explained in accordance to the research questions. Analysis revealed more than half of the participants were e-cigarette users and from that 28.9% were current users. The results similarly showed that being a cigarette smoker and from non-health science faculties were related to e-cigarette use. In terms of knowledge, half of the participants, be it users or non-users had good levels of knowledge on e-cigarette but results revealed there was no statistically significant association with e-cigarettes used. Regarding the reason for initiation, most of the e-cigarette users claimed e-cigarettes are accessible, more acceptable for non-tobacco smokers, effective in quit smoking and affordable. Usage wise, most participants were found to be user of e-cigarettes for the first time before the age of 20 and friends are the major influencer in initiating e-smoking behaviours. Next, the finding under this chapter will be further discussed with previous literatures in next chapter.

CHAPTER FIVE

DISCUSSION AND RECOMMENDATION

CHAPTER FIVE: DISCUSSION AND RECOMMENDATION

5.0 CHAPTER OVERVIEW

The researcher specifically explored the determinants of e-cigarettes by current, former and never users, the number of students on using e-cigarette, knowledge of e-cigarettes, reasons for initiation of e-cigarettes and usage of e-cigarettes in accordance with research questions and specific objectives in this chapter. Moreover, the researcher examined the association between socio-demographic variables, knowledge and usage patterns with e-smoking status. Findings from the previous chapters will be interpreted and compared with the present literatures. Lastly, the implication, strengths and limitations will be further discussed here.

5.1 DISCUSSION OF MAJOR FINDINGS

5.1.2 NUMBER OF PARTICIPANTS USING E-CIGARETTES

In this study, more than half of the participants had used an e-cigarette and from that, 85 (28.9%), of them were current e-smokers and, 84 (28.6%), were former e-smokers. A high level of e-cigarette use (74.9%) was reported in a cross-sectional study conducted among university students in Malaysia (Puteh, et al., 2018). Conversely, Biener, et al. (2015) found a lower level of e-cigarettes use where current users and former users were (8.4%) and (22.6%) respectively, while Littlefield, et al. (2015) reported (14%) of current e-cigarette users and (29%) of former e-cigarettes users in their study. The findings portrayed in this study were higher compared to most of the previous studies (Littlefield, et al., 2015; Biener, et al., 2015). This may suggest a growing interest on the use of e-

cigarette devices and it is relatively prevalent among university students. Furthermore, the inconsistency in the level of e-cigarettes use could be affected by the coverage of study setting as in one of the previous studies it involved six universities located in Klang Valley while present study only involved one university (Puteh, et al., 2018). Secondly, vary in inclusion criteria might affect the number of e-cigarette users recruited as previous study solely focused on conventional cigarette smokers or e-cigarettes users whereas present study involving all the students regardless of their smoking or e-smoking status.

5.1.3 KNOWLEDGE OF E-CIGARETTE SMOKING

The knowledge of present study populations regarding e-cigarettes was good and it matches the findings from the cross-sectional studies conducted in Malaysia and India (Hafiz, Rahman and Jantan, 2019; Phansopkar, et al., 2016). The same findings could be explained where most of the participants were e-cigarette or conventional cigarette users hence this contributed to their knowledge on e-cigarettes. However, there were another (49.3%) of participants in this study reported to have poor knowledge on e-cigarettes. Hafiz, Rahman and Jantan (2019), suggested this may due to some of the participants were still unfamiliar with e-cigarette and indicating there is a need to impart knowledge among every individual regardless of their smoking or e-smoking status.

Further reviewed in this study reported most participants has lacking of knowledge on content and health effects of e-cigarettes compared to conventional cigarettes. These findings were aligned with several studies (Hafiz, Rahman and Jantan, 2019; Vasconcelos and Gilbert, 2019; Sutfin, et al., 2013). Vasconcelos and Gilbert (2019) further explained the lack of knowledge could be due to the common misconception among the public as they perceived absence of carcinogens and tar in the e-cigarette is considered as harmless. Furthermore, due to e-cigarettes produced lesser smoke compared to conventional cigarettes and readily dissipated in air, hence it was assumed to be harmless to both users and the people around (Phansopkar, et al., 2016). In truth, e-cigarette can be viewed as equally harmful as conventional cigarettes.

Apart from lacking of knowledge on the impact of e-cigarettes, most of the participants in this study were not aware of any alternative nicotine delivery system to substitute e-cigarette. This was further reviewed by Puteh, et al. (2018), there was a possibility that participants were lacking exposure or knowledge on the use of appropriate methods to quit smoking despite of various methods promoted and subsidized by our Malaysian government such as nicotine lozenges, patches, inhalers and nasal spray. Another survey conducted in London, reported vaping appears more pleasurable compared to other smoking cessation methods and this was an important factor for them to stay on the smoking cessation process (Wadsworth, et al., 2016).

5.1.4 REASONS FOR INITIATION OF E-CIGARETTES

In this study the top reasons for initiation were e-cigarettes being accessible, followed by more acceptable to non-tobacco users, affordable and as a mean to quit smoking. All these reasons were designated as goal-oriented reasons and study showed that those who used for goal-orientated reasons have a higher rate of continuous use (Pepper, et al., 2014). Compared with those who use e-cigarettes for non-goal-orientated reasons such as curiosity and social influences, they might just use it for trial and less likely to continue using (Pepper, et al., 2014; Ab Rahman, et al., 2019). An online survey in New Zealand showed that reducing or quitting smoking was the top reason for initiation which differed from the present study (Truman, Glover and Fraser, 2018). This could be affected by the number conventional smokers recruited in the study.

The accessibility of e-cigarette was being reported as the top reason for initiation in this study and this may be due to the widespread use of e-cigarette. For instances, study conducted in the US revealed e-cigarette are being sold in a variety of shops and it can be easily purchased through the internet (Case, et al., 2016). Also, with the addition of interesting flavours and promotions for trial, it further attracts the younger population (Barrington-Trimis, et al., 2016). Secondly, participants declared that e-cigarettes are more acceptable to non-tobacco users. This could be attributed by majority belief that e-cigarettes contain fewer chemicals, less nicotine, less smoke and is considered safe to the public (Jiang, et al., 2019; Case, et al., 2016). Interestingly, Case, et al. (2016) stated one of the participants mentioned e-cigarettes only produce water vapor

through exhalation thus it does not pose anyone with the risk of getting second-hand smoke (Case, et al., 2016). In fact, e-cigarettes produce aerosol rather than water. The aerosol produced may contain ultrafine particles, harmful chemicals and flavouring which can be inhaled deep into the lung and causes serious lung injuries (Centre on Addiction, 2018).

