

## TABLE OF CONTENT

|                            | Page |
|----------------------------|------|
| RESEARCH TITLE             | i    |
| TABLE OF CONTENT           | ii   |
| DISCLAIMER                 | vii  |
| ACKNOWLEDGEMENTS           | viii |
| LIST OF TABLES             | ix   |
| LIST OF FIGURES            | x    |
| LIST OF ABBREVIATIONS      | xi   |
| LIST OF APPENDICES         | xii  |
| ABSTRAK                    | xiii |
| ABSTRACT                   | xv   |
| <br>                       |      |
| CHAPTER ONE: INTRODUCTION  | 1    |
| 1.1 Overview               | 1    |
| 1.2 Background of study    | 1    |
| 1.3 Problem statement      | 4    |
| <br>                       |      |
| CHAPTER TWO: OBJECTIVES    | 5    |
| 2.1 General objective      | 5    |
| 2.2 Specific objectives    | 5    |
| 2.3 Alternative hypotheses | 6    |
| 2.4 Null hypotheses        | 6    |

|                                                                     | <b>Page</b>   |
|---------------------------------------------------------------------|---------------|
| <b>CHAPTER THREE: LITERATURE REVIEW</b>                             | <b>7</b>      |
| 3.1 Introduction                                                    | 7             |
| 3.2 Validation and reliability of questionnaires                    | 7             |
| 3.3 Blood transfusion service                                       | 9             |
| 3.3.1 Overview                                                      | 9             |
| 3.3.2 Motivating factors among blood donors                         | 10            |
| 3.3.3 Deterring factors among blood donors                          | 11            |
| 3.3.4 Frequency of donation and likelihood of donation in<br>future | 12            |
| 3.3.5 Attractive incentives for blood donors                        | 13            |
| <br><b>CHAPTER FOUR: METHODS</b>                                    | <br><b>14</b> |
| 4.1 Overview of research methodology                                | 14            |
| 4.1.1 Summary of research protocol                                  | 16            |
| 4.2 Research background                                             | 17            |
| 4.2.1 Study design                                                  | 17            |
| 4.2.2 Study location                                                | 17            |
| 4.2.3 Study duration                                                | 17            |
| 4.2.4 Ethical consideration                                         | 18            |



|                                                                                    | <b>Page</b> |
|------------------------------------------------------------------------------------|-------------|
| <b>CHAPTER FIVE: RESULTS</b>                                                       | <b>28</b>   |
| 5.1 Overview                                                                       | 28          |
| 5.2 Development of research tool                                                   | 28          |
| 5.2.1 Questionnaire design                                                         | 28          |
| 5.2.2 Validation of questionnaires                                                 | 30          |
| 5.2.2.1 Overview                                                                   | 30          |
| 5.2.2.2 Content validity                                                           | 31          |
| 5.2.2.3 Pilot study                                                                | 40          |
| 5.2.2.4 Face validity                                                              | 40          |
| 5.2.2.5 Reliability test                                                           | 41          |
| 5.2.2.6 Finalisation of questionnaire                                              | 42          |
| 5.3 Socio demographic characteristics                                              | 42          |
| 5.4 Motivating factors for blood donation                                          | 44          |
| 5.5 Deterring factors for blood donation                                           | 45          |
| 5.6 Attractive incentives                                                          | 46          |
| 5.7 Association between gender and the motivating factors for<br>blood donation    | 47          |
| 5.8 Association between gender and the deterring factors for<br>blood donation     | 50          |
| 5.9 Association between frequency of donation and likelihood of<br>repeat donation | 52          |

|                                                                                    | <b>Page</b> |
|------------------------------------------------------------------------------------|-------------|
| <b>CHAPTER SIX: DISCUSSIONS</b>                                                    | <b>53</b>   |
| 6.1 Overview                                                                       | 53          |
| 6.2 Validation of questionnaires                                                   | 53          |
| 6.3 Motivating factors for blood donation                                          | 55          |
| 6.4 Deterring factors for blood donation                                           | 59          |
| 6.5 Attractive incentives                                                          | 63          |
| 6.6 Association between gender and the motivating factors for<br>blood donation    | 64          |
| 6.7 Association between gender and the deterring factors for<br>blood donation     | 66          |
| 6.8 Association between frequency of donation and likelihood of<br>repeat donation | 67          |
| 6.9 Study limitations                                                              | 68          |
| <b>CHAPTER SEVEN: CONCLUSIONS</b>                                                  | <b>69</b>   |
| 7.1 Conclusion                                                                     | 69          |
| 7.2 Future studies                                                                 | 70          |
| 7.3 Recommendations                                                                | 70          |
| <b>REFERENCES</b>                                                                  | <b>72</b>   |
| <b>APPENDICES</b>                                                                  | <b>81</b>   |

## DISCLAIMER

I hereby declare that I am the sole author of the thesis entitled “Motivating Factors And Potential Deterrents For Blood Donation Among Blood Donors Of Higher Education Students In Kota Bharu, Kelantan”. I declare that this thesis is being submitted to Universiti Sains Malaysia (USM) for the purpose of the award of Master Of Medicine (Transfusion Medicine). This dissertation is the result of my own research under the supervision of Dr. Sharifah Azdiana Binti Tuan Din and Dr. Wan Haslindawani Binti Wan Mahmood, except for quotation and citation which have been duly acknowledged. I also declare that this dissertation has not been previously or concurrently submitted for any other degree at USM or their institutions.

