

Blood donor recruitment and education for successful donor retention.

A literature review.

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<p>Abstract:</p> <p>Blood donation is an important part of modern-day medicine with the constant need for blood supply in clinical settings. Recruitment and retention of blood donors are similarly important to ensure that blood supply is constant and readily available in cases where it is needed by recipients.</p> <p>The purpose of this paper is to present a literature review of studies, relating to blood donor recruitment, education and retention. The aim of this review was to find out what methods are being used to recruit, educate and retain blood donors. Additionally, to find out the roles nurses play in the blood donation process.</p> <p>A search for this systematic literature review was conducted by collecting articles from EBSCO, CINAHL(EBSCO), ScienceDirect, databases and Sage journals between March and June 2018. A total of twelve studies between 2007 and 2018, met the inclusion criteria. The findings suggest that the blood donor career is dependent on blood donor behaviour and attitude, blood donor characteristics are different and ever-changing hence influence decisions to donate, deterrents affect blood donor motivation to donate, loyalty building methods help with recruitment of blood donors and blood donating staff should be well trained to effectively support donors.</p> <p>The conclusion for this review is that placing value on all types of blood donors during recruitment, giving blood donors constant support and communicating effectively during the donation process, training blood donation staff effectively can eventually contribute greatly to blood donor retention.</p>	
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Abbreviations.

WHO - World Health Organization

BSE - Bovine spongiform encephalopathy

vCJD - variant Creutzfeldt Jakob's Disease

RH - rhesus

AIDS - Acquired Immune Deficiency Syndrome

COX - cyclooxygenase

ASA - Acetylsalicylic acid

NSAIDs - Nonsteroidal anti-inflammatory drugs

CDC - Centres for Disease Control and Prevention

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FOREWORD

My heartfelt gratitude to my parents, siblings, friends and mentor for their constant support and patience throughout this research period.

We make a living by what we get. We make a life by what we give.

~ Winston Churchill ~

1 INTRODUCTION

Blood donation is a voluntary procedure where blood is drawn from a blood donor and is safely prepared to eventually be transfused to the recipient in need. Donated blood is used in cases where a patient has experienced excess loss of blood during surgeries, needs blood after an accident or the patient is receiving chemotherapy or is suffering from a condition, like leukaemia, that requires transfusion of blood components. (Mayoclinic.org, 2018)

Safe blood transfusions and the safety of patients begins with the careful selection of blood donors. A combination of strict selection criteria followed by laboratory screening tests reduces donor-patient infections and spread of illness while protecting both donor and patient health. (Hewitt & Wagstaff, 1998)

The need for different blood groups varies daily which in turn necessitates the recruitment of willing donors. Blood donor recruitment is an integral part of the blood donating service. Retaining donors is an even more important role that ensures the constant supply of blood needed for patients. Nurses play an important role in catering to blood donors immediately they walk into the blood donation centre. Their role in the process of recruitment, education and retainment of donors is somewhat demarcated and rarely acknowledged hence the choice of this topic.

This study revolves around blood donation and its related processes and mainly focuses on the recruitment of first-time donors and retention of both first-time and lapse voluntary blood donors. Additionally, it aims at examining methods used in recruiting blood donors and good nursing practices for successful blood donor retention.

The motivation behind this study is the interest in blood donor recruitment methods as well as the role of the nurse in helping to increase blood donor retention. Additionally, to research the initial phase of the donation process where nurses' roles are salient.

The significance of this topic in nursing stretches from when blood is donated to when it is transfused to the patient. The background chapter of this thesis presents an overview

of blood donation especially voluntary blood donation, factors affecting voluntary blood donation, the role of the nurse in educating and guiding blood donors and blood donor retention.

2 BACKGROUND

2.1 Overview of blood donation.

Blood donation or blood banking is the process of collecting, testing, preparing, and storing whole blood as well as other blood components, whose main purpose is for transfusion. (Gale encyclopaedia of surgery, 2004)

In modern day medicine, some patients still need blood donations throughout or during their treatment which signifies the practice of blood donation and its related processes. Blood donation contributes to saving patient lives who depend on donated blood to cater to their health needs and improve their quality of life. Fewer young people are donating blood while the aging population continues to increase and invasive therapies that require blood transfusions continue to exist (Bönig et al., 2012).

Donating blood is beneficial to both the donor and the patient. While benefiting on one hand, some patients may still suffer or unfortunately die following unsafe transfusions (WHO, 2010). By donating blood, the donor benefits from several factors including the reveal of potential health problems, reduction of harmful iron stores, lowering the risk of heart attacks, helping with keeping a healthy liver (without iron overload) and helping to keep a good mental state (donating blood is a humanitarian act). (Rasmussen.edu, 2018)

The following concepts are common in blood donation and are defined as follows: -

- *Whole blood* – blood composing blood cells, platelets and plasma drawn from a vein or artery.
- *Plasma* – a pale yellow mixture of water, proteins and salts in the blood that transports nutrients, enzymes and hormones for blood cells.
- *Platelets* – cells in the blood that first respond to bleeding by assisting in the blood clotting process.
- *Apheresis* – a blood purification procedure performed outside the body, where one constituent (plasma, red blood cells or platelets) is removed through centrifugation or filtration, and the rest is returned to the body.

- *Plasmapheresis* - this is a separating plasma from blood cells. It is a subset of apheresis where blood is purified to remove large molecular weight substances from blood plasma.
- *Blood registry* – this is collected and shared information of donated blood and blood donors. (Nickson, 2018)

The Finnish blood service's recommended blood donating ages are between 18-70 years and maximum 59 years for first-time donors. After, the age of 66, blood donors can continue to donate normally until the age of 70 years without taking breaks that are more than two years.

The table below shows how frequent a blood donor can donate different blood components:

Table 1: Donation frequency.

Source: (Redcrossblood.org, 2018)

<i>Donation type</i>	<i>Frequency*</i>
Blood (whole blood)	Every 56 days
Platelets	Every 7 days, up to 24 times / year
Plasma	Every 28 days, up to 13 times / year
Power Red	Every 112 days, up to 3 times / year

**If more than one donation type is donated, this will affect the number of allowable donations per year due to red cell and plasma loss limit guidelines. Final eligibility will be determined by the American Red Cross at the time of donation.*

Once the blood donor has been welcomed into the donation centre, he/she is registered and guided to fill a questionnaire. Filling the donor's health questionnaire is part of the blood donation process which is mandatory, to find out any crucial information from the donors' medical history. Following this is the blood donor interview, which is a highly regulated process carried out by trained and qualified nurses, to administer the questions. The interview includes screening which is done in a private setting and an unhur-

ried manner to allow free discussion of personal or confidential information. (Klein & Anstee, 2014)

The nurse asks the potential donor a series of questions that will determine whether he/she will donate or not. By asking these questions, depending on the donor's answers, the nurse can elicit much valuable information relating to communicable diseases and vaccinations (Wallace & Franklin, 1934- 1976). Additionally, asking questions helps to prevent certain diseases. The table below illustrates possibilities of communicable diseases that can be prevented in blood donation.

Table 2: Health history interview questions.

Source: Iranian Blood Transfusion Organization (IBTO) Research Centre, 2018.