Furthermore, in terms of affordability, a local study reported two-thirds of the e-cigarette users came from low levels of household income and they preferred using e-cigarettes rather than conventional cigarettes (Nurasyikin, Leelavathi and Tohid, 2019). This is because e-cigarettes are more affordable in long run as Nurasyikin, Leelavathi and Tohid (2019) pointed out in their study majority of the respondents smoked two tanks of juice in one day which cost around RM 105 (USD 25) in a month whereas smoking 15 sticks of cigarettes per day may cost RM405 (USD 100) per month. Besides that, previous literature has mentioned that the use of e-cigarette as a smoking cessation tool was more economical compared to other methods such as nicotine replacement therapy products (Vasconcelos and Gilbert, 2019; Phansopkar, et al., 2016). This may conclude that, cost of the e-cigarette is one of the influencing factors considered by the young consumers during the first purchase.

5.1.5 USAGE PATTERN OF E-CIGARETTE

Current study indicated that (74.6%) of the participants started using e-cigarettes at the age of 20 and younger. This coincides with the findings of Brozek, et al. (2019) in Europe and differs from Morean, Krishnan-Sarin and O'Malley (2018) where the mean age of first reach for e-cigarettes was 18.2± 2.2 years old and 14.52 years old respectively. The age of e-cigarette use onset may be different between countries (Brozek, et al., 2019). The difference depends on the accessibility, culture, and regulations on tobacco control policies in the country.

An online survey conducted by Pepper, et al. (2014) noted that having at least one friend who is using e-cigarette increases the likelihood of e-cigarette use. A qualitative study conducted among young adults who commenced working after high school reported most of them preferred to obtain information from peers or family members who smoke e-cigarette rather than any reliable or scientific proven sources (Gowin and Wann, 2016). This may indicate that people who are close to them are more persuasive and have a greater influential impact on the use of e-cigarette as substantiated by this study.

Usage wise, the main findings were (49.7%) of participants not using e-cigarettes within the past 30 days, while (37.9%) were frequent daily users. In Hong Kong, study reported the number of frequent users was slightly lower (36.8%) compared to present study (Jiang, et al., 2019). The slight difference might be due to the number of current e-cigarettes users recruited by Jiang, et al. (2019)

were generally lesser than (4.8%) present study (28.9%). This was further explained by Youth and US Department of Health and Human Services (2016) majority of current e-cigarette users were frequent users hence it may conclude that increase in the number of current e-cigarette users may result in higher frequency of frequent users.

While for daily e-cigarettes usage, the frequency of occasional users (42.6%) found to be more prevalent in this study. In comparison to a study conducted among university students in Spain, most participants reported they smoked e-cigarettes mainly for trial rather than occasional use (Rodriguez, Parrón and Alarcón, 2017). In this context, the most relevant explanation could be due to the various reasons for initiation. As Rodriguez, Parrón and Alarcón (2017) reported most participants started to use e-cigarettes out of curiosity and this reason were classified as non-goal orientated reasons where the rate for continued use of e-cigarettes was lower. Contrary with present study, reasons for initiation were more on goal orientated reasons such as accessibility and to quit smoking. Hence, this may suggest the participants in this study smoked e-cigarette more often due to the rate of continued use is higher compared to study done by Rodriguez, Parrón and Alarcón (2017).

5.1.6 ASSOCIATION BETWEEN SOCIO-DEMOGRAPHIC VARIABLES AND E-SMOKING STATUS

The results of this study revealed that faculty and cigarette smoking may be the predictors of e-cigarette users and found to be significantly associated with e-smoking status (current, former and never). However, the obtained results indicate the association between age groups with e-smoking status was not significant. The finding is compatible with a cross sectional study (Puteh, et al., 2018). However, contradictory findings were detected by Tavolacci, et al. (2016) in which age group was highly associated with the use of e-cigarettes. The reason for the contradictory findings could be due to present study being exclusively focused on participants aged 18-24 and most of the participants were fall under the aged group of above 20.

In terms of faculty, this study reported e-cigarette use was predominantly among non-health science faculties. Non-health science faculties including LKCFES, FCI, FAM and CFC while FMHS was the only health sciences faculty. A similar outcome was recorded in the study done mainly on health science students in the US, showing the majority (78.8%) of them never tried on e-cigarettes (Alanazi, et al., 2019). The low prevalence of e-cigarette use among health science students may be the result of them being more aware of the health consequences of smoking and knowledge acquired in class (Brozek, et al., 2019). However, the definite association between faculties of study and e-cigarette use has not been documented previously.

In addition, current study reported that there was an association between cigarette smoking and e-smoking status. A visible trend was reported by Hafiz, Rahman and Jantan (2019), Tavolacci, et al. (2016) and Biener, et al. (2015). Studies revealed conventional smokers were strongly related to e-cigarette use and this phenomenon most likely can be related to e-cigarettes were promoted as an effective smoking cessation method (Tavolacci, et al., 2016; Hafiz, Rahman and Jantan, 2019; Pepper, et al., 2014).

5.1.7 ASSOCIATION BETWEEN KNOWLEDGE AND E-SMOKING STATUS

Present research indicated that there was no significant association between knowledge level on e-cigarettes with e-smoking status. Results showed half of the participants had good knowledge on e-cigarettes. The results portrayed in this study were aligned with a cross-sectional study conducted by Hafiz, Rahman and Jantan (2019) in Malaysia. This indicates regardless of the e-smoking status it does not affect the knowledge of e-cigarettes. Youth and US Department of Health and Human Services (2016) declared the use of e-cigarette has become an epidemic specifically among the younger population hence there is a need to ensure every individual should have good knowledge towards e-cigarette to prevent initiation or continual usage of e-cigarettes.

5.1.8 ASSOCIATION BETWEEN USAGE PATTERN AND E-SMOKING STATUS

The obtained result indicated most participants started using e-cigarettes at the age of 20 and younger but there was no significant association identified. Inconsistency was observed in the study conducted by Brozek, et al. (2019) where there was an association between age of initiation and the use of e-cigarettes. The reason for the variation may be due to most of the participants first reach of e-cigarettes at the age of below 20 and it did not involve others age groups in this study.

Peer influence may serve as a predictor with the use of e-cigarettes. Undoubtedly, as youngsters enrol into university, peer pressure plays an important role in decision making but it is usually associated with negative or risky behaviour (Kishlock, 2019). The finding was documented in the study conducted by Kong, et al. (2017) and Gowin and Wann (2016) where the authors mentioned friends play a supportive role in introducing and encouraging the use of e-cigarette among young adults. Some of them even shared an e-cigarette with their friends or offered e-cigarette as a gift for the first use of e-cigarettes (Gowin and Wann, 2016). This finding was further support by a web-based survey from 175 university students where having more friends who smoked e-cigarettes was strongly associated with the use of e-cigarettes and this may reflect the important of peers influence in affecting the use of e-cigarettes in this study (Wallace and Roche, 2018).