I authorise USM at the request of other institutions and individuals to use dissertation for the purpose of scholarly research and publication. I further authorise USM to reproduce this thesis by photocopying or by other means, in total or in part, at the request of the other institutions or individuals for the purpose of scholarly research.



---

Nuraini Binti Sham

P-IPM0073/15

## ACKNOWLEDGEMENTS

In the name of Allah, the Most Gracious and the Most Merciful Alhamdulillah, all praises to Allah for the strengths and His blessing in completing this thesis.

First, I would like to express my sincere gratitude to my main supervisor **Dr. Sharifah Azdiana Binti Tuan Din** and co-supervisor **Dr. Wan Haslindawani Binti Wan Mahmood** for the continuous support of my research, patience, motivation, and sharing of knowledge. Your guidance had helped me to endure the research and writing of this thesis. I could not wished having a better advisor and mentor for my research study. I would like to take this opportunity to thank all the staffs in Department of Haematology and Transfusion Medicine Unit, Hospital Universiti Sains Malaysia (HUSM) for their support and assistance for data collection. My gratitude goes to **Dr. Rohayu Hami** and **En. Nizuwan** for your invaluable advice on statistical and data analysis. My appreciation extends to **Dr. Zanariah Binti Kassim**, Head of Transfusion Medicine Department Hospital Sultanah Aminah Johor Bahru (HSAJB) and all her staffs for their hospitality and for allowing me to complete the pilot study in HSAJB. To my coursemates, **Dr. Noor Sheereen**, **Dr. Amrah**, **Dr. Norkhazarina**, **Dr. Nurulraihan**, **Dr. Wan Noor Falah**, **Dr. Idzham** and **Dr. Mohd. Faeiz** for their never ending words of encouragement and advice. Thank you for all the ecstatic and blissful experience but not forgetting some melancholy moments we shared. Certainly I would like to thank my parents and family who had embolden my spirit and showed me endless abutment in duration of my research. Last but not least, this thesis is profoundly dedicated to my loving husband and children who have endured a lot during these past few years.

May Merciful Allah rifely bless all of you.

## LIST OF TABLES

|            |                                                                                                                    | <b>Page</b> |
|------------|--------------------------------------------------------------------------------------------------------------------|-------------|
| Table 4.1  | Sample size calculated based on specific objectives                                                                | 21          |
| Table 5.1  | Summary of research questionnaires                                                                                 | 29          |
| Table 5.2  | Grading scale for content validity index                                                                           | 32          |
| Table 5.3  | Calculation of I-CVI, S-CVI/UA, S-CVI/Ave of motivating factors, deterring factors and attractive incentives items | 33          |
| Table 5.4  | Summary of items changes                                                                                           | 39          |
| Table 5.5  | Cronbach's alpha value for motivating factors, deterring factors and attractive incentives                         | 41          |
| Table 5.6  | Demographic data of blood donors of higher education student                                                       | 43          |
| Table 5.7  | Motivating factors for blood donation                                                                              | 44          |
| Table 5.8  | Deterring factors for blood donation                                                                               | 45          |
| Table 5.9  | Attractive incentives                                                                                              | 46          |
| Table 5.10 | Gender and motivating factors                                                                                      | 47          |
| Table 5.11 | Gender and deterring factors                                                                                       | 50          |
| Table 5.12 | Frequency of donation and likelihood of repeat donation                                                            | 52          |

## LIST OF FIGURES

|            |                       | Page |
|------------|-----------------------|------|
| Figure 4.1 | Methodology flowchart | 16   |

## LIST OF ABBREVIATIONS

|           |                                                          |
|-----------|----------------------------------------------------------|
| AMDI      | Advanced Medical and Dental Institute                    |
| BTS       | Blood Transfusion Service                                |
| HSAJB     | Hospital Sultanah Aminah Johor Bahru                     |
| HUSM      | Hospital Universiti Sains Malaysia                       |
| I-CVI     | Item-level Content Validity Index                        |
| MREC MOH  | Medical Research and Ethics Committee Ministry of Health |
| NMRR      | National Medical Research Register                       |
| S-CVI/Ave | Scale-level Content Validity Index/ Average              |
| S-CVI/UA  | Scale-level Content Validity Index/ Universal Agreement  |
| SPSS      | Statistical Package for Social Sciences software         |
| STPM      | Sijil Tinggi Pelajaran Malaysia                          |
| USM       | Universiti Sains Malaysia                                |
| WHO       | World Health Organization                                |

## LIST OF APPENDICES

|            |                                                                                          | Page |
|------------|------------------------------------------------------------------------------------------|------|
| APPENDIX A | Permission From Author                                                                   | 81   |
| APPENDIX B | Ethics Approval From JEPeM                                                               | 82   |
| APPENDIX C | Ethics Approval From NMRR                                                                | 85   |
| APPENDIX D | Approval From CRC HSAJB                                                                  | 87   |
| APPENDIX E | Expert Group Meeting Attendance                                                          | 89   |
| APPENDIX F | Content Validity Meeting Attendance                                                      | 90   |
| APPENDIX G | Adapted Questionnaires                                                                   | 105  |
| APPENDIX H | Motivating Factors and Potential Deterrents<br>Questionnaires<br>(English Version)       | 108  |
| APPENDIX I | Motivating Factors and Potential Deterrents<br>Questionnaires<br>(Malay Version)         | 113  |
| APPENDIX J | Participant Information Sheet and Consent                                                | 118  |
| APPENDIX K | Participation Invitation Brochure                                                        | 129  |
| APPENDIX L | Poster Presentation for 8 <sup>th</sup> National<br>Transfusion Medicine Conference 2018 | 130  |

