FACTORS THAT MOTIVATE AND HINDER TEMPORARILY DEFERRED FIRST TIME BLOOD DONORS

By

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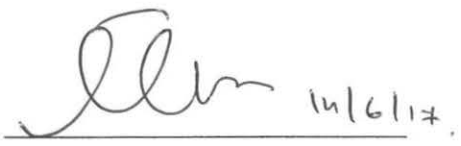
DECLARATION

I hereby declare that this research has been sent to Universiti Sains Malaysia for the degree of Masters of Medicine in Transfusion Medicine. It is also not to be sent to any other universities. With that, this research may be used for consultation and will be photocopied as reference.

Courtesy



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DEDICATION

This dissertation is dedicated to my beloved husband, Mr.Shanker Sathivellu for his unconditional support, understanding and believe in me during my various difficult phases of my life; to my charming boys Loga Vignesh, Sarva Vignesh and Pravin who have always made my days filled with happiness, motivation and purpose to continue my journey. My parents and my parent in laws for their prayers, encouragement and all the support they have rendered all my life. My brother Mr.Mathi Chelvam who have been a great support throughout this journey.

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"ARISE, AWAKE, AND STOP NOT UNTIL THE GOAL IS ACHIEVED"

-Swami Vivekananda-

First and foremost, thank you to Almighty, for His blessing and giving me good health, courage and strength to pursue this challenging journey.

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ABBREVIATIONS

AMDI Advanced Medical and Dental Institute

BBIS Blood Bank Information System

BTS Blood Transfusion Service

CUE Confidential Unit Exclusion

EU European Union

ID Identification

KL Kuala Lumpur

NMRR National Medical Research Registry

NBC National Blood Center

n Number

PDN Pusat Darah Negara

UK United Kingdom

USM Universiti Sains Malaysia

WHO World Health Organization

ABSTRAK

Latar Belakang: Aktiviti menderma darah di Malaysia diamalkan secara sukarela. Merekrut dan mengekalkan penderma darah merupakan satu cabaran dalam perkhidmatan transfusi. Di samping itu kadar penolakan penderma darah juga meningkat. Tujuan kajian ini dijalankan adalah untuk memahami faktor pendorong dan penghalang supaya kadar penolakan sementara boleh diperbaiki di kalangan penderma darah kali pertama.

Kaedah: Seramai 480 penderma darah utuh kali pertama dari Pusat Darah Negara (PDN), telah mengambil bahagian dalam kajian ini dari Januari 2014 hingga Disember 2014. Penderma dipilih secara perisian komputer rawak dan pemilihan ini berdasarkan kriteria inklusi; penderma dikategorikan kepada 2 kumpulan utama iaitu satu kumpulan penderma yang kembali untuk menderma darah dan yang kedua tidak kembali selepas di tangguhkan kali pertama. Setiap penderma darah ini telah dihubungi melalui telefon dan soal selidik bertanya secara peribadi. Soalan untuk soal selidik telah diwujudkan merujuk kepada garis panduan PDN. Kajian rintis telah dilakukan untuk validasi sebelum kajian dimulakan.

Keputusan: Data dari 2010 - 2014, sejumlah 480 orang penderma dimasukkan dalam kajian ini. 240 orang penderma yang kembali menderma darah dan 240 orang penderma yang tidak kembali untuk menderma darah berikut penangguhan sementara kali pertama. Penderma yang kembali adalah lebih muda daripada penderma yang tidak kembali (29.5 tahun berbanding 35 tahun $p < 0.001$). Jantina, pekerjaan, status perkahwinan dan alamat juga ketara berbeza antara penderma yang kembali menderma dan tidak kembali untuk menderma darah. Perempuan mempunyai kadar yang lebih

tinggi (61.3%) untuk kembali menderma berbanding lelaki (38.8%). Penderma bujang (68.3%) lebih cenderung untuk kembali menderma berbanding penderma yang sudah berkahwin (31.7%).

Perbandingan di antara penderma yang kembali dan tidak kembali untuk menderma penderma profesional (38.8% berbanding 33.3%), pelajar (26.4% berbanding 20.4%), pekerja am (21.9% berbanding 21.7%), badan seragam (6.4% berbanding 9.6%),suri rumah dan menganggur (6.3% berbanding 15.0%). Bagi alamat, penderma yang tinggal di kawasan bandar lebih cenderung untuk kembali berbanding penderma yang tinggal di kawasan luar bandar (34.6%).

Antara faktor-faktor yang mendorong penderma untuk kembali menderma adalah kepuasan diri (25.8%), sumbangan sosial (24.6%), pengaruh rakan sebaya (16.7%), pemurah (13.3%), galakan keluarga (13.3%) dan lain-lain (6.3%). Faktor-faktor yang menghalang penderma daripada kembali untuk menderma adalah seperti tidak ada masa (34.2%), kehilangan minat (20.8%), takut akan ditangguhkan lagi (17.9%), tidak tahu tempat derma darah (14.2%), tiada insentif (7.9%) dan lain lain (5.0%).

Kesimpulan: Kajian ini menunjukan generasi muda, bujang, golongan profesional dan penderma dari kawasan bandar menyumbang kepada kadar kembali yang tinggi. Maka, penderma kategori ini harus diberikan tumpuan supaya mereka menjadi penderma kekal yang akan meningkatkan mutu perkhidmatan transfusi di Malaysia.