In this study, results indicated has statistically significant association between frequency of using e-cigarette and e-smoking status. However, there was no previous literature showing that the frequency of using e-cigarettes was significantly associated with e-smoking status as most of the study focused on the association between frequency and tobacco smoking status (Jiang, et al., 2019; Wang, et al., 2019).

5.2 IMPLICATION OF STUDY

The findings of this study can provide up to date information on e-cigarette and important implications for future research. The information generated could be used to create a foundation for smoking prevention activities and intervention programming to deter the e-smoking behaviours especially the university students. Furthermore, this study highlighted the use of e-cigarettes are prevalent among university students, from non-health science faculties as well as being a cigarette smoker. Thus, authority shall impose strict rules and regulations on the usage of e-cigarette in the campus together with the strategic planning intervention by involving all the university students.

Importantly, present study identified peer influence on the use of e-cigarettes. This has created concerns where ongoing monitoring on peer pressure associated with e-cigarette use is needed in future. Furthermore, implementation of prevention measures and education programs also have found to be effective in reducing smoking among students (Wallace and Roche, 2018). The uncertainty

on the harmfulness of e-cigarettes emphasise the need for more educational programs and campaigns to impart knowledge on the risk and danger of using e-cigarettes among university students. Present study supports the e-cigarette prevention campaign ‘The Real Cost’ that was launched by the U.S. Food and Drug Administration (2020) to urge the younger populations on knowing the real cost of vaping. Hence, similar campaigns shall be conducted among university students in Malaysia.

In addition, present study enables to provide better understanding on what motivated the use of e-cigarette and this can help in predicting the likelihood of continued use of e-cigarette among university students. Lastly, the affordability of e-cigarettes was reported as one of the main reasons for initiation hence implementation of taxation on e-cigarettes products may be useful in reducing and discouraging the use of e-cigarettes among university students.

5.3 STRENGTH AND LIMITATIONS

5.3.1 STRENGTH

This study is the first study conducted to assess participants' knowledge, reason for initiation and usage of e-cigarette in this private university. Results obtained can aid to raise awareness among the students and staff in this private university and work together to combat e-smoking among university students. In addition, most of the results obtained in this study are largely consistent with the previous study in terms of the characteristics of e-cigarette users, knowledge and usage of

e-cigarette. Likewise, most previous studies were more focused on wide age range, smokers and awareness on e-cigarette. Limited research has been carried out specifically among university students who aged 18-24 and present study is one of the few studies to explore their knowledge, usage and reasons for initiation. Moreover, questionnaires adapted in this study were standardized, being used globally and highly validated. Valid questionnaires help to collect better quality of data with high comparability. Current study also has been pilot tested on 35 participants to ensure the uniformity and feasibility of the study instrument. Lastly, a satisfactory response rate was able to be achieved in accordance with the sample size calculation.

5.3.2 LIMITATIONS

Present study subject to few limitations. First, this study is restricted to the specific ethnicity of the population and confined to only one university, thus the results obtained may not represent the multi-ethnicity population in Malaysia. Second, as this study involved all the students in the university regardless of their e-smoking or smoking status, the answers collected might not be accurate among never users due to being unaccustomed towards e-cigarette. Some results might be under-reported particularly when asked on frequency of usage as there is possibility of recall bias.

5.4 RECOMMENDATIONS FOR FUTURE RESEARCH

Future studies should consider samples from different ethnicities and increase the coverage of study settings to generalize the entire population in Malaysia. As young populations are particularly vulnerable to the use of e-cigarettes hence future research can target this age group of participants. A long-term investigation is prompted on the effectiveness of smoking cessation by e-cigarettes as it was reported to be one of the main goal-directed reasons for e-cigarette initiation. The comparison with other nicotine replacement methods should be made. Furthermore, a longitudinal study can be done to investigate whether e-cigarette smoking can lead to initiation of tobacco smoking. The inconsistent knowledge and uncertainty on e-cigarette highlight the need for more evidenced-based research to correct their misconception and provide consistent on e-cigarettes. In addition, further research should explore the familiarity and knowledge among health care professionals. This is to ensure all the healthcare professions are competent and equipped with reliable information on e-cigarette in terms of the safety, contents and appropriate smoking cessation methods. Lastly, additional research on monitoring peer pressure associated with e-cigarettes should be undertaken.

5.5 CONCLUSION

In line with previous literature, e-cigarette use is prevalent among university students and it poses a significant health harm to the users. Results revealed 28.9% of participants currently involved in e-cigarette and the figure assumes an increase with time due to the ubiquitous advertisement of e-cigarettes on social media that are frequently used by the young adults. Present study also reported university students, from non-medical faculties and cigarette smokers are predominant as the characteristics of e-cigarette users in this study.

Besides, most of the participants are still unaware of the content of e-cigarettes, effectiveness in quitting smoking and harmfulness of using e-cigarette. Hence, this highlighted the necessity of future research and educational program in this area. Additionally, considering on e-cigarettes usage cause lung injuries which has lasting effect on a person. Hence, more useful research is warranted to monitor the latest trends and risk of continuous use of e-cigarette together with the reason that lead to the use of e-cigarettes. This study also has highlighted the significant issues on e-cigarettes along with the previous literature and they are enough to create awareness among the public to mitigate e-cigarette use among the younger population. Action to prevent the culture of e-smoking among university students could be more effective with the joint effort from everyone including the educators, health care providers, friends, parents, non-government and government organizations. However, considering the small sample size in this study, results reported may not be generalizable and should be interpreted with caution.

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APPENDIX

APPENDIX A: INSTRUMENT TOOL

A Survey on Knowledge, Initiation and Usage of Electronic Cigarette among Students in a Private University, Kajang

Dear Participants,

You are invited to participate in a survey study conducted by Lee Zhi Han from Bachelor of Nursing (Hons) University Tunku Abdul Rahman (UTAR), Sungai Long Campus. The purpose of this research is to study knowledge, initiation and usage on the use of Electronic Cigarette (E-cigarette) among university students.

This questionnaire consists of four sections. Section A: Socio-demographic questionnaire, Section B: Knowledge on E-cigarette, Section C: Use of e-cigarette and Section D: Reasons for initiation.

SECTION A: SOCIO - DEMOGRAPHIC DATA

You are required to answer ALL the questions.

