AWARENESS AND BARRIERS OF BLOOD DONATION AMONG FIRST YEAR UNDERGRADUATE STUDENTS IN SCHOOL OF HEALTH SCIENCES, UNIVERSITI SAINS MALAYSIA

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by

SITI AISYAH BINTI EDDY ROHAIZAT

Dissertation submitted in partial fulfillment of
the requirements for the degree of
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CERTIFICATE

This is to certify that the dissertation entitled “Awareness and Barriers of Blood Donation Among First Year Undergraduate Students in School of Health Sciences, Universiti Sains Malaysia” is the research work done by Ms. “Siti Aisyah binti Eddy Rohaizat” during the period from October 2023 until June 2024 under my supervision. I have read this dissertation, and, in my opinion, it conforms to acceptable standards of supervision of scholarly presentation and is fully adequate, in scope and quality, as a dissertation to be submitted in partial fulfilment for the degree of Bachelor in Nursing with Honours.

DECLARATION

I hereby declare that this dissertation is the result of my investigations, except where otherwise stated and duly acknowledged. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at Universiti Sains Malaysia or other institutions. I grant Universiti Sains Malaysia the right to use the dissertation for teaching, research and promotional purposes.

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I would like to express my gratitude towards the Almighty for allowing me to complete my thesis with His permission. Even though I was tested with various hardships throughout the preparation of this thesis, I am grateful that God is always with me and listened to my duas. Therefore, never underestimated the power of duas.

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LIST OF ABBREVIATION

USM- Universiti Sains Malaysia

HUSM- Hospital Universiti Sains Malaysia

HBM- Health Belief Model

KESEDARAN DAN HALANGAN DERMA DARAH DALAM KALANGAN PELAJAR SARJANA MUDA TAHUN PERTAMA DI PUSAT PENGAJIAN SAINS KESIHATAN, UNIVERSITI SAINS MALAYSIA

ABSTRAK

Derma darah adalah aktiviti kesihatan awam yang penting untuk menyelamatkan nyawa. Walau bagaimanapun, jumlah penderma sukarelawan semasa tidak mencukupi untuk memenuhi keperluan yang semakin meningkat. Mendapatkan pandangan tentang pelbagai tahap kesedaran dan mengiktiraf halangan untuk menderma darah di kalangan individu muda adalah penting untuk merangka strategi fokus untuk meningkatkan kadar derma. Objektif kajian ini adalah untuk mengukur tahap kesedaran dan menentukan halangan yang dirasakan menghalang pelajar tahun pertama di Pusat Pengajian Sains Kesihatan, Universiti Sains Malaysia (USM) daripada menderma darah. Keputusan kajian mendedahkan bahawa 77.5% responden menunjukkan kesedaran yang baik mengenai pendermaan darah. Halangan utama yang dikenal pasti adalah "Saya tidak layak kerana sebab perubatan," yang dilaporkan oleh 24.7% peserta. Tiada hubungan yang signifikan secara statistik antara kesedaran dan halangan pendermaan darah (nilai p = 0.251), yang membawa kepada penerimaan hipotesis nol. Walau bagaimanapun, tiada hubungan yang signifikan didapati antara umur dan halangan pendermaan darah (nilai p = 0.401), menyebabkan penerimaan hipotesis nol. Tambahan pula, terdapat hubungan yang signifikan antara jantina dan halangan pendermaan darah, oleh itu menolak hipotesis nol. Penemuan ini menekankan keperluan untuk intervensi yang disasarkan untuk menangani halangan tertentu dan meningkatkan kesedaran mengenai pendermaan darah dalam kalangan pelajar. Kajian ini menekankan pentingnya kesedaran dalam menurunkan halangan terhadap pendermaan darah dalam kalangan pelajar tahun pertama Sarjana

Muda Sains Kesihatan di Universiti Sains Malaysia (USM). USM boleh mewujudkan persekitaran yang lebih kondusif untuk pendermaan darah dengan menangani halangan yang dikenal pasti melalui usaha pendidikan yang disasarkan, sokongan psikologi, dan peningkatan aksesibiliti, dengan itu menyumbang kepada matlamat kesihatan awam yang lebih besar untuk mengekalkan bekalan darah yang stabil dan boleh dipercayai.