ABSTRACT

Background: Blood donation in Malaysia is practised as voluntary non-remunerated. However recruiting and retaining blood donors remains as challenge in transfusion service. Along with that, the deferral rate has also increased. The aim of this study is to understand the motivating and hindering factors, then modifiable deferral rate can be improved especially among those first time donors.

Methods: Four hundred and eighty first time temporary deferred whole blood donors from National Blood Centre (NBC), Kuala Lumpur, participated in this study from January 2014 till December 2014. Donors were randomly extracted from Blood Bank Information System by computer software. Based on the inclusion and exclusion criteria, the donors were categorized into 2 main groups of which one group of donor who return for blood donation and the other who did not return for donation after first time deferral. Each blood donor was contacted via telephone and questionnaire asked personally. Questionnaires were developed based on NBC donor criteria guideline and pilot study conducted for validation.

Results: From 2010 - 2014, a total of 480 donors were included in this study. As 240 donors who returned and 240 donors who did not return for donation following first time temporary deferral. Donors who return were significantly younger than donor who did not return (29.5 years versus 35 years, $p < 0.001$). Socio- demography also significantly differs between return and did not return. Females had higher proportion (61.3%) for returned compared to males (38.8%). Singles (68.3%) were more likely to return for donation compared to married donors (31.7%). Relating to occupation; comparing return versus did not return

donors professionals (38.8% versus 33.3%), student (26.4% versus 20.4%), general worker (21.9% versus 21.7%), uniform body (6.4% versus 9.6%) and housewife/unemployed (6.3% versus 15.0%). Donors who lived in urban areas were more likely to return for donation compared to donors who lived in rural areas (34.6%).

Among factors that motivate donors to return for donation are self-satisfaction (25.8%), social contribution (24.6%), peer influence (16.7%), altruism (13.3%), family encouragement (13.3%) and others (6.3%). Factors that hinder donor from return for donation were no time (34.2%), loss of interest (20.8%), scared to be deferred (17.9%), don't know donation site (14.2%), no incentive (7.9%) and others (5.0%).

Conclusion: In this study, clearly showed that younger generation, single and professionals from urban areas contributed to higher rate of return donor. Thus focusing on this category of donors to become regular donors will enable us to enhance and improve transfusion service in Malaysia.

Chapter 1

Introduction

1.1Blood and Blood Donation

Blood is precious and unique. Over the last few decades along with civilization and medical advancement numerous discoveries has been achieved. Beneficial outcomes at various levels such as from discovery of blood groups; first transfusion from animal to human following with human to human transfusion was done (Cooper, 2012). Although all these inventions have changed many people's life; it will not be wrong to admit there are still grey areas in the field of science.

Despite many scientists have invented machine to replace physiological functions in our system such as pacemakers, knee replacement and many more yet, the one aspect no man kind is able to reproduce mechanically is blood. Although, there are many products such as per fluorocarbon emulsions (first generation), stroma free haemoglobin, polyethylene glycol haemoglobin (PEG), conjugate bovine haemoglobin, hemospan and more. These products can be rendered as substitutes for blood but none of them is equivalent to blood itself although these products are able to function similar to blood in oxygen carrying capacity. This fact will not be wrong to say that human blood has no substitute (Davey, 2004). With that it is important to understand the need to donate blood and retain regular blood donors.

The act of giving blood by an individual can be defined as blood donation (Salaudeen and Odeh, 2011). Later it is utilised for transfusion in needy patient. The aim of transfusion is to save millions of life. Yet the biggest challenge is to face the paucity of donors (John and Varkey, 2015). According to WHO; blood donation is categorized into 3 categories such as

voluntary non –remunerated blood donations, family or replacement donation and finally paid donation (WHO, 2008).

However, the best type of donation is voluntary non remunerated donation (WHO, 2014). One has to be convinced to donate their blood in improving the society's need. As the need and demand keeps increasing, number of people transforming into blood donors and being regular blood donors becomes a necessity. In fact these donors are the backbone of blood bank. Both quantity and quality of blood donors play a vital role in blood collection.

As many studies have implied, acquiring safe blood and blood component is ensured by voluntary non remunerated donation (Dhingra, 2002). Amongst one of the studies, understanding people's perception and concepts about blood donation was analysed in Japan. In this study, correlation between the community and clinical trust was evaluated. The main objective of this study was to increase the amount of donated blood to accommodate the societal need. Understanding the perception of community towards blood donation and improvising the negative influence brought positive results in increasing awareness towards blood donation (Nakayama et al., 1999).

1.2 Blood donation in Malaysia comparing to other Asian countries.

According to WHO (WHO, 2008), based on a country's population, 5% of total population should contribute as voluntary non remunerated blood donors. Although this is the end target of WHO, globally there is a large disparity between developed and developing countries. Donation rate in many countries, still has not achieved its target (Bagot et al., 2016).

In National Blood Centre (NBC), the increase of blood and its product usage with amount of blood being collected is a major concern; but to create altruism and need to lure pool of safe blood donors from these donations are of the main intention. Voluntary non-remunerated blood donors are the corner stone of safe blood as well. Unlike, in the past where donor replacement was practiced which lead our society to compromise in safety. During this period donors who came forward for donation were not adequately screened. Thus risk of transfusion transmitted diseases were high in statistics, according to BTS, Annual Report, 2013.