## ABSTRAK

**PENGENALAN:** Penyertaan penderma darah yang berpotensi dari usia muda adalah usaha yang baik kerana mereka biasanya mempunyai kesihatan yang baik dan masa hadapan yang panjang sebagai penderma darah. Kajian ini bertujuan untuk mengenalpasti faktor-faktor motivasi dan penghalang terhadap pendermaan darah di kalangan penderma darah yang sedang menuntut di institusi pengajian tinggi.

**KAEDAH:** Kajian ini merupakan kajian rentas silang menggunakan borang soal selidik yang melibatkan 391 penderma darah berusia 18 hingga 26 tahun yang sedang menuntut di institusi pengajian tinggi di Kota Bharu, Kelantan. Borang soal selidik telah diadaptasi serta diubahsuai, disahkan dan digunakan untuk menjalankan kajian perintis yang melibatkan 30 penderma darah. Borang soal selidik yang muktamad terdiri daripada 12 soalan tentang faktor-faktor motivasi, 8 soalan mengenai faktor penghalang dan 7 soalan berkenaan insentif yang menarik. Analisis data dilakukan dengan perisian SPSS dan Stata.

**KEPUTUSAN:** Majoriti peserta kajian adalah perempuan (67%) dan Melayu (92.3%) dengan usia min 20.4 tahun. Kebanyakan mereka sedang menuntut dalam diploma (37.3%) dan telah menderma sekali (29.2%) dan dua hingga tiga kali (29.2%). Faktor motivasi yang paling tinggi adalah untuk membantu orang lain dan membuat amalan yang baik (98%). Faktor motivasi berminat dengan promosi derma darah yang dilakukan lebih dipilih oleh perempuan (87%) berbanding lelaki (79.1%). Terdapat kaitan yang signifikan antara jantina dan faktor motivasi dari segi berminat dengan promosi derma darah ( $p=0.043$ ). Faktor penghalang yang paling tinggi adalah tidak

suka tertinggal kelas untuk menderma darah (30.9%) yang lebih dipilih oleh penderma darah perempuan (35.1%) berbanding lelaki (22.5%). Terdapat hubungkait yang signifikan antara jantina dan faktor penghalang dari segi tidak suka tertinggal kelas untuk menderma darah ( $p=0.011$ ).

**KESIMPULAN:** Sebagai kesimpulan, sikap altruistik adalah penyebab utama penderma darah muda menderma darah dan beberapa strategi perlu diambil untuk mengatasi faktor penghalang yang dikesan.

## ABSTRACT

**INTRODUCTION:** Recruitment of potential blood donors from young age is a good effort, because they are usually in better health and may have a longer period for blood donation. The purpose of this study was to determine the motivating and the deterring factors for blood donation among blood donors of higher education students.

**METHODS:** This was a cross sectional study using a self-administered questionnaire involving 391 blood donors of higher education students age 18 - 26 years old in Kota Bharu, Kelantan. The research tool was adapted and modified, validated and pilot-test was done on 30 blood donors to ensure its validity and reliability. The finalised questionnaire consisting 12 motivating factors items, eight deterring factors items, and seven attractive incentive items. Data analysis was encrypted and processed using SPSS and Stata software.

**RESULTS:** Majority of the participants of this study were female (67%) and Malay (92.3%) with mean age of 20.4 years old. Most of them were studying for diploma (37.3%) and had donated once (29.2%) and two to three times (29.2%). The most rated motivating factor was to help others and create a good practice (98%). Motivating factor of interested in blood donation campaign promoted was most likely to be rated by female (87%) rather than male (79.1%). There was a significant association between gender and the motivating factors in term of interest in blood donation campaign promoted ( $p=0.043$ ). The most rated deterring factor was dislike

skipping class to donate blood (30.9%) which was most likely to be rated as positive response among female blood donors (35.1%) compared to male (22.5%).

**CONCLUSION:** In conclusion, altruism was the main reason for young blood donors to donate blood and some strategies should be put in place to overcome the identified deterring factors.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Overview**

This chapter covers some brief introduction on blood transfusion service, current issue and knowledge gap on motivating and deterring factors for blood donation especially among blood donors of higher education students. This chapter also highlights the problem statements and objectives of the study.