AWARENESS AND BARRIERS OF BLOOD DONATION AMONG FIRST YEAR UNDERGRADUATE STUDENTS IN SCHOOL OF HEALTH SCIENCES, UNIVERSITI SAINS MALAYSIA

ABSTRACT

Blood donation is an essential public health activity that is vital for saving lives. However, the current number of volunteer donors is inadequate to fulfil the increasing need. Gaining insight into the various degrees of consciousness and recognizing obstacles to blood donation among young individuals is crucial for formulating focused strategies to enhance donation rates. The objective of this study is to measure the level of awareness and determine the perceived barriers that prevent first-year undergraduate students in the School of Health Sciences at Universiti Sains Malaysia (USM) from donating blood. This study aimed to evaluate the level of awareness and identify the main barriers to blood donation among first-year undergraduate students in the School of Health Sciences at Universiti Sains Malaysia (USM). The results revealed that 77.5% of respondents demonstrated good awareness of blood donation. The primary barrier identified was "I am not eligible because of medical reasons," reported by 24.7% of participants. There was a statistically no significant association between awareness and barriers to blood donation (p-value = 0.251), leading to the accepting of the null hypothesis. However, no significant association was found between age and barriers to blood donation (p-value = 0.401), resulting in the acceptance of the null hypothesis. Additionally, a significant association was observed between gender and barriers to blood donation, thus rejecting the null hypothesis. These findings underscore the need for targeted interventions to address specific barriers and enhance blood donation awareness among students. The study emphasizes the importance of awareness in lowering the barriers on blood donation

among first year undergraduate students in School of Health Science, Universiti Sains Malaysia (USM). USM can foster a more conducive environment for blood donation by addressing identified barriers through targeted educational efforts, psychological support, and increased accessibility, thereby contributing to the larger public health goal of maintaining a steady and reliable blood supply.

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Blood donation, which is performed voluntarily, has the potential to save lives. A few types of blood donation exist. Various types serve different medical purposes. According to the World Health Organization (WHO) in 2023, although transfusion continues to be a critical and potentially life-saving procedure, millions of patients require immediate access to secure blood. Any professional healthcare planning and support system must incorporate security measures and maintain a sufficient blood supply.

Blood use is not solely for accident victims; individuals needing the most blood include those undergoing cancer treatment, orthopedic, cardiovascular, and hereditary hematological conditions (OneBlood & Solodev, 2020). Just a single unit of blood has the potential to save up to three lives. However, due to its short duration of use, a continuous supply of blood donations is necessary (Agarwal, Pandey, & Kumar, 2016).

During the Movement Control Order (MCO) implemented from 2020 to mid-2022, there was a significant decline in blood supplies. This was primarily caused by a fall in the number of blood donors, which put immense strain on the blood bank at Hospital Universiti Sains Malaysia (HUSM). As a result, the hospital made appeals to the public to give blood. (Bernama, 2021) Moreover, the HUSM's Transfusion Medicine Unit needs at least 12,000 bags of blood every year. According to the HUSM's Transfusion Medical Unit Medical Officer, Dr Mohd Amran Ab Wahab, every month the average amount of blood required is 800 bags which is given to the other hospitals that are needed at the same time (Zaidi, 2022).

1.2 Problem Statements

A shortage of blood supply often happens where according to the National Blood Centre (NBC) requires around 2000 to 2200 units of blood daily to provide treatment for 1000 patients across the country. (Tuty Haryanti, 2023) Even though Dr. Norasrina Ishak, a Transfusion Physician who is also the Head of the Blood Procurement Division of the NBC stated that the blood supply was currently sufficient, the awareness among the public is that it is strongly recommended that individuals give blood regularly every three months to provide a continuous supply and maintain an ideal stock level. This will ensure that patients may get timely treatment.

There is a significant difference between awareness and barriers to blood donation. Despite having good knowledge and positive attitudes towards blood donation, students may be unaware of the opportunities and processes involved in donating blood, leading to a lack of action (Anuar et al., 2020). Barriers such as being unqualified for donation and fear or misconceptions were identified as reasons for non-donation, indicating a gap in addressing these concerns (Mahfouz et al., 2021). Possessing knowledge about blood donation does not ensure the actual act of giving blood, highlighting the gap between theoretical understanding and the action of donation (Sara et al., 2018).

The importance of addressing barriers and misconceptions related to blood donation through awareness programs and educational initiatives (Elnajeh, Ghazi, Abdalqader, & Baobaid, 2017). According to research by Majdabadi, Kahouei, Taslimi, & Langari (2018), some of students have low awareness of blood donation which 35.33%. In addition, the survey revealed that a significant proportion of participants (23.59%) had a pessimistic view on blood donation. By using first-year undergraduate students, they

represent a group of young people who are at the beginning of their professional careers and are more likely to be open to new ideas and experiences (S, 2019).

1.3 Research Questions

1. What is the level of awareness of blood donation among first year students in School of Health Sciences, USM?
2. What are the key barriers of blood donation among first year students in School of Health Sciences, USM?
3. Is there any association between awareness and barriers on blood donation among first year students in School of Health Sciences, USM?
4. Is there any association between selected sociodemographic characteristics and barriers of blood donation among first year students in School of Health Sciences, USM?

1.4 Research Objectives

1.4.1 General objective

To identify the level of awareness and barriers of blood donation among year 1 undergraduate students in School of Health Sciences, USM.

1.4.2 Specific objectives

1. To determine the level of awareness of blood donation among first year students in School of Health Sciences, USM.
2. To determine the key barriers of blood donation among first year students in School of Health Sciences, USM.
3. To determine the association between awareness and barriers of blood donation among first year students in School of Health Sciences, USM.