1. **Age (Years old)**

   _____

2. **Gender:**

   ☐ Male

   ☐ Female

3. Educational level

☐ Foundation

☐ Undergraduate

4. Faculty

☐ Lee Kong Chian Faculty of Engineering and Science (LKCFES)

☐ Faculty of Accountancy and Management (FAM)

☐ Faculty of Medicine and Health Sciences (FMHS)

☐ Faculty of Creative Industries (FCI)

☐ Centre for Foundation Studies (CFS)

5. Ethnicity

☐ Malay

☐ Chinese

☐ Indian

☐ Others

6. Are you a e-smoker, conventional smoker or both?

E-cigarette smoker

- ☐ Currently
- ☐ Never
- ☐ Former e-smoker

Conventional smoker

- ☐ Currently
- ☐ Never
- ☐ Former smoker

SECTION B: KNOWLEDGE ON E-CIGARETTE

Please put (/) in the box that best describes your response toward electronic cigarettes.

Items of questions	Yes	No	Do not know
E-cigarettes are addictive			
E-cigarettes may contain nicotine			
Health risk of e-cigarette usage is similar as normal cigarettes			
E-cigarettes have same chemicals as the normal cigarettes			
Are you aware of any government regulation on e-cigarettes			
Are you aware of any alternative nicotine delivery system for substitution of e-cigarette smoking			
E-cigarettes are less harmful to health compare to conventional cigarettes			
E-cigarettes are not harmful to health			
E-cigarettes is not prohibited in smoke free areas			

SECTION C: USE OF E-CIGARETTE

1. **Have you ever smoked an E-cigarette?**

☐ Yes

☐ No

Questions below designated for e-smoker. Please skip the questions until the last section (Section D) if you are not a e-smoker.

2. **How old were you when you first tried on E-cigarette?**

_____

3. **Do you have any influential company that influence you into smoking e-cigarettes?**

☐ Yes

☐ No

If yes, please state your relationship with he or she _____

4. **During the past 30 days, on how many day(s) did you smoke E cigarette?**

_____

5. **How frequent did you smoke E-cigarette in one day?**

_____

SECTION D: REASONS FOR INITIATION

On a scale of 1–5, please select (/) the number that best describes your response toward electronic cigarettes.

(1= Strongly Disagree, 2= Disagree, 3=Neutral, 4= Agree and 5= Strongly Agree)

	1	2	3	4	5
E-cigarettes are safe					
E-cigarettes are effective in quitting smoking					
E-cigarettes are easy to find					
E-cigarettes are affordable					
The advertising for E-cigarettes appeals to me					
E-cigarettes can use in places where smoking cigarette is not allowed					
E-cigarettes are more acceptable to non-tobacco users					
E-cigarettes can be less harmful than cigarettes					
People who are influential to me use E-cigarettes					
E-cigarettes don’t smell					

THE END

THANK YOU FOR YOUR PARTICIPATION

APPENDIX B: PERMISSION LETTER TO USE QUESTIONNAIRE

CDC INFO: Topic Request permission for the use of Tobacco Questions for Surveys of Youth (TQS-Youth); [CDC-332127-Y9H4T9] CRM:00064970

CDCInfo <cdcinfo@cdcinquiry.onmicrosoft.com>
Sat 11/30/2019 6:46 AM
To: han96_lee@hotmail.com <han96_lee@hotmail.com>

Thank you for your inquiry to CDC-INFO.

We hope you find the following information about reusing CDC content.

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Information and images developed by CDC and presented on the CDC website are works of the U.S. Government. This content may include:

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Content syndication is a way to have CDC.gov content, such as podcasts, eCards, Web pages, widgets, microsites, etc., placed on your site. The syndicated content is automatically updated in real time requiring no effort from your development staff to keep the Web pages up to date. You can present CDC Web content in the look and feel of your site and maintain visitors on your site. Content syndication also allows you to integrate CDC Web content and science with localized content. CDC maintains 2 sites for syndication: Content Syndication at https://tools.cdc.gov and the Public Health Image Library

APPENDIX C: LETTER FOR CONTENT VALIDITY

Request letter for establishing content validity of tool

LH **lee zhi han <han96_lee@hotmail.com>**
10/2/2020 2:44 PM

To: Mohammed Abdul razzaq Jabbar Cc: Shamala a/p Baskaran

Letter Requesting Suggestion of...
71.26 KB

Dear Dr. Razzaq,

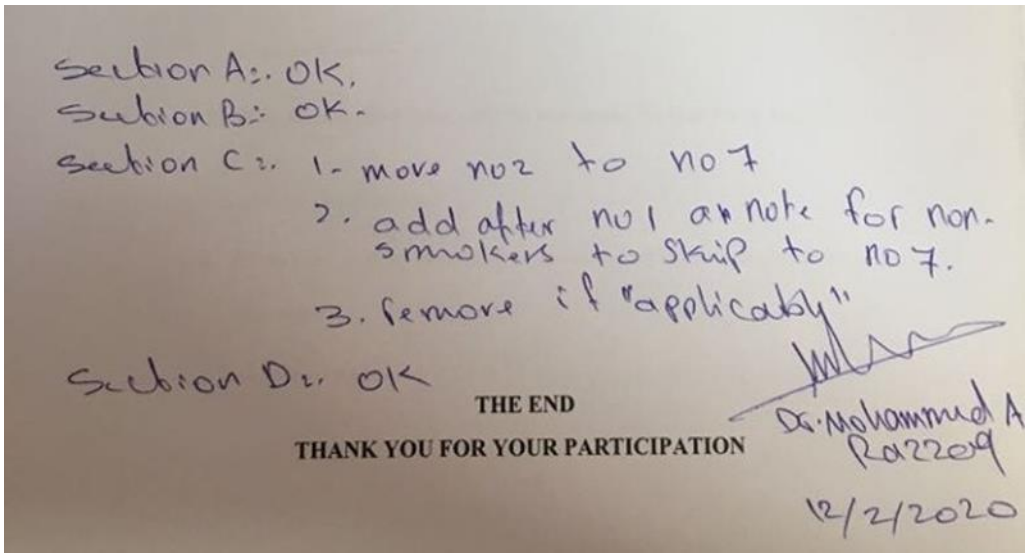
Good day, I am Lee Zhi Han year 4 UTAR nursing student. Currently, I am conducting a final year project on *'A Survey on Knowledge, Initiation and Usage of Electronic Cigarette among Students in a Private University, Kajang'*.

Hereby, I would like to request your acceptance for being a tool valuator and provide expert opinions for the accuracy, appropriateness, relevancy, and suggestions of the tool or modifications if needed.

The formal request letter with the summary of my research proposal and questionnaire is attached below. Please kindly review and thank you for your valuable time.

Thank you

Regards,
Lee Zhi Han
UTAR Nursing Student
16UMB07247



Re: Request letter for establishing content validity of tool

NN **N Ampihavathi a/p V Nagalingam <ampihavathi@utar.edu.my>**
18/2/2020 3:53 PM

To: lee zhi han

Dear Ms. Lee
Good day.
Tq for the offer.i accept your request.
Will look into and come back to you.