#### **1.2 Background of study**

“Be there for someone else. Give blood. Share life”, it was the theme for World Blood Donor Day 2018. It highlights the important of altruism value, respect, empathy and kindness which stress out on sustaining voluntary and non-remunerated blood donation systems (World Health Organization, 2018). Blood transfusion is one of the measures that can save patients’ lives and improves health. Every country’s national health care policy should be established in order to provide safe and adequate blood supply nationwide (World Health Organization, 2017). Blood transfusion service includes a chain of process from collection of blood from voluntary donors, processing, screening until the blood supplied to the patients. It is the responsibility of blood transfusion service to provide “Adequate and Safe” blood at any time. An adequate and reliable supply of safe blood can be assured by a stable base of regular, voluntary, unpaid blood donors. These donors are also the safest group of donors as the prevalence of blood borne infections is the lowest among this group. The World

Health Organization's (WHO) goal is for all countries to obtain all blood supplies from voluntary unpaid donors by 2020 (World Health Organization, 2016). It is a major challenge to optimise the gap between the demand and the supply of blood products. Malaysian National Blood Centre had identified that, almost all states had difficulty to recruit and retain blood donors especially during the festive season as Malaysia is a multi-racial country. Total population of this country is estimated at 32.0 million in 2017. It is composed of 68.8% Bumiputera, 23.4% Chinese, 7.0% Indian and 1.0% others (Uzir, 2017). Multiple festivals are held throughout the year. Malaysia hosts festivals from all religions and cultures, such as the holy month of Ramadan, Hari Raya Aidilfitri, and Hari Raya Haji for the Muslim Malay, Thaipusam, Wesak Day and Deepavali for the Indians, the Hungry Ghost Festival, the Mid-Autumn Festival and Chinese New Year for the Chinese community and Christmas for the Christians (Soh, 2012).

Malaysia will be an ageing nation by 2035, when 15% of the populations are classified as senior citizens. Ministry of Women, Family and Community Development forecast by the Statistics Department revealed that Malaysia's senior citizen population (aged 60 and above) would number 5.6 million by 2035. The ministry was also looking for ways for researchers to carry out studies relating to the matter as well as to improve policy and laws to ensure that the senior citizens' well being is taken care of (Daim, 2016). This situation may worsen when we are burdened with an ageing population with increasing blood utilization due to higher risk for malignancies, chronic illnesses, and other clinical states requiring surgical intervention, but also face a decreasing pool of individuals willing and able to donate blood (Greinacher *et al.*, 2010; Whitaker and Sullivan, 2005).

Efforts to recruit potential blood donors of younger age is attractive, because they are usually in good health and may have very long donor careers (Kollins and Herron, 2003; Lemmens *et al.*, 2005). An understanding on the factors that motivates and deterring donors of various ethnic backgrounds and age groups can facilitate more targeted recruitment and retention efforts by blood collection centres, thereby significantly expanding the existing donor pool.

Therefore, the current study had been conducted targeted to younger age group of blood donors. From the results of this study, we hope to know better about the motivating and deterring factors for blood donation among this population. Thus, this study focused on higher education students blood donors where many of young population can be found in universities and colleges. This study was conducted in Kota Bharu, Kelantan which involved blood donation service by Transfusion Medicine Unit, HUSM. Kota Bharu is a city in Malaysia that serves as the state capital and royal seat of Kelantan. Majority of Kota Bharu's population is Malay population. Besides the Malay, there are also minority Tamil, Chinese, Siamese and Orang Asli residing in this city. The total population of Kota Bharu as in 2010 is 491,237 (Department of Statistics Malaysia, 2017). Department of Haematology and Transfusion Medicine Unit provides medical laboratory services for Hospital Universiti Sains Malaysia (HUSM), and also committed in teaching and learning programs for undergraduate & postgraduate students and research initiatives. Apart from carrying out diagnostic tests related to the use of blood, Transfusion Medicine Unit's main function is to supply blood, blood components and therapeutic services for patients at USM Hospital. For this purpose, the Transfusion Medicine Unit

frequently organize a blood donation campaign in and outside the campus. Mobile Blood Bank Unit has been established to carry out those blood donation activities outside of the unit.

### **1.3 Problem statement**

Adequate blood supply is important to ensure fulfilment of patient's need and demand. Blood transfusion may be part of supportive management for those hospitalised. Therefore collection centres must design campaigns that successfully recruit and maintain active donor pool. Understanding the factors that motivate and deter individuals from donating may help centres to develop targeted recruitment campaigns. These factors among university and college aged blood donors have not yet been fully investigated. A study on blood donors revealed that more than three-quarters were males and in secondary education (Mauka *et al.*, 2015). The donation of blood from young students is preferred because the risk of acquiring the blood transmitted diseases from blood donated by the students is less than other groups (Khadeer *et al.*, 2004). This proposed study was beneficial to produce a local data that represents this population of age and it may be dissimilar from other studies that have been done overseas. Hence, this study was critical in order to understand this population of age. Furthermore, there are still no published data in Malaysia regarding young blood donors at the moment. It may assist blood transfusion service to develop their strategy to motivate to motivate people to donate blood. Many strategies can be put in place to educate them to become a future safe and regular blood donors in order for Malaysia to be ready approaching the ageing population in 20 years of time.

## **CHAPTER TWO**

### **OBJECTIVES**

#### **2.1 General objective**

To evaluate the motivating and deterring factors for blood donation among higher education students age 18 - 26 years old.

#### **2.2 Specific objectives**

- i. To validate the adapted questionnaire to suit local setting.
- ii. To identify the motivating and deterring factors for blood donation among higher education students.
- iii. To determine the association between gender and the motivating and deterring factors for blood donation among higher education students.
- iv. To determine the association between frequency of donation and likelihood of repeat donation among higher education students.

### **2.3 Alternative Hypotheses**

There is a significant association between gender and the motivating and deterring factors for blood donation among higher education students.

There is an association between frequency of donation and likelihood of repeat donation among higher education students.

### **2.4 Null hypotheses**

There is no significant association between gender and the motivating and deterring factors for blood donation among higher education students.

There is no association between frequency of donation and likelihood of repeat donation among higher education students.

