A SURVEY ON STUDENTS' KNOWLEDGE AND CONSUMPTION PATTERN OF BUBBLE MILK TEA IN A PRIVATE UNIVERSITY, KAJANG

By

LIM ZHI QIAN

A research project submitted to the Department of Nursing

Faculty of Medicine and Health Sciences

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ABSTRACT

BACKGROUND: Bubble milk tea (BMT) is a recent craze on social media and in high demand. Due to its rising popularity especially among the young adults, there has been a mushrooming of bubble milk tea vendors and shops in Malaysia. However, bubble milk tea is not a healthy choice as it contains high sugar content. The public seems to have wrong perceptions on this issue to take it healthier than other sugary beverages. This situation can cause the consumers to take in sugar without knowing and contribute to higher risk of disease such as obesity, overweight, diabetes and other comorbidities.

OBJECTIVE: To determine the prevalence, consumption pattern and knowledge level on BMT and its health effects among the university students.

METHODOLOGY: This study is a descriptive survey. A total of 404 university students who aged 18 and above and pursuing studies in a private university in Kajang were selected as participants through convenience sampling method, with 383 of them remained eligible. Self-administered questionnaire was used for data collection after obtaining consent. The questionnaire was divided into three sections to assess socio-demographic data, BMT consumption pattern, and knowledge level on BMT and its health effects. The data was analyzed using descriptive and inferential analysis.

FINDINGS: The prevalence of BMT consumption was as high as 93.0% among the participants, with majority of them consuming for more than 3 years. Peer influence was the main factor affecting the consumption. Drinking BMT in regular cup size and half sugar during snack time was the preference. Only 62.9% and 60.3% of the consumers knew the sugar and calorie content in one standard cup of BMT respectively. Diabetes, weight gain and obesity topped the health effects of BMT consumption by participants. The knowledge levels were influenced by different socio-demographics including age, gender, program and faculty of study and consumption patterns including duration of drinking BMT and choice of sugar level.

CONCLUSION: There was high prevalence of BMT consumption with a lack of knowledge regarding the sugar and calorie content of BMT among the university students. Majority of them were able to identify health effects such as diabetes, weight gain and obesity. Actions and interventions are recommended and encouraged to increase the awareness on importance of having proper sugar intake among the university students.

KEYWORDS: Bubble milk tea, sugar-sweetened beverages, consumption patterns, knowledge, university students, 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 LIM ZHI QIAN (ID No: 16UMB07120) has completed this research project entitled "A SURVEY ON STUDENTS' KNOWLEDGE AND CONSUMPTION PATTERN OF BUBBLE MILK TEA IN A PRIVATE UNIVERSITY, KAJANG" under the supervision of Ms. Woo Li Fong (Main Supervisor) and Ms. Jagjit Kaur Najar Singh (Co-Supervisor) from the Department of Nursing, Faculty of Medicine and Health Sciences.

I hereby give my permission to the university to upload the 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,

_____

(LIM ZHI QIAN)

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.

(LIM ZHI QIAN)

Date: 22 May 2020

APPROVAL SHEET

This research project entitled **"A SURVEY ON STUDENTS' KNOWLEDGE AND CONSUMPTION PATTERN OF BUBBLE MILK TEA IN A PRIVATE UNIVERSITY, KAJANG"** is prepared by LIM ZHI QIAN and submitted as partial fulfilment of the requirements for the degree of Bachelor of Nursing (Honours) at Universiti Tunku Abdul Rahman.

Approved by:

_____

(Ms. Woo Li Fong) Date: _____

Main Supervisor
Department of Nursing
Faculty of Medicine and Health Sciences
Universiti Tunku Abdul Rahman

_____

(Ms. Jagjit Kaur Najar Singh) Date: _____

Co-Supervisor
Department of Nursing
Faculty of Medicine and Health Sciences
Universiti Tunku Abdul Rahman

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CHAPTER ONE

INTRODUCTION

CHAPTER 1: INTRODUCTION

1.0 CHAPTER OVERVIEW

Chapter 1 includes a brief explanation on bubble milk tea such as its definition, invention, the growing demand and related health problems. Relevant problems will be discussed and further lead to the derivation and analysis of research questions, objectives, and significance of study.

1.1 BACKGROUND

Bubble milk tea (BMT), also called pearl milk tea, tapioca tea or bubble tea was first introduced in the early 1980s in Taiwan. It is a sweet beverage with mixture of tea, milk and small chewy tapioca balls which can be served cold or hot (Merriam Webster, 2019). Its main component: the pearl, is made of tapioca starch extracted from cassava root, then kneaded into small balls and cooked in boiling water until soft. These small pearls are kept in brown sugar or syrup to create the sweetness and chewiness. However, the word ‘bubble’ does not refer to the pearls, but the milk froth formed when the drink is being shaken (Khushbu Shah, 2016).

The discovery of BMT is credited to Mister Liu Han-Chieh and Miss Lin Hsiu Hui who both worked in a Taiwanese teahouse. Mr. Liu first developed the idea to serve cold Chinese tea and by chance, Ms. Lin brought a Taiwanese sweetened tapioca pudding called ‘fen yuan’ to a meeting. They added these two together for fun, but it turned out everyone loves the drink. This new drink quickly outsold other teas since it was brought up to menu (Chang, 2017; Wen,

2019). Until today, BMT has evolved into a combination of sweetened tea with creamer and flavourings, with the top up of tapioca pearls or puddings (Carey, 2017).

From 2018 till now, the BMT demand reached another fever-pitch level and the bubble tea café operators revealed this demand is fueled by social media. The creation of aesthetic and photogenic beverages encouraged the customers to purchase and post the products on social media, thus snowball the local attention (Foong, 2019; Wen, 2019). The trend is especially popular among college students, who make up a great portion of customers (Lee and Vega, 2014). In other fact, Weil (2019) said that BMT is a high calorie and high fat drink with little health benefits. Since the tapioca pearls are made of starch, they are high in carbohydrates and the milk tea which has been sweetened artificially is not healthy too. However, the public seems to have wrong perceptions that this beverage is a healthier choice compared to other sugar-sweetened beverages (SSB) (Jalelah Abu Baker, 2019). The awareness of health risks related to SSB is low especially among the frequent SSB consumers, thus there is definitely a need for interventions to educate and raise the public awareness in this issue (Miller et. al, 2019).

1.2 PROBLEM STATEMENT

BMT shops and vendors are sprouting like mushrooms after rain in Malaysia. Take one of the local streets as an example, it was named ‘Bubble Tea Street’ because of the overwhelming numbers of bubble milk tea shops opening there

(Vinodh Pillai, 2019). The consumption is especially high among young adults and undergraduate students (Lee and Vega, 2014; Norliza-Ahmad et. al., 2019).

A study done by Min et. al. (2017) showed a 16-ounce (473mls) of BMT contains 38 grams of sugar and 299 calories. This limit exceeds the 2015 U.S. Dietary Guidelines Advisory Committee's recommendation for added sugar intake, thus BMT is validated as sugar-sweetened beverage (SSB). Centers for Disease Control and Prevention (2017) defines SSB as "any liquids that are sweetened with various forms of added sugars like brown sugar, corn sweetener, corn syrup, dextrose, fructose, glucose, high-fructose corn syrup, honey, lactose, malt syrup, maltose, molasses, raw sugar, and sucrose." Added sugar possesses its consumers with health risks such as tooth erosion, weight gain, diabetes, obesity, liver disease, heart disease, skin problems and certain cancers. Out of these consequences, obesity plays the largest negativity as it can further lead to other obesity-related comorbidities (Centers for Disease Control and Prevention, 2017; Kubala, 2018; Lobo, 2019; Min et. al, 2017).

Malaysian National Health and Morbidity Survey 2015 revealed that the prevalence of diabetes had increased to 17.5% from 15.2% in 2011, with more than 50% undiagnosed. Narrowing down to age group of 18 to 19, the prevalence of diabetes increased from 2.1% to 5.5% in four years gap proving Malaysian young adults have been growing sweet tooth (MOH, 2015). Besides, Malaysia has been rated as the highest among Asian countries for obesity and overweight with 65% of women and 64% of men found to be obese (WHO, 2019). These show the negative implications of poor supervision on sugar

consumption among the Malaysians, especially the young adults and university students who are craze over BMT. In Malaysia, there is a lack of specific research in studying the consumers' knowledge level about the health risks related to high sugar consumption. However, Schafer (2019) and Sakdapanichkul (2018) found out from their studies done in United States and Thailand respectively that even though the consumers have strong knowledge of these health consequences, it does not affect their consumption. The purposeful ignorance on health warnings, incorrect perceptions or pure lack of knowledge should be handled as health care urgency to how serious the consequences can affect the people, community, and country.

1.3 RESEARCH OBJECTIVE

1.3.1 General Objectives

To study the prevalence, consumption pattern and knowledge level on BMT and its health effects among the university students.

1.3.2 Specific Objectives

1) To determine the prevalence of BMT consumption among the participants.
2) To determine the BMT consumption pattern among the participants.
3) To determine the knowledge level on BMT and its health effects among the participants.
4) To determine whether there is significant association between knowledge level on BMT and its health effects and socio-demographic variables among participants.
5) To determine whether there is significant association between knowledge level on BMT and its health effects and consumption pattern among participants.

1.4 RESEARCH QUESTIONS

1) What is the prevalence of BMT consumption among the participants?
2) What is the BMT consumption pattern among the participants?
3) What is the knowledge level on BMT and its health effects among the participants?
4) Is there significant association between knowledge level on BMT and its health effects and socio-demographic variables among participants?
5) Is there significant association between knowledge level on BMT and its health effects and consumption pattern among participants?

1.5 HYPOTHESIS

1.5.1 Null Hypothesis

$H0_1$: There is no significant association between knowledge level on BMT and its health effects and socio-demographic variables among participants.

$H0_2$: There is no significant association between knowledge level on BMT and its health effects and consumption pattern among participants.

1.5.2 Alternative Hypothesis

HA_1: There is significant association between knowledge level on BMT and its health effects and socio-demographic variables among participants.

HA_2: There is significant association between knowledge level on BMT and its health effects and consumption pattern among participants.

1.6 CONCEPTUAL AND OPERATIONAL DEFINITION

1.6.1 Knowledge Level on BMT and Its Health Effects

Knowledge level is the depth of understanding regarding particular happenings or events (Cox, 2019). To determine the participants' knowledge level on BMT and its health effects, the ten questions from Section C of the questionnaire are single best answer question. Every question has only one correct answer and each correct answer will contribute one point. A perfect score will be ten points. The points were then categorized into two: poor (0 to 5) and good (6 to 10) knowledge.

1.6.2 BMT Consumption Pattern

Consumption pattern is the identification, purchase and consumption process of the products or services by consumers in order to fulfill their needs (IGI Global, 2019). The consumption pattern surveyed in this study includes the participants' individual characteristics in consuming BMT such as the influencing factor, choices of cup size and sugar level, and so on. This variable was studied in Section B of the questionnaire.

1.6.3 Socio-Demographic

Socio-demographic refers to the definition of a group by its sociological and demographic characteristics. These characteristics can include sex, ethnicity, religion, and educational level (Reference.com, 2020). In this study, the socio-demographic variables accessed were date of birth, age, gender, ethnic origin, program and faculty of study.

1.6.4 Private University Student

Private university student is a person who is studying at an educational institution that provides tertiary education under operation by a private committee board, taking either foundation, undergraduate or postgraduate course. In this research, the university students are studying at a private education institute located in Kajang. They are individuals who aged 18 and above, pursuing foundation or undergraduate courses of five different faculties: Accountancy and Management, Medicine and Health Sciences, Creative

Industries, Lee Kong Chian Faculty of Engineering and Science, and Centre for Foundation Studies.

