Evolving strategies to encourage repeat donations among first time voluntary and replacement blood donors in southern Ghana

Thesis submitted in accordance with the requirements of the University of Liverpool for the degree of Doctor of Philosophy by

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DEDICATION

I dedicate this thesis to my parents, Mr. J M Asamoah (of blessed memory) and Mrs. Jane Asamoah. Words are not enough to describe the selfless sacrifices they made to help me get to this stage in my life. In the midst of my difficulties - juggling life, work and my studies, my Dad, on his deathbed, defied the pains he was suffering and said to me, "make sure you complete the Ph.D.". Those words have propelled me through the rest of the journey, especially whenever I appeared to be at a dead end. I am forever grateful, Mum and Dad…

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LIST OF ABBREVIATIONS

AABC	Accra Area Blood Centre
AU	African Union
CABC	Central Area Blood Centre
DSS	Donor Services Staff
FGD	Focus Group Discussions
FRD	Family Replacement Donor
HDI	Human Development Index
HIC	High-Income Countries
HSRP	Health Services Rehabilitation Project
IDI	In-depth Interview
KATH	Komfo-Anokye Teaching Hospital
KBTH	Korle-Bu Teaching Hospital
LMIC	Low- and Middle-Income Countries
LSTM	Liverpool School of Tropical Medicine
MMR	Maternal Mortality Ratio
MOH	Ministry of Health
NABC	Northern Area Blood Centre
NABDAG	National Blood Donor Association of Ghana
NBSG	National Blood Service, Ghana
NDF	Nordic Development Fund
NDPC	National Development Planning Commission
PBC	Perceived Behavioural Control
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
QSR	Qualitative Software and Research
SABC	Southern Area Blood Centre
SBfAF	Safe Blood for Africa Foundation
SSA	Sub-Saharan Africa

TMU	Transfusion Medicine Unit
TPB	Theory of Planned Behavior
TTI	Transfusion Transmissible Infection
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
VNRBD	Voluntary Non-Remunerated Blood Donor
WHO	World Health Organisation

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ABSTRACT

Low- and middle-income countries have about 81% of the world's population, but contribute only about 50% of the 112.5 million donations of blood collected annually worldwide. In Ghana, there is shortage of blood all year round, with a deficit of about 35% of the national requirement of 250,000 units. Voluntary non-remunerated blood donors (VNRBDs) are uncommon and contribute only about 36% of the donated blood. Repeat donations constituted only 38.2% of donations by VNRBDs at the Southern Area Blood Centre of the National Blood Service, Ghana (NBSG) in 2016, despite the recognition that repeat donors are safer. To increase the safety and adequacy of blood supply in low- and middle-income countries, locally relevant evidence is needed about how to better motivate blood donors. This study examined the perceptions about blood and blood donation; motivators for, and deterrents to blood donation; first-time blood donors' intention to return to donate blood; and recommended interventions to promote blood donation in Ghana. Two scoping literature reviews, 24 individual in-depth interviews, five focus group discussions with a total of 39 participants, and a cross-sectional survey of 250 first time VNRBDs and 255 first-time family replacement blood donors (FRDs) were conducted in southern Ghana. A sequential exploratory mixed methods design was used.

Key perceptions that influence blood donation in Ghana were the perception that blood is life, the symbolism of blood as a spiritual, religious and cultural entity, the knowledge of blood as a physical/biological substance; and that blood donation is a good and lifesaving act with health benefits and negative health effects. Key motivating factors were altruism, collectivism, education, awareness, publicity/advertisement, reminders, and some non-monetary incentives. Important deterrents were: fear, negative service experience, negative influence of other persons, inconvenience, discouraging religious and cultural beliefs. First time donors were young (median age, 25 years; interquartile range 21-31 years), with 87.4% below 35 years of age, male (72.5%), single (73.3%), Christian (93.7%), employed (58.8%), with at least a basic education (98%), and lived with parents/family (54.3%). VNRBD were younger (median, 23years; interquartile range 20-29 years) than FRD (median, 28 years; interquartile range 23-33 years). Most FRDs considered themselves as VNRBDs (82.6%). Factors that positively predicted intention to return to donate were: convenient access to donation sessions (OR=2.6, 95% CI 1.5–4.6; p=0.001); if Ghana needs blood (OR=2.5, 95% CI 1.1–6.0; p=0.033); if it makes one feel good about himself/herself (OR=1.8, 95% CI 1.0-3.2; p=0.040); SMS/email reminders (OR=2,7, 95% CI 1.5–4.8; p=0.001); TV, radio or newspaper advertisement (OR=2.9, 95% CI 1.6–5.1; p<0.001). Factors that negatively predicted intention to donate again included blood credits (OR=0.4, 95% CI 0.2–0.8; p=0.013); free TTI test results (OR=0.4, 95% CI 0.2–0.9; p=0.018); and not knowing what happens to the donated blood (OR=0.5, 95% CI 0.3-0.9; p=0.028).