Health history interview questions.	
<i>Question category</i>	<i>Possible disease prevented</i>
<ul style="list-style-type: none"> • Medical history of a disease 	Creutzfeldt Jakob's Disease (CJD), AIDS, Hepatitis, Malaria.
<ul style="list-style-type: none"> • Medical history compatible with a disease 	Bacteremia, Viremia, AIDS
<ul style="list-style-type: none"> • Blood exposure through transfusion or needle injuries 	Hepatitis, AIDS
<ul style="list-style-type: none"> • Previous visit or residency to endemic areas 	Malaria
<ul style="list-style-type: none"> • Medical treatment 	CJD
<ul style="list-style-type: none"> • Donor's and/or donor's partner's sexual activities and drug use 	Hepatitis, AIDS

Blood donors providing honest information that can be trusted, during the interview with the nurse, assures reliability of the blood donor selection process. This makes it paramount that blood donation should be voluntary and unpaid or have no incentives, to reduce the risks that come with blood donors concealing important health information

(WHO, 1992). Donors receiving incentives or getting paid to donate blood accretes the risk of diseases spreading after blood transfusion through intravenous therapy. Such risks include pyrogenic (fever inducing) reactions, air embolism, electrolyte imbalances, contaminations through bacteria, circulatory overloading and thrombophlebitis. (Wallace & Franklin, 1934- 1976)

During the interview stage, haemoglobin concentration is measured. Haemoglobin is the protein that gives blood cells their red colour and functions as a helper in oxygen transportation (WebMD 2016). This ability to help in oxygen transportation is dependent on the amount of iron present in the haemoglobin molecules. The recommended haemoglobin concentrations for a donor to be allowed to donate is at least 125g/l for women and 135g/l for men. (Bloodservice.fi, 2018)

Iron stores in individuals should be enough in order to donate blood. Men have three times more iron than women (Saito, 2014). Donating blood requires blood donors to eat a balanced diet and sometimes take iron supplements (this applies mostly to fertile women). Iron supplements help to restore iron lost from the body. They however affect absorption of some medicines into the body and should be taken as prescribed. (Bloodservice.fi, 2018)

Blood donor/ client education is an integral part of the interview stage of the donation process. In blood donation, educating the blood donor happens from time to time in situations where there is lack of clarity, on the blood donor's part, with matters relating to their own health. This form of client education is necessary for the successful delivering of necessary information, that increases client satisfaction and results in improved outcomes and adherence. Educating a client, especially in real-time, may prove to be more successfully delivered, since clients are able to receive the information first-hand and learn by experience. (Zirwas & Holder, 2009)

After the interview, nurses then collect whole blood (WB) from donors into a set of sterile plastic packs which later end up in disposable plastic sets used by hospitals during transfusion (Wallace & Franklin, 1934- 1976). Donated blood then goes through a series of laboratory tests and separations before it is transfused to the patient. During donation of blood components like blood plasma, the blood collected from a donor goes through

a blood separating machine into a sterile plastic pack which is later separated in a lab (WebMD, 2018).

2.2 Voluntary blood donation.

According to WHO a voluntary blood donation is when a donor gives blood, plasma or cellular components out of free will without expecting payment or any form of remuneration. This would include time off work other than that reasonably needed for the donation and travel. Tokens, refreshments and reimbursements of direct travel costs are compatible with voluntary, non-remunerated donation. (WHO,2010)

2.3 Factors affecting voluntary blood donation.

Some of the common factors affecting voluntary blood donation among eligible blood donors are negative attitudes towards blood donation and lack of proper education plus information relating to donating blood. Blood transfer organizations should promote blood donation knowledge to masses with potential blood donors, because having well informed blood donors who have the potential of acting as referees can be a good source to attract new donors. (Shakeri, M T et al., 2012)

Other unique factors affecting blood donor eligibility to donate blood are discussed further in the topics that follow.

2.3.1 Blood types.

Blood types, that are determined by antigens (substances found on red blood cells capable of stimulating an immune response), are categorized in ABO and RH systems. These two systems are clinically significant in transfusion medicine (Avent & Reid, 2000) and organ transplants (Agrawal, et al.,2014).

ABO includes A, B, O and AB blood groups while RH can either be positive (Rh+) or negative (Rh-). Additionally, other antigens that exist in the MNS immune blood group system are M, N, S, s and U (S-s-U- and S-s-U+var) (Faria et al., 2012). S-s-U- (also known as U-) is a rare blood type and an uncommon MNS phenotype (Dean,2005) that is found in people of African origin or Afro-descendant populations (Faria et al., 2012). In Finland, a blood donor with this phenotype is yet to be found (Bloodservice.fi, 2018).

Compatibility of blood types in blood transfusion is a key factor that prevents fatal adverse reactions caused by immune responses. These adverse reactions can be avoided by following strict criteria of getting the right blood from the donor to a matching recipient which is paramount in blood transfusion. (Héma-Québec, 2018). The figure depicted below illustrates donor/recipient compatibilities for red blood cell transfusions.

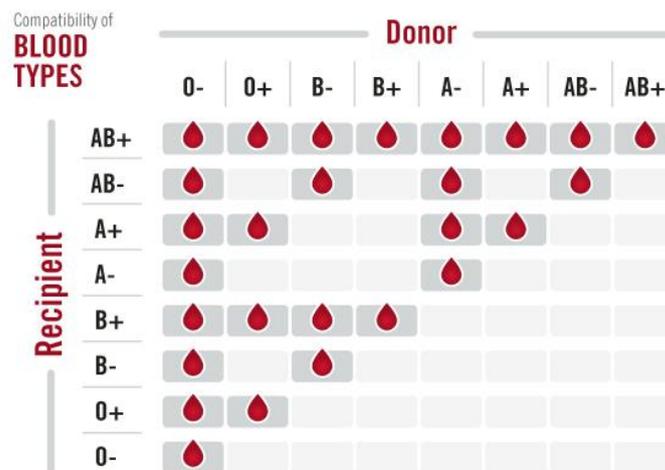


Figure 1: Compatibility of blood types.

Source: Héma-Québec, 2018.

The distribution of blood types varies globally depending on ethnic background and geographic locations. The figure depicted below illustrates approximate blood type distribution worldwide.