Regards
Ampi

On Tuesday, February 11, 2020, lee zhi han <han96_lee@hotmail.com> wrote:

> Dear Ms Ampi,
>
> Good day, I am Lee Zhi Han year 4 UTAR nursing student. Currently, I am conducting a final year project on *'A Survey on Knowledge, Initiation and Usage of Electronic Cigarette among Students in a Private University, Kajang'*.
>
> Hereby, I would like to request your acceptance for being a tool valuator and provide expert opinions for the accuracy, appropriateness, relevancy, and suggestions of the tool or modifications if needed.
>
> The formal request letter with the summary of my research proposal and questionnaire is attached below. Please kindly review and thank you for your valuable time.
>
> Thank you
>
> Regards,
> Lee Zhi Han
> UTAR Nursing Student
> 16UMB07247

APPENDIX D: APPLICATION LETTERS AND SAMPLE OF ETHICAL APPROVAL

UNIVERSITI TUNKU ABDUL RAHMAN			
Form Title : **APPLICATION FOR ETHICAL CLEARANCE TO INVOLVE HUMAN SUBJECTS IN RESEARCH**			
Form Number : **FM-IPSR-R&D-056**	Rev No : 1	Effective Date: **19/10/2015**	Page No : **1 of 7**

Application No. *(Official use only)*

PRINCIPAL INVESTIGATOR/SUPERVISOR (FOR STUDENT'S PROJECT)				
Full Name	:	Ms Shamala a/p Baskaran		
Chinese character *(if applicable)*	:	NIL		
Staff No.	:	12159		
New Identity Card / Passport No.	:	740710-05-5430		
Designation	:	Lecturer		
Qualification(s)	Master in Nursing Science	Specialization	:	Critical Care Nursing
Faculty / Institute	: FMHS	Department	:	Nursing
Institution Address	:	Universiti Tunku Abdul Rahman (UTAR), Sungai Long		
Telephone	:		Mobile Phone	: 012-2556319
Fax	: +603-90860288	E-mail	:	shamalab@utar.edu.my

STUDENT		
Full Name	:	Lee Zhi Han
Student No.	:	16UMB07247
New Identity Card / Passport No.	:	960623-05-5250
Programme Name	:	Bachelor of Nursing (HONS)
Faculty / Institute	:	FMHS
Mobile Phone	:	016-2463283
E-mail	:	han96_lee@hotmail.com

PROPOSED RESEARCH PROJECT

1. **Title of proposed research project**:
A survey on knowledge, initiation and usage of e-cigarette among students in a private university, Kajang, Malaysia

2. **Objectives of the research**:

1. To determine the number of students on e-cigarette usage among university students.

2. To determine the knowledge on e-cigarette usage among university students.

3. To determine the cause of initiation on the usage of e-cigarette among university students.

4. To determine the usage of e-cigarette among university students.

3. **Location of the research**:

University Tunku Abdul Rahman, Sungai Long Campus

4. **Specific Outcomes and Expected Contribution of Study**:

To study knowledge, initiation and usage of e-cigarette among university students as they are the population with highest prevalence on using e-cigarette. Data collected can be added in future tobacco preventive activities by the university

5. **Human Subject Involvement**: *Please tick appropriate box*

A.	Questionnaires/ Interviews	☑
B	Clinical trials of drugs/ formulations	☐
C.	Clinical trials of devices	☐
D.	Use of human tissue samples	☐
E.	Use of body fluids (e.g. blood)	☐
F.	Human genetics research	☐
G.	Others *(please state)* _____	

6. **Prior Review:**

Do you intend to submit or have you submitted this project to any other ethics committee(s)?

☐ YES ☑ NO

Name of ethics committee :

If yes, please provide details :

7. **Possible risks / discomforts to subjects/ patients or volunteers:**

There will be no risk or discomfort to the participants

8. **What are the direct or potential benefits (e.g. medical and financial) to participant?**

To create awareness and identify the usage pattern among university students as use of e-cigarette may cause nicotine addiction and pulmonary disease.

9. **What are the potential benefits to humanity?**

Create awareness and improve knowledge on the use of e-cigarette.

10. **If the research is conducted together with other researchers, please state:**
(Details of co-researcher(s))

	Name	Identity Card No*.	Faculty / Institution	Signature
a.				
b.				
c.				
d.				
e.				

** Passport No. for Foreign Researcher*

11. **Name of other relevant external parties involved (if any):**

	Name	Identity Card No.	Faculty / Institution	Signature
a.				
b.				
c.				
d.				
e.				

** Passport No. for Foreign Researcher*

12. **Who will be responsible for research related costs?**

For sponsored research, list thoroughly the costs that will be borne by the sponsor.

13. PROTOCOL CHECKLIST

13.1 Purpose of the study:

13.1.1 State concisely and precisely the specific objectives of the research

To determine the number of students on e-cigarette usage among university students.To determine the knowledge on e-cigarette usage among university students. To determine the cause of initiation on the usage of e-cigarette among university students. To determine the usage of e-cigarette among university students.

13.2 Background:

13.2.1 Describe the background of the study

Increase in popularity and use of e-cigarette has become the most concerning aspects particularly among young adult, despite the safety and usefulness of e-cigarette are still remain unknown.

13.2.2 *State concisely the importance of the research described in this application.*

13.3 Preliminary Studies / Progress Reports:

13.3.1 *Provide the report for the preliminary studies (if any) pertinent to the application.*

13.4 Methodology

13.4.1 *Briefly describe the study design (e.g. randomized, double blind, cross over, phase III)*

13.4.2 *Describe sequentially all procedures, interventions and evaluations to be applied to subjects, and identify any that are experimental or performed exclusively for research purposes.*

13.4.3 *Indicate who will carry out the research procedures. Describe where the research will be conducted.*

13.4.4 *Include details on sample size calculation and the statistical methods used to analyse the data.*

13.4.5 *List all trial related procedures. Please also describe the subject research visits (frequency and procedures involved). For studies with multiple visits, please attach visit schedule.*

13.4.6 *Discuss the potential difficulties and limitations of the proposed procedures and alternative approaches to achieve the aims.*

13.4.7 *Describe the anticipated benefits and risks to human subjects participating in this research.*

Notes: Drawing of body fluids from volunteer can only be carried out by qualified doctor or nurse

13.5 Additional Information on Methodology: (*Please tick appropriate box*)

☐ 13.5.1 **If research involves databases, please complete the following:**

13.5.1.1 *Storage location of the research data, consent forms and personal data*

13.5.1.2 *Who will have access to the data?*

13.5.1.3 *Mode of disposal of data after completion of project.*

13.5.1.4 *Mode of disposal of consent forms after completion of project.*

☐ 13.5.2 **If research involves placebo, please complete the following:**

13.5.2.1 *Explain what "standard of care" therapy is available for this condition*