However, in Malaysia we have manage to overcome donor replacement method (C.G.Lopez, 1983). During the initial days, blood donation was done on demand basis, thus if an individual is subjected for transfusion, subsequently another blood bag should be replaced by a known or new donor. Positive attitude donation will enhance healthy living within the general population. Thus knowledge of factors which motivates donors will be very useful for us in transfusion service to ensure all products transfused are safe with highest quality or as pure as possible. In other words, donors with positive attitude about blood donation will be highly motivated to return for blood donation and these donors potentially become regular blood donors by abiding donor criteria. As a result, BTS will be able to maintain regular collection by providing products all-round the year. In addition, retaining blood donors will be much feasible (Buciuniene et al., 2006).

Below is a table showing the number of total donations in NBC. This table shows total number of first time whole blood donors and donors who have been deferred for the first time. These data, has not been published yet, however permission has been given to show in this study.

Table 1.1: Data from National Blood Centre for last 5 years.

Year	Total donation	Total first time donations	Total temporary deferred donation
2010	141,855	60,702	28,407
2011	160,525	67,568	29,608
2012	162,004	62,334	31,055
2013	166,787	62,293	28,268
2014	172,260	66,417	29,749

The above table showed increase in number of total donation for last 5 years with increasing trend of total temporary deferral and total first time whole blood donors.

On the other hand, knowledge and attitude of donors, especially young donors, who could be potential regular donors is important. In sight about their thoughts is required in order to retain these groups. However, Israelis intention and perceptions of blood donation is still strongly influenced by their socio-demographic status (Ben Natan and Gorkov, 2011). In view of blood bank's core business is to recruit and retain blood donors, as mentioned earlier understanding donors thoughts are crucial in order to be able to sustain sufficient supply. Many studies have been conducted analysing similar area which explains the importance of intention and understanding donors' intention.

In a recent study conducted in central India, donors who are being deferred have higher possibility of developing negative feeling towards blood donation. Preventing such ill feelings can be achieved by educating and motivating our donors. According to author, when a donor

is deferred they are also counselled regarding their status. As a result of the counselling donors will be encouraged to continue being blood donors (Kumar Alok, 2014).

WHO and the International Federation of the Red Cross, which are International arbitrators on a separate note had supported blood policies described that bloods donated through voluntary non-remunerated donors are the safest (WHODoEHTBTS, 2008). These policies promoted anonymous donation and discouraged kin-based or replacement donation. However these were all concluded from western data which was not suitable for Asian representation. In order to develop a national policy in Pakistan, a research using the empirical ethnographic data was conducted (Mumtaz et al., 2012).

Also with additional evidence has been upheld by a study on voluntary non remunerated blood donation to be the most secured or safest act. Alongside that understanding it is essential for us whose core duty to give safe blood product and capacity to retain donors. Besides retaining, to recruit new donors will be much easier if donor's intentions and motivations are understood (Bhalodia Jignasa, 2012).

Regardless the number of studies and researches conducted, it is crucial to understand that the core interest of blood bank is to truly understanding donor retention and recruitment. Excluding these two areas, blood banking or the transfusion service will become hazardous to mankind because supplying safe product is the ultimate achievement of this service.

1.3 Justification of the study.

The need to maintain regular blood donors requires understanding donor's intention and needs. Temporary or permanent whole blood donor deferral plays a major role in maintaining donor retention. Despite stabilizing retention rate, it also provides opportunity to maintain regular, safe and healthy blood donors. In view of the increase in number of temporary deferred donors, insight about factors which motivate and hinder whole blood donor will help us in blood bank to strengthen the strategy to retain donors. This study is conducted to identify aspects that contribute to improve the status of regular donors. As a result of this study, NBC should be able to improve and strengthen their recruitment and collection state.

Data of NBC in 2010 till 2014, has shown a clear increase in number of donors. However the total number registered for donation and total donation still can be improved if the intentions and factors that motivates donors is analysed and understood. These figures clearly indicate there has been increasing trend of donors who have registered for donation but number of deferral did not show much improvement. In average, there is about 15 – 17 % of deferral recorded. The number of deferrals includes common temporary deferral criteria such as high blood pressure, low haemoglobin level, donors on medication and other deferral criteria listed in Appendix H.

Once the factors of temporary deferral is identified and rectified, this will improve the total number of donation in years to come. However, these figures are courtesy from recruitment and record unit of National Blood Centre, yet to be published.