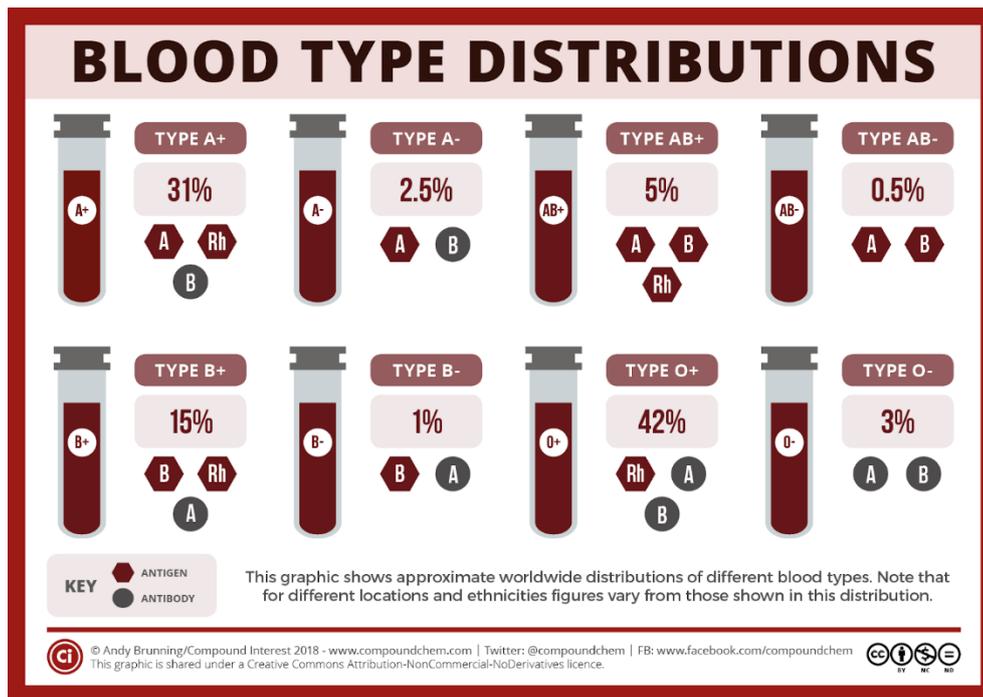


Figure 2: Blood type distributions.

Source: Compound interest, 2018.

2.3.2 Blood donor health.

The probability of transfusion-transmitted infections transpiring is real and may occur because of poor blood manufacturing processes or measures taken to ensure blood safety are not perfect (Dodd et al, 2001). Therefore, it is very important for nurses to try and find out donor health situations during the interview stage to help reduce or prevent risks of infection.

Painkillers such as aspirin (ASA) and non-aspirin-like nonsteroidal anti-inflammatory drugs (NSAIDs), affect platelet function of whole blood donors. These do so by inhibiting cyclooxygenase (COX) enzymes; enzymes that, when inhibited by ASA and other non-steroidal anti-inflammatory medication, gives relief from pain and reduces inflammation. (Fitzpatrick, 2004)

According to the Finnish Red Cross Blood Service, useful blood platelets can only be separated from whole blood (WB) when the last time a blood donor took ASA medication, is over 24 hours.

Blood donors who have been vaccinated with live viruses (those against measles, chickenpox, shingles, cholera, typhoid and yellow fever) are prevented from donating blood for a certain period depending on the type of vaccination. To give an example, yellow fever vaccination that is recommended for travellers, is a live virus vaccine that has attenuated pathogens that can easily be transmitted to the blood product recipient after transfusion (Cdc.gov, 2018). The Finnish blood service recommends that blood donors who have received such vaccines, to wait at least four weeks, from the vaccination time, before donating blood.

Some diseases that have affected or are affecting blood donors as well as different blood donor health situations like surgical procedures done, affect blood donating permissions. Some blood donor health situations like epilepsy, having a bleeding disorder or donor having had a bypass surgery strictly prevents potential blood donors from donating blood. (Bloodservice.fi, 2018)

2.3.3 Blood donor lifestyle.

In Finland, intravenous drug users are not allowed to donate blood. According to the Finnish blood service, if a blood donor has a history of drug abuse or is using unprescribed intravenous pharmaceuticals, he/she is automatically disqualified from blood donation. Eligibility to donate blood is also checked if a blood donor's sexual partner is an unprescribed intravenous drug user. Procedures like tattooing, permanent pigmentation and acupuncture have blood donor deferral periods of up to four months. With acupuncture cases, potential blood donors are only deferred if the procedure was done outside Finland. Otherwise, they are allowed to donate blood. The Finnish blood service requires the procedure to be done by a healthcare professional using disposable needles in Finland. (Bloodservice.fi, 2018)

In 1977, a permanent deferral was put in place for men who have sex with men (MSM) (Karamitros, Kitsos & Karamitrou, 2017). MSM are at a higher risk of contracting blood-borne virus or infections (Bönig et al., 2012). In countries like South-Africa, Mexico and Spain, restrictions are not in place that prevent MSM from donating blood.

In September 2011, the UK lifted the ban on MSM exclusion from donating blood. The United States (US) also dropped its ban in 2015, allowing this group of donors to donate blood after abstaining for at least one year. Taiwan will follow suit in May 2018 and allow gay men to donate blood if they have abstained for at least 5 years. In other countries such as Austria, Greece and Denmark, MSM are strictly prohibited from donating blood even with improved technology that rigorously tests donated blood (The Economist, 2018).

2.3.4 Diseases influencing blood donation.

2.3.4.1 Malaria

Blood donation deferral among potential blood donors travelling to or visiting Malaria risk areas is common. In the US, the Food and Drug Administration (FDA), has set blood donation screening guidelines for blood donors relating to Malaria which correlate to the Finnish blood service. The FDA guidelines are outlined as follows:

- Blood donors who have travelled to malaria risk areas have a deferral period of 1 year from after returning from their trip.
- Blood donors born and have resided in malaria risk areas have a deferral period of 3 years after travel.
- Blood donors diagnosed with malaria are not allowed to donate for 3 years after treatment while being free of malaria during this time. (Cdc.gov, 2018)

On the other hand, the Finnish blood service guidelines for malaria are as follows:

- Blood donors who have travelled to malaria risk regions have a deferral period of 6 months after travel and use of antimalarial drugs if so applies.
- Blood donors born and have resided in malaria risk areas under the age of 5 have a deferral period of 3 years after travel.
- Blood donors diagnosed with malaria are not allowed to donate for 3 years after treatment while being free of malaria during this time. A positive result after a malaria antibody test equals permanent prevention from donating blood.

Visiting zero risk malaria regions, for example the EU region as well as the EFTA (Norway, Iceland, Switzerland, Liechtenstein) region, automatically gives blood donors permissions to donate blood. (Bloodservice.fi, 2018)

2.3.4.2 Hepatitis

Infectious diseases like Hepatitis A, B and C may deter blood donors from donating blood. However, if an individual has once had hepatitis A, and is fully recovered, he or she is not barred from donating blood only if there no signs of the disease. on the other hand, hepatitis B and C which are blood-borne viruses, strictly prevent the potential donor from donating blood. (Verywell Health, 2018).

2.3.4.3 vCJD

Variant Creutzfeldt-Jacobs disease (vCJD) is the human form of Bovine spongiform encephalopathy (BSE) or mad-cow disease. Blood donors who have lived in the British Isles between 1 January 1980 and 31 December 1996 are strictly forbidden from donating blood for risk of spreading the disease (Finnish Blood Service,2018). However, the spread of vCJD through blood is still theoretical (O'Neil, 2003).

2.4 The nurse's role.

Nurses play the role of determining whether blood donors can be allowed to donate blood for the blood donor's safety and that of the blood recipient. Nurses require extensive training and expertise to be able to apply acceptable guidelines that effectively evaluate blood donor's health during the blood donor selection process. (Nursing Times, 2005)

2.4.1 Blood donor recruitment and selection.

Blood donor screening correlates highly with identifying potential blood donors carrying infectious blood. The table below depicts blood safety procedures used for donor

selection and disqualification at the collection site and disqualification of collected samples before releasing them from the donation centre. (Linden & Bianco, 2001)

Table 3: Blood safety procedure without laboratory testing.

Source: Linden & Bianco, 2001.