13.5.2.2 *Discuss the ethical implications of using placebo instead of "standard of care" therapy in this situation*

13.5.2.3 *Address the issues of safety and efficacy of other available therapies*

13.5.2.4 *The total duration the subject would be on placebo arm of the research*

13.5.2.5 *Greatest potential harm that the subject might be exposed to as a result of not receiving effective therapy*

13.5.2.6 *Protocol in place to safeguard participants receiving placebo*

☐ 13.5.3 **If research involves tissues / body fluids, please complete the following:**

13.5.3.1 *Describe the samples that will be collected and stored?*

13.5.3.2 *What tests will be performed on these samples?*

13.5.3.3 *What will happen to the tissues after the research is completed?*

13.5.3.4 *Will results from the tests be communicated to the subjects?*

☐ 13.5.4 **If research involves cell cultures / cell lines, please complete the following:**

13.5.4.1 *Describe the cells that will be used for the research.*

13.5.4.2 *Indicate the source of the cell cultures/lines. Please provide proof of purchase or catalog details of the cells.*

14. CHARACTERISTICS OF VOLUNTEERS

14.1 Provide the maximum number of subjects you seek approval to enroll from the entire subject populations you intend to use and justify the sample size.

14.2 Lower Age Limit: Upper Age Limit:

14.3 Are there any subject recruitment restrictions based on race of the subject?

14.4 Inclusion criteria: (*Please tick appropriate box)*

☑ Healthy Volunteers ☐ Outpatients ☐ Inpatients

☐ Children ☐ Pregnant Women

☐ Incompetent Patients *(Please specify)* _____

☐ Others *(Please specify)* _____

14.5 Exclusion criteria

Participant who are refused to participant

15. **Attach the following with this application form:**

15.1 Biodata of the applicant and any co-researcher(s).

15.2 List of previous research
Indicate the research in relation to this project with an asterisk (*).

16. INDEMNITY

I shall indemnify, defend and hold harmless UTAR from any or all claims, demands, losses, damages, costs and liabilities made by any third party due to or arising out of any acts, omission or negligence in carrying out this study.

17. DECLARATION

a) I will not initiate this research until I receive written approval from the UTAR Scientific & Ethical Review Committee and the regulatory authority or otherwise relevant authorities (if applicable).

b) I will not initiate any changes in protocol without prior written approval from UTAR Scientific and Ethical Review Committee except when it is necessary to reduce or eliminate risk to the subject.

c) I will promptly report any unexpected or serious adverse events, unanticipated problems or incidents that may occur in the course of this research.

d) I will take all necessary steps to maintain confidentiality of all information, samples and specimens about the volunteers. Data, samples and specimen obtained will be stored securely and will be made available only to the Principal Investigator and the research team, the UTAR Scientific and Ethical Review Committee, the sponsor and the regulatory authorities for the purpose of verifying the research procedures info and/or data

e) I declare that the name and other facts that might identify the volunteer will not appear when this study is presented or its results are published

f) I declare that there is no existing or potential conflict of interest for any of the investigators participating in this research.

g) I have read and understood, and hereby accept and agree to abide by UTAR Research Ethics & Code of Conduct and any applicable UTAR's Guidelines. I undertake that the information I have provided herein is complete and accurate and I agree to carry out the Project in accordance with the terms in the International Conference of Harmonization of Good Clinical Practice Guidelines. My involvement in this Project does not conflict with my University duties and I have no other conflict of interest to declare

h) I further agree that I shall abide by all instructions and directions issued by UTAR pertaining to all aspects of the research herein including but not restricted to suspending and ceasing of the research herein.

Remarks *(if any)* :

_____ _____

Principal Investigator/Supervisor Signature — Date

Name of Principal Investigator/ Supervisor : _____

RECOMMENDATION BY DEAN

Recommended / Not Recommended for Approval

_____ _____

Signature — Date

Name of Dean _____

RECOMMENDATION BY UTAR SCIENTIFIC & ETHICAL REVIEW COMMITTEE

Comments : _____

_____

_____

_____

_____

UTAR Scientific & Ethical Review Committee : Minutes No. _____

.....
Signature of Secretary

Name of Secretary: _____

COMPLETED BY THE CHAIRMAN OF THE UTAR SCIENTIFIC & ETHICAL REVIEW COMMITTEE

Approved ☐

Approved subject to full review (of protocol, informed consent documents etc.) ☐

Not Approved ☐

Others (*please state*) ☐

_____ _____

Signature of Chairman Date:

Name of Chairman:

BIODATA OF APPLICANT

Name **:** Lee Zhi Han

Student ID **:** 16UMB07247

Course **:** Bachelor of Nursing (Honours)

University Address **:** Universiti Tunku Abdul Rahman, Sungai Long Campus, 43000, Kajang, Selangor

Contact Number **:** 016-2463283

Email Address **:** han96_lee@hotmail.com

EDUCATION AND ACHIEVEMENTS

Primary School:

SJK © Yuk Hua Jelebu (2002 – 2007)

- UPSR 4As'3B achiever

Secondary School:

SMK DUMA Jelebu (2008 – 2012)

- PMR 4As'3B1D achiever
- SPM 6As'3B1C achiever

Pre-university:

SMK KING GEORGE (2013 – 2014)

- Form 6 achiever

University:

University Tunku Abdul Rahman, UTAR Sungai Long (currently)

- OCT 2016 – OCT 2020
- Dean's list in September 2018 trimester

WORKING EXPERIENCE:

- Accountant assistant, sales and dental assistant

SKILLS:

Language: English, Malay, Mandarin and Hakka

Computer skills: Microsoft Office (Words, PowerPoint Office and Excel)

Personal Strengths: Patience, friendly and punctual

APPENDIX E: ETHNICAL CLEARANCE APPROVAL LETTER

UNIVERSITI TUNKU ABDUL RAHMAN
Wholly Owned by UTAR Education Foundation (Company No. 578227-M)

Re: U/SERC/19/2020

6 February 2020

Ms Liew Siew Fun
Head, Department of Nursing
Faculty of Medicine and Health Sciences
Universiti Tunku Abdul Rahman
Jalan Sungai Long
Bandar Sungai Long
43000 Kajang, Selangor

Dear Ms Liew,

Ethical Approval For Research Project/Protocol

We refer to your application for ethical approval for your students' research project from Bachelor of Nursing (Hons) programme enrolled in course UMNB4024. We are pleased to inform you that the application has been approved under expedited review.