## CHAPTER THREE

### LITERATURE REVIEW

#### 3.1 Introduction

This chapter contains the overview of previous research and established knowledge for the topic concerned. It includes the process of questionnaires validation, overview of blood transfusion service (BTS), motivating and deterring factors among blood donors, probability of repeat donation for donors and incentives in blood donation.

#### 3.2 Validation and reliability of questionnaires

Questionnaire is one of the assessment tools. Every designed questionnaire should be validated and tested for its reliability before it can be use in actual study (Jalalian *et al.*, 2010). The survey questionnaire usually developed based on thorough literature reviews, guidelines, and experts opinions (Jalalian *et al.*, 2010; Parsian and AM, 2009). The process of validation including translational validity (content validity and face validity), construct validity using factor analysis, reliability and internal consistency using test-retest reliability and Cronbach's alpha correlation coefficient (Jalalian *et al.*, 2010; Parsian and AM, 2009). Content validity is done to ensure appropriateness and relevancy of the content in a questionnaires to fit objective of study (Parsian and AM, 2009). Content validity should be done by several experts in the respective field with minimum of three persons required (DeVon *et al.*, 2007; Lynn, 1986). The expert reviewers must rate the relevance of each item using a 4-point Likert scale. Subsequently, the Content Validity Index (CVI) should be

calculated to estimate the validity of the items (Lynn, 1986). Face validity functions to evaluate whether the questionnaires are appropriate to the study purpose and content area. It is the easiest validation process to be done but it is the weakest form. It assess the appearance of the questionnaire in terms of practicability, comprehensibility, uniformity of style and formatting, and the understandability of the language used (DeVon *et al.*, 2007; Parsian and AM, 2009). After the validation process had completed, the questionnaires should be examined for its reliability. Reliability refers to the ability of a questionnaire to give a consistent results and how well the items fit together (DeVon *et al.*, 2007). The reliability of questionnaire expected to increase if more items included in the questionnaire (Jalalian *et al.*, 2010). The acceptable items from reliability test can be retain for the actual study (Jalalian *et al.*, 2010). However, in certain condition, the reliability of the measurement tool maybe improved by removing some of the items (Jalalian *et al.*, 2010). Nevertheless, each domain should contains optimum number of items to produce adequate reliability (Jalalian *et al.*, 2010). Finally, the survey tools can be use in a larger population after analysis of the pilot study and revision of the questionnaires (Jalalian *et al.*, 2010). In future, the validated questionnaires could be used to similar type of populations for other research (Jalalian *et al.*, 2010).

### **3.3 Blood transfusion service**

#### **3.3.1 Overview**

The demand for blood usage and supply is increasing in our country that lead to raise in concern for those in healthcare field particularly blood transfusion service (BTS) to fulfil the requirement. Blood transfusion may increase as the population ages. This is due to larger percentage of the population will be at higher risk for malignancies, chronic illnesses, and other medical illnesses which will require surgical intervention (Greinacher *et al.*, 2010).

Ministry of Health Malaysia has targeted to recruit at least 5% of Malaysian population to become blood donors (Niam, 2012). Many efforts done to increase the participation of people for blood donation. However the numbers of blood collected has yet to achieve the optimum level. This situation may affect a country and the whole world population because blood transfusion is one of the life saving intervention. It has an essential role in the total patient management. This issue has created the need to understand the population and the influencing factors that can increase motivation to be a blood donor. Previously, paid donors are associated with higher rates of transfusion-transmitted infections (Caspari *et al.*, 2003; Zaller *et al.*, 2005). Therefore, World Health Organization recommends to collect the blood and blood component from voluntary, unpaid repeat donors (World Health Organization, 2017). Previous studies had reported that college students can be a very good source of easily access blood donors to earn quality blood. This can be realised if they are motivated and recruited well as potential voluntary blood donors (Ahmed *et al.*, 2014; Salaudeen and Odeh, 2011).

### 3.3.2 Motivating factors among blood donors

Many studies had shown that there are differences of motivating factors for blood donation among blood donors. Differences have been identified between genders, races, age groups, level of education and donation experience (Glynn *et al.*, 2006; Hupfer *et al.*, 2005; Steele *et al.*, 2008; Yuan *et al.*, 2011). Most studies showed that pro social beliefs were the most important motivating factors among blood donors in order for them to decide for blood donation (Ferguson, 2015; Finck *et al.*, 2016; Yuan *et al.*, 2011). Pro social beliefs may be due to altruism (helpfulness) or empathy (feeling for others) or may be as part of social responsibility (Steele *et al.*, 2008). Majority of the blood donors donated to help others and to save lives even though they do not know the recipients (Abderrahman and Saleh, 2014). A study reported that the millennial generation which were born between year 1981 and 2000 has low civic engagement than older generations due to loss of altruism in this group of age (Kolins and Herron, 2003). A study in Jordanian population regarding blood donation revealed several influencing factors such as friends, media, and religion. However friends are the most influencing factors for the population to donate blood (Abderrahman and Saleh, 2014).

In another study done among university students in Tanzania, they found that significant factors that were associated with ever donating blood were male gender, knowing a person who is a blood donor, knowledge of the amount of blood donated, willingness to donate blood again, and not expecting any rewards and incentives (Elias *et al.*, 2016). Study by Yuan *et al.* (2011) reported that gift and incentive were the third most chosen motivating factors among donors at university campus-based

collection centre. This motivating factor was more important to younger age group (Yuan *et al.*, 2011). About half of the respondents chose concept of donating blood increase their school collection more than other schools as an important motivating factor (Finck *et al.*, 2016). This positive behaviour of competition may be used in development of a recruitment strategy in institutional level.