4. To determine the association between selected sociodemographic characteristics (age and gender) and barriers of blood donation among first year students in School of Health Sciences, USM.

1.5 Research Hypothesis

Hypothesis 1: There is no association between awareness and barriers of blood donation among year 1 undergraduate students in School of Health Sciences, USM. **(Ho)**

Hypothesis 2: There is an association between awareness and barriers of blood donation among year 1 undergraduate students in School of Health Sciences, USM. **(H_A)**

1.6 Conceptual and Operational Definitions

Awareness	Awareness can be defined as a knowledge that something exists or understanding of a situation or subject at the present time based on information or experience (Cambridge Dictionary, 2019). In this study, awareness generally refers to places and facilities involved for blood donation among first year undergraduate students in School of Health sciences, USM Health Campus Kubang Kerian, Kelantan. It is the state of being conscious, cognizant, or mindful of something. It also involves having knowledge or perception of a particular situation, fact, event or condition.
Barriers	Barriers can be defined as something that prevents something else from happening or makes it more difficult (Cambridge Dictionary, 2019). In this study, the barrier also recognizes as the challenges or the influence factors for the students to donate their blood.

	Barriers in this study is to assess a limitation among first year undergraduate students in School of Health sciences, USM Health Campus Kubang Kerian, Kelantan towards the process or blood donation itself.
Blood donation	Blood donation means giving some of your blood so that it can be used to help someone else (MyHealth.Alberta.ca, 2022).

Table 1: Conceptual and Operational Definitions

1.7 Significance of the Study

The findings from this study will determine the level of awareness and barriers to blood donation among first-year undergraduate students in the School of Health Science at USM. It is hoped that the study findings can be contributed to the blood donation campaign by the Transfusion Medicine Unit team in HUSM. Besides, by focusing on freshmen, the study may promote favorable attitudes and actions towards blood donation at the beginning of their academic experience. Promoting blood donation during this period has the potential to boost long-term donation behaviors. First-year students enrolled in the School of Health Sciences are potential healthcare professionals. Promoting blood donation and increasing awareness among this group has the potential to enhance their active involvement in advocating for blood donation in their professional lives.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Blood donation is a procedure that is performed voluntarily which has potential to save lives. There are multiple forms of blood donation that exist, and each category serves various medical needs. This chapter will present a review of the literature related to blood donation, level of awareness of blood donation among students, the key barriers of blood donation among students, the association between awareness and barriers of blood donation among students and the relationship between selected sociodemographic characteristics and barriers of blood donation among students. The final section will detail the theory of planned behavior (TPB), the study's conceptual frameworks.

2.2 Blood donation

Blood donation is a vital act that can save lives and contribute to the well-being of others in need. Blood donation plays a crucial role in saving lives and meeting the ongoing demand for blood transfusions (Al-Asadi & Al-Yassen, 2018).

In Malaysia, before donating blood, the person will need to fill out a registration form or card. Then, they will get their weight checked. After that, they will get a blood test to find out their blood type and hemoglobin level. A doctor or nurse gives counselling or advice before the donation is made. If they are eligible, get their information recorded and a blood donor book given to them. Once this is done, the actual process of blood donation usually takes between 7 and 15 minutes. After donating blood and having the needle taken out, the giver must rest for at least 10 minutes before getting up. Lastly, the donor will then be given a light snack (Dottie, 2020).

2.2.1 Purpose of Blood donation

Blood donation is essential for transfusion therapy, as it provides a vital resource for patients who require blood products (Ioannis et al., 2022). The collected blood is used for various medical purposes. Medical and surgical treatments such as cardiac surgery and organ transplantation, and management of thalassemia, hemophilia and patients with anemia, all depend on blood transfusion. Ministry of Health Malaysia has targeted to recruit at least 5% of Malaysian population to become blood donors (Dottie, 2020).

2.2.2 Types of Blood donation

There are several types of blood donation. Whole blood donation is the most adaptable way to give. It can be used to help more than one person when it is split down into its individual parts, such as red cells, plasma, and platelets (The American National Red Cross, 2023). It is frequently given to trauma patients and people who are undergoing surgery and the donation frequency about every 56 days, up to 6 times a year.

The donation of apheresis requires more time than the donation of whole blood. Donating a whole blood or an apheresis component of blood can take between one and two hours, while the former takes approximately twenty minutes (Giving Equals Living, 2022). Common blood components used in apheresis blood donation is red blood cells, platelets and plasma. Red blood cells usually treat patients with anemia and replace blood loss in accidents or during childbirth. Platelets used for dengue treatment and plasma for clotting factors that have been depleted due to infection or hemorrhage (Health Sciences Authority, 2023).