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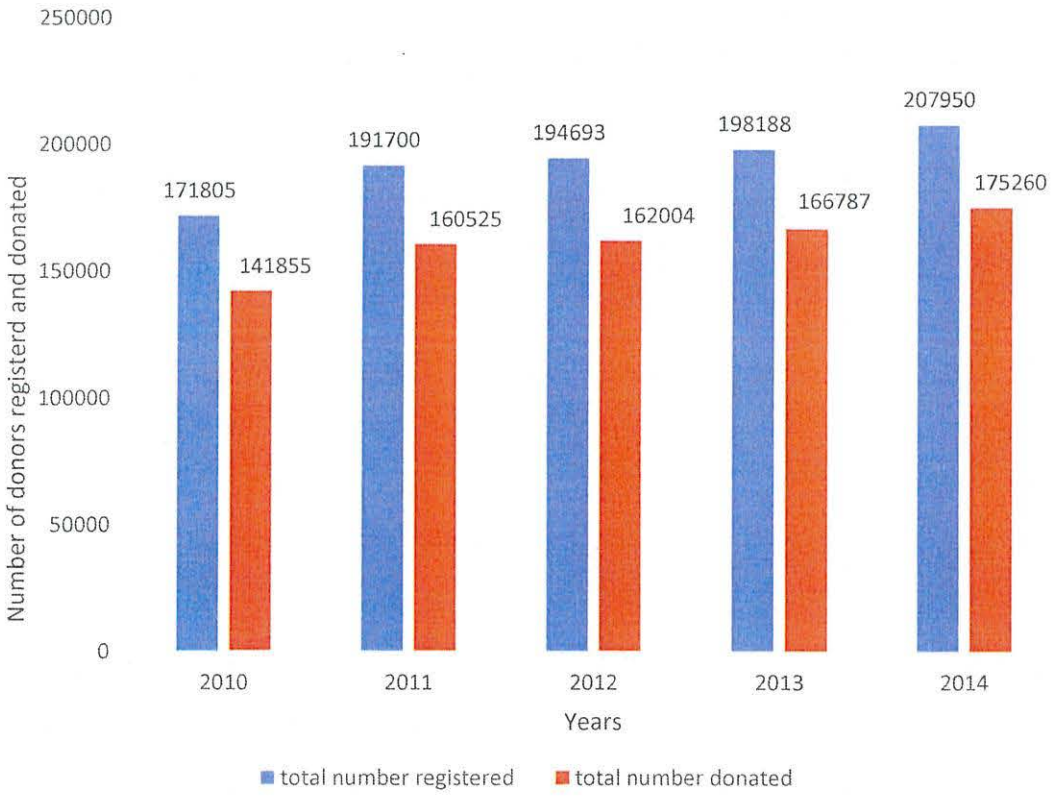

Figure 1.1 Total registered donor versus total donation in NBC

The above table shows total number of whole blood donors registered for blood donation versus total number of donors completed successful donation.

1.4 Objectives

1.4.1 General Objectives

To determine factors that motivate and hinder the return of temporarily deferred first time blood donors.

1.4.2 Specific Objectives

i. To identify the prevalence of temporarily deferred first time blood donors.

ii. To compare the demographic characteristics of donors who return and did not return following temporarily deferred first time blood donors.

iii. To identify the factors that motivate and hinder temporarily deferred first time blood donors to return for blood donation.

iv. To determine the associated factors (age, gender, marital status, occupation and donation site) of returned temporarily deferred first time blood donor.

1.5 Hypothesis

1. There is a significant difference in demographic characteristics of donors who return and did not return following temporarily deferred first time blood donors.
2. There is significant associated factors of returned temporarily deferred first time blood donors.