1.7 SIGNIFICANCE OF STUDY

Currently, popular press or online sources provides most of the information regarding BMT. Investigations and research on this situation are very limited in Malaysia. Hence, this study aims to clarify the aspects and concerns on knowledge level and consumption pattern of BMT. The outcome can serve as proof to determine public awareness regarding issue of added sugar intake and for related authorities such as Ministry of Education and Ministry of Health (MOH) to take appropriate initiatives in improving the situation in view of high prevalence of obesity and diabetes which lead to increased healthcare cost burden to the country. The findings also act as strong evidences to be integrated into future nursing healthcare as part of preventive measure to prevent chronic diseases through health education and promotion.

1.8 SUMMARY

The review of the background regarding BMT helps to identify and highlight important information in this study such as the sugar content, health effects and public perception on BMT, followed by derivation of the research questions and objectives. It provided a direction for the researcher to plan this study to achieve outcome and significance.

CHAPTER TWO

LITERATURE REVIEW

CHAPTER 2: LITERATURE REVIEW

2.0 CHAPTER OVERVIEW

Chapter 2 illustrates the search strategy, literature review, followed by the explanation on theoretical framework used for this study.

2.1 SEARCH STRATEGY

The literature search was performed using various search engines including university library database and Google Scholar. Keywords such as BMT, sugar-sweetened beverages, knowledge, young adults and university students were used to explore related articles and journals. A total of 49,821 results were generated. After application of BOOLEAN operator, parentheses, selection of few criteria (published in year 2013 to 2020, full-text availability, peer-reviewed and English language), and filtered by the researcher according to the relevance to research title, a total of 20 relevant journal articles was obtained.

The process was shown in Diagram 2.0.

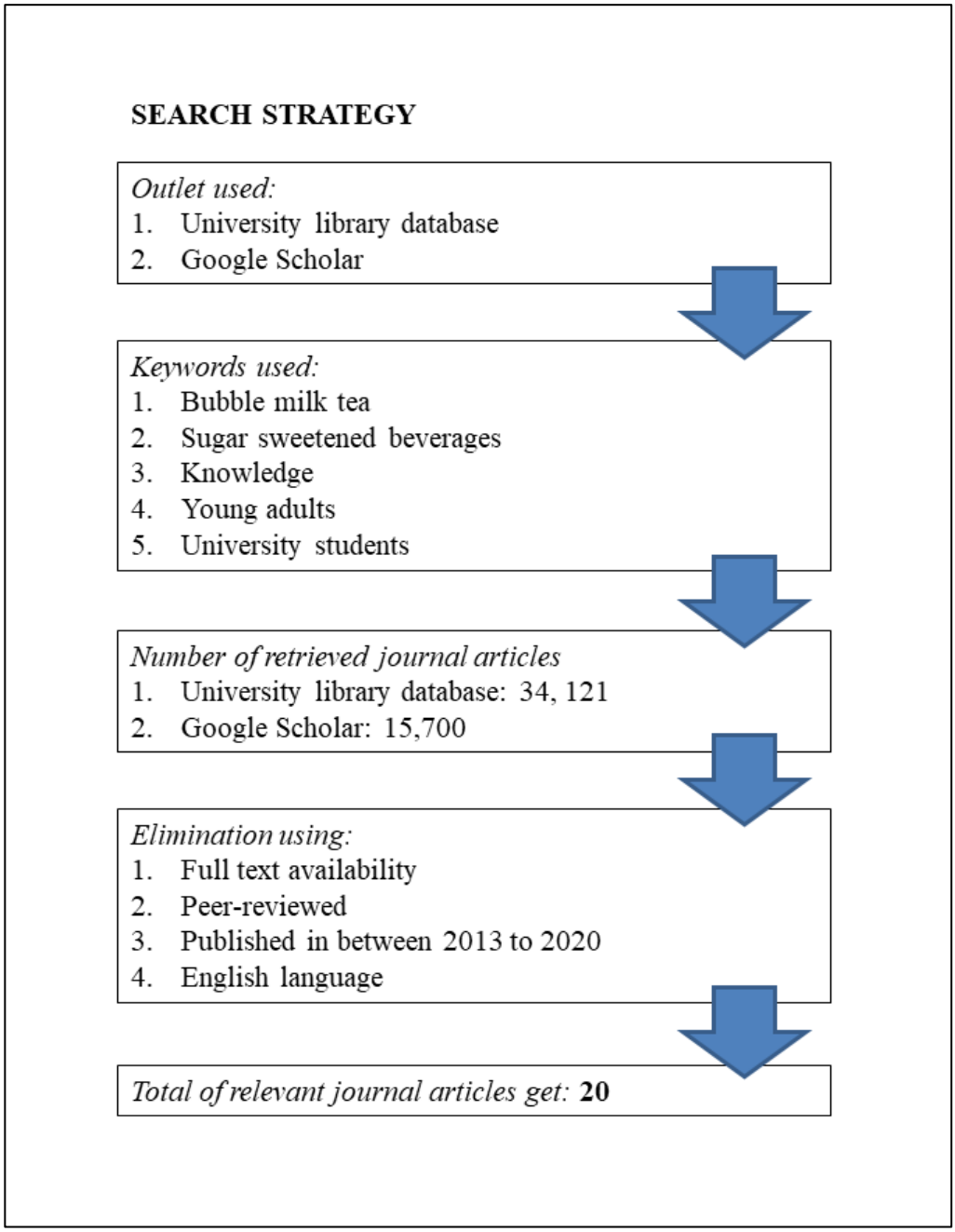


Diagram 2.0: Search Strategy

2.2 REVIEW OF LITERATURE

2.2.1 BMT and Its Popularity

BMT is a Taiwanese origin sweet beverage which has been receiving popularity ever since its introduction in 1980s (Khushbu Shah, 2016). Although the demand seems to have subsided over the last few years, the influx of new brands into Malaysia revives this beverage trend (Ili Aqilah and Ivan Loh, 2019). The tornado effect began with the introduction of photogenic drinks that encourages the purchasers to take a snap and post it on social media (StoreHub, 2019). One of the customers, aged 27 said that the reason he queues for BMT is to just take a picture and post it on social media as it seems to be a trendy thing lately (Liu and Choi, 2018). More evidence proving the rapid growing demand of BMT is the mushrooming of bubble tea vendors and shops such as in Cheras Traders Square, there are 13 bubble tea shops while in Sungai Long area, the number of bubble tea shops increased to nearly 8 from 1 within one short year (Blue Brickz, 2019; Vinodh Pillai, 2019).

2.2.2 Knowledge and Consumption of BMT

According to a study done in our neighbouring country Thailand, bubble tea is the third most consumed beverage at 67.5% following coffee and tea. The respondents mentioned that the impacts affecting their purchasing decisions include referral from family or friend, trend, promotion, and frequent advertisements. According to Sakdapanichkul (2018), the respondents are aware of the health risks but not at their time of purchase. Other than this, the respondents from a study done in Philippines stated that the store location and

hot weather are factors driving the desire to purchase BMT as snack or refreshment. Most of them consumed BMT once or twice a week and the percentage of customers at selected milk tea stores is the highest among college students who aged 19 to 24 years old (Lee and Vega, 2014). These statements correspond with the study result of Schafer (2019) stating that the young adults consume SSB once or twice a week and their good knowledge about the risk for obesity and other diseases does not affect their consumption.

2.2.3 Health Problems That Could Occur with BMT or SSB Consumption

Health Minister Datuk Seri Dzulkefly Ahmad advised consumers to avoid drinking bubble milk tea as a cup of 500ml bubble tea contains 20 teaspoons of sugar whereas World Health Organisation and Malaysian Dietary Guidelines suggest that the added sugar intake for adults should not exceed 10 teaspoons a day (Ida Nadirah Ibrahim, 2019; Ministry of Health Malaysia, 2014). The added sugar is mostly of high-fructose corn syrup and can potentially leads to risk of liver and heart disease, weight gain, obesity or related comorbidities, metabolic disease, certain cancers, skin problems and diabetes (Kubala, 2018; Lobo, 2019; Min et. al., 2017). Considering that Malaysia has the highest rate of diabetes and obesity in Asia region, the Malaysian Medical Association president Dr. N Ganabaskaran advised Malaysians to be careful with sugar intake as the best way to control this craze is self-awareness on negative effects of BMT (Iylia Adreena, 2019; Nurul Azwa Aris, 2019).

2.3 THEORETICAL FRAMEWORK

The socio-demographic data in this study included age, gender, ethnic origin, program, and faculty of study. The variables to be surveyed include the prevalence, BMT consumption pattern and knowledge on BMT and its health effects. Health Belief Model (HBM) is utilized as the framework in planning the study.

The details are illustrated as in Diagram 2.1.

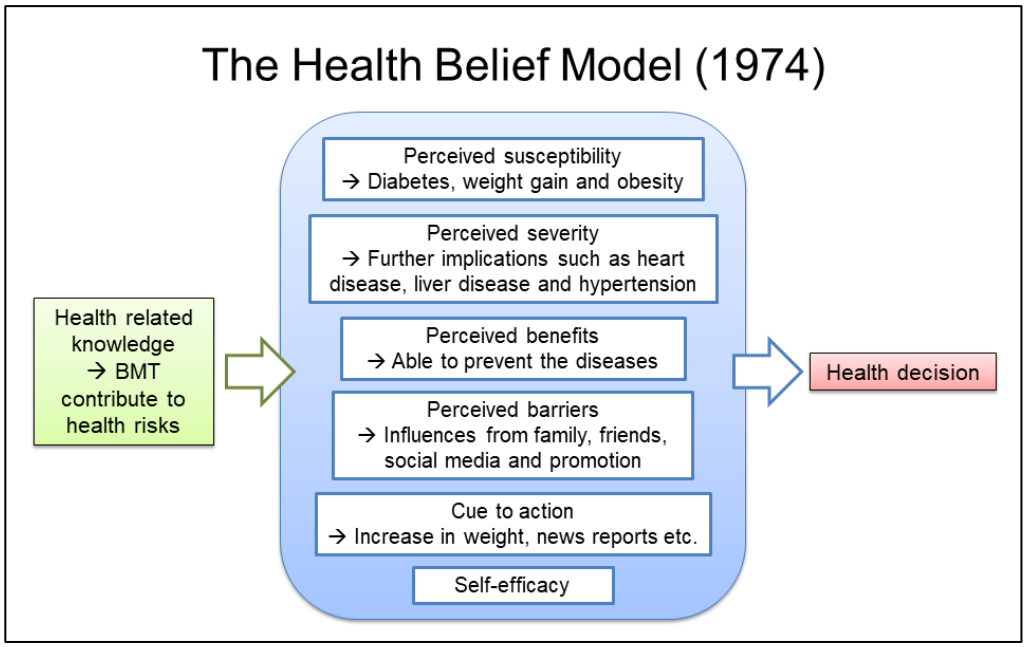


Diagram 2.1: Health Belief Model (Rosenstock, 1974)

HBM was developed by a group of social scientists – Rosenstock, Hochbaum, Kegeles and Leventhal in between 1950 and 1960. It was first introduced as a complete model in 1974 (Rosenstock, 1974). The model proposes a person is more likely to adopt the health behaviours if he believed in the personal threat of a disease and the effectiveness of the recommended health actions. There are six constructs of HBM: perceived susceptibility, perceived severity, perceived

benefits, perceived barriers, cue to action and self-efficacy. These constructs are closely related to and affect the adoption and decision of behaviour of an individual (Rosenstock, 1974). In this study, the suggestion was that an individual with BMT-related knowledge can determine the variables, develop adequate self-efficacy and come to a health decision.

2.4 SUMMARY

Literature review showed there has been a rising demand of BMT in Malaysia and the main consumer is young adult or university student. It is also clear that BMT is not a healthier choice compared to other sugary beverages. Its frequent and long-term consumption can lead to risk of health problems such as diabetes, obesity, heart disease and skin problems. HBM was integrated to help conceptualizing the study and determine sequence of the variables in this study.

CHAPTER THREE

METHODOLOGY

CHAPTER 3: METHODOLOGY

3.0 CHAPTER OVERVIEW

Chapter 3 comprises of research design, study setting, population, sample, sampling, variables, instruments, validity and reliability, pilot study, data collection procedure and ethical consideration.