Blood safety procedure without laboratory testing.	
Before donation	<ul style="list-style-type: none"> • Excluding blood donor groups • Excluding incentives • Educating the blood donor
At donation site	<ul style="list-style-type: none"> • Self-exclusion • Donor deferral registry • Health history interview • Confidential unit exclusion • Telephone call-back
After Donating blood	<ul style="list-style-type: none"> • Product retrieval • Recipient notification

2.4.2 Blood donor education and guidance.

Good nursing practice in blood donation is also highlighted with the nurse's role as an educator. Nurses have in history played the role of educating patients, families and colleagues making teaching an independent nursing function. Patient teaching is a key element in the nursing practice and the role of the nurse as an educator is essential in nursing care delivery. Additionally, nurses are expected by law to give consumers instructions to help them maintain optimal levels of wellness and manage illness. (Bastable, 2013)

During the interview stage, it is quite common that some donors may not be necessarily familiar with information regarding their health. Nurses guiding blood donors ought to have necessary skills in educating the blood donor when necessary. Zirwas & Holder, (2009), summarized the following list of important things to note while preparing to give client education. They include:

- Using the right tools depending on your target audience.
- Using proper language that is coherent and clear depending on your target audience.
- Having a clear plan and set outcomes for the teaching process.
- Having literacy in whatever is being taught to be able to answer questions in a proper and timely manner.
- Making education content readily available to the client should they want to refer to what was taught as well as help with recall.
- Having some level of respect to help with communication with your target audience.
- Having leadership qualities and organizational skills that help with managing targeted audience.

Client education has its benefits and effective teaching by a nurse can increase consumer satisfaction, improve the quality of care, decrease client anxiety, reduce the occurrence of illness and disease, foster adherence to treatment plans and allow consumers to take charge of planning their care. (Bastable, 2013)

3 THEORETICAL FRAMEWORK

The theoretical framework summarizes a research's theory which is related to a problem developed through reviewing earlier done research on related variables. It encourages investigations and interpretations of research findings. The role of the theoretical framework is to prove that the proposed relationships in the research, are not based on guesses or personal opinions and instincts but are derived from previously done research by other authors. (Statistics Solutions, 2018)

This study is based on Nola J. Pender's health promotion model (HPM) whose purpose is to understand the main factors determining health behaviours, which in turn can be used by healthcare professionals to give counsel and promote healthy lifestyles. (Deepblue.lib.umich.edu, 2018)

The key concepts in nursing defined as the basis of the HPM model are as follows:

- **Person** - an organism that is shaped by its environment and seeks to express its full potential within that environment.
- **Environment** – the context within which life courses unfold physically, socially and culturally. The person can manipulate the environment to create positive facilitators for health promoting behaviours.
- **Nursing** – To mean collaborating with the person, families and communities to improve health and increase well-being.
- **Health** – referring to the individual actualizing their potential through goal-oriented behaviour, self-care and satisfying behaviour with others while trying to be in harmony with their environments despite adjustments.
- **Illnesses** – events that can either be short-term or long-term;(acute or chronic), that obstructs a person's quest for health.

The HPM model also aims to describe the different aspects of an individual's pursuit of health while interacting with their environment (Deepblue.lib.umich.edu, 2018). The model focuses on three components which are individual characteristics and experiences, behaviour-specific cognitions and affect, and behavioural outcomes that equals health promoting behaviour.

Individual characteristics and experiences highlight previous behaviours and personal factors, that are either biological, psychological or sociocultural. These factors include personality, sex, age, race, ethnicity, self-esteem, self-motivation, personal competence, education and socioeconomic status, which influence a person's health behaviour. Individual characteristics and experiences affect blood donor behaviour in terms of motivation to donate blood, blood donation frequency and acquiring or having existing knowledge about blood donation. (Deepblue.lib.umich.edu, 2018)

Behaviour cognitions and affect (prior behaviour) include perceptions of the consequences of taking up a behaviour and perceptions of the setbacks and competencies relating to a certain behaviour. Additionally, the feelings involved before undertaking a health behaviour and perceptions of the situational and interpersonal influences and intentions to carry out health behaviours. Behavioural outcomes include the end results of health behaviours, individuals' decision-making and plans to act, influenced by health behaviours. (Deepblue.lib.umich.edu, 2018)

Pender's theory distinguishes everyone as having different unique characteristics which influence the actions that follow. It also states that people take up tasks to reach certain attainable goals which in turn give positive or valuable results. In blood donation, positive attitude, role identity, self-efficacy (confidence in being able to donate) and anticipated regret (belief that negative feelings will be experienced if one doesn't donate), are part of individual intentions which is the strongest determinants of blood donation behaviour (Bagot, Murray and Masser, 2016).

HPM relating to the study.

According to Pender 2011, health behaviour and characteristics influences beliefs, affect and the enactment health promoting behaviour. Pender's HPM also adds that an individual engaging in a certain health behaviour, where there are potential benefits, increases the chances of committing to that behaviour. Having existing knowledge about blood donation, coupled with individuals' characteristics for example self-motivation

and personal competence, increases the enactment and commitment towards voluntary blood donation.

With reference to Guiddi et al., 2015, blood donation agencies are encouraged to take into consideration the motivations that prompt individuals to donate blood while developing strategies for blood donor recruitment. Voluntary blood donation, like volunteerism, is carried out with precise motivation thus improving individual's choices and possibilities for engaging in the donation process, which in turn offers blood donors spaces to also satisfy their own needs.

Applied tension (AT) and preloading with water or caffeine are coping behavioural techniques suggested and encouraged by healthcare professionals to blood donors before blood donation. These techniques are recommended as they reduce symptoms of feeling faint while donating blood. In addition to this, they increase goal intentions of blood donors making future donations thus increasing the likelihood of competence to donate blood. Healthcare professionals can ensure these behavioural techniques are used every time and at the right time blood donors donate. (Ferguson et al., 2007). Pender 2011, in her HPM proposes that individuals having competence to perform a certain behaviour, increases the likelihood to commit to act and perform that behaviour.

Pender's HPM also proposes that when positive emotions are associated with a behaviour, the likelihood of committing to that behaviour is high. Individuals' intention to donate blood and return for subsequent donations depends on positive attitudes towards blood donation. Additionally, the confidence in knowing that they can donate (self-efficacy) and being identified as a blood donor (self-identity). (Bagot, Murray and Masser, 2016)

Nurses and healthcare professionals in general, make up part of the interpersonal environment, which exerts influence on persons during their lifetime. By using the HPM, nurses can work together with the patient or client in changing behaviours to lead healthy lifestyles (Pender,2011). Nurses play the role of educators in blood donation. They are also the ones to give the blood donor appreciative feelings, happy and make

them comfortable while donating blood, to increase the probability of the blood donor donating again in the future (Piersma et al., 2017).

Pender's HPM proposes that situational influences from an individual's external environment can decrease or increase participation or commitment towards a health-promoting behaviour. The occurrence of catastrophic events prompts individuals to donate blood. However, studies state that retention of blood donors following catastrophic events is low. Other situational influences may include social pressure to donate blood and family members or friends getting sick (Bagot, Murray and Masser, 2016).