1.6 Conceptual Framework.

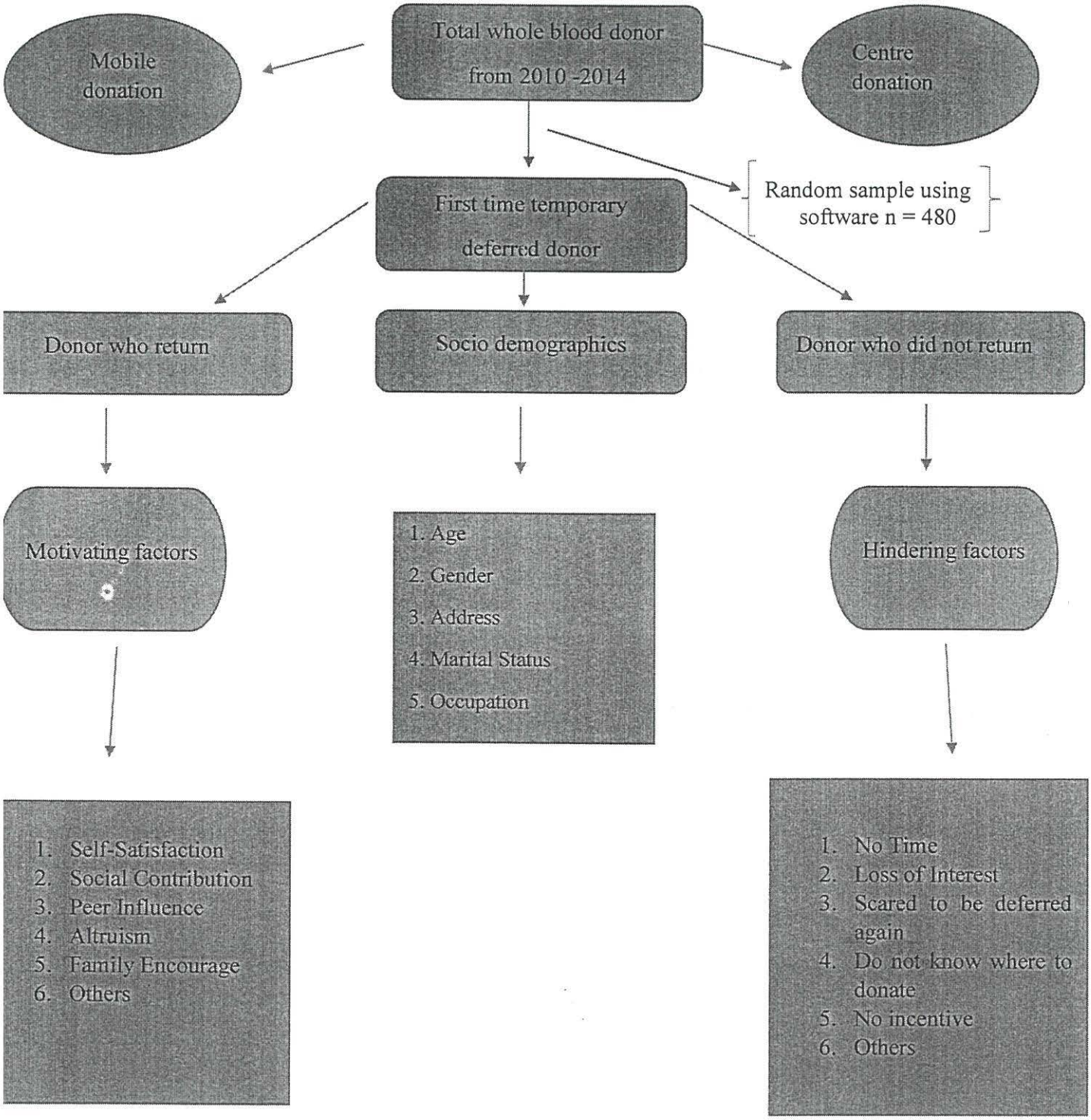

Figure 1.2: Conceptual framework of the study

Chapter 2

Literature review

2.1 Importance of blood supply.

During the Second World War, the important properties of lifesaving through blood transfusion became clear to mankind, and thereafter blood transfusion became a routine hospital function (Rossi and Simon, 2009). It was during this period; the treatment of severe haemorrhage due to either war effect or surgical procedures became difficult or rather impossible to succeed without blood transfusion. Over the years, along with all other improvement, blood transfusion service evolved too.

Blood transfusion service (BTS) is an essential part of health care system. Especially in Malaysia, blood transfusion is challenged with the increase numbers of transfusion dependent patients. The goal of transfusion services is to provide sufficient and quality blood and blood product. In view of this situation, BTS has a huge responsibility to provide adequate blood and its component for usage besides BTS has humongous task of providing safest product too. In addition to that; these products should be cost effective and easily accessible for patient's needs.

In the current era, with so many diseases appearing out of numerous situations, providing adequate supply in the safest form is primary and most crucial responsibility. Although National Blood Centre (NBC) runs many methods and modes of screening using latest laboratory techniques yet due to the presences of window period for transfusion transmitted

infection, donor counselling plays an important role equally important with donor's intention for blood donation.

NBC is given the significant task for making these events possible. In NBC, blood donation and collection along with other factors plays a vital role. Despite all these, the main objectives of NBC is to supply safe sufficient blood and its product primarily to the government hospitals along with those who have a memorandum of understanding between NBC and private medical centres. NBC's contribution is not limited within Klang Valley. Their services are extended to all the medical facilities throughout the country. Besides blood and its product, NBC also provides technical support and advice on blood banking as well as related activities such as training for all categories of personnel involved in blood banking activities (Blood Transfusion Services, Annual Report, 2013).

2.2 Blood donation.

Information from Blood Bank Information System (BBIS) revealed that 160,000 units of whole blood is collected in NBC annually. In United States approximately 15 million units of whole blood is collected each year (about 70 million) from voluntary non-remunerated donors (VNRDs). The collected blood is processed into blood components (such as red blood cells, platelets, plasma and cryoprecipitate) and used in various bleeding condition for patients (Whiteker et al., 2011). However, the entire process encompasses appropriate donor's eligibility for blood donation, donation procedures and testing the blood products derived from donated blood unit (Hilyer et al., 2009).

Identifying with the way as to achieve adequate supply without trading off its quality in Malaysia in addition to donor recruitment and retention is an irreplaceable actuality in BTS. Ministry of Health, Malaysia has been producing a series of annual report showing increase in blood collection and reduced rate of replacement donors. In the last 15 years, looking at the reports it is proven that Malaysia has no replacement donors according to BTS, Annual Report, 2013. It has taken a while for those of us in BTS to understand the value of factors that motivate and hinder donors is extremely important in maintaining safe and regular donors. To comply WHO's suggestion that in every country it is key role to ensure at least 5% of their total population becomes a regular non-remunerated blood donors. In addition to this, it is also WHO's aim to ensure 2%of each country's population to become voluntary non-remunerated blood donors.

In Hong Kong, the BTS is funded by public organization and Red Cross Service. Author Lee conducted a study focused on donor recruitment and retention in Hong Kong (C. K. Lee, 2008). He identified donor recruitment has two important purpose first to compensate drop out or deferred donors next to ensure their pool of donors kept expanding. The outcome of his study lead to large funding contributed for donor education and promotion on blood donation (C. K. Lee, 2008).

As mentioned above achieving 5% of population is achievable goal in the future. In order to ensure these goals are put into practise and present successfully, understanding and reconstructing modifiable factors will provide stability to any blood bank and its organization. Most probable outcome will be expected to have continuous supply of blood and its products from voluntary non-remunerated.