3.1 RESEARCH DESIGN

This study is a descriptive survey. The purpose of this research design is to observe, describe, and document the aspects of a situation or phenomenon accurately and systematically (McCombes, 2019a; Polit and Beck, 2018). Moreover, utilizing this design can answer what, when, where, who and how questions under circumstances that the researcher does not control or manipulate any of the variables, but only observe or measure them (McCombes, 2019a). Thus, it is suitable to be used in this study to determine the BMT consumption patterns without manipulation of any variables.

Survey method was chosen instead of observational and case study. Through this method, the researcher can frame appropriate questions to obtain a large number of needed information in terms of characteristics, preferences, opinions, or beliefs (McCombes, 2019a; Polit and Beck, 2018). Survey in the form of questionnaire was applied to this study. The questionnaires were distributed in-person for the researcher to screen the participants to fulfil the inclusion criteria (McCombes, 2019b).

Diagram 3.1 showed the conceptual framework of this whole study.

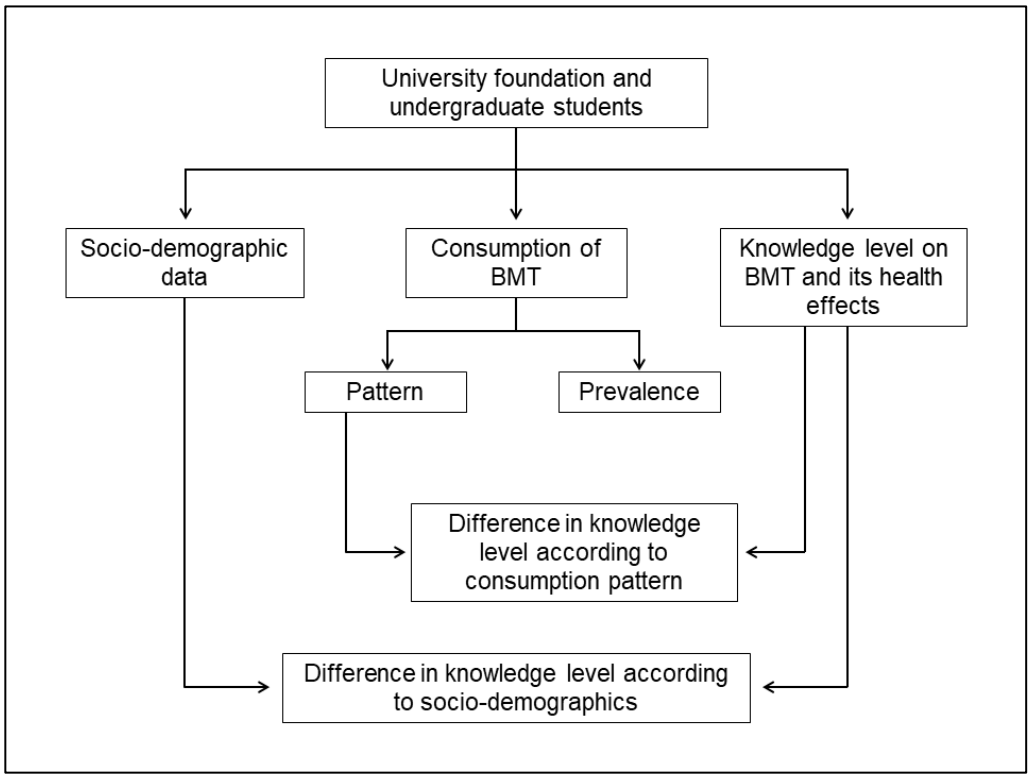


Diagram 3.1: Conceptual Framework

3.1.1 Setting of The Study

The study took place in a private university in Kajang.

3.1.2 Population

3.1.2.1 Target Population

Main targeted population was the university students in a private university, Kajang.

3.1.2.2 Accessible Population

Accessible population were university students who are pursuing foundation or undergraduate course in a private university in Kajang, available and consented to answer the questionnaire at the time of survey.

3.1.2.3 Sample

Samples included in this study are university students, who aged 18 and above and pursuing foundation or undergraduate course in a private university, Kajang.

3.2 VARIABLES

Variables of this study are: (1) socio-demographics, (2) BMT consumption pattern, and (3) knowledge level on BMT and its health effects.

3.3 SAMPLING

3.3.1 Method

Non-probability convenience sampling method was used in selecting participants for this study. This sampling method is convenient, inexpensive and time-saving to gather data in a survey study as the participants selected are the ones who happen to be the most accessible to the researcher. It is appropriate in collecting initial data to develop an understanding regarding the group (McCombes, 2019c).

3.3.2 Sample Size

The calculation of sample size in this study was done using Cochran's formula developed in 1963 (Singh and Masuku, 2014). The formula is as shown:

$$N = \frac{(Z_{1-\alpha})^2 \, P(1-P)}{e^2}$$

$Z_{1-\alpha}$ = Confidence interval of 1.96,

P = Prevalence from previous study (Sakdapanichkul, 2018),

e = desired level of precision at 0.05.

Hence with the formula,

$$N = \frac{(1.96)^2 \, 0.675 \, (1-0.675)}{0.05^2}$$

N = 337 + 0.2 (337)

N = 404

An attrition rate of 20% was added to *N* in case that the participants do not respond fully to the questionnaire. Therefore, the final sample size is 404 participants.

3.3.3 Sampling Criteria

3.3.3.1 Inclusion Criteria

The samples must be current university students, who aged 18 and above and pursuing foundation or undergraduate course in a private university in Kajang.

3.3.3.2 Exclusion Criteria

Individuals who refused to participate and postgraduate students were excluded from the study.

3.4 INSTRUMENT

A questionnaire titled 'Beverage Intake Questionnaire (BEVQ-15)' was adapted as a tool in questionnaire planning (Hedrick et. al., 2012). Request for permission to use the questionnaire was sent through e-mailing of formal letter and the author replied with attached scoring system to ease the result generation (Appendix A). The questions were modified to fit better for the purpose of this study. More related questions were added according to the literature review and to answer the research questions. The modified questionnaire used as the research instrument (Appendix B) was sent to one internal lecturer and external reviewer for content validation.

The questions were divided into three sections: Section A (Socio-demographic data), Section B (BMT consumption pattern), and Section C (Knowledge level on BMT and its health effects).

3.4.1 Section A: Socio-Demographic Data

Section A comprised of four close-ended questions and two short-answer questions related to the participants' socio-demographic data including date of birth, age, gender, ethnic origin, program, and faculty of study.

3.4.2 Section B: BMT Consumption Pattern

Prior to answering this section, the participants were asked whether they consume BMT or not. Those who do not consume BMT were directed to Section C whereas those who consume proceeded with this section. The result here answered the prevalence of BMT consumption as stated in Research Question 1.

Section B has six close-ended questions to assess the common BMT consumption pattern such as duration of consuming BMT, frequency, influencing factor, preferred hour to consume, choices of cup size and sugar level among the participants. The result from this section answered to Research Question 2.

3.4.3 Section C: Knowledge Level on BMT and Its Health Effects

Section C has close-ended questions to assess the participants' knowledge on BMT and its health effects. The participants were asked to identify the sugar and calorie content in one standard cup (500ml with 100% sugar level) of BMT, and also health problems that could occur with long-term and frequent BMT consumption such as diabetes, obesity, heart disease, liver disease and certain cancers. The final result contributed to answer Research Question 3.

3.4.4 Validity and Reliability

The original questionnaire 'Beverage Intake Questionnaire (BEVQ-15)' was determined to possess the ability to provide accurate and reliable information with Cronbach Alpha value above 0.99 (Hedrick et. al., 2012). The modified questionnaire was sent to one internal lecturer and one external reviewer and content validation was obtained (Appendix C).

3.4.5 Pilot Study

Pilot study was carried out from 24 to 26 February 2020 after obtaining ethical approval and questionnaire validation. It served to allow the researcher to assess the whole data collection process, the feasibility of questionnaire, and to foresee and solve any problems that may be encountered during the actual study.

The subjects for pilot study were calculated by 10% from sample size, thus a total of 40 participants were selected. They owned the same inclusion criteria as in the actual study which they are university students who aged 18 or above, and pursuing foundation or undergraduate course in a private university in Kajang. These subjects would not be included in the actual study. The researcher had informed these participants to reject the offer and explain that they had taken part if they are approached to participate in the actual study.

3.5 DATA COLLECTION PROCEDURE

Data collection for actual study was carried out from late February 2020 to early March 2020. The university students were approached after their classes and in the concourse area. They were given brief explanation regarding the purpose of study. Then, the printed questionnaire attached with consent form was administered to those who were willing to participate. Ten minutes was allowed for the completion of questionnaire. Finally, the researcher proceeded to data entry, analysis, interpretation, and discussion.

3.6 ETHICAL CONSIDERATION

Researcher ensured that the data collection process started after obtaining approval from university ethical committee board. The ethical approval application form and the official ethical approval letter are attached in Appendix D and Appendix E respectively. The researcher had obtained permission from all faculties to carry out the survey as attached in Appendix F. The data collected were kept confidential and the participants' privacy was protected from third party. Along the data collection process, the completed questionnaires were kept in a locked cabinet to avoid leakage of information. The related documents in the laptop or computer were encrypted with password that only the researcher can access.

3.6.1 Consent information

The consent form (Appendix G) was attached with the questionnaire. The participants were provided with adequate and comprehensive information regarding the study and given the freedom to decide their participation. They were also well-informed of their rights to withdraw from the study at any point of time.

3.7 SUMMARY

This descriptive survey took place in a private university in Kajang. Sample size calculated was 404. Participants were selected through convenience sampling, with application of inclusion and exclusion criteria. Self-administered questionnaires were distributed to collect data in answering research questions. The selection of methods is crucial to produce an accurate and significant data in a time-saving and efficient manner.

CHAPTER FOUR

DATA ANALYSIS AND RESULT

CHAPTER 4: DATA ANALYSIS AND RESULT

4.0 CHAPTER OVERVIEW

In this chapter, the statistical analysis used will be discussed. The results interpreted using Statistical Package for the Social Sciences Version 23 (IBM SPSS Statistics 23) will be presented in table and discussed further.

4.1 TYPES OF ANALYSIS

4.1.1 Descriptive Analysis

The data are presented in frequency and percentage. These data included socio-demographic data, prevalence of BMT consumption, BMT consumption pattern, distribution of knowledge level and distribution of correct and incorrect answers for each question in Section C of the questionnaire assessing the knowledge level. Specific objectives 1, 2 and 3 were achieved with this analysis:

1) To determine the prevalence of BMT consumption,
2) to determine the BMT consumption pattern, and
3) to determine the knowledge level on BMT and its health effects among the participants.

4.1.2 Inferential Analysis

Chi-square test was used to achieve specific objectives 4 and 5:

4) To determine whether there is association between knowledge level on BMT and its health effects and socio-demographic variables, and
5) to determine whether there is association between knowledge level on BMT and its health effects and consumption pattern among participants.

The knowledge level on BMT and its health effects were tested among participants of different socio-demographic variables and consumption patterns. This knowledge level was analyzed through ten questions in Section C. Each correct answer contributes to one point, a perfect mark will be ten. The points which represented the respondents' overall knowledge were then categorized into two – poor (0 to 5) and good (6 to 10) knowledge.

4.2 STATISTICAL DATA PROCESSING AND ANALYSIS

Researcher distributed 404 questionnaires and received back 404. The response rate was 100%. After data cleaning, it was found that 21 questionnaires were incomplete and made 5.2% as missing data. The final count of participants eligible for the study was 383 (94.8%). Descriptive analysis and chi-square test were used respectively to answer the research questions. Significance level was set at $p<0.05$. The results are as shown below.