This study describes original research which suggests that interventions and recommendations that are likely to increase first-time donor return in Ghana include those aimed at education, improving access to donation sites, and encouraging FRDs to become regular donors; a functioning donor contact centre; and evaluation, rationalising and implementation of an incentive system. There are examples in the literature of successful interventions for motivating blood donors in Ghana, but the challenge is a lack of quality evaluations and scale-up studies.

CHAPTER 1

INTRODUCTION AND BACKGROUND

1.1. Blood donors and blood donation

1.1.1. Blood donors

Blood donors can be categorised, depending on the motive for donating blood, as voluntary non-remunerated blood donors (VNRBD); family, replacement or family/replacement donors (FRD); and paid or commercial donors (WHO, 2017a). VNRBD donate blood by their own free will, without receiving any payment in cash or 'in kind' which could be considered a substitute for money. Small tokens, gratuities, refreshments and the reimbursement of direct costs and direct travel expenses are usually compatible with the voluntary and unpaid donation of blood (Woodfield, 2007). FRDs are blood donors who donate blood only in response to need by a known patient, usually a family member, a friend or an acquaintance. Paid donors receive remuneration, for donating blood.

1.1.2. Blood donation

Blood donation is a process whereby a person voluntarily has blood drawn from him or her, to be used for transfusion or for processing into blood products for medical purposes. Blood donors are the only source of human blood and blood products for therapeutic, research and laboratory use. Depending on the intended recipient of the blood or blood products, blood donation can be categorised as autologous or homologous/allogeneic. Autologous blood donations are intended for transfusion to the blood donor, who is usually a patient; homologous/allogenic donations are intended for transfusion or benefit of other persons other than the donor; and directed donations are a subgroup of allogeneic donations intended for a specific recipient.

Blood donation in high-income countries (HIC)

Out of 74 countries that collect more that 90% of their blood form VNRBD, 39 are HIC. Only 11 HIC collect more that 50% of blood from FRDs or PDs, out of 71 countries (WHO, 2017a). Denmark, as an example, with a population of 5.571 million and the highest usage of blood per capita, that is over 66 units per 1000 inhabitants, has adequate blood supply with about 230,000 donors donating 1.5 units of blood per year (Burgdorf et al., 2017).

Blood donation in low- and middle-income countries (LMIC)

LMIC have about 81% of the world's population, but contribute only about 50% of the 112.5 million donations of blood collected annually worldwide (WHO, 2016). The deficit in supply of blood per annum in developing countries has been estimated to be around 40 million donations a year (Zarocostas, 2004). In the African region FRD, who donate blood only in response to need by a patient who is known them, are the main source of blood and provide about 60-90% of the total blood supply (Allain et al., 2010; WHO, 2008). FRDs may include hidden paid donors, who receive remuneration, from patients' relatives for donating but often misrepresent themselves as FRDs. Using a donation rate of 1% of the population, the WHO estimated that the blood requirement for the 46 member states in the African Region in 2010 was about 8.13 million units. However, in that year, only about 3.48 million units were donated in the region, leaving a deficit of about 4.65 million (Tapko et al., 2014). Blood from FRDs in many SSA countries serves as either an alternative for or a supplement to insufficient numbers of VNRBDs.