2.3 Donor deferral in blood transfusion service.

Donor deferral relates to blood donors who for various reasons are unable to donate on various occasions (Sundar et al., 2010). In BTS donor deferral has different categories; namely temporary, permanent deferral and confidential unit exclusion (CUE) (Transfusion guidelines 4th edittion 2016). As for temporary deferral are associated to modifiable reasons as listed in Appendix H, which has time limits and following the deferral period, donor could resume blood donation again. Permanent deferral leads to permanent ineligibility of donors for blood donation. As for CUE, in the event if donor completed donation, however has a reason to be deferred, post donation donor could still alert the respective blood centres (Transfusion guidelines 4th edittion 2016).

According to a study in Japan, aging population was increasing in trend and requirement for blood and its product also increased (Ngoma et al., 2014). In view of this situation, to ensure Japan had adequate supply for their society, a short study on deferral period was analysed. This data was helpful to re-evaluate their deferral criteria which also targeted their younger generation. Educating and creating awareness among their younger generations, helped in improvement of donor recruitment in Northern Japan.

2.4 Motivating and hindering factors of donation.

In Greece, there was increase in demand of blood usage due to rising number of sickle cell patients going into crisis (Marantidou et al., 2007). Greece blood transfusion society faced a huge challenge in coping with the demand. They discovered that understanding the factors that motivate and hinders their donors from becoming regular and safe donors played a vital role (Marantidou et al., 2007). Greece Blood Transfusion Society came up with an idea to create a questionnaire and distribute it to 11 collection centres which represents their geographical

distribution in their country (Marantidou et al., 2007). The outcome of this study incurred high cost and delay in blood supply due to domestic hiccups, despite increase in blood donation awareness (Marantidou et al., 2007).

In addition to above study, Greece BTS conducted another study in 2013 to determine Greece donor's opinion about blood donation. The aim of this study was to identify the lack of motivation on blood donation since this led to the decline of continuous supply in Greece. The authorities tried to understand their weakness and established better recruitment and retention campaigns. With regards to reasons for donation, there was a vast difference between motivation and hindering factor for donation. About 88% had most fundamental reason of donating as an offering to good deeds. The rest had various reasons for not donating and the common reason was the concern of safety. Approximately 36.6%, were worried about the sterility of the clinical equipment such as needles, blood bags and others (Kalargirou et al., 2014).

Basically these data can be improved by creating positive awareness regarding blood donation. Considerable percentages of these donors can be retained as regular donors improve the total national collection. Thus the conclusion of this study lead a new path in Greece's campaigns on blood donation and direct approached made towards their population aiming to change the thinking and attitude pertaining to blood donation.

In Italy, narrowing focus on factors motivate donors in pursuing blood donation and to understand their intentions of donating blood. This study reported that most of them mentioned as "to help others" which related closely to altruism. The aim of the study was to compare

motivating factors among other countries and to establish these positive aspects into blood donors (Bani and Strepparava, 2011).

Another study, related to factors motivate donors was studied in Japan. This was a community based study in a rural area, where a relationship was built between researcher and participant before the study was conducted. Author believed by building relationship between donors and exposing the importance of blood donation, will allure donors for donating blood for right reasons (Nakayama et al., 1999).

Regular voluntary donors are generally associated with safer blood supplies in terms of transfusion-transmitted diseases. World Health Organization and the Council of Europe recommend that blood and blood components should only be collected from voluntary, non-remunerated repeat donors (Dhingra, 2002; Council of Europe, 2003). In Maharashtra recently a study was conducted focusing specifically on first time temporary deferred donors. (Wilkins et al., 2015).

India has a large population, their supply of blood is always a challenge, because blood banks in India is still practicing replacement, remunerated and non-remunerated donors. This sort of mix or rather donation based on need and availability without a reliable continuous support made donation and collection more difficult. Increase in demand due to rising cases of patients with thalassemia, sickle cell and nutritional anaemia, just like other developing countries, India is facing shortage in coping with blood and its product supply (Wilkins et al., 2015). In order to deal with this situation, blood banks initiated a step to establish a system to cope with the shortage. As a stepping stone, In Maharashtra a research team conducted a study using questionnaire distributed to 100 donors to identify factors that motivate and hinders. Many donors fail to return for donation because they were not aware of blood donation policies, such

as in the event if they are deferred for temporary reasons when will they be able to return for donation. The knowledge of basic blood donation policy as referring to deferral criteria and eligibility for donation would have been able to improve donor return for donation. The outcome of this study resulted as awareness played an important role in donor retention subsequently improved their donor retention (Wilkins et al., 2015).

In King Abdul Aziz Medical City Population, Saudi Arabia a study was conducted with the aim to explore knowledge, attitude and awareness of blood donation among their population. A large number of people believed that it is a religious duty to donate blood (Alfouzan, 2014). Despite that, another large number of people were not donating due to lack of understanding the needs and importance of blood donation and need to maintain adequate blood supply. Contributing to shortage of donors were those who had been deferred for temporary period. This study concluded that age ranging between 31-50 male, educated or in the uniform forces seems to have higher number of regular donors. Another important fact in this study was, low number of female donors coming forward for blood donation. Due to religious practise and lack of awareness female donors are not encouraged to come forward for blood donation which lead to higher rate temporary deferral donors (Alfouzan, 2014).

In order to achieve their goal of increasing awareness and number of donors, they have decided to target smaller groups of people and extend teaching of importance of blood donation along with emphasising the intention of regularity to ensure safe blood and its product. Besides, improving donor deferral and retention rate (Alfouzan, 2014).