The details of the research projects are as follows:

	Research Title	Student's Name	Supervisor's Name	Approval Validity
1.	Knowledge and Awareness of Basic Life Support Skills Among Non-medical Students in a Private University Kajang, Malaysia: A Survey Study	Achi Blessing Zidyeb	Ms Jagjit Kaur Co-supervisor: Ms Woo Li Fong	6 February 2020 – 5 February 2021
2.	Knowledge and Attitude Towards Epilepsy Among Undergraduate Students in a Private University in Kajang, Malaysia	Gilbert H'ng Yung Han	Ms Magesvary Manuthiah Co-supervisor: Ms Thulasy Perumal	
3.	A Survey on Knowledge, Initiation and Usage of Electronic Cigarette Among Students in a Private University, Kajang	Lee Zhi Han	Ms Shamala Baskaran Co-supervisor: Ms Thavamalar Paramasivam	
4.	A Survey on Students' Knowledge and Consumption Pattern of Bubble Milk Tea in a Private University, Kajang	Lim Zhi Qian	Ms Woo Li Fong Co-supervisor: Ms Jagjit Kaur	
5.	Survey on the Knowledge and Attitudes Towards Cervical Cancer Among Students of a Private University in Kajang	Michelle Chang Siang Jie	Ms Thulasy Perumal Co-supervisor: Ms Magesvary Manuthiah	
6.	A Survey on Suicidal Ideation and Attempt in One Private University, Malaysia	Ng Sin Hooi	Ms Thavamalar Paramasivam Co-supervisor: Ms Shamala Baskaran	
7.	Knowledge and Practice of Self-medication Using Paracetamol Among Students in a Private University	Phoon Wil Son	Ms Sheela Devi Sukuru Co-supervisor: Ms Ng Siow Fam	

Kampar Campus : Jalan Universiti, Bandar Barat, 31900 Kampar, Perak Darul Ridzuan, Malaysia
Tel: (605) 468 8888 Fax: (605) 466 1313
Sungai Long Campus : Jalan Sungai Long, Bandar Sungai Long, Cheras, 43000 Kajang, Selangor Darul Ehsan, Malaysia
Tel: (603) 9086 0288 Fax: (603) 9019 8868
Website: www.utar.edu.my

The conduct of this research is subject to the following:

(1) The participants' informed consent be obtained prior to the commencement of the research;

(2) Confidentiality of participants' personal data must be maintained; and

(3) Compliance with procedures set out in related policies of UTAR such as the UTAR Research Ethics and Code of Conduct, Code of Practice for Research Involving Humans and other related policies/guidelines.

Should the students collect personal data of participants in their studies, please have the participants sign the attached Personal Data Protection Statement for records.

Thank you.

Yours sincerely,

Professor Ts Dr Faidz bin Abd Rahman
Chairman
UTAR Scientific and Ethical Review Committee

c.c Dean, Faculty of Medicine and Health Sciences
Director, Institute of Postgraduate Studies and Research

Kampar Campus : Jalan Universiti, Bandar Barat, 31900 Kampar, Perak Darul Ridzuan, Malaysia
Tel: (605) 468 8888 Fax: (605) 466 1313
Sungai Long Campus : Jalan Sungai Long, Bandar Sungai Long, Cheras, 43000 Kajang, Selangor Darul Ehsan, Malaysia
Tel: (603) 9086 0288 Fax: (603) 9019 8868
Website: www.utar.edu.my

APPENDIX F: DEPARMENTAL APPROVAL LETTER FOR DATA COLLECTION

LEE KONG CHIAN FACULTY OF ENGINEERING AND SCIENCE (LKCFES)

LT **Li Xian Tan <tanlx@utar.edu.my>**
17/2/2020 3:23 PM

To: lee zhi han Cc: Ts Dr Yap Wun-She

Dear Zhi Han,

Please be informed that you may carry out your data collection from LKC FES students. Please bring along with you the approval letter.

However, ensure that in the processing of carrying out the activity, permission from the lecturer concerned is obtained/ on-going class is not being disturbed.

Thank you.

With Best Regards,
Li Xian, Tan
Faculty General Office
Lee Kong Chian Faculty of Engineering and Science
Universiti Tunku Abdul Rahman
Jalan Sungai Long
Cheras, 43000 Kajang
Selangor Darul Ehsan, Malaysia
Tel:+(603) 90860288 Ext: 778
Fax:+(603) 90193886

FACULTY OF ACCOUNTANCY AND MANAGEMENT (FAM)

Re: REQUEST LETTER FOR PERMISSION TO COLLECT DATA FOR FINAL YEAR PROJECT

BS **Bee Chuan Sia <siabc@utar.edu.my>**
17/2/2020 10:25 AM

To: lee zhi han

ok

On Sat, Feb 15, 2020 at 2:25 PM lee zhi han <han96_lee@hotmail.com> wrote:

> Good day Dr. Sia,
>
> I am Lee Zhi Han UTAR Y4 nursing student. Currently, I and my colleagues are conducting our final year projects. Hence on behave of my colleagues I would like to seek permission to allow us to collect data from students who are pursuing their studies in the Faculty of Accounting and Management. Our formal request letter, UTAR ethical board approval letter, research details and questionnaire are attached below. Please kindly review and thank you for your valuable time.
>
> Thank you
>
> Regards,
> Lee Zhi Han
> 16UMB07247
> Bachelor of Nursing (Honours)
> Faculty of Medicine and Health Sciences
> University Tunku Abdul Rahman
> Contact: 016-2463283
> Email: han96_lee@hotmail.com

FACULTY OF MEDICINE AND HEALTH SCIENCES (FMHS)

From: Outlook Web Support. <dinxj@utar.edu.my>
Sent: Wednesday, February 19, 2020 6:36 AM
To: Lim ZhiQian <zhiqian0622@hotmail.com>
Subject: Re: LETTER TO SEEK PERMISSION ON DATA COLLECTION FOR FYP

Kindly proceed.

Regards,
Din XJ

On Sat, Feb 15, 2020 at 4:53 PM Lim ZhiQian <zhiqian0622@hotmail.com> wrote:

> Good day, Emeritus Prof. Dr. Cheong,
>
> I am Lim Zhi Qian, a UTAR Year 4 nursing student. Currently, my colleague and I are conducting our final year projects. Hence on behalf of my colleague, I would like to seek permission to allow us to collect data from students who are pursuing their studies in the Faculty of Medicine and Health Sciences. Our formal request letter, UTAR ethical board approval letter, research details and questionnaires are as attached. Please kindly review.
>
> Thank you for spending time and your response is highly anticipated.
>
> Regards,
> Lim Zhi Qian
> 16UMB07120
> Bachelor of Nursing (Honours)
> Faculty of Medicine and Health Sciences
> Universiti Tunku Abdul Rahman
> Contact: 012-7275442
> Email: zhiqian0622@hotmail.com

FACULTY OF CREATIVE INDUSTRIES (FCI)

From: **David Tneh Cheng Eng** <tnehce@utar.edu.my>
Date: Fri, Feb 14, 2020 at 6:31 PM
Subject: Re: LETTER REQUESTING FOR PERMISSION TO COLLECT DATA FOR PROJECT
To: BLESSING ZIDYEB ACHI <achixee@1utar.my>

Dear Achi,

I'm ok with this data collection, please proceed.