4 AIMS AND RESEARCH QUESTIONS.

This thesis focuses on blood donation processes and most supreme, finding out effective methods that can be used to retain voluntary blood donors who are either first-time donors or repeat donors. The information presented in this study has potential to be useful especially to blood donation agencies looking at recruiting more blood donors and retaining them to ensure constant supply of blood.

Research questions

1. What approaches have so far been used to recruit blood donors?
2. What effective methods can blood donating agencies use to increase donor retention?
3. What roles do nurses play in blood donation?

5 THEORETICAL FRAMEWORK

5.1 Data collection.

A literature review summarizes existing studies and substantiates familiarity of previously presented work to establish the credibility of a research paper. It summarizes previously done research and links the research paper to earlier done research. A literature review also proves that a researcher has learnt from others and is presenting information that may pave way for new ideas, develop theories and make suggestions for future studies. (The Royal Literary Fund, 2018). A literature review was conducted for this research to collect data. The articles were collected from EBSCO, CINAHL(EBSCO), ScienceDirect, databases and Sage journals between March and June 2018. Other general information relating to the study were obtained from Google, Google Scholar and Google books.

Boolean combination of words also known as Boolean operators, connect search words to either narrow or broaden search results. The three basic Boolean operators include “AND”, “OR” and “NOT”. Only the operator “AND” was used in the article search. The periods of when the articles were written were randomly selected with an aim of reducing limitations during the search process. This to mean that no general specified period was selected for the search. The following table illustrates the article search strategy with the search terms used for extracting the literature relating to this review.

Table 4: Article search strategy.

*S = Search

Note: Additional records found from other sources (Google scholar and Sage) using the same search strategy were 6 in total. None of these articles met the inclusion criteria.

Database	Boolean combination of words	Period	No. Of Articles
EBSCOhost	S1: <u>blood donor AND recruitment AND education AND retention</u>	2006-2018	1
	S1a: <u>blood donor AND recruitment AND education AND retention</u> AND nursing	No period	0
	S1b: <u>blood donor AND recruitment AND education AND retention</u> AND nursing care	No period	0
	S2: blood donor recruitment AND education	2009-2015	2
	S2a: blood donor recruitment AND education AND nursing	No period	0
	S2b: blood donor recruitment AND education AND nursing care	No period	0
	S3: blood donor recruitment AND retention	2009-2015	5
	S3a: blood donor recruitment AND retention AND nursing	No period	4
	S3b: blood donor recruitment AND retention AND nursing care	No period	0

CINAHL (EB-SCO)	S1: <u>blood donor AND recruitment AND education AND retention</u>	2005-2016	5
	S1a: <u>blood donor AND recruitment AND education AND retention</u> AND nursing	No period	0
	S1b: <u>blood donor AND recruitment AND education AND retention</u> AND nursing care	No period	0
	S2: blood donor recruitment AND education	2009-2015	1
	S2a: blood donor recruitment AND education AND nursing	No period	18
	S2b: blood donor recruitment AND education AND nursing care	No period	1
	S3: blood donor recruitment AND retention	2006-2018	8
	S3a: blood donor recruitment AND retention AND nursing	No period	0
	S3b: blood donor recruitment AND retention AND nursing care	No period	0
	ScienceDirect	S1: <u>blood donor AND recruitment AND education AND retention</u>	2006-2018
S1a: <u>blood donor AND recruitment AND education AND retention</u> AND nursing		No period	6
S1b: <u>blood donor AND recruitment AND education AND retention</u> AND nursing care		No period	5
S2: blood donor recruitment AND education		2009-2018	3108

With regards to ScienceDirect, the searches yielded results of numerous articles which prompted the filtration of the articles. A decision to cease the search after the first phase of the second search was made due to limited time as well as the large number of articles found.

In search 1, 830 articles were found in total. S1a and S1b articles were excluded based on abstracts and not chosen for further screening. The 819 articles left were refined to research articles that yielded 184 articles. This was narrowed further to open access articles that were 34 in total. This result was narrowed down further to articles between 2014 and 2018 that were 26 in total. The 26 articles were then included for further screening.

In search 2, 3108 records were found, out of these, 1379 records were research articles. the search was narrowed down further to articles under the title “transfusion and apheresis science”, which resulted to 43 articles. This result was narrowed further to articles between 2014 and 2018 which were 21 in total. The 21 articles were then included for further screening.

A PRISMA flow diagram that follows, has been used to illustrate the process of the article selection using inclusion and exclusion criteria. This summarizes the article selection process. A total of 12 articles were selected for the literature review.