In many countries, on the contrary to Arab Saudi, women are under-represented or contribute to the higher number within the temporary deferral data. In blood bank of Oslo, Norway a study

was conducted from 1999 till 2009 with the aim to understand the under-represented among the long term donors. Many reasons were evaluated, as to why this happened among women donors. The significant detail was voluntary non-remunerated donors had a high degree of stability (Misje et al., 2010). Reason of focusing into gender specification was to understand whether the reason for deferral could be improved or there were other hindering factors which contributed to higher rate of women deferral.

Women were clearly over represented for temporary deferral, a set of questionnaire was distributed among donors who have at least donated once between the mentioned periods and analysed. It was clearly noted that women were over represented for deferral and under represented for being regular donors were ranging within the reproductive age women (Misje et al., 2010). This is a significant fact because, when these women answered their questionnaires most of their reasons were associated to lactation, menstruation and nutritional anaemia. In other words, these are modifiable factors which may not represent the true data of deferral in many cases. This situation can be prevented from skewing the temporary data if awareness is cultivated among all donors (Misje et al., 2010).

Looking further into this aspect, in Lithuania during the Soviet period blood donation system was exclusively operated by remunerated basis (Buciuniene et al., 2006). This scenario changed after Lithuania joined European Union (EU) and committed to EU requirements, which is to provide all their end users safe blood and its product from voluntary non - remunerated blood donors. Although this requirement would meet WHO regulations, yet introducing the new system into action has a considerable effect on donor's intention and motivation. In view of this unpropitious effect of temporary deferral, a study on blood donors' motivation and attitude to non-remunerated blood donation in Lithuania was conducted. The

aim of this study was determine blood donation motives among the donors with the new implementation (Buciuniene et al., 2006).

The end result of this research lead to a mix presentation of donor intention. Although most of the donors were willing to donate on base of altruism, yet there were considerable a large amount of donors who were also donating due to remuneration reason. The major concern for Lithuania blood banks was this non remunerated practise may cause decline in donors with clear intentions, which may seriously affect the national supply of blood and its product (Buciuniene et al., 2006).

In my opinion, reading all these articles and more studies related to similar topic, each and every study has only indicated the importance of donor's motivation and hindrance factors towards blood donation. In order to achieve WHO's requirement by year 2020, it is crucial to understand the attitude of blood donors especially temporarily deferred first time blood donors. By identifying donors attitude not just safe product will be supply, instead donor retention will be also easier to manage. Definitely, these reasons may be implied in different manner in view of different country carries different believe, culture and exposure. However once the intentions are understood, later it's just the matter of accommodating these facts according to own countries need to ensure safe and adequate blood supply rendered continuously.

According to Annual Report Blood Transfusion Services, Malaysia has population about 30,073,353 (July 2014 est.). Ensuring at least 5% of this number become regular blood donor and retain as donors is not difficult to accomplish. As NBC's vision, mission and objective is truly to achieve-reality. In fact becoming a regular blood donor is a wonderful privilege because when an individual becomes a blood donor, every donation he or she makes saves 3 lives at a

time. Each donor will have the opportunity to donate every 3 months, 4 times in a year as whole blood donors (Transfusion guidelines 4th edittion 2016).

This study was conducted to understand motivating and hindering factors among first time temporary deferred donors. Following which rectification of the factors should be done to improve the donor retention in blood transfusion service.

Chapter 3

Methodology

3.1 Research Background

3.1.1 Study Design

This is cross sectional study to assess factors that motivate and hinder temporarily deferred first time blood donors.

3.1.2 Study Location

This study was conducted in National Blood Centre (NBC), Kuala Lumpur. NBC is the national blood collection centre and referral lab for many other blood banks related to blood and blood product including some haematological investigations too.

Donors of NBC as well as from blood donation campaign (mobile) who fulfil the criteria were recruited for this study. However, NBC have donors who belong to other states but residing in KL currently donated. All donor deferrals were inclusive of both mobile site and centre collection of National Blood Centre (NBC), regardless of their permanent address.

3.1.3 Study Duration

Total research duration was 35 months (December 2013– December 2016).

Data collection was from January 2014 till December 2014.

Data analysis and write up started from 1st May 2015 until 30th November 2016.

3.2 Sampling

3.2.1 Target Population

All temporarily deferred first time blood donors who registered for blood donation at National Blood Centre Kuala Lumpur and its mobile site.

3.2.2 Population Sample

All first time donors who attempted to donate blood in any of the donation sites but due to various reasons have been temporarily deferred.

3.2.3 Sample Unit

Whole blood donors who full filled donation criteria for blood donation.

3.2.4 Sampling Method

Total number of whole blood donation from 2010 – 2014 was extracted BBIS. Subsequent to that all first time donors were segregated from the total list. Using the new list of all temporarily deferred first time blood donors was further extracted every 8^{th} subject was selected until 240 subjects were obtained for each category.

3.2.5 Inclusion criteria

i. All first time whole blood donors in National Blood Centre from 2010 – 2014.

ii. Subjects who have never donated elsewhere.

iii. All first time temporary deferred donors according to National Blood Centre deferral guideline.