4.3 RESULTS

4.3.1 Descriptive Analysis Results

4.3.1.1 Socio-Demographic Data of Respondents

Table 4.1: Socio-demographic data of respondents, N=383

Socio-demographic	Frequency (%)
Age	
18 – 20	136 (35.5)
21 – 23	213 (55.6)
>23	34 (8.9)
Gender	
Male	164 (42.8)
Female	219 (57.2)
Ethnic origin	
Chinese	355 (92.7)
Malay	4 (1.0)
Indian	20 (5.2)
Others	4 (1.0)
Program	
Foundation	90 (23.5)
Undergraduate	293 (76.5)
Faculty	
FAM	61 (15.9)
FMHS	87 (22.7)
FCI	56 (14.6)
LKCFES	90 (23.5)
CFS	89 (23.2)

*FAM = Accountancy and Management, FMHS = Medicine and Health Sciences, FCI = Creative Industries, LKCFES = Lee Kong Chian Faculty of Engineering and Science, CFS = Centre for Foundation Studies

Table 4.1 showed the respondents aged 21 to 23 made up the biggest portion (55.6%) for this study. There were more female respondents (57.2%) than male respondents (42.8%). Around 93% of the respondents are Chinese, whereas Malay and respondents of other ethnic origin only took up 2%. Most of the respondents (76.5%) are from undergraduate program, with majority studying

in LKCFES (23.5%), followed by CFS (23.2%), FMHS (22.7%), FAM (15.9%), and finally FCI (14.6%).

4.3.1.2 Prevalence of Bubble Milk Tea (BMT) Consumption

Table 4.2: Prevalence of bubble milk tea (BMT) consumption, N=383

Prevalence of bubble milk tea consumption	**Frequency (%)**
Do you ever drink BMT?	
Yes	356 (93.0)
No	27 (7.0)

Table 4.2 showed the prevalence of respondents consuming BMT. Out of all, 93.0% stated that they had consumed BMT whereas 7.0% of them did not. This showed a high prevalence rate of BMT consumption among the university students.

4.3.1.3 Distribution of BMT Consumption Pattern

Table 4.3: Distribution of BMT consumption pattern, N=356

Bubble milk tea consumption pattern	Frequency (%)
How long have you been taking BMT?	
Less than 6 months	87 (24.4)
More than 6 months	48 (13.5)
More than 1 year	85 (23.9)
More than 3 years	136 (38.2)
What/Who influences you to drink BMT?	
Family	32 (9.0)
Friends	158 (44.4)
Social media	17 (4.8)
Self-initiative	107 (30.1)
Promotion or beneficial program	28 (7.9)
Location of store or level of convenience to get BMT	14 (3.9)
How often do you take BMT for the past 3 months?	
Less than 1 cup per week	262 (73.6)
1 cup per week	62 (17.4)
2 – 5 cups per week	29 (8.1)
6 -9 cups per week	2 (0.6)
10 cups or more per week	1 (0.3)
What is the size of cup you usually choose?	
Regular	264 (74.2)
Large	92 (25.8)
What is the sugar level you usually choose?	
0%	18 (5.1)
25%	73 (20.5)
50%	168 (47.2)
75%	17 (4.8)
100%	80 (22.5)
When would you most probably drink BMT?	
Breakfast time	1 (0.3)
Lunch time	45 (12.6)
Snack or tea time	278 (78.1)
Dinner time	32 (9.0)

Table 4.3 illustrated that most of the respondents (38.2%) had consumed BMT for more than 3 years. Majority of the respondents stated that their BMT consumptions were influenced by friends (44.4%) and the least influenced by

location of store or level of convenience getting BMT (3.9%). Nevertheless, over 70% of the respondents took less than one cup of BMT per week. As for the size of cup chosen, 74.2% of them usually chose regular rather than large. Regarding the sugar level, majority (47.2%) of the respondents usually chose 50% sugar level, whereas the most popular time for the respondents to consume BMT is during snack or tea time (78.1%).

4.3.1.4 Distribution of Answers on BMT and Its Health Effects

Table 4.4: Distribution of answers on BMT and its health effects, N=383

Knowledge on BMT and its health effects	**Distribution of answers in Frequency (%)**	
	Correct	**Incorrect**
Sugar content of BMT	142 (37.1)	241 (62.9)
Calorie content of BMT	152 (39.7)	231 (60.3)
Tooth erosion	264 (68.9)	119 (31.1)
Weight gain	363 (94.8)	20 (5.2)
Obesity	353 (92.2)	30 (7.8)
Diabetes	367 (95.8)	16 (4.2)
Heart disease	201 (52.5)	182 (47.5)
Liver disease	121 (31.6)	262 (68.4)
Skin problems	175 (45.7)	208 (54.3)
Certain cancers	133 (34.7)	250 (65.3)

There were ten questions in Section C to assess the knowledge of respondents on BMT and its health effects. Over 60% of the respondents answered incorrectly for the sugar and calorie content of BMT, indicating more than half of the respondents had no idea of the sugar and calorie content in one standard cup of BMT. The data revealed that diabetes, weight gain and obesity are well-known health effects of frequent and long-term BMT consumption with an accurate rate of over 90%. Other than these, tooth erosion and heart disease are the health effects acknowledged by over half of the respondents. However,

liver disease, skin problems and certain cancers are less recognized by the respondents.

4.3.1.5 Distribution of Knowledge Level Among Respondents

Table 4.5: Distribution of knowledge level among respondents, N=383

Knowledge category	**Frequency (%)**
Poor	161 (42.0)
Good	222 (58.0)

From Table 4.5, the number of respondents with good knowledge (58.0%) slightly outnumbered those with poor knowledge (42.0%).

4.3.2 Inferential Analysis Results

4.3.2.1 Relationship Between Knowledge Level on BMT and Its Health Effects and Socio-Demographic Variables

Table 4.6: Relationship between knowledge level on BMT and its health effects and socio-demographic variables, N=383

Socio-demographic	Knowledge level on BMT and its health effects, n (%)		χ^2	df	POR	*p* value
	Poor	Good				
Age						
18 – 20	69 (50.7%)	67 (49.3%)	6.565	2	NA	0.038*
21 – 23	79 (37.1%)	134 (62.9%)				
>23	13 (38.2%)	21 (61.8%)				
Gender						
Male	84 (51.2%)	80 (48.8%)	9.926	1	1.936	0.002*
Female	77 (35.2%)	142 (64.8%)				
Ethnic origin						
Chinese	146 (41.1%)	209 (58.9%)	3.350	3	NA	0.341
Malay	2 (50.0%)	2 (50.0%)				
Indian	12 (60.0%)	8 (40.0%)				
Others	1 (25.0%)	3 (75.0%)				
Program						
Foundation	46 (51.1%)	44 (48.9%)	3.976	1	1.618	0.046*
Undergraduate	115 (39.2%)	178 (60.8%)				
Faculty						
FAM	27 (44.3%)	34 (55.7%)	12.584	4	NA	0.013*
FMHS	23 (26.4%)	64 (73.6%)				
FCI	25 (44.6%)	31 (55.4%)				
LKCFES	40 (44.4%)	50 (55.6%)				
CFS	46 (51.7%)	43 (48.3%)				

Chi-square test was performed, $p<0.05$, n = frequency, df = degree of freedom, POR = prevalence odds ratio, * as significant results, FAM = Accountancy and Management, FMHS = Medicine and Health Sciences, FCI = Creative Industries, LKCFES = Lee Kong Chian Faculty of Engineering and Science, CFS = Centre for Foundation Studies

From Table 4.6, the prevalence of good knowledge is the highest (62.9%) among respondents aged 21 to 23 years old with statistical significance of p=0.038.

Female participants have a higher percentage of good knowledge (64.8%) compared to males (48.8%) and this result is statistically significant with p=0.002.

For ethnicity, the result is not statistically significant, indicating that ethnicity does not affect the respondents' knowledge level on BMT and its health effects.

Nevertheless, result showed undergraduates with good knowledge (60.8%) is more than foundation students (48.9%) and is statistically significant at p=0.046.

Among the faculties, FMHS respondents apparently have good knowledge with a high percentage of 73.9% than those of other faculties along with statistical significance of p=0.013.

In overall, knowledge level on BMT and its health effects was shown to have association with majority of the socio-demographic variables – age, gender, program and faculty of study, except ethnicity. Hence, alternative hypothesis 1 (HA_1) was accepted and proved there is significant association between knowledge level on BMT and its health effects and socio-demographic variables among the participants.

4.3.2.2 Relationship Between Knowledge Level on BMT and Its Health Effects and Consumption Pattern

Table 4.7: Relationship between knowledge level on BMT and its health effects and consumption pattern, N=356

BMT consumption pattern	Knowledge level on BMT and its health effects, n (%)		χ^2	df	POR	*p* value
	Poor	Good				
How long have you been taking BMT?						
Less than 6 months	38 (43.7%)	49 (56.3%)	10.715	3	NA	0.013*
More than 6 months	24 (50.0%)	24 (50.0%)				
More than 1 year	46 (54.1%)	39 (45.9%)				
More than 3 years	45 (33.1%)	91 (66.9%)				
What/Who influences you to drink BMT?						
Family	19 (59.4%)	13 (40.6%)	6.793	5	NA	0.236
Friends	71 (44.9%)	87 (55.1%)				
Social media	7 (41.2%)	10 (58.8%)				
Self-initiative	43 (40.2%)	64 (59.8%)				
Promotion or beneficial program	8 (28.6%)	20 (71.4%)				
Location of store or level of convenience to get BMT	5 (35.7%)	9 (64.3%)				
How often do you take BMT for the past 3 months?						
Less than 1 cup per week	113 (43.1%)	149 (56.9%)	8.923	4	NA	0.063
1 cup per week	30 (48.4%)	32 (51.6%)				
2 – 5 cups per week	7 (24.1%)	22 (75.9%)				
6 -9 cups per week	2 (100.0%)	0 (-)				
10 cups or more per week	1 (100.0%)	0 (-)				

What is the size of cup you usually choose?						
Regular	111 (42.0%)	153 (58.0%)	0.362	1	0.864	0.547
Large	42 (45.7%)	50 (54.3%)				
What is the sugar level you usually choose?						
0%	4 (22.2%)	14 (77.8%)	16.780	4	NA	0.002*
25%	24 (32.9%)	49 (67.1%)				
50%	68 (40.5%)	100 (59.5%)				
75%	9 (52.9%)	8 (47.1%)				
100%	48 (60.0%)	32 (40.0%)				
When would you most probably drink BMT?						
Breakfast time	0 (-)	1 (100.0%)	1.219	3	NA	0.748
Lunch time	20 (44.4%)	25 (55.6%)				
Snack or tea time	121 (43.5%)	157 (56.5%)				
Dinner time	12 (37.5%)	20 (62.5%)				

Chi-square test was performed, $p<0.05$, n = frequency, df = degree of freedom, POR = prevalence odds ratio, * as significant results

According to the analysis shown in Table 4.7, respondents who have consumed BMT for more than 3 years have prevalent good knowledge (66.9%). This result was statistically significant with $p=0.013$.

Next, the coverage of good knowledge is the greatest (71.4%) for those who were influenced by promotion or beneficial program into drinking BMT, yet this result is not statistically significant with $p>0.05$.

Respondents who consumed 2 to 5 cups of BMT per week for the last three months appeared to have good knowledge (75.9%). However, this result is not statistically significant with $p=0.063$.

Result also showed those who usually chose regular cup size have better knowledge (58.0%) but with $p>0.05$, it is not statistically significant.

Meanwhile for the sugar level, the prevalence of good knowledge is the highest (77.8%) among respondents who usually chose 0% sugar level. This analysis is statistically significant with $p=0.002$.

Finally, respondents who preferred to consume BMT at breakfast hour were shown to have better knowledge (100.0%). However, this result is not statistically significant ($p>0.05$).

Concluded from the analysis above, knowledge level on BMT and its health effects was shown to have significant association with only minority of the consumption patterns in this study which are the duration of BMT consumption and choice of sugar level. The knowledge was not associated with the influencing factor, frequency, cup size choice and preferred hour to drink BMT as $p>0.05$. Therefore, null hypothesis 2 ($H0_2$) was accepted as there is no significant association between knowledge level on BMT and its health effects and consumption pattern among participants.

4.4 SUMMARY

The analysis had shown the prevalence of BMT consumption was high among the university students, with majority of them being a long-term consumer (more than 3 years). Peer influence is a great factor contributing to the purchasing behavior. Most were likely to consume BMT less than one cup per week during snack or tea time. BMT in half sugar and regular cup size was the popular preference for the respondents in this study.