Best

David C.E. Tneh 鄭清詠 (Ph.D.)
Asst. Professor and Dean
Faculty of Creative Industries
Universiti Tunku Abdul Rahman (UTAR)
Bandar Sungai Long City Campus
Selangor Darul Ehsan
MALAYSIA
Tel: (603)-90860288 (Ext.232)
Fax:(603) 9019 8868

CENTER FOR FOUNDATION STUDIES (CFS)

From: Melissa Stefanie Netto <melissasn@utar.edu.my>
Sent: Wednesday, February 19, 2020 4:09 AM
To: Lim ZhiQian <zhiqian0622@hotmail.com>; Choon Min Wai <choonmw@utar.edu.my>
Subject: Re: LETTER TO SEEK PERMISSION ON DATA COLLECTION FOR FYP

Dear Zhi Qian,

The HOD has given the arrangement below; kindly confirm with us that this is feasible for you:

Date: 24/02/2020 (Monday)
Time: 2pm - 2.30pm
Venue: KB103
Lecturer's Name: Pn Nurul Syuhada

Thanks

Ms Melissa

APPENDIX G: CONSENT FORM

CONSENT FORM

Dear participants,

I am Lee Zhi Han, currently pursuing Bachelor of Nursing. I would like to invite you to participate in my research study titled 'A Survey on The Knowledge, Initiation and Usage of Electronic Cigarette among Students in a Private University, Kajang. The purpose of this research is to study knowledge, initiation and usage on the use of Electronic Cigarette (E-cigarette) among university students. Information collected will not be disclosed to third parties and only anonymized data will be published in order to protect your privacy and confidentiality. It is used only for partial fulfillment of the requirements for the degree of Bachelor of Nursing (Hons). The researcher believes there is no known physical or mental harm associated with this research study and you can withdraw from the study at any time as your participation is on voluntary basis. This is for your information and kind participation.

I, hereby consent voluntarily to participate and undergo the study as a participant.

I confirm the study purpose and procedures have been explained to me. I have the opportunity to ask questions according to the research study or questionnaire.

Signature of the Participant,	Signature of Investigator,
…….	…….
Name:	Name: Lee Zhi Han
Date:	

APPENDIX H: PERSONAL DATA PROTECTION STATEMENT (PDPS)

PERSONAL DATA PROTECTION STATEMENT

Please be informed that in accordance with Personal Data Protection Act 2010 ("PDPA") which came into force on 15 November 2013, Universiti Tunku Abdul Rahman ("UTAR") is hereby bound to make notice and require consent in relation to collection, recording, storage, usage and retention of personal information.

Notice:

1. The purposes for which your personal data may be used are inclusive but not limited to:-
   - For assessment of any application to UTAR
   - For processing any benefits and services
   - For communication purposes
   - For advertorial and news
   - For general administration and record purposes
   - For enhancing the value of education
   - For educational and related purposes consequential to UTAR
   - For the purpose of our corporate governance
   - For consideration as a guarantor for UTAR staff/ student applying for his/her scholarship/ study loan

2. Your personal data may be transferred and/or disclosed to third party and/or UTAR collaborative partners including but not limited to the respective and appointed outsourcing agents for purpose of fulfilling our obligations to you in respect of the purposes and all such other purposes that are related to the purposes and also in providing integrated services, maintaining and storing records. Your data may be shared when required by laws and when disclosure is necessary to comply with applicable laws.

3. Any personal information retained by UTAR shall be destroyed and/or deleted in accordance with our retention policy applicable for us in the event such information is no longer required.

4. UTAR is committed in ensuring the confidentiality, protection, security and accuracy of your personal information made available to us and it has been our ongoing strict policy to ensure that your personal information is accurate, complete, not misleading and updated. UTAR would also ensure that your personal data shall not be used for political and commercial purposes.

Consent:

1. By submitting this form you hereby authorise and consent to us processing (including disclosing) your personal data and any updates of your information, for the purposes and/or for any other purposes related to the purpose.

2. If you do not consent or subsequently withdraw your consent to the processing and disclosure of your personal data, UTAR will not be able to fulfill our obligations or to contact you or to assist you in respect of the purposes and/or for any other purposes related to the purpose.

3. You may access and update your personal data by writing to us at _____.

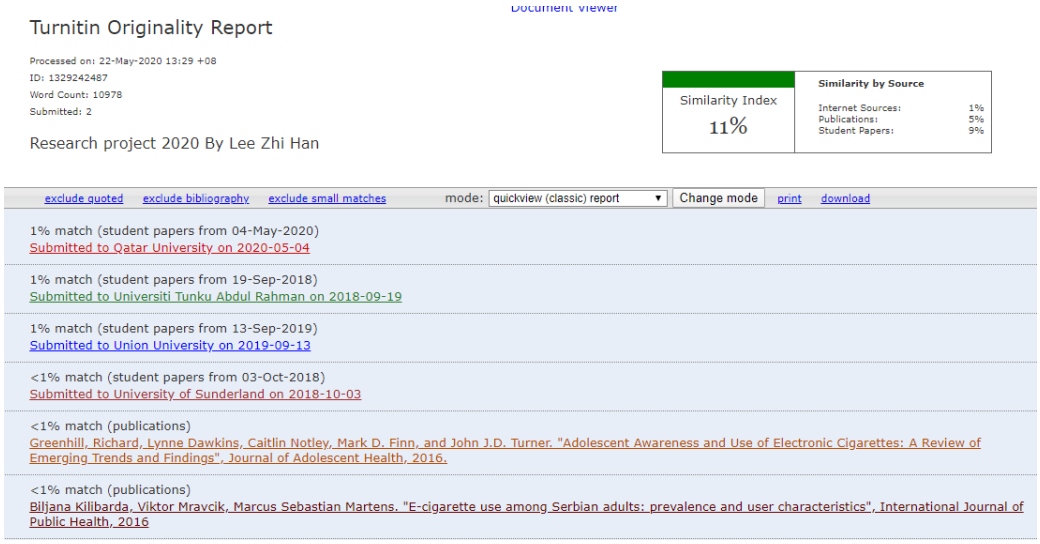
Acknowledgment of Notice

[ ] I have been notified by you and that I hereby understood, consented and agreed per UTAR above notice.

[ ] I disagree, my personal data will not be processed.

.....
Name:
Date:

APPENDIX I: TURNITIN ORIGINALITY REPORT



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