3.2.6 Exclusion criteria

i. Donors who are deferred for chronic medical illness such as hypertension, diabetes mellitus and other medical illness requiring long term medication.

ii. Donors with high risk behaviour.

iii. Existing regular whole blood donors (donors who have already donated at some point of time before).

iv. Autologous donors (who have donated for own use before this attempt).

v. Donors who are deferred for more than 6 months duration or permanently deferred.

vi. Those who are deferred due to stay in United Kingdom/Europe (as NBC deferral criteria).

vii. Donors who did not consent for the study.

viii. Donors who are not contactable

3.2.7 Flowchart of sampling method.

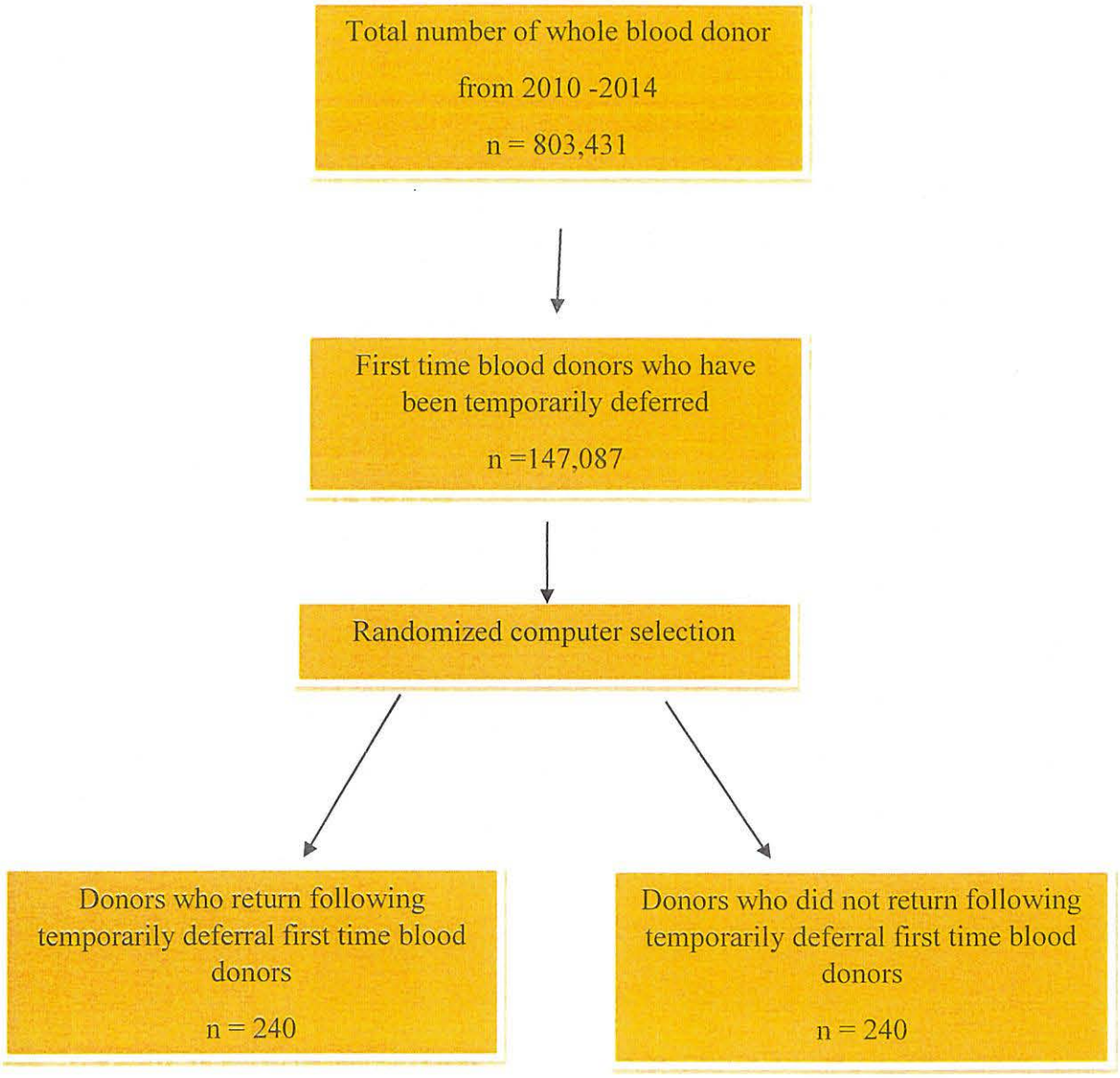

Figure 3.1 Flowchart of sampling method of study.

3.2.8 Data Collection.

Phone calls were made to all these donors and questions were asked based on set of questions prepared. These questions were verified and validated by randomly answered by other donors who have visited NBC before proper usage.

3.3 Subject consent and confidentiality.

All the subjects have voluntarily came forward for donation without any prior priming related for data collection. This study was based on questionnaire over phone call. These questions were also approved by the Human Research Ethics Committee USM.

Every time a donor was contacted, donor was explained about the study and verbal consent was taken for participation in the study. Thus all donors who were included for data collection had understood the purpose of the study and consented verbally. The requirement of verbal consent was suggested by Human Research Ethics Committee of Universiti Sains Malaysia (USM) attached as Appendix A.

Besides USM, the National Medical Research Register (NMRR) has approved this study to be conducted and obtain verbal consent from the participant. Research identification number from NMMR 14-636-21535, attached as Appendix B. Latest renewal of NMRR is attached as APPENDIX F.