2.3 Awareness among students towards blood donation

A study conducted by ACS Medical College and Hospital in Chennai, India in 2021 finding that the level of the awareness has been increasing and give positive feedback where the 92.0 % of students are aware of the voluntary blood donation and 97.5% are aware about their own blood group (Roberts O R, Bai S*, & P, 2021). Another study conducted found that there is greater awareness among medical and physiotherapy students compared to nursing, dental and ayurvedic students (Kanani, Vachhani, Upadhyay, & Dholakiya, 2018).

However, there is a lack of significant research about the level of student awareness of the lack of barriers to potential blood donations. It is crucial to assess the students' degree of knowledge of their need for blood and the obstacles they face in donating blood. Furthermore, it is vital to implement appropriate methods to address these issues specifically among the students (Abd et al., 2022). According to research by Majdabadi, Kahouei, Taslimi, & Langari (2018), a minority of students have low or moderate awareness of blood donation which 35.33%. In addition, the survey revealed that a significant proportion of participants had a pessimistic view on blood donation.

2.4 Barriers on blood donation among students

A few factors contributing to the barriers on blood donation. According to the research among the students in Japan, the study found that fear was the primary barrier preventing Japanese university students from donating blood (Ngoma et al., 2013). In additional, a study conducted by the University of Namibia, finding that most of the health science students have never done in blood donation. The primary reasons cited for this include fear of needles, insufficient knowledge, being underweight, lack of interest, and medical conditions (Klinkenberg et al., 2018).

Furthermore, barriers associated with the blood donation procedure included issues with time and place, insufficiency of accurate information, and delays in obtaining blood group results and donor cards, which the study found that while the students were eager to give blood, these obstacles had a substantial impact on their capacity to do so (Karugaba & Nantongo, 2021). Barriers to blood donation among students may include lack of awareness, misconceptions, and perceived distance from the world of donation (Sara et al., 2018). Another study by Viwattanakulvanid & Chan Oo (2021) also identified the top three reasons for not donating blood among non-donors, which were "no opportunity," "fear to donate," and "still underage to donate." (Viwattanakulvanid & Chan Oo, 2021)

2.5 Association between awareness and barriers on blood donation among students

Research indicated that 18% of the student's lacked awareness of their blood group, implying a deficiency in understanding their own eligibility for blood donation (Arun, et al.,2013). Insufficient knowledge can result in misunderstandings and apprehension, both of which act as individual obstacles to blood donation (Al-Johar et al., 2016). The presence of trypanophobia, or fear of needles, was recognized as a barrier to blood donation, indicating that mere knowledge may not be enough to overcome certain barriers (Moore, Gitau, & Kerochi, 2020). Besides, non-donors face challenges in blood donation due to lack of knowledge about donation procedures and locations, and first-time donors often attribute this to medical reasons or concerns about health consequence (Padilla-Garrido, Fernández-Herrera, Aguado-Correa, & Rabadán-Martín, 2021).

2.6 Relationship between selected sociodemographic characteristics (age and gender) and barriers of blood donation among students

Sociodemographic characteristics may influence awareness and barriers on blood donation among students. The selected sociodemographic characteristics in this study are age and gender.

2.6.1 Age

According to Romero-Domínguez, Martín-Santana, Sánchez-Medina, & Beerli-Palacio, (2021), found that students who are between 18 and 35 years of age are more likely to be affected by donation barriers. Additionally, 88.0% of students who are more than 23 years old are non-donors due to “no one ever asked for donation” and “never thought to donate” (Gomes, Nogueira, Antão, & Teixeira, 2019).

2.6.2 Gender

According to study from Saudi Arabia, it shows that male respondents were more likely to be blood donors than female respondents, and that college type had no significant influence on the prevalence of blood donation (Mahfouz et al., 2021). However, another study did analyze the influence of gender on the barriers to blood donation, finding that male participants resort more frequently to "pretexts" to avoid blood donation, while females give more importance to external incentives (Martínez-Santos, Fernández-De-La-Iglesia, Casal-Otero, Pazos-Couselo, & Rodríguez-González, 2022).