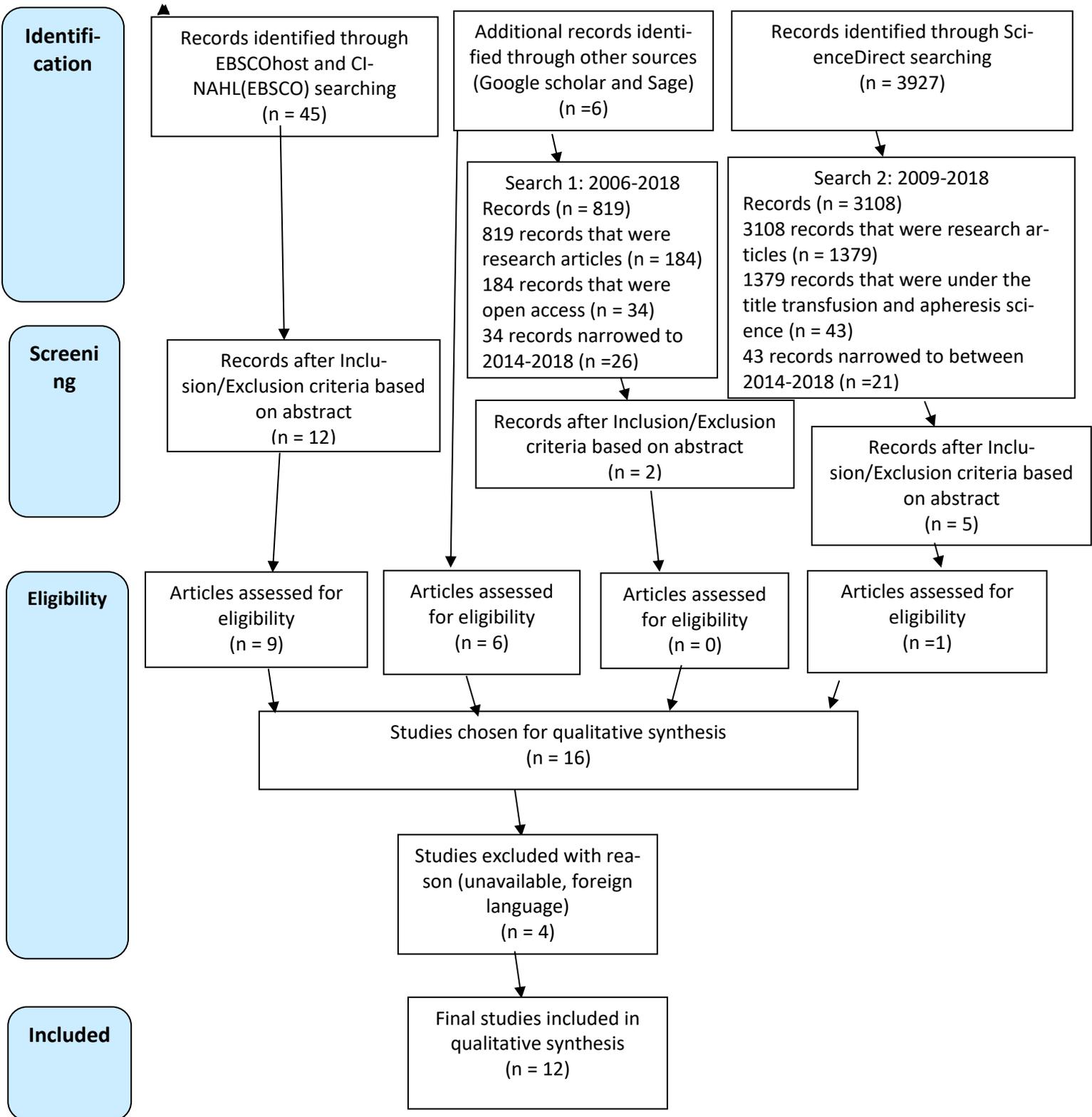


Figure 3: Article selection.

Table 5: Result of the answers to research questions 1, 2 and 3

Article and year	Question 1	Questions 2 and 3
Improving blood donor recruitment and retention: integrating theoretical advances from social and behavioural science research agendas (Ferguson et al., 2007)	“reminders have been shown to be successful with respect to increasing donor recruitment”	- “FITD approach is more effective” - “a simple behavioural technique can be strengthened with a social science technique that ensures that the behavioural technique is used every time”
<u>Keys to Open the Door for Blood Donors to Return</u> (Ringwald, Zimmermann and Eckstein, 2010)	(No answer)	- “successful conversion of first-time donors into repeat donors” - “remind the blood donor about future blood donations.”
Retention of blood donors: strategies to fulfil the requirements of blood centres (De Almeida Neto, 2011)	(No answer)	- “a shorter waiting time, more personal attention, entertainment, enhancing blood donor satisfaction, minimizing adverse reactions of donation and offering a convenient and accessible place to donate.” - “a balance between rational screening criteria and blood safety”
New donors, loyal donors, and regular donors: Which motivations sustain blood donation? (2015)	(No answer)	- “more attention must be focused on women, not so much in the recruitment phase as in the loyalty building phase” - “it necessary that recruitment and loyalty building strategies be different” - “consider the different motivations that drive people to donate blood”
Negative experiences and donor return: An examination of the role of asking for some-	(No answer)	(No answer)

thing different (Guiddi et al., 2015)

Donation frequency and its association with demographic characteristics--a 1-year observational study (Ou et al., 2015) (No answer)

- "to increase the donation frequency among donors"
- "put more efforts to attract even more young people to donate blood"
- "timely reminders may help change blood donation from an occasional behaviour to a habitual behaviour"

How Can We Improve Retention of the First-Time Donor? A Systematic Review of the Current Evidence (Bagot, Murray and Masser, 2016)

- "a more personal connection with the blood collecting agency staff"
- "additional content of reminders needs to be considered carefully."
- "a personalized interview using psychological techniques"
- "understanding the critical period between the first donation and deciding to donate again"
- "a campaign targeting donor curiosity at different stages of the blood donation process"
- "a personalized interview using psychological techniques"
- "providing specific, targeted support by actively listening and responding to first-time donors"

The impact of the context and recruitment materials on non-donors' willingness to donate blood (Masser et al., 2016) (No answer)

- "modifying recruitment materials could improve donor recruitment"
- "providing space and structure within the materials for non-donors to plan their donations may be beneficial"

A systematic review of incentives in blood donation (Chell et al., 2017)

- "the offer of cash"
- "both monetary and non-monetary incentives were found to be more successful in retaining new "

Just" blood donors? A study on the multi-affiliations of blood donors (Alfieri et al., 2017) (No answer)

- "experiencing a sense of affiliation and belonging to a group"
- "relevant agencies strive to improve the membership satisfaction of their donors"

Individual, contextual and network characteristics of blood donors and non-donors: a systematic review of recent literature (Piersma et al., 2017)

(No answer)

(No answer)

Easy come, easy go. Retention of blood donors. (van Dongen, 2018)

(No answer)

-” retention campaigns should focus on warm glow rather than on purely altruistic messages.”
-” retention of new donors should start from recruitment onwards”
-” making the donation a pleasant experience and reminding donors that they might be disappointed in themselves if they do not donate”
-” encouraging donors to drink water and apply muscle tension, will help decreasing vasovagal reactions”
-” helping donors to plan their donation “

5.2 Data analysis.

The data was analysed by qualitative content analysis. Content analysis in research is used to determine the presence of certain words, themes, or concepts within some given qualitative data (Mailman.columbia.edu, 2018). Content analysis can also be described as any technique for making inferences by systematically and objectively identifying special characteristics of messages (Parker & Holsti, 1970).

Following the problems at hand relating to this thesis, questions were defined with the aim of finding solutions. Data was then collected from relevant databases and necessary information was considered to answer the key questions. The twelve articles representing the necessary information showed correlation between them and findings were drawn to help answer the questions set for this research.

6 FINDINGS

As mentioned earlier, following inclusion and exclusion criteria, 12 articles met the inclusion criteria. The findings from these articles were categorized into topics presenting the altruism in blood donation, suggestions for increasing blood donor retention and the role of the nurse in blood donation.

6.1 Altruism in blood donation.

Altruism is the motivation to help others without expecting anything in return (Guiddi et al., 2015). Guiddi et al. claim that donating blood is considered true altruism as the blood donor has no information whatsoever, about the blood recipient. They also believe that gender plays a major role in blood donation by stating that women are driven by altruistic motivations while men by individualistic motivations. Guiddi et al., 2015 also describes the donor career as a process that is ever changing depending on blood donor motivation. Their study suggests that blood donating agencies should aim at knowing and understanding blood donors' motivations to donate blood to help in recruitment and eventually retention. Ferguson et al., 2007 state that many large-scale recruitment campaigns use altruism as a campaign tool. Their study found that blood donors exposed to altruistic campaign messages were more likely to donate blood.

Bagot, Murray and Masser, 2016, in their study, state that catastrophic events also strongly push donors to donate blood. However, blood donors who donate during catastrophic events are hard to retain. Bagot, Murray and Masser suggest that blood donation agencies could create registries for donors willing to donate blood in case of catastrophic incidents. Apart from catastrophic events, free time from work or school, pressure from the society and the reputation of the blood collection agency, prompt first-time blood donors to donate blood. Additionally, curiosity was identified in the study, as a promising motivator for blood donation where use of machines, interest in blood types and community-level information could be made available for potential blood donors. Bagot, Murray and Masser also found out that using some interventions to increase blood donation behaviour in repeat donors is not as effective as using the same

interventions on the first-time blood donor. They claim that the blood donor's intention to return to donate blood is dependent on positive attitudes towards the donation, feeling of control over the donation and the perception of being subjected to social pressure to donate or not.

Ferguson et al., 2007, claims that blood donors' intentions to donate are the best predictors of blood donor behaviour but no interventions to enact intentions, have been used to increase donation. Their study states that blood donors pass through decision-making stages as they try to change their behaviour and that moving from one stage to the next in their donor career, is made possible by different behavioural processes.