Diabetes, weight gain and obesity were highly acknowledged as the health effects of frequent and long-term consumption of BMT. Nevertheless, the respondents showed poor knowledge on sugar and calorie content of BMT and less recognition on other health effects such as liver disease, skin problems and certain cancers.

Among different socio-demographic variables, it was revealed that majority of those aged 21 to 23, female, pursuing undergraduate program, and studying FMHS showed good knowledge on BMT and its health effects. Besides, the prevalence of good knowledge was higher among respondents who had consumed BMT for more than 3 years and usually chose 0% sugar level.

CHAPTER FIVE

DISCUSSION AND RECOMMENDATION

CHAPTER 5: DISCUSSION AND RECOMMENDATION

5.0 CHAPTER OVERVIEW

In this chapter, the researcher will discuss findings related to research questions and specific objectives. The findings will also be interpreted, supported and compared with previous studies or relevant information, along with the implications of study. The limitations of this study and recommendations for future studies will be discussed at the end of this chapter.

5.1 DISCUSSION OF FINDINGS

There were limited studies being done on BMT not only in Malaysia, but also in other countries. Thus, the following discussion will include studies made on sugar-sweetened beverage (SSB) as well since BMT could be validated as SSB due to its sugar and calorie content which exceeded the 2015 U.S. Dietary Guidelines Advisory Committee's recommendation for added sugar intake (Min et. al., 2017).

5.1.1 BMT Consumption

5.1.1.1 BMT Consumption Prevalence

From this study, the prevalence of BMT consumption among the university students is as high as 93.0%. This finding is expected as the accessibility to BMT boosted with the mushrooming of BMT shops and vendors in the area. Moreover, BMT is originally designed to attract younger consumers with its 'viral food' trends and the primary market is college students (Lee and Vega,

2014; The ASEAN Post, 2019). Although there was no study pertaining BMT being done in Malaysia, this finding could be strengthened by a study done in Manila which emphasized that as much as 95% of the participated university students have tried BMT (Alfafara et. al., 2012). Moreover, Schafer (2019) revealed that the consumption of sugar-sweetened beverage (SSB) is higher in younger population (age 18 to 29) compared to older age group. This aligned with the finding of this study as the respondents involved are aged 18 to 26 years old, which falls in the same age category.

5.1.1.2 BMT Consumption Pattern

Majority of the respondents (38.3%) claimed that they have consumed BMT for more than 3 years and the top influencing factor is friends (44.4%). This result was supported by a previous study proving that 58% of its participants knew about BMT through friends (Alfafara et. al., 2012). This suggested peer influence is the main attracting factor of SSB consumption. Over 70% of the respondents took less than one cup of BMT per week. This result collided with the finding of Alfafara et. al.'s study which stated most of the respondents took BMT once a week. However, it could not be denied that the difference in geographical status, cultures, dietary habits or availability might affect the outcome. Almost 75% of them usually chose regular cup size and close to 48% of them preferred to take BMT in half-sugar level. These two preferences on BMT were not studied or surveyed before, thus they can serve as new findings and act as baseline for future related research. The favourite time of drinking

BMT is during snack or tea time. This is consistent with Lee and Vega (2014) finding that the participants chose milk tea as snacks due to the hot weather.

5.1.2 Knowledge Level on BMT and Its Health Effects

5.1.2.1 Knowledge Level on Sugar and Calorie Content in BMT

In this study, the researcher found out that only around 60% of the respondents answered the sugar and calorie content in one standard cup (500ml with 100% sugar level) of BMT correctly. This analysis is similar with the studies done by Warner and Ha (2017), Hala AL-Otaibi (2017) and Miller et. al. (2014). The study done in United Kingdom claimed that only 59.6% of students had adequate knowledge on the SSBs consumed (Warner and Ha, 2017). This result also aligned with the data of 68.8% of students did not have adequate knowledge about the kilocalories content of SSB in the study done in Saudi Arabia (Hala AL-Otaibi, 2017). Moreover, there was a study in Australia found out that only 34% of respondents could give correct response regarding the sugar content in a can of soft drink, thus proving further that the younger population nowadays does not possess adequate knowledge on the sugary beverages they consumed (Miller et.al., 2014).

5.1.2.2 Knowledge Level on BMT-related Health Effects

For the health effects of frequent and long-term BMT consumption, diabetes, obesity and weight gain were the three most recognized health effects with being acknowledged by over 90% of respondents. This analysis is further

evidenced with the study finding of Warner and Ha (2017) that showed diabetes, obesity and weight gain are the most identified perceived health risks of SSB consumption. Besides, Miller et. al. (2014) surveyed that the knowledge of respondents towards diabetes and weight gain as health effects of SSB consumption was as high as 61% and 43% respectively. Diabetes, overweight and obesity always top the list of non-communicable diseases in Malaysia. It was even reported that Malaysia has the highest rate of diabetes in Asia region. Moreover, these health effects have always been highlighted by Ministry of Health (MOH) in various health campaigns to promote public awareness. Tooth erosion and heart disease were recognized by over half of the respondents in this study. Tooth decay is a common concern especially by parents to their children consuming a lot of sweet stuffs or food and drink high in sugar content. According to Warner and Ha (2017), tooth decay is the third most recognized health risk following diabetes, obesity and weight gain. However, heart disease was the least recognized, evidencing there might be difference in knowledge due to uncertain factors. Lastly, skin problems, liver disease and certain cancers are less recognized. Skin problems and acne was proven as less recognized perceived health risk in Warner and Ha's study (2017), yet liver disease and certain cancers are not being mentioned or surveyed as health risk in any of the related studies. This could be due to lack of publicity of relevant information to public, hence in future, this kind of data should be included in health promotion campaign as well.

5.1.2.3 Overall Distribution of Knowledge Level

It was shown in this study that the respondents with good knowledge was of higher percentage than those with poor knowledge. This result was consistent with a study finding done in Malaysia. Norliza-Ahmad et. al. (2019) found out through their study that majority of the university students had a high level of knowledge about the SSB and physical and health hazards caused by SSB consumption.

5.1.3 Difference in Knowledge Level on BMT and Its Health Effects

5.1.3.1 Difference in Knowledge Level on BMT and Its Health Effects According to Socio-demographic

According to the analyzed data, most respondents aged 21 to 23 years old showed good knowledge. There might be a possibility that age has influence on knowledge as Warner and Ha (2017) found out that participants with increased age had more adequate knowledge. Meanwhile, female respondents in this study tended to know better than the males. The respondents who are studying undergraduate program and those who are from Faculty of Medicine and Health Sciences (FMHS) scored good knowledge than foundation students and of other faculties. As suggested in Hala AL-Otaibi's study, females had better knowledge than males. Besides, it was shown in the same study that fourth year students were more knowledgeable than the others. This could mean that knowledge will increase with the advancement in studies, thus could support that students taking undergraduate program will know better than foundation students. Still, there were no studies available to evident that students of health

science stream will have better knowledge than the others, yet this result was understandable due to the different extent of exposure to health problems and linking factors.

5.1.3.2 Difference in Knowledge Level on BMT and Its Health Effects According to Consumption Pattern

Majority of the respondents who have consumed BMT for more than 3 years had shown good knowledge in this study. When the consumers are making decision to purchase something, they will go through a process called 'information search' whereby they will collect details regarding the products and analyze the purchase (Jaideep, n.d.). Thus, the knowledge on the product could differ among new and old users as information accumulated over time. Next, more of those who usually chose 0% sugar level while purchasing BMT scored good knowledge compared to the others. According to Sakdapanichkul (2019), health consciousness does impact the consumers' intention to buy extremely sweet beverages. This proposed that the consumers with good health consciousness can approach healthier dietary habits by reconsidering the choices of sugar level when purchasing SSB like BMT.

5.2 IMPLICATIONS OF STUDY

From this study, it is obvious that there is a high prevalence of BMT consumption but only an average level of knowledge on BMT and its health effects among the university students. With the facts showing that a cup of

500ml BMT can contain up to 102.5grams or 20.5 teaspoons of sugar, a lack of knowledge on how much sugar and calorie go into each cup of BMT could mislead people into thinking it is a healthier choice compared to other sugary beverages due to milk, tea or sometimes brown sugar as an ingredient in it (Jalelah Abu Baker, 2019). The community should be advised to be cautious on consuming either BMT or SSB as both of them contain an amount of sugar content exceeding the Malaysia Ministry of Health (MOH)'s recommendation which was less than 10 teaspoons or 50grams of sugar per day. WHO (2015) even suggested that further reduction of sugar intake to 25grams or 6 teaspoons per day would provide additional health benefits. Excess sugar intake stands for excess energy intake, and excess energy intake over a period of time can increase body weight and cause obesity. Moreover, overweight and obesity further lead to risk of getting other chronic diseases such as diabetes, hypertension, stroke and heart disease (MOH, 2014). All these health risks and complications are avoidable and controllable given that the citizens have an adequate knowledge on dietary intake especially on sugar amount, and the best way to control this BMT craze is public self-awareness on the negative effects.

Prevention is always better than cure. Health promotion serves as the first line of disease prevention and control (MOH, 2010). The knowledge and awareness of the public can be strengthened effectively if media, social marketing, related authorities and the citizens share the responsibility in combating with the situation. Health promotion can take place in various circumstances, whether it is through social media, school or workplace, and in community (MOH, 2010). Campaigns transmitting useful and important information regarding healthy

lifestyle and dietary habits must be encouraged. Besides, information on BMT such as nutrition facts must be included in those campaigns since it is a new trend and the public may not have well exposure to it yet. The public must also be educated on the linkage between sugar consumption and occurrence of non-communicable diseases (NCDs). Most of the time, the citizens especially the students lost interest in joining such campaigns because they felt that the contents are all about the same and lack of creativity. Hence the authority must ensure that the information is of the latest and new content should be introduced in a more innovative way such as using board games or prize-exchange terms to attract the public's attention (MOH, 2010). Effective health promotion can improve quality of life and reduce healthcare cost burden of the country.

Other than health promotion, research and surveillance have their vital roles in raising and creating awareness too particularly in this case where there is a lack of surveys and studies being done on BMT or even SSB consumption and knowledge in Malaysia (MOH, 2010). This might be the factor that the Malaysians are showing less care and being all free in purchasing BMT or SSB. They might not know the sugar content in a cup of BMT or a can of soft drink; they might overlook or neglect the MOH's recommendation for sugar intake; or they might ignore all the warning signs and insist on consuming sugary beverages. There is always an uncertainty as the consumers are likely to underestimate the negative impacts of their choices (Miller et. al., 2014). Hence, it would be great if the Malaysian researchers are able to break this paucity of studies and develop more useful data in helping with public awareness creation.

5.3 LIMITATION AND RECOMMENDATION FOR FUTURE RESEARCH

Although this study had achieved the sample size calculated, there are a few limitations of the study. First, the questionnaire used in this study was self-administered by the researcher. There was a risk of recall bias that might contribute to inaccurate result. Next, majority of the participants were of Chinese ethnic, thus the result could not be generalized to represent the whole population in Malaysia which is made up of various ethnicity.

Future studies are recommended to conduct a correlational study in order to determine the causal relationship between the socio-demographic, consumption patterns and knowledge level on BMT and its health effects. This can allow a clearer picture for the planning of interventions to counter the root problems. The researcher can add in interview sessions instead of purely questionnaire to minimize the risk of recall bias as the researcher is able to direct the participants in comprehending and answering the questions more accurately. Furthermore, a study population involving a balanced distribution among different ethnics in Malaysia is encouraged to promote the generalization of result.

5.4 CONCLUSION

The prevalence of BMT consumption among university students was as high as 93.0% and peer influence is the main contributing factor. Less than 40% of the participants were aware of the accurate sugar and calorie content in one standard cup of BMT. Nevertheless, majority of them were still able to identify health risks of frequent and long-term BMT consumption especially diabetes, weight gain and obesity. There were differences in knowledge level according to socio-demographic and consumption patterns. The prevalence of good knowledge was high for participants aged 21 to 23, female, pursuing undergraduate program and taking FMHS courses. It was also found out that the long-term consumers (>3 years) who usually chose 0% sugar level when purchasing BMT had prevalent good knowledge.