2.7 Theoretical and Conceptual Framework of the Study

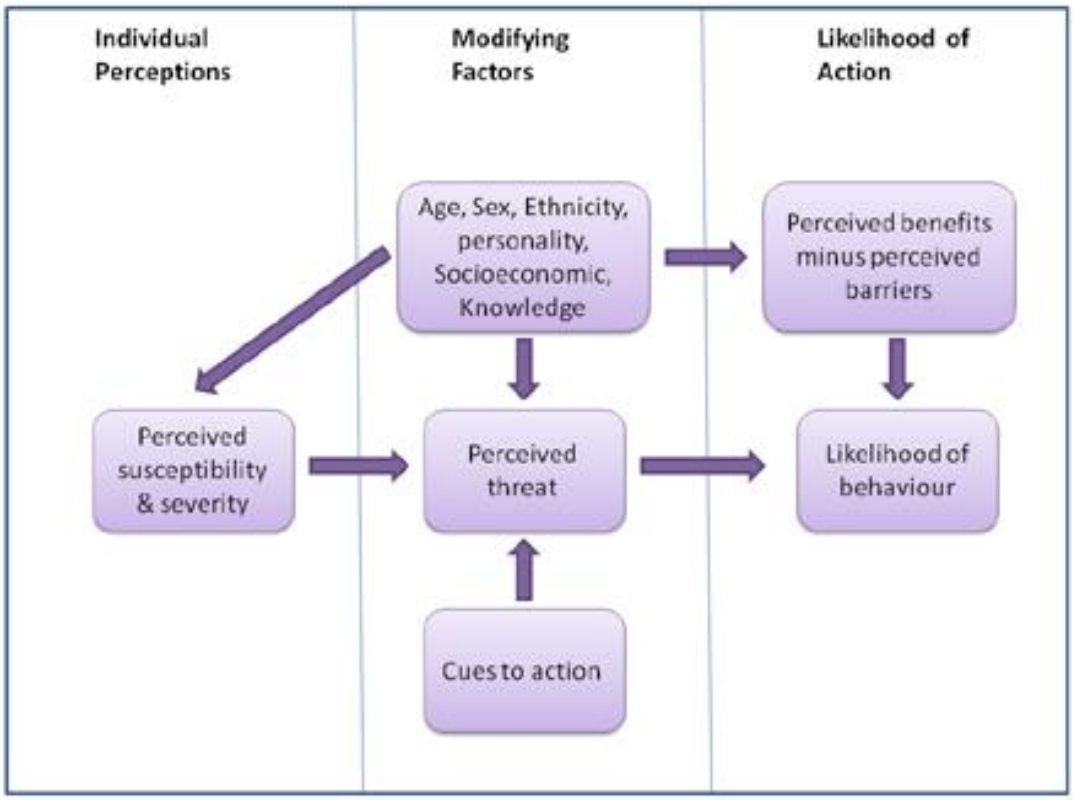

Figure 1: The Health Belief Model adopted from Glanz, Rimer & Lewis (2002)

A conceptual framework called Health Belief Model (HBM) proposes that messages may facilitate behavior modification by addressing perceived barriers, benefits, self-confidence, and risks. Nevertheless, the actual use of this is restricted by theoretical limitations and clarity over the arrangement of variables (Jones et al., 2015).

The HBM has four constructs which are perceived vulnerability, perceived severity, perceived benefits, and perceived barriers. Perceived severity and vulnerability are closely associated with the susceptibility of an individual and consequences in case they become ill, respectively. Perceived rewards are the positives associated with particular action while barriers are a reduced image of poor health qualities that stop desired behavior change. (Jones et al., 2015).

Using the HBM, this study explores modifying factors which are selected sociodemographic factors which are age and gender as well as awareness and barriers of blood donation among first year students. Furthermore, the HBM can examine if it moderates the relationship between the mentioned variables and blood donation behaviors. This exploratory study will be conducted to identify factors that impact awareness and barriers towards blood donation among first year undergraduate students.

For the outcome, the participants will give either good or poor awareness regarding blood donation. Generally, this concept is available to determine the relationship between awareness and barriers on blood donation among first year undergraduate students in School of Health Sciences, USM.