6.2 Increasing blood donor retention.

van Dongen, 2018 defines retention as the prevention of blood donors becoming lapse and eventually becoming inactive. In her study, van Dongen states that the purpose of blood donating agencies conducting blood donor programs is to inspire blood donors to keep up with their donations frequently, if they meet eligibility requirements. The suggestions according to van Dongen's study on blood donor retention include:

- Starting retention from the recruitment stage,
- Blood donation agencies to focus on blood donors' warm glow rather than altruistic messages,
- Blood donating staff to make the donation process a delightful experience for the blood donor,
- Blood donating staff to encourage the blood donor to apply different techniques to reduce adverse events.
- Sending reminders to blood donors.

Understanding the period between the first donation and the next time the blood donor decides to donate, can increase retention (Bagot, Murray and Masser, 2016). Ringwald, Zimmermann and Eckstein, 2010 highlight convenience of the blood donation site is

key in retention of blood donors. They state that easy access of the donation site allows blood donors to return to the donation site.

Guiddi et al., 2015, claim that women have a higher chance of leaving the donation community than men. Their study puts forth a suggestion that blood donating agencies should focus on women more especially in the loyalty building phase and not in the recruitment phase. Additionally, their study highlights the differences in donor motivations and suggest using different recruitment and loyalty building strategies specific to each donation process phase. Chell et al., 2017 state that using incentives motivates people in that they are likely to participate in an activity that comes with a reward. In their study, they describe incentives as rewards that can be in the form of money or not. They also claim that incentives are motivators of specific behavioral actions, for example recruitment, retention and reactivation. However, they state that there is little evidence to show that incentives enhance blood donor recruitment unlike donor retention.

Masser et al., 2016, suspect whether changing blood donor recruitment materials could improve blood donor recruitment. Their literature demonstrated that small modifications to recruitment materials improved orientation to donate blood for both donors and non-donors as well as their willingness to participate in a blood drive. Masser et al. also found that potential blood donors who filled questionnaires in the presence of blood donation paraphernalia (for example blood donation posters and collection tubes) reported low intention to donate that those in the absence of the same paraphernalia. Ringwald, Zimmermann and Eckstein, suggest that promotion strategies that show how easy it is to donate are important as they increase motivation.

FITD (foot-in-the-door) is a recruitment technique which means asking for a small commitment from the blood donor and following it with a greater one. Ferguson et al., 2007, found out that this approach is effective when it comes to maintaining a positive mood among blood donors.

Ferguson et al., 2007 claim that giving reminders to individuals, has a positive effect on attendance in different clinical settings. According to their study, this has also proven successful when it comes to increasing blood donor recruitment. They claim that reminders increase negative emotions which in turn motivate a helping behaviour in po-

tential donors. Their study adds by stating that reminders activate relevant attitudes and intentions to donate blood.

A fear of needles, anxiety, deferrals and adverse events (e.g. fainting and nausea) are negative predictors that reduce blood donor chances of donating blood frequently. Repeat blood donors have a lower chance of experiencing adverse events as compared to first-time donors which in turn increases retention (Bagot, Murray and Masser, 2016).

Masser et al., 2016, state that pre-donation anxiety is a barrier to blood donation and is directly linked to vasovagal reactions that eventually decrease blood donor retention. They claim that blood donating paraphernalia highly contributes to this anxiety. Ringwald, Zimmermann and Eckstein, 2010, warn against the use of needles or blood bags in campaigns as they may provoke negative images among blood donors. Instead, they suggest the use of measures that increase self-efficacy and self-esteem to ignite the feeling of capability to donate blood, in the blood donor.

Ferguson et al., 2007 state that using applied tension prior to donating blood is known to be effective with regards to anticipatory emotion (which precede behavioural outcomes). However, blood donors don't always use this technique leading to experiencing distress and eventually not returning to donate blood. They add that negative emotional experiences decrease the chances if first-time donors to return.

Ringwald, Zimmermann and Eckstein, 2010 state that a bad experience in the donation process, especially at the beginning of the donation and among first-time donors, is a major deterrent for future donations. Masser et al., 2015 describe bad experiences as service failure as the blood donor's expectations of donating blood are not met. Ringwald, Zimmermann and Eckstein's study suggests to blood donation sites to have an ambassador to help first-time donors who are prone to feel lost at the donation site. Ringwald, Zimmermann and Eckstein also suggest active contact with deferred blood donors once their deferral period is over. Using invites is recommended.

6.3 Nurse roles in blood donation.

Bagot, Murray and Masser, 2016 state that throughout the donation experience, blood donors need psychological individualized physical support. Focusing on the first-time donor's concerns and needs and creating a connection with them, is the role of the blood collection agency staff guiding the donor through the donation process. Bagot, Murray and Masser claim that the most successful intervention that has been able to increase blood donor retention is having a personalized interview which involves listening and addressing blood donors' anxieties and fears. They found that the use of this intervention significantly increased retention from 60% to 96.4%. Active listening and responding by the interviewer during the donation experience, is a promising strategy that can improve, especially, first-time blood donor retention.

Masser et al., 2016 argue that educating the blood donor and providing coping materials to the donor help to reduce anxiety, ward off negative thoughts and increase confidence to donate blood. Their study found that blood donors who were given coping brochures reported a stronger intention to donate blood than those who did not. De Almeida Neto, 2011, highlights allowing blood donors a shorter waiting time, increasing personal attention, reducing adverse reactions and blood donor satisfaction as preferred strategies for donation agencies' staff, to help retain blood donors.

In past years, patients have been encouraged to channel their focus away from stressful medical procedures to reduce stress and pain. In blood donation, nurses guide blood donors with coping strategies to help them experience less distress. These include distraction, applying muscle tension, water loading and drinking fluids with caffeine (Ferguson et al., 2007).

Alfieri et al., 2017 explains that individuals having more than one motivation, have the possibility of enhancing personal satisfaction and fulfilment. However, people who engage in different motivations at the same time may experience negative outcomes (Kiviniemi et al.2002). Alfieri et al. add that usually donors don't have the chance to feel part of a group following recruitment campaigns for new donors and creating awareness relating to blood donation. Therefore, their study suggests that blood donation staff

should strive on improving donor blood donor satisfaction while making them feel important and part of a group during their donation experiences.

Ringwald, Zimmermann and Eckstein, 2010, encourage active communication from the beginning of the donation process as well as taking measures to support the development of the blood donor's identity. Their study states that, having well trained staff, improving the blood donation process, reducing adverse events, satisfying blood donors and appealing to their personal motivations, are keys to achieving good development of the blood donor. They add that it is the role of the nurses to give the blood donor the feeling of appreciation and make the blood donor feel comfortable during their donation process. Ringwald, Zimmermann and Eckstein state that giving specific dates to donors to return for another donation allows a future forecast for blood donations. Therefore, they suggest that the role of the blood donating staff is to support the first-time blood donor, to help them build up their identity and break any barriers that might hinder their donation process or development in their donor career.

7 DICUSSION

The goal of this review was to identify the methods used in blood donor recruitment and retention while shedding light on the role of the nurse in blood donation. Generally, the review presents evidence-based knowledge relating to the topic from previous studies done.