Previous studies among college aged blood donors showed that altruism has been the most important motivating factor (Finck *et al.*, 2016; Yuan *et al.*, 2011). Women were more likely motivated by the idea of helping others and being influenced by family members and friends. On the other hand, men were more influenced by social pressure and did not want to disappoint others (Hupfer *et al.*, 2005; Yuan *et al.*, 2011).

### **3.3.3 Deterring factors among blood donors**

Studies revealed that more than two-thirds of college students have history of blood donation before due to varying reasons although many of them were not donating any more (Baig *et al.*, 2013; Salaudeen and Odeh, 2011). Some of the deterring factors identified were busy schedule at college, lack of knowledge and awareness of blood donation (Salaudeen and Odeh, 2011), afraid of needle or infection (Mohammad *et al.*, 2011), and lack of opportunity to donate (Ahmed *et al.*, 2014).

Pain associated with donation was the most chosen factor as potential deterrent in most of previous studies (Finck *et al.*, 2016; Hupfer *et al.*, 2005; Yuan *et al.*, 2011). Some studies found that inconvenience and time constraints were the significant deterrent among college aged (Hupfer *et al.*, 2005; Yuan *et al.*, 2011) and older

donors (Schreiber *et al.*, 2006). These findings of deterring factors may allow some measures to be taken to overcome the potential deterrents. This information would be important in planning for increase awareness and helping younger generation to be a regular blood donor in future.

#### **3.3.4 Frequency of donation and likelihood of donation in future**

Recruitment of blood donors is important. However, retention of these blood donors is equally vital to ensure safe and adequate blood supply. Therefore many studies done to understand their attitude towards future donation.

Majority of blood donors with history of blood donation had intention to repeat donation in future regardless of their regularity of donation (Abderrahman and Saleh, 2014). Another study reported that individuals who had donated before showed better attitude towards blood donation compared to individuals who did not have such history (Alfouzan, 2014). Most of the blood donors responded that they will repeat donation and described blood donation is a good experience. Hence, they will encourage their friends to be a blood donor too (Alfouzan, 2014).

A study had showed that most of university student blood donors opted for repeat donations. Many of the students also willing to donate blood in the future even though they never donated before (Elias *et al.*, 2016).

### **3.3.5 Attractive incentives for blood donors**

Most countries do not accept paid blood donors in order to ensure blood safety. However it is still common for blood collection centre to give a little incentive to increase and maintain their collection. It is acceptable if the incentives cannot be converted into cash. Most studies showed that solid items were more frequently rated as attractive compared to non material rewards to be the potential incentives given (Finck *et al.*, 2016; Yuan *et al.*, 2011). On the other hand, free health screening were less likely rated by young blood donors compared to older donors (Finck *et al.*, 2016; Glynn *et al.*, 2006)

## CHAPTER FOUR

### METHODS

#### 4.1 Overview of research methodology

This study was divided into two phases. The first phase include the process of designing and validating the questionnaires. In second phase, the validated questionnaires had been distributed to subjects for data collection.

In phase one, a series of steps were taken to develop the research questionnaires. Questionnaires is adapted from Finck *et al.* (2016). Adaptation of the questionnaires had been consented by the author. An expert review meeting was done to discuss the questionnaires and opinions were taken for amendment. The questionnaires had undergone forward and backward translation as it had been distributed in English language or Malay language based on participant's preference. The translation process was assisted by Pusat Bahasa, USM Health Campus. Content validity was checked via experts' assessment by two Transfusion Medicine Specialists and a Family Medicine Specialist. Face validity was assessed during pilot study conducted in Johor Bahru, Johor involving 30 blood donors of higher education students. The number of sample size was decided based on previous literature which recruits 30 to

2014; Perneger *et al.*, 2015). It was proven that to achieve a power of 90% power to detect a problem, 22 participants would be needed. Therefore, 30 participants is a

Furthermore due to limited duration of study, we have decided to have only 30 participants as a pilot study in phase one.

Data collected was analysed using SPSS to obtain the Cronbach's alpha for reliability test. Subsequently, the questionnaires was amended based on validation and reliability results.

A total of 391 blood donors from thirteen mobiles (Kota Bharu, Machang, Pasir Mas) have been selected in phase two based on inclusion and exclusion criteria. The questionnaires were distributed to these donors and data obtained was entered and analysed with Statistical Package for Social Sciences software (SPSS, version 23.0) and Stata version 13 for descriptive and inferential statistics.