There is a necessity to organize awareness campaigns to improve the consumers' knowledge on sugar, calorie content in beverages and the health impacts of excess sugar intake. Education on how to link the sugar consumption with occurrence of NCDs should be focused on as well so that the consumers can improve their dietary styles as first line of disease prevention. The collaboration between MOH and university is also encouraged for the students to involve in health promotion and increase self-awareness.

REFERENCES

Alfafara, B. M., Canlas, P., Dimalibot, A., Lim, M., Salvatierra, J. and Valerio, C., 2012. *Popularity of the drink Milk Tea among College of Fine Arts Students in UST and which brand do they prefer.* [online] Available at: <https://teafever.blogspot.com/2012/03/popularity-of-drink-milk-tea-among.html> [Accessed 31 March 2020].

Blue Brickz, 2019. *Malaysia Property: 3 Hot "Bubble Tea Streets" That Are Blowing Up Now!* [online] Available at: <https://bluebrickz.com/property/malaysia-property-rental-is-the-bubble-tea-trend-a-real-estate-booster-3-hot-bubble-tea-streets-that-are-blowing-up-now/> [Accessed 2 November 2019].

Carey, E., 2017. *What Is the Nutritional Value of Boba?* [online] Available at: <https://www.healthline.com/health/food-nutrition/nutritional-value-of-boba> [Accessed 22 October 2019].

Centers for Disease Control and Prevention, 2017. *Get the Facts: Sugar-Sweetened Beverages and Consumption.* [online] Available at: <https://www.cdc.gov/nutrition/data-statistics/sugar-sweetened-beverages-intake.html> [Accessed 23 October 2019].

Chang, D., 2017. *Bubble tea: How did it start?* [online] Available at: <http://edition.cnn.com/travel/article/bubble-tea-inventor/index.html> [Accessed 21 October 2019].

Cox, 2019. *What is Depth of Knowledge?* [online] Available at: <https://www.thoughtco.com/what-is-depth-of-knowledge-2081726> [Accessed 23 October 2019].

Foong, L. M., 2019. *Boom or bust?: Malaysia's bubble tea scene approaches saturation point.* [online] Available at: <https://www.channelnewsasia.com/news/asia/boom-or-bust-malaysia-bubble-tea-saturation-11711138> [Accessed 21 October 2019].

Hala AL-Otaibi, 2017. Sugar Sweetened Beverages Consumption Behavior and Knowledge among University Students in Saudi Arabia. *Journal of Economics, Business and Management*, [e-journal] 5(4), pp. 173-176. Available through: ResearchGate <https://www.researchgate.net/publication/317560531_Sugar_Sweetened_Beverages_Consumption_Behavior_and_Knowledge_among_University_Students_in_Saudi_Arabia> [Accessed 30 March 2020].

Hedrick, V. E., Savla, J., Comber, D. L., Flack, K. D., Estabrooks, P. A., Nsiah-Kumi, P. A., Ortmeier, S. and Davy, B. M., 2012. Development of a Brief Questionnaire to Assess Habitual Beverage Intake (BEVQ-15): Sugar-Sweetened Beverages and Total Beverage Energy Intake. *J Acad Nutr Diet*, [e-journal] 112(6), pp. 840-849. Available through: PubMed Central <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3379009/> [Accessed 26 October 2019].

Ida Nadirah Ibrahim, 2019. *Health Ministry urges Malaysians to shun sickly sweet bubble tea.* [online] Available at: <https://malaysia.news.yahoo.com/health-ministry-urges-malaysians-shun-053410723.html> [Accessed 25 October 2019].

IGI Global, 2019. *What is Consumption Pattern.* [online] Available at: <https://www.igi-global.com/dictionary/social-media-engagement/55112> [Accessed 30 October 2019].

Ili Aqilah and Loh, I., 2019. *Back to being people's cup of tea.* [online] Available at: <https://www.thestar.com.my/metro/metro-news/2019/07/09/back-to-being-peoples-cup-of-tea> [Accessed 23 October 2019].

Iylia Adreena, 2019. *Govt To Start Monitoring Bubble Tea Phenomenon In Malaysia.* [online] Available at: <https://www.msn.com/en-my/foodanddrink/foodnews/govt-to-start-monitoring-bubble-tea-phenomenon-in-malaysia/ar-AAEPQqP> [Accessed 23 October 2019].

Jaideep, S., n.d.. *Top 5 Stages of Consumer Buying Process.* [online] Available at: <http://www.yourarticlelibrary.com/consumers/top-5-stages-of-consumer-buying-process/48596> [Accessed 31 March 2020].

Jalelah Abu Baker, 2019. *Sweeter than soda? The hidden sugars in bubble tea.* [online] Available at: <https://www.channelnewsasia.com/news/singapore/bubble-tea-sugar-content-sweeter-than-coke-soda-11063316> [Accessed 2 November 2019].

Khushbu Shah, 2016. *So what is bubble tea, exactly? Everything you need to know about the drink and boba balls.* [online] Available at: <https://www.mic.com/articles/152810/so-what-is-bubble-tea-exactly-everything-you-need-to-know-about-the-drink-and-boba-balls> [Accessed 21 October 2019].

Kubala, J., 2018. *11 Reasons Why Too Much Sugar Is Bad for You.* [online] Available at: <https://www.healthline.com/nutrition/too-much-sugar#section2> [Accessed 24 October 2019].

Lee, N. N. and Vega, A. T., 2014. Factors Affecting Consumers' Buying Behavior on Selected Milk Tea Stores Towards Obtaining Sustainability. *SPUQC Student Journal*, [e-journal] 9 (2), pp. 123-143. Available through: Google Scholar <https://ejournals.ph/article.php?id=6927> [Accessed 22 October 2019].

Liu, P. and Choi, M., 2018. *Bubble tea craze is a super sweet market for inventive Hong Kong entrepreneurs. But could this bubble burst?* [online] Available at: <https://www.scmp.com/business/companies/article/2163187/bubble-tea-craze-super-sweet-market-inventive-hong-kong> [Accessed 2 November 2019].

Lobo, C, 2019. *Is Bubble Tea Healthy?* [online] Available at: <https://www.livestrong.com/article/418232-is-bubble-tea-healthy/> [Accessed 22 October 2019].

McCombes, S., 2019a. *Descriptive research.* [online] Available at: <https://www.scribbr.com/methodology/descriptive-research/> [Accessed 24 November 2019].

McCombes, S., 2019b. *How to do survey research.* [online] Available at: <https://www.scribbr.com/methodology/survey-research/> [Accessed 24 November 2019].

McCombes, S., 2019c. *Understanding different sampling methods.* [online] Available at: < https://www.scribbr.com/methodology/sampling-methods/> [Accessed 25 November 2019].

Merriam Webster, 2019. *Bubble tea.* [online] Available at: <https://www.merriam-webster.com/dictionary/bubble%20tea> [Accessed 21 October 2019].

Miller, C., Wakefield, M., Braunack-Mayer, A., Roder, D., O'Dea, K., Ettridge, K. and Dono, J., 2019. Who drinks sugar sweetened beverages and juice? An Australian population study of behaviour, awareness and attitudes. *BMC Obesity*, [e-article] 6(1). Available through: BioMed Central <https://bmcobes.biomedcentral.com/articles/10.1186/s40608-018-0224-2> [Accessed 30 March 2020].

Ministry of Health Malaysia, 2010. *National Strategic Plan For Non-Communicable Disease.* [online] Available at: <https://www.moh.gov.my/moh/images/gallery/nspncd/NSPNCD.pdf> [Accessed 1 April 2020].

Ministry of Health Malaysia, 2014. *Facts About Sugar.* [online] Available at: <http://www.myhealth.gov.my/en/facts-about-sugar/> [Accessed 21 November 2019].

Ministry of Health Malaysia, 2015. *National Health & Morbidity Survey: Non-Communicable Diseases, Risk Factors & Other Health Problems.* [online] Available at: <http://iku.moh.gov.my/images/IKU/Document/REPORT/nhmsreport2015vol2.pdf> [Accessed 31 March 2020].

Min, J. E., Green, D. B., and Kim, L., 2017. Calories and sugars in boba milk tea: implications for obesity risk in Asian Pacific Islanders. *Food Science & Nutrition,* [e-journal] 5(1), pp. 38-45. Available through: UTAR Library Database <https://onlinelibrary.wiley.com/doi/full/10.1002/fsn3.362> [Accessed 23 October 2019].

Norliza-Ahmad, Muhammad Afiq-Md Zuki, Nur Azilah-Azahar, Khor, B. H., and Halimatus Sakdiah-Minhat, 2019. Prevalence and Factors Associated with Sugar-Sweetened Beverage Intake among Undergraduate Students in a Public University in Malaysia. *Pakistan Journal of Nutrition,* 18: 354-363.

Nurul Azwa Aris, 2019. *Bubble tea, a sweet but deadly brew?* [online] Available at: <https://www.freemalaysiatoday.com/category/nation/2019/07/22/bubble-tea-a-sweet-but-deadly-brew/> [Accessed 26 October 2019].

Polit, D. F. and Beck, C. T., 2018. *Essentials of Nursing Research: Appraising Evidence for Nursing Practice.* 9th ed. Philadelphia: Wolters Kluwer.

Reference.com, 2020. *What Does Sociodemographic Mean?* [online] Available at: <https://www.reference.com/world-view/sociodemographic-mean-cc3b7119d0e7aefe> [Accessed 23 October 2019].

Rosenstock, I. M., Hochbaum, G. M., Kegeles, S. S., and Leventhal, H., 1974. Historical Origins of the Health Belief Model. *Health Education Monographs,* 2(4), pp. 328-335.

Sakdapanichkul, C., 2018. *A Study of Factors Influencing the Purchase of High-Sugar-Content Beverages at the Tea-and-Coffee Stores in Thailand.* Master. Thammasat University. Available at: <http://ethesisarchive.library.tu.ac.th/thesis/2018/TU_2018_6002040126_10345_9997.pdf> [Accessed 25 November 2019].

Schafer, J., 2019. *Sugar- Sweetened Beverages: A Survey to Assess Adults Knowledge, Attitudes, and Consumption Patterns of Sugar-Sweetened Beverages.* Master. Minnesota State University. Available at: <https://cornerstone.lib.mnsu.edu/cgi/viewcontent.cgi?article=1911&context=etds> [Accessed 2 November 2019].

Singh, A. S. and Masuku, M. B., 2014. Sampling Techniques & Determination of Sample Size in Applied Statistics Research: An Overview. *International Journal of Economics, Commerce and Management,* [e-journal] 2(11). Available at: <http://ijecm.co.uk/wp-content/uploads/2014/11/21131.pdf> [Accessed 25 November 2019].

StoreHub, 2019. *How Did Bubble Tea Become So Popular?* [online] Available at: <https://www.storehub.com/blog/bubble-tea-trend/> [Accessed 25 October 2019].

The ASEAN Post, 2019. *Southeast Asia's bubble tea craze.* [online] Available at: <https://theaseanpost.com/article/southeast-asias-bubble-tea-craze> [Accessed 30 March 2020].

Vinodh Pillai, 2019. *Bubble tea 'bubble' may burst soon, says economist.* [online] Available at: <https://www.freemalaysiatoday.com/category/nation/2019/05/30/bubble-tea-bubble-may-burst-soon-says-economist/> [Accessed 26 October 2019].

Warner, R. S, and Ha, M-A., 2017. University Students' Knowledge, Consumption Patterns and Health Perceptions of Sugar Sweetened Beverages (SSB). *EC Nutrition*, [e-article] 11(6), pp. 223-232. Available through: ECronicon <https://www.ecronicon.com/ecnu/pdf/ECNU-11-00393.pdf> [Accessed 30 March 2020].