Blood donation is highlighted as a process, in that blood donors go through different stages and experiences. During this process, their decisions and donation intentions are moulded in different ways which in turn influences their donating behaviour especially when it comes to deciding whether to donate blood or not. The stages of a blood donor career are outlined as (1) initiation, (2) maintenance, (3) habit formation, (4) habit, and (5) establishment of blood donor identity formation (van Dongen, 2018). When the blood donor's career develops, their donor behaviour during their donor career illuminates. Therefore, as blood donation confidence increases (i.e. self-efficacy), they may face some anticipated regret and discover their role more to become more influential or less influential in their donor career. (Bagot, Murray and Masser, 2016). Intentions, self-efficacy and habit formation are cognitive and behavioural motives that show association in all stages of the donor career. (Piersma et al., 2017)

Blood donation agencies were found to place the most value on repeat donors than first time donors as predicting their donation behaviour is much easier than first-time donors. The findings show that providing information to potential donors and making information about blood donation available, is a promising step towards encouraging donors to donate and maintaining blood supply. This is a given and at the same time may or may not be effective because the final decision to donate is totally dependent on the blood donor. However, there is hope with this following good donation experiences and blood donors developing positive attitudes towards donating blood (Bagot, Murray and Masser, 2016).

Recruitment campaigns based on altruism and understanding the motivations behind donating blood, like curiosity (Bagot, Murray and Masser, 2016), are aspects that blood donating agencies can use while recruiting blood donors. Additionally, categorizing

blood donors in different groups based on their different characteristics may aid donor recruitment and eventually increase retention (Guiddi et al., 2015; Ferguson et al., 2007). The question on where to draw the line with altruism, curiosity, and in cases of retaining blood donors after catastrophic events is somewhat questionable as blood donors' characters and emotions are involved. The decision to donate blood does not only depend on individual motivations but also social responsibility for the greater good of an individual's community (Neto, 2011).

Deferrals and adverse events that include fainting, vasovagal reactions, low haemoglobin and travelling abroad affect blood donor behaviour. Such deferrals are reasons for blood donors to become lapse or stop donating altogether (Piersma et al., 2017). Deferrals occur when blood donors are ineligible to donate and can either be temporary or permanent (Masser et al., 2015). As a result, this may contribute to the blood donor being frustrated or inconvenienced in one way or another. Vasovagal reactions in first-time plasmapheresis donors, decrease their intentions to continue donating blood plasma or whole blood. This case however does not apply to whole blood donors faced with similar situations of a vasovagal reactions. Whole blood donors have the chance to convert to plasmapheresis donors. Anxiety, fear of needles and adverse events are deterring factors of blood donation (Masser et al., 2015).

The findings did not give enough solutions to these problems, but the ones presented, e.g. avoiding images of blood donating paraphernalia in campaign posters, increasing blood donor self-efficacy and self-esteem (Masser et al., 2016; Ringwald, Zimmermann and Eckstein, 2010) and using applied tension (Ferguson et al., 2007), seem viable and have potential to facilitate donation of blood. However, increasing blood donors' self-efficacy and self-esteem may in some ways prove difficult with regards to providing proper training to blood donating staff who will effectively handle the tasks.

Incentives being used as motivators to donate blood is in a way contradictory and in some ways goes against the act of donation, especially because of the nature of donating blood which is seen as an altruistic act. There still seems to be challenges in getting some blood donors to donate blood without getting anything in return. However, giving incentives to donors has proven to aid in blood donor recruitment and retention.

Temporary blood donor deferrals e.g. for travellers who visit malaria risk regions may lead to increase of blood donors being lapse or first-time donors not returning at all to donate blood. Frustration and inconveniences (Piersma et al., 2017), for this group of blood donors is eminent especially for frequent travellers who would like to donate and travel as well. Deferrals due to low haemoglobin in blood donors, thwarts donation attempts as the donors must take steps to start treatment to meet the required criteria to donate blood.

The role of the blood donating staff is seen as not only collecting blood but taking care of the blood donor for them to return for subsequent donations. A good blood donation experience begins from when the blood donor steps into the donation center and extends way after the donation period with check-ins, reminders (Ringwald, Zimmermann and Eckstein, 2010; Ferguson et al., 2007) and information related to blood donation available at the donors' disposal. The role of the nurse was limited in the findings. All in all, it was clear that, nurses play a vital role of guiding the blood donor throughout the donation process. Nurses are clinically responsible for the donation sessions and are responsible for providing medical expertise and being in charge of the careful selection of blood donors (Ford and Ford, 2018).

Good communication is required between the nurse and the blood donor to avoid misunderstandings and malpractices during the donation process. Nurses are required to be well trained to handle the blood donors as expected. The personalized interview stage offers the opportunity for nurses to extract information that may be useful in terms of recruiting and retaining potential donors in the future (Bagot, Murray and Masser, 2016). Additionally, in this stage, nurses can help anxious blood donors to be calm and improve their donation experience to be a better one. Giving the blood donor necessary information related to the donation and coping strategies to be able to donate blood, leads to reduced anxiety and increased confidence. This eventually encourages subsequent blood donations in the future (Masser et al., 2016).

Retaining blood donors is a challenge for blood donation centres. However, using the right methods to retain donors, especially giving the blood donor a pleasant experience

and right support during the donation process, focusing on both the first-time donor and the repeat donor (Bagot, Murray and Masser, 2016) as well as educating and helping blood donors to reduce adverse events (Masser et al., 2016; Ferguson et al., 2007), is key with regards to retention. With regards to using reminders to increase retention, exploring different methods for example electronic communication (text messages, emails, websites and social media) can help a great deal in increasing blood donor retention (Sironani et al., 2013). Doing this will help to maintain a constant blood supply.

8 CONCLUSIONS

A big part of recruiting blood donors is highly dependent on constantly reaching out to and communicating with blood donors. Retaining blood donors requires optimal focus on the blood donor throughout the donation process. Focusing on all types of blood donors is necessary to encourage subsequent donations and increase blood donation frequency. Blood donating staff, in this case, nurses, should be well trained to handle blood donors carefully and effectively as part of promoting a pleasant donation experience for the blood donor. They should be well educated with matters relating to donation in order to answer any pressing questions the blood donor may have. Communicating with the blood donor should also be an opportunity to develop new ways of retaining the blood donor.

Strengths, limitations and recommendations.

The study topic was quite interesting and introduced a lot of information, new and old. Evidence of connections on different aspects of the topic were seen while reading and analysing the articles. The availability and quick access to databases to aid the research was a good thing that made the search process less difficult.

Despite the aims of this study being achieved and the research questions answered, the review was limited to few relevant studies that have been done recently. This may also be because the study was limited to one Boolean operator, "AND" to mean the search for articles was limited hence not exhausted upon effectively. There were no specific studies found that covered all the important aspects related to this topic in one study. Despite this, the chosen articles were relevant and helpful for this topic.

The research was done in a limited period where the allotted time was not enough to effectively research the topic. It was also a solo project with one novice researcher working independently.

As a suggestion to be considered for further research, a cross-sectional or longitudinal study could be done for this topic to provide more information that may be less limiting

and more accurate. Other future studies could focus more on the nurse's role in and their responsibilities in blood donation because they work closest with the blood donor.

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