#### 4.1.1 Summary of research protocol

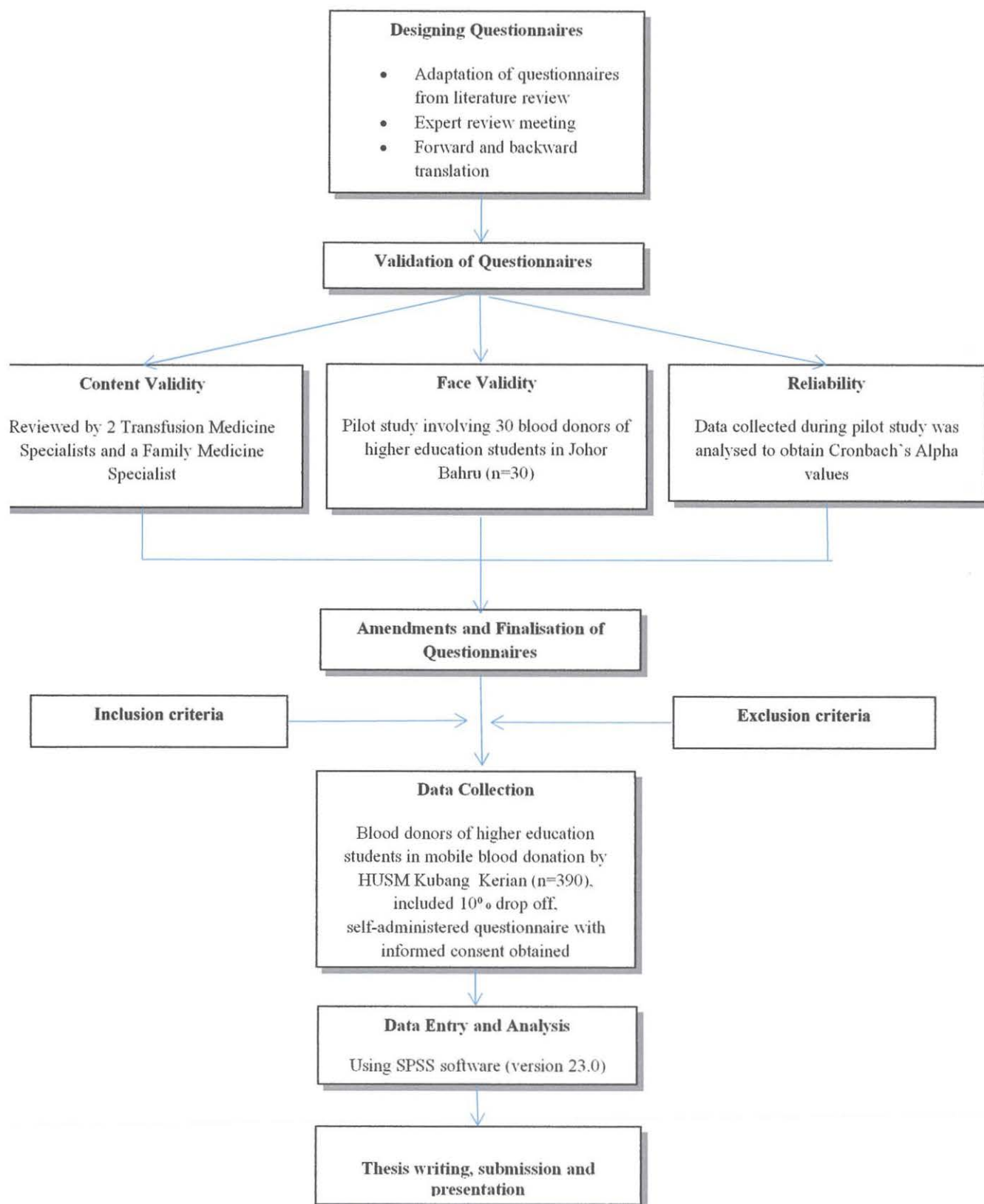


Figure 4.1: Methodology flowchart

## **4.2 Research background**

### **4.2.1 Study design**

This is a cross-sectional study using self-administered questionnaires.

### **4.2.2 Study location**

This study was conducted in Kota Bharu, Kelantan which involved blood donation campaigns in universities, colleges and schools conducted by Transfusion Medicine Unit, HUSM. Transfusion Medicine Unit is responsible to supply of blood and blood components as well as providing therapeutic services for patients at HUSM. Therefore, Transfusion Medicine Unit often organise blood donation campaigns inside and outside the campus to meet demands. Mobile Blood Bank Unit was established for outside blood donation activities.

### **4.2.3 Study duration**

This study was conducted from 1<sup>st</sup> January 2017 until 31<sup>st</sup> December 2018. Data was collected within 7 months (October 2017 until April 2018).

#### **4.2.4 Ethical consideration**

An ethical approval from the Human Research Ethics Committee Universiti Sains Malaysia (USM) and Medical Research and Ethics Committee Ministry of Health (MREC MOH) were obtained. This study was also registered by National Medical Research Register (NMRR) .

### **4.3 Data Collection**

#### **4.3.1 Sampling criteria**

##### **4.3.1.1 Target population**

Blood donors in Kota Bharu, Kelantan

##### **4.3.1.2 Population sample**

Blood donors age 18-26 years old

##### **4.3.1.3 Sampling frame**

Blood donors of higher education student

#### **4.3.1.4 Sampling method**

Universal sampling (all donors that donated at university, college and schools

mobiles conducted by Transfusion Medicine Unit, HUSM )

#### **4.3.1.5 Inclusion criteria**

- i. Malaysian citizen
- ii. Age from 18 years old until 26 years old
- iii. Blood donor
- iv. Higher education student
- v. Consented to participate in the study voluntarily

#### **4.3.1.6 Exclusion criteria**

- i. Unable to comprehend in Malay or English languages
- ii. Donors who had participated answering the questionnaires before
- iii. Donors who do not consented to participate in the study
- iv. Age more than 26 years old

#### **4.3.1.7 Withdrawal criteria**

The participation of subjects were voluntary. If at any point of time, they wished to be withdraw from study, they may contact the principal investigator. Hence, their answered questionnaires and signed consent will be excluded and discarded.