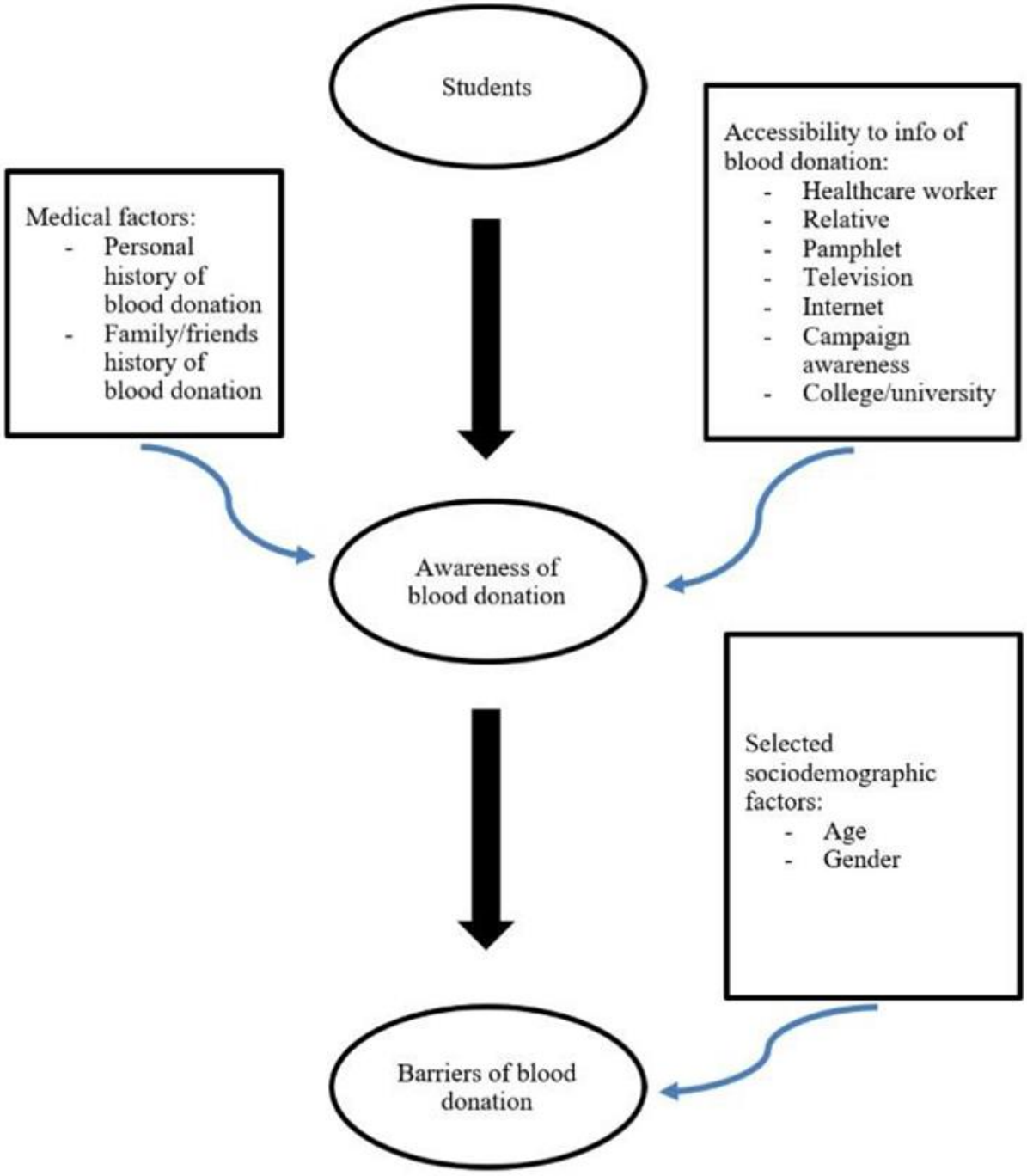

Figure 2: Conceptual framework of the Study for Awareness and Barriers of Blood Donation Among First Year Undergraduate Students in School of Health Sciences, USM.

CHAPTER 3

RESEARCH METHODOLOGY

3.0 Introduction

This chapter will clarify the methods and reasons used to justify the selected research methodology. It is important to design and understand a relevant research design in order to accomplish the objectives of the research. The chapter begins by providing an overview of a cross-sectional design and the rationale for selecting for this methodology. The remaining component consists of a description of the study's setting the population involved, the criteria for selecting participants, the method for sampling, the determination of the sample size, and the instruments used, which includes ethical considerations and data collecting procedures. This chapter will also include a section that clarifies the suggested statistical analysis used for the quantitative data.

3.1 Research Design

The study will be using a cross-sectional study design. A cross-sectional study is a research strategy that involves gathering data from a various group of persons at a certain moment in time. In cross-sectional study, variables are observed without exerting any influence on them (Thomas, 2020). A method used in qualitative research to determine a certain group of people or things to study.

3.2 Research Location

This study will be conducted among first year undergraduate students in the School of Health Sciences in USM Health Campus, Kubang Kerian, Kelantan.

3.3 Research Duration

This study will be conducted from October 2023 until August 2024.

3.4 Research Population

This study will be conducted among first year undergraduate students who fulfilled the inclusion criteria.

3.5 Subject criteria

Inclusion Criteria	Exclusion criteria
1. First year undergraduate students who studied in School of Health Sciences, USM.	1. Students who are in Diploma in Advanced-Renal program.
2. Willingly to participate in this study.	2. Refused to participate in this study

Table 2: Inclusion and Exclusion Criteria

3.6 Sampling Plan

3.6.1 Sampling Size Estimation

For the first and second objective, a single proportion formula is used in sample size estimation.

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

Whereby,

n = Sample size

p = Anticipated population proportion

z = Value of standard normal distribution = 1.96

$\boldsymbol{\Delta} = \text{Precision} = 0.05$

For the first objectives which is to determine the level of awareness of blood donation among first year students in School of Health Sciences, USM.

Calculation:

Based on previous research with title "Awareness, Perception, and Practices Towards Blood Donation Among Undergraduate Health Science Students of India During the COVID-19 Pandemic" (Joseph & Khaitan, 2022).

$$n= \left[\frac{1.96}{0.05}\right]^2 0.866\ (1 - 0.866)$$

n= 178

After considering 10% drop off,

178 x 10% = 18

n= 170

Therefore, the total sample size for the first objective will be 170 samples.

For the second objective which is to determine the key barriers of blood donation among first year students in School of Health Sciences, USM.

Calculation:

Based on previous research with title "

$$n= \left[\frac{1.96}{0.05}\right]^2 0.05\ (1 - 0.05)$$

n= 73

After considering 10% drop off,

73 x 10% = 7

n= 66

Therefore, the total sample size for the second objective will be 196 samples.