Weil, A., 2019. *Is Boba Tea Bad?* [online] Available at: <https://www.drweil.com/diet-nutrition/food-safety/is-boba-tea-bad/> [Accessed 22 October 2019].

Wen, K., 2019. *Bubble Tea Tales: The History of Boba.* [online] Available at: <https://www.chowhound.com/food-news/213021/history-of-boba-bubble-tea/> [Accessed 21 October 2019].

World Health Organization, 2015. *WHO calls on countries to reduce sugars intake among adults and children*. [online] Available at: <https://www.who.int/mediacentre/news/releases/2015/sugar-guideline/en/> [Accessed 1 April 2020].

World Health Organization, 2019. *Malaysia and WHO call for more investment in primary health care the 21st century***.** [online] Available at: <https://www.who.int/malaysia/news/detail/08-04-2019-malaysia-and-who-call-for-more-investment-in-primary-health-care-the-21st-century> [Accessed 30 March 2020].

APPENDICES

Appendix A: Letter to request permission to use Beverage Intake Questionnaire (BEVQ-15) and reply from the author

24th November 2019

Lim Zhi Qian
Bachelor of Nursing (HONS)
Universiti Tunku Abdul Rahman
Jalan Sungai Long
Bandar Sungai Long
Cheras, 4300 Kajang
Selangor, Malaysia

Dear Sir/Madam,

I am a nursing student from Universiti Tunku Abdul Rahman, currently doing my research proposal titled 'A survey study: trend of bubble milk tea consumption among the students in a private university, Kajang'.

I would like to ask for your permission to use the Beverage Intake Questionnaire (BEVQ-15) questionnaire instrument and adapt it into my research proposal as one of my research objectives is to determine the consumption patterns, which can be reflected with your questionnaire content.

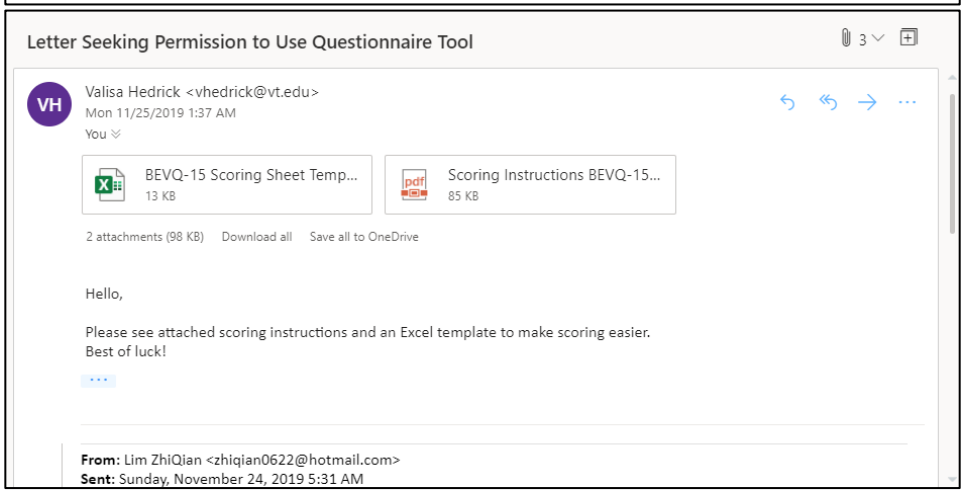
Thus, I would like to use your questionnaire under the following conditions:

- I will use the questionnaire for the purpose of my research study only and will not sell or circulate it for any other activities
- I will cite the copyright statement in my research proposal
- I will send a copy of my completed research study to your attention upon completion of study.

If the above statements are acceptable, please indicate your reply to this e-mail. Your response is much anticipated and appreciated.

Thank you.

Regards,
Lim Zhi Qian
16UMB07120
Nursing student
Universiti Tunku Abdul Rahman



Appendix B: Research Instrument

A Survey on Students' Knowledge and Consumption Pattern of Bubble Milk Tea in a Private University, Kajang

This questionnaire consists of 16 questions in total. It is made up of 3 sections surveying on: (A) socio-demographic data, (B) bubble milk tea consumption pattern, and (C) knowledge level on bubble milk tea and its health effects.

SECTION A: SOCIO-DEMOGRAPHIC DATA

Please fill in personal details and tick (✓) where appropriate.

You are required to answer ALL questions in this section.

1. Date of birth : _____ (Day/Month/Year)
2. Age : _____
3. Gender : ☐ Male ☐ Female
4. Ethnic origin : ☐ Chinese ☐ Malay ☐ Indian
   ☐ Others, please specify: _____
5. Program : ☐ Foundation ☐ Undergraduate
6. Faculty:

☐ Accountancy and Management (FAM)
☐ Medicine and Health Sciences (FMHS)
☐ Creative Industries (FCI)
☐ Lee Kong Chian Engineering and Science (LKCFES)
☐ Centre for Foundation Studies (CFS)

Before going into Section B, please answer this question first.

Do you ever drink bubble milk tea?

☐ Yes (*proceed to* ***Section B*** *and* ***Section C***)

☐ No (*please proceed to* ***Section*** **C**)

SECTION B: BUBBLE MILK TEA CONSUMPTION PATTERN

Please tick your answer in the box accordingly. Answer ALL questions.

1. How long have you been taking bubble milk tea?

☐ Less than 6 months

☐ More than 6 months to 1 year

☐ More than 1 year to 3 years

☐ More than 3 years

2. What/Who influences you to drink bubble milk tea? *(choose one only)*

☐ Family

☐ Friends

☐ Social media (e.g. Facebook news, Instagram story)

☐ Self-initiative (just to fulfil the desire)

☐ Promotion or beneficial program (e.g. buy 1 free 1, discounts, cashback)

☐ Location of store or level of convenience to get bubble milk tea

3. How often do you take bubble milk tea for the past 3 months?

- ☐ Less than 1 cup per week
- ☐ 1 cup per week
- ☐ 2 – 5 cups per week
- ☐ 6 – 9 cups per week
- ☐ 10 cups or more per week

4. What is the size of cup you usually choose?

- ☐ Regular (500ml)
- ☐ Large (700ml)

5. What is the sugar level you usually choose?

- ☐ 0%
- ☐ 25%
- ☐ 50% (Half)
- ☐ 75%
- ☐ 100% (Normal)

6. When would you most probably drink bubble milk tea? *(choose one only)*

- ☐ Breakfast time
- ☐ Lunch time
- ☐ Snack or tea time
- ☐ Dinner time

SECTION C: KNOWLEDGE LEVEL ON BUBBLE MILK TEA AND ITS HEALTH EFFECTS

Please tick your answer in the box accordingly. Answer ALL questions.

1. How much sugar content is there in 500ml of bubble milk tea with normal sugar level?

☐ 20 grams (4 teaspoons)

☐ 40 grams (8 teaspoons)

☐ I do not know

2. How much calorie does 500ml of bubble milk tea with normal sugar level contain?

☐ 255 kcal

☐ 335 kcal

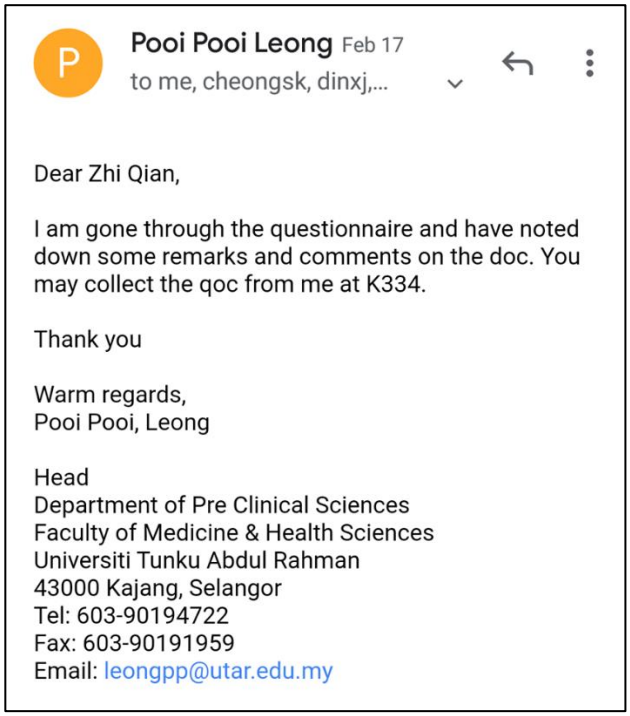
☐ I do not know

3. Identify the health effects of long-term and frequent bubble milk tea consumption. Circle your answer.

a) Tooth erosion	**Yes / No / Not sure**
b) Weight gain	**Yes / No / Not sure**
c) Obesity	**Yes / No / Not sure**
d) Diabetes	**Yes / No / Not sure**
e) Heart disease	**Yes / No / Not sure**
f) Liver disease	**Yes / No / Not sure**
g) Skin problems (e.g. acne breakout, aging)	**Yes / No / Not sure**
h) Certain cancers (e.g. esophageal, intestines, breast)	**Yes / No / Not sure**

-End of questionnaire. Thank you for participation.-

Appendix C: Research Instrument Content Validation



Pooi Pooi Leong Feb 17
to me, cheongsk, dinxj,...

Dear Zhi Qian,

I am gone through the questionnaire and have noted down some remarks and comments on the doc. You may collect the qoc from me at K334.

Thank you

Warm regards,
Pooi Pooi, Leong

Head
Department of Pre Clinical Sciences
Faculty of Medicine & Health Sciences
Universiti Tunku Abdul Rahman
43000 Kajang, Selangor
Tel: 603-90194722
Fax: 603-90191959
Email: leongpp@utar.edu.my

Kher Pui Ling Feb 17
to me, Li

Dear Zhi Qian,

Thank you for your invitation.

Please find the attached for my comments.

I wish you the best in your research project.

Thank you.

Best regards,

Kher Pui Ling

Senior Dietitian

National Kidney Foundation of Malaysia

Appendix D: Ethical Approval Application Form

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	:	Woo Li Fong			
Chinese character *(if applicable)*	:				
Staff No.	:	10330			
New Identity Card / Passport No.	:	720617-02-5140			
Designation	:	Lecturer			
Qualification(s)	:	Master in education	Specialization	:	Diabetes educator
Faculty / Institute	:	FMHS / UTAR	Department	:	Nursing
Institution Address	:	Universiti Tunku Abdul Rahman, Sungai Long, 43000, Kajang, Selangor			
Telephone	:		Mobile Phone	:	012-3035285
Fax	:		E-mail	:	woolf@utar.edu.my

STUDENT		
Full Name	:	Lim Zhi Qian
Student No.	:	16UMB07120
New Identity Card / Passport No.	:	960622-01-7236
Programme Name	:	Bachelor of Nursing (Honours)
Faculty / Institute	:	FMHS / UTAR
Mobile Phone	:	012-7275442
E-mail	:	zhiqian0622@hotmail.com

PROPOSED RESEARCH PROJECT

1. **Title of proposed research project**:

   A Survey on Students' Knowledge and Consumption Pattern of Bubble Milk Tea in a Private University, Kajang

2. **Objectives of the research**:

   1) To determine the prevalence of bubble milk tea (BMT) consumption among the students in a private university in Kajang.
   2) To determine the knowledge level on BMT among the students in a private university in Kajang.
   3) To determine the BMT consumption pattern among the students in a private university in Kajang.

3. **Location of the research**:

Universiti Tunku Abdul Rahman, Sungai Long Campus.

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

This study aims to clarify the aspects and concerns on knowledge level and consumption pattern of bubble milk tea. The outcome will serve as proof to determine public awareness and to develop appropriate initiatives in improving the situation.

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:**

This study will not cause any risks or discomforts to the participants.

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

This study can act as an initiation to encourage the participants in improving their knowledge and awareness towards bubble milk tea consumption, thus helps to reduce risk of getting related health consequences.

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

If this study succeeds in raising public awareness towards possible health consequences accompanied with bubble milk tea or high sugar consumption, the related comorbidities can be prevented effectively and hence improve the quality of life.