#### 4.3.1.8 Sample size calculation

By using formula of two proportion formula and single proportion formula, the sample size based on specific objective was calculated with reference to the study by Finck *et al.* (2016) and Alfouzan (2014).

Two proportion formula:

$$n = \frac{p_1(1-p_1) + p_2(1-p_2)}{(p_1 - p_2)^2} (z_\alpha + z_\beta)^2$$

n = sample size

p<sub>1</sub> = proportion of the associated factor among high risk population

p<sub>2</sub> = proportion of the associated factor among low risk population

z<sub>α</sub> = 1.96 for α=0.05 (two tailed) or 2.58 for α=0.01 (two tailed)

z<sub>β</sub> = 0.84 for 80% power or 1.28 for 90% power

Single proportion formula:

$$n = \left( \frac{z}{\Delta} \right)^2 p(1-p)$$

n = sample size

z = z statistic for a level of confidence=1.96 (95% confidence interval)

p = expected prevalence or proportion (in proportion of one; if 100%, p=1)

Δ = precision (in proportion of one; if 5%, Δ=0.05)

Table 4.1: Sample size calculated based on each specific objectives

| Objective                                                                                                                                                | Calculation                                                                                                                                                                                                                                                                                                   | Sample Size | Cited From                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------|
| To identify the motivating and deterring factors for blood donation among blood donors of higher education students.                                     | <p>Single proportion formula:</p> $n = \left( \frac{1.96}{0.05} \right)^2 0.9(1-0.9)$ $= 138 + 10\%$ $= 152$ <p>p = proportion of donors chose the most important motivating factor (donating blood is the right thing to do)</p>                                                                             | 152         | Finck <i>et al.</i> , 2016 |
| To determine the association between gender and the motivating and deterring factors for blood donation among blood donors of higher education students. | $n = \frac{0.94(1-0.94) + 0.85(1-0.85)}{(0.94-0.85)^2} (1.96 + 0.84)^2$ $= 177 + 10\%$ $= 195 \times 2$ $= 390$ <p>(p<sub>1</sub> = proportion of male donors chose the most important motivating factor)</p> <p>(p<sub>2</sub> = proportion of female donors chose the most important motivating factor)</p> | 390         | Finck <i>et al.</i> , 2016 |

|                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                               |    |                |
|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----------------|
| <p>To determine the association between frequency of donation and likelihood of repeat donation among blood donors of higher education students.</p> | $n = \frac{0.95(1-0.95) + 0.45(1-0.45)}{(0.95-0.45)^2} (1.96 + 0.84)^2$ $= 10 + 10\%$ $= 11 \times 2$ $= 22$ <p>(p<sub>1</sub> = proportion of donors with history of previous donation will come again for donation in future)</p> <p>(p<sub>2</sub> = proportion of donors with no history of previous donation will come again for donation in future)</p> | 22 | Alfouzan, 2014 |
|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----------------|

From the calculation, specific objective three had the largest sample size (390) and were selected for this study.

#### 4.3.2 Data collection

##### 4.3.2.1 Subject recruitment

All donors who fulfil the inclusion criteria were approached to join the study after the blood donation finished. They received a brochure containing brief information about this study and donor who was interested to join, informed the researcher for subsequent steps. Every subject was explained by the researcher regarding the purpose of study, procedure involved and their rights in this study. Donors who consented to participate in the study were required to sign an informed consent.

Questionnaires was self-administered by donor. Donors who did not consented were not forced to participate or receive any punishment. Small token of appreciations were distributed to consented donors once they completed the questionnaire. Subsequently, completed questionnaires was submitted and checked by the investigator. If any missing data occur, donor was approached back to complete the questionnaires.

#### **4.3.2.2 Consent and confidentiality**

Every subject was given subject information sheet and required to sign an informed consent. The data collected via questionnaires and the data of interest were recorded anonymously hence there will be no possible traceability occur. Results obtained from this study, raw or analysed will not be revealed to any third party, except when it is required by law.

#### **4.3.2.3 Security of sources documents and study data**

The questionnaires and study data collected were stored in a secured and locked cabinet in medical officer room in HUSM to ensure its confidentiality. The data will be kept safe for five years after completion of study. After the period of storage, the data will be destroyed.

#### **4.3.2.4 Confidentiality of subject during publication**

No personal data of the subjects will be revealed in any publication. All subjects' identification will be anonymous.

#### **4.3.2.5 Declaration of conflict of interest**

There is no conflict of interest relevant to this study.

### **4.4 Data Analysis**

Subjects need to rate the importance of each motivating and deterring factors that influenced them in decision to donate blood. They also must rate the appeal of incentives listed. The responses of each questions were further categorised for analysis.

For motivating and deterring factors questions, “strongly agree” and “agree” were categorised as a positive responses while “not sure”, “disagree” and “strongly disagree” were categorised as a negative response.

For likelihood of repeat donation question, “very likely” and “probably” were categorised as a positive response. On the other hand, “not sure”, “maybe not” and “not at all” were categorised as a negative response.

Data entry and analysis were done with SPSS version 23.0 and Stata version 13. Data was analysed using descriptive and inferential analysis.