For the third and fourth objective, the double proportion method is used in sample size estimation.

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

Whereby,

n = Sample size

p = Anticipated population proportion

α = level of statistical significance

1-β = power of the study

For the third objective which is to determine the association between awareness and barriers of blood donation among first year students in School of Health Sciences, USM.

Calculation:

Based on previous research with title "Awareness, Perception, and Practices Towards Blood Donation Among Undergraduate Health Science Students of India During the COVID-19 Pandemic" (Joseph & Khaitan, 2022).

Prevalence of good awareness on blood donation:

p_1: 0.866

α= 0.05

1-β= (1-0.8) = 0.2

z_α : 1.96

Prevalence of poor awareness on blood donation:

p_2: 0.05

α= 0.05

1-β= (1-0.84) = 0.2

z_β : 0.05

$$n= \frac{0.866(1-0.866)+0.05(1+0.05)}{(0.866+0.05)^2}(1.96 + 0.84)^2$$

n= 1.35

n= 2

For the fourth objective which is to determine the relationship between selected sociodemographic characteristics and barriers of blood donation among first year students in School of Health Sciences, USM.

Calculation:

Based on previous research with title "Barriers and motivators to blood donation among university students in Japan: development of a measurement too" (Ngoma et al., 2013).

Prevalence of high barriers on blood donation:

p_1: 0.34

α= 0.05

1-β= (1-0.8) = 0.2

z_α : 1.96

Prevalence of low barriers on blood donation:

p_2: 0.01

α= 0.05

1-β= (1-0.84) = 0.2

z_β : 0.05

$$n= \frac{0.34(1-0.866)+0.01(1+0.01)}{(0.34+0.01)^2}(1.96+0.84)^2$$

n= 2.39

n= 3

Based on the four estimated sample sizes that's calculated, the greatest sample size was selected in this study to ensure all objectives can be achieved. The number of sample sizes that will be collected is 170 students in School of Health

Sciences, USM Health Campus Kubang Kerian, Kelantan who full filled both exclusion and inclusion criteria.

3.6.2 Sampling Method

This study will use a convenience sampling method for collection of data among first year undergraduate students in School of Health Sciences, USM. Coveniece sampling method is a qualitative research sampling approach that involves the selection of participants based on their ease of access and availability to the researcher (Fleetwood, 2018).

3.7 Research Instrument

3.7.1 Questionnaire

The instrument used is a structured, self-administered questionnaire focused on awareness and barriers on blood donation among undergraduate students in School of Health Sciences, USM (Appendix A). The questionnaire was adapted, and permission to use the tool was obtained from the original (Chee, Chin, Cheng Kueh, & Yusoff, 2018) and (Ciepiela et al., 2017) (Appendix A).

Part A: Socio-demographic data

Part A represents the socio-demographic characteristics comprised of age, gender, program, and history of blood donation.

Part B: Awareness of blood donation

Part B consists of 5 open-ended questions related to the awareness of blood donation.

Part C: Barriers on blood donation

Part C consists of 16 close-ended questions related to barriers on blood donation. This section is to be filled out by non-donors only.

3.7.2 Translation of Instrument

The original questionnaire was established in English. However, the questionnaire will be in bilingual which are English and Bahasa Melayu to help the students understand the questionnaire better in both languages.

3.7.3 Validity and Reliability

The content will be validated by three experts in this field of study. All the recommendations and suggestions from the experts to improve the instrument. A pilot study will be done among 18 first year undergraduate students in School of Medical Science, USM who meet the inclusion criteria.

3.8 Variables

3.8.1 Variable Measurement

Dependent variable	Awareness and barriers on blood donation
Independent variable	Selected sociodemographic factors and barriers

Table 3: Dependent and Independent Variables

3.8.2 Variables Scoring

In scientific inquiry, a variable denotes an entity, location, item, or phenomenon that one is aiming to quantify (Labaree, 2023).

3.8.2.1 Scoring for Awareness of Blood Donation

For awareness on blood donation, 3-points Likert scale scoring will be used in this study from low level of awareness on blood donation to high level of awareness of blood donation.

Level of Awareness of Blood Donation	Score
Poor	0-30
Average	40-60
Good	70-100

Table 4: Scoring for Awareness of Blood Donation

3.8.2.2 Scoring for Barriers of Blood Donation

The barriers were addressed using a set of questions, and responses were given using a 5-point Likert scale ranging from "Strongly agree" to "Strongly disagree" (Ibrahim, Koç, & Abdallah, 2021).

The key Barriers of Blood Donation	Score
Strongly Disagree	1
Disagree	2
Neither agree nor disagree	3
Agree	4
Strongly Agree	5

Table 5: Scoring for Barriers of Blood Donation

3.9 Data Collection Plan

3.9.1 Procedure of data collection

The data collection is expected to start from January to March 2024 after obtaining ethical approval from the Human Research Ethics Committee (HREC) of USM and permission from the Dean of the School of Health Sciences.