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?**

The researcher herself 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 what are the specific objectives of the research?*

1) To determine the prevalence of bubble milk tea (BMT) consumption among the students in a private university in Kajang.
2) To determine the knowledge level on BMT among the students in a private university in Kajang.
3) To determine the BMT consumption pattern among the students in a private university in Kajang.

13.2 Background:

13.2.1 *Describe the background of the study.*

There has been a rising demand of BMT and the consumption is especially high among the young adults who aged 19 to 24 years old. However, BMT is a high sugar and high calorie drink which has been proven to be a precipitating factor of various health risks such as obesity, diabetes, cardiovascular diseases and others.

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

Limited investigations and researches done on BMT consumption and its related health consequences may be a reason leading to a low awareness among the public on this issue. Thus, this study can serve as a baseline to implement interventions.

13.3 Preliminary Studies / Progress Reports:

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

N/A.

13.4 Methodology

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

Descriptive survey.

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.*

The participants will be briefed on study purpose and their consents will be obtained before administration of questionnaire.

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

The research procedures will be carried out by the researcher in a private university in Sungai Long, Kajang.

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

With Cochran's formula (1963), a total of 404 participants is obtained. They will be recruited through convenience sampling. The data collected will be analysed by descriptive analysis using SPSS Version 23 software.

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.*

Pilot study will be conducted in late January after ethical approval is obtained.

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

Limited time and rejections from participants may be barriers to this study. The researcher will seek to overcome these by spending more time and effort in participant recruitment.

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

This research will not cause harm to the participants, instead the participants may discover awareness in the related issues.

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*

The completed questionnaires will be kept in a locked cabinet; data in laptop will be encrypted with password.

13.5.1.2 *Who will have access to the data?*

The researcher only.

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

The questionnaire will be shredded and the data in laptop will be deleted.

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

The consent forms will be shredded too.

☐ 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: 18 Upper Age Limit: Nil

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

Individuals who refuse to participate, and postgraduate students.

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 : Lim Zhi Qian

Student ID: 16UMB07120

Course: Bachelor of Nursing (Honours)

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

Contact number: 012-7275442

Email address: zhiqian0622@hotmail.com

EDUCATION AND ACHIEVEMENTS

Pre-school:

Tadika Tongkang Pechah, Batu Pahat, Johor (2001 – 2002)

Primary school:

SJK © Tongkang Pechah, Batu Pahat, Johor (2003 – 2008)

- UPSR 6A1Bs achiever

Secondary school:

SMK Tunku Putra, Batu Pahat, Johor (2009 – 2013)

- PMR 7A1Bs achiever
- SPM 10As achiever

Pre-university:

SMK Tunku Putra, Batu Pahat, Johor (2014 – 2015)

- Form 6 achiever

University:

Universiti Tunku Abdul Rahman (UTAR), Sungai Long (currently)

October 2016 – October 2020

WORKING EXPERIENCE

- **Tadika Bandar Usaha, Batu Pahat, Johor**
  March to July 2016
  Worked as part-time tutor while waiting for STPM results

- **AEON BiG Supermarket, Batu Pahat, Johor**
  August to September 2016
  Worked as part-time promoter to gain experience, save money and use time wisely while waiting for enrollment into UTAR

SKILLS

Language: English, Malay, Mandarin and Hokkien dialect

Computer skills: Microsoft Office, PowerPoint, and Excel

Personal strength: Cheerful, willing to take responsibility and lead, willing to learn and explore new skills, self-motivating, give the best attempt in task given

Appendix E: Ethical 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 Maruthiah **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 Maruthiah	
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;

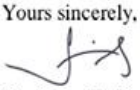
(2) Confidentiality of participants' personal data must be maintained; and

(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

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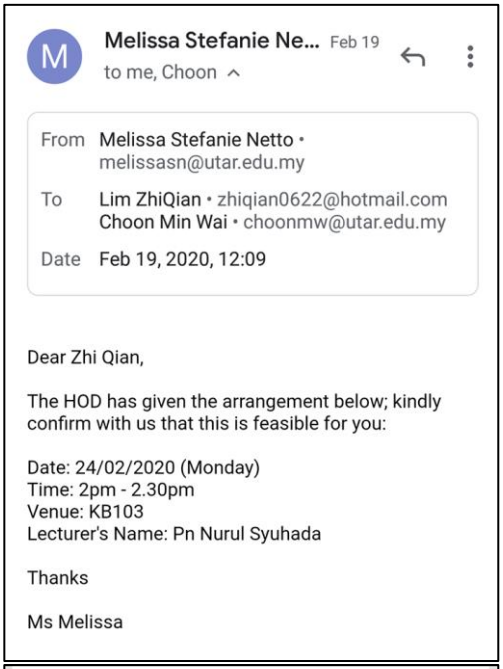
Appendix F: Approval on Data Collection by Faculties Through Mail



Melissa Stefanie Ne... Feb 19
to me, Choon

From Melissa Stefanie Netto • melissasn@utar.edu.my
To Lim ZhiQian • zhiqian0622@hotmail.com
Choon Min Wai • choonmw@utar.edu.my
Date Feb 19, 2020, 12:09

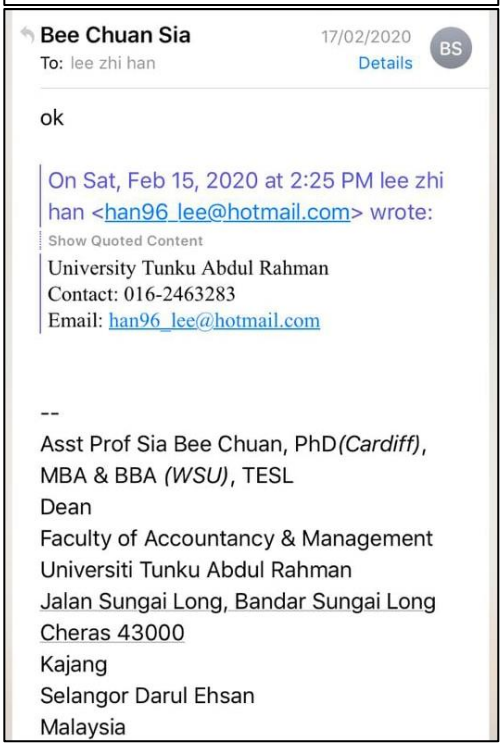
Dear Zhi Qian,

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

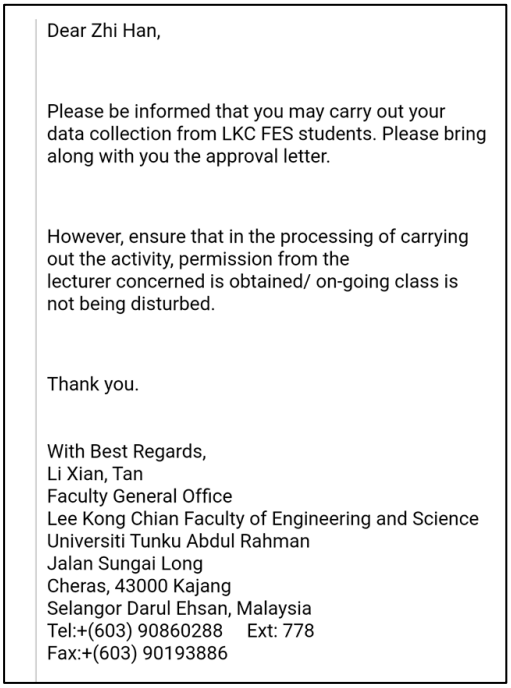


Bee Chuan Sia 17/02/2020
To: lee zhi han Details

ok

On Sat, Feb 15, 2020 at 2:25 PM lee zhi han <han96_lee@hotmail.com> wrote:
Show Quoted Content
University Tunku Abdul Rahman
Contact: 016-2463283
Email: han96_lee@hotmail.com

--
Asst Prof Sia Bee Chuan, PhD*(Cardiff)*, MBA & BBA *(WSU)*, TESL
Dean
Faculty of Accountancy & Management
Universiti Tunku Abdul Rahman
Jalan Sungai Long, Bandar Sungai Long
Cheras 43000
Kajang
Selangor Darul Ehsan
Malaysia



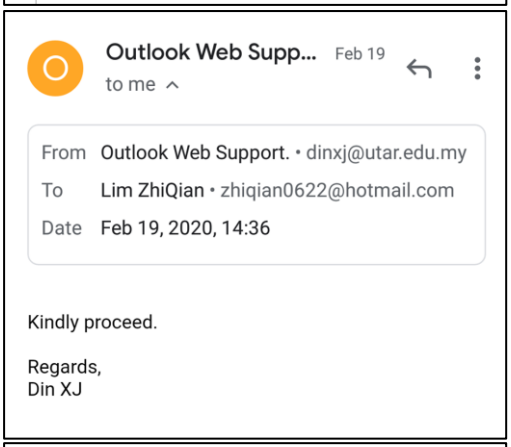
Dear Zhi Han,

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

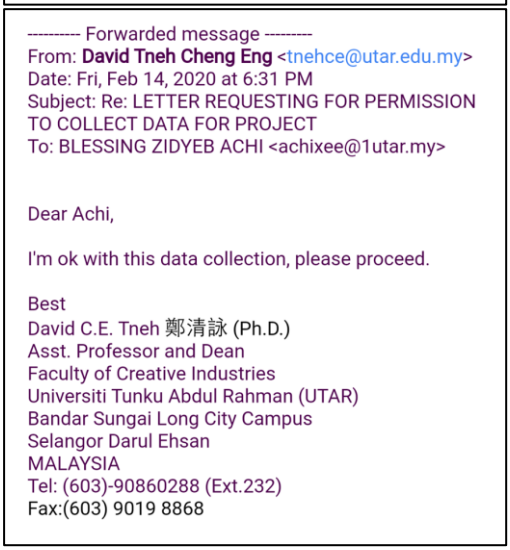


Outlook Web Supp... Feb 19
to me

From Outlook Web Support. • dinxj@utar.edu.my
To Lim ZhiQian • zhiqian0622@hotmail.com
Date Feb 19, 2020, 14:36

Kindly proceed.

Regards,
Din XJ



---------- Forwarded message ---------
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

Appendix G: Participant Consent Form

CONSENT FORM

Dear participant,

Thank you for agreeing to reading this. I am Lim Zhi Qian, currently pursuing Bachelor of Nursing (HONS) in Universiti Tunku Abdul Rahman. In conjunction with my research subject, I need your help in answering the attached questionnaire which is related to knowledge level and consumption pattern of bubble milk tea. This questionnaire will not cause any physical or mental harm and the result will be useful in interpreting the related issues.

The information provided will be treated confidentially and privacy will be protected from third party. Your participation is highly appreciated.

Signature of the researcher: .....

Participant declaration

I, ..., was given adequate and comprehensive information regarding the purpose and procedure of this study. I confirmed that I was given the opportunity to ask questions and freedom to decide my participation. I understand that my participation is voluntary and I have the right to withdraw from this study at any point of time.

Hereby, I give my consent to participate in this study by completing the attached questionnaire.

Signature of the participant: .....

Name:

Date:

Appendix H: Personal Data Protection Statement

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

Turnitin Originality Report

Processed on: 22-May-2020 14:00 +08
ID: 1327781518
Word Count: 8710
Submitted: 3

Research Project By ZhiQian Lim

Similarity Index	Similarity by Source	
8%	Internet Sources:	3%
	Publications:	1%
	Student Papers:	7%

1% match (Internet from 05-Mar-2020)
http://eprints.utar.edu.my/3259/1/Ooi_Man_Thing_(BNS)_May_2018_Thesis.pdf

1% match (student papers from 26-Nov-2019)
Submitted to Universiti Tunku Abdul Rahman on 2019-11-26

< 1% match (student papers from 23-Mar-2011)
Submitted to Universiti Sains Malaysia on 2011-03-23

< 1% match (student papers from 09-Mar-2018)
Submitted to Pennsylvania State System of Higher Education on 2018-03-09

< 1% match (student papers from 12-Oct-2009)
Submitted to Mahidol University on 2009-10-12

< 1% match (student papers from 24-Jan-2016)
Submitted to University of New England on 2016-01-24