After the questionnaire was validated, it was formatted into Google Forms. The researcher used Google Forms for data collection, involving first year undergraduate students in School of Health Sciences, USM. By using Google Forms for data collection, it makes the data collection easier for the researcher due to survey answers and data are automatically collected in Google Spreadsheets (Vasantha & Harinarayana, 2016). The link of the Google Forms will be spread through WhatsApp application by the class representative for respective programmes with an explanation of the aim of the study and the procedures of data collection for participants. The students are voluntarily to answer the questionnaire given and if they participate, the consent form on the first page of the Google Forms will be fulfilled before answering the questionnaire for about 5 to 10 minutes and link will be opened 24 hours. The questionnaire should be answered with honesty by the participants themselves. Then, the questionnaire will be collected after participants finish answering and the answers were checked for their completeness. The data collection procedure will follow the flow chart provided below.

3.9.2 Study Flowchart

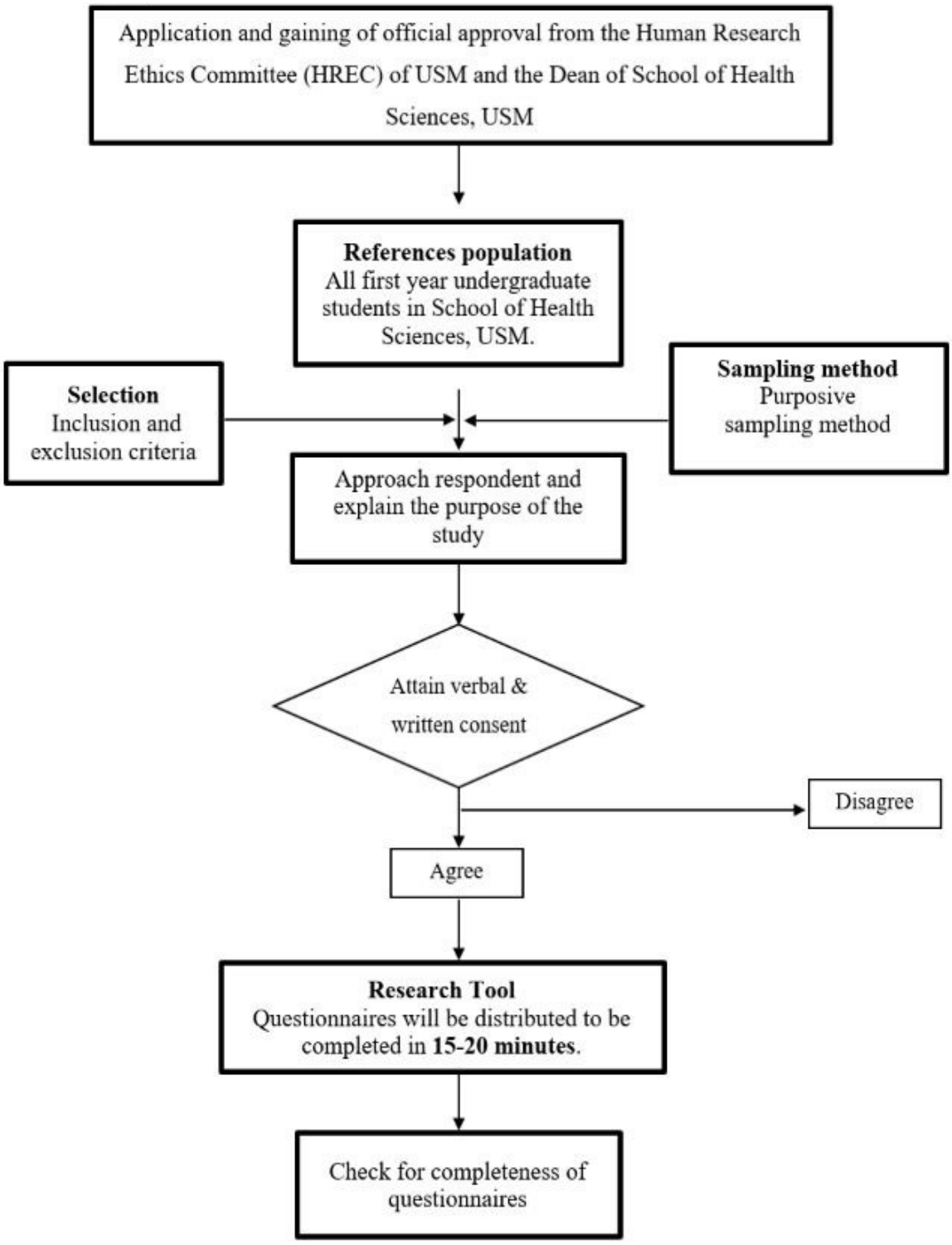

Figure 3: Study Flowchart