Blood donation in Ghana

Two main types of blood donors can be identified in Ghana based on the motive for donating blood. These are VNRBDs who donate blood for altruistic reasons and the

FRDs who donate blood for family members or friends, among whom there are "hidden commercial" donors who present as FRDs but are paid by patient's relatives to donate. With the exception of the Komfo-Anokye Teaching Hospital Blood Bank (KATH), located in Kumasi in the middle zone of Ghana, which operates as a Blood Centre and mobilises VNRBDs, all the hospital-based facilities collect blood predominantly from FRDs. The minimum annual blood requirement for the country is estimated to be about 250,000 (NBS Ghana, 2017). The total reported blood collection for the whole country were 150,322, 155,250 and 160,624 units for 2014, 2015 and 2016 respectively (NBS Ghana, 2015, 2016, 2017). The percentage of these blood collections, donated by VNRBD for these years were 30%, 34%, and 36% respectively. (NBS Ghana, 2015, 2016, 2017) Of the total of 34,274 units of blood collected by the Southern Area Blood Centre in 2016, the total blood donations from repeat VNRBD, defined as blood collection from VNRBD who have donated two times or more with a minimum of one donation in every 24 months, was 6,632 (38.2%). The figure was 5,997 (36.6%) for 2015 (SABC/NBS Ghana, 2017). Available data indicate that in 2016, of the 17,375 units of blood, donated by VNRBDs at mobile blood collection sessions of the SABC, first time donations constituted 10,743 units (61.8%) (SABC/NBS Ghana, 2017). There are no records on repeat donations by FRD.

Blood supply in Ghana has never been able to meet the estimated requirements, with shortages all year round. Maternal Mortality Rate (MMR) in Ghana is 451 per 100,000 live births and 22.8% to 27% of all maternal deaths are due to haemorrhage (Asamoah et al., 2011; Martey et al., 1993; NDPC/UNDP, 2010). Malaria is hyper-endemic in all parts of the country and accounts for 33% of deaths in under-fives (USAID, n.d.). There is little published evidence on deaths due to anaemia in children in Ghana, but one study established that as many as 259 (58.1%) of the 554 deaths in the emergency

rooms per annum in children beyond the neonatal period in the Korle-Bu Teaching Hospital (KBTH) in Accra, were related to severe anaemia (Commey and Dekyem, 1995). With the expansion of medical facilities, introduction of new technologies and establishment of new emergency and accident centres in Ghana, the demand for blood and blood products is expected to increase. This increase in turn is expected to add to the existing pressure on the Blood Service in Ghana. The National Guidelines for the Clinical use of Blood and Blood products in Ghana provides guidance to clinicians with regards to the use of blood and encourages the use of alternatives to blood transfusion where applicable. Such alternatives that are available in Ghana include volume expanders, red cell growth factors (exogenous erythropoietin), pre-operative autologous blood donation, intra-operative haemodilution and intra-operative cell salvage". However, an audit in 2009 identified gaps in the appropriate clinical use of blood and compliance with the Ghana National Guidelines on Clinical Use of Blood and Blood Products (CBTC/NBS Ghana, 2009). The resultant wastage of inappropriate blood use further increases the shortage of blood. There is a need, therefore, to explore the mechanisms to improve blood donation in addition to ensuring appropriate clinical use of blood and blood components.

1.2. History of blood services in Ghana

Globally, the first attempt at blood transfusion dates back to 1667, while the first successful transfusion of human blood to a patient was in 1818 by Dr. James Blundell (Shaz et al., 2013). The first blood transfusion in Ghana was recorded in 1953, although first blood grouping had been reported earlier in 1935 (Schneider, 2013). After World War II, the Red Cross Branch Blood Collection Service in Ghana started in 1952. This marks the beginning of organised blood transfusion services in Ghana (Schneider, 2013). The idea of a Blood Transfusion Service as an organisation in

Ghana evolved in the mid-1960s, when it was started as a Regional Blood Transfusion Service. It subsequently became the National Blood Transfusion Service in 1973 and NBSG in 2007. Until 2007, the NBSG was a unit under the Institutional Care Division of the Ghana Health Service, under the Ministry of Health (MOH). The National Blood Policy of the Ministry of Health in Ghana was adopted by Cabinet in 2006 for the implementation and establishment of the National Blood Service Ghana as an agency of the Ministry of Health. The legislative instrument of the NBSG has been drafted, and is waiting for parliamentary approval to be passed to law. The promulgation of the legislative instrument will provide the necessary legal backing to the NBSG to execute its mandate as the sole agency responsible for the provision of blood and blood products in Ghana. This will facilitate cooperation of all stakeholders towards implementation of blood service policies and guidelines on organisation and management; donor selection motivation and retention, blood donation; donation testing; blood processing, storage and distribution; quality systems; and effective coordination of roles of hospitals and other stakeholders.

Figure 1-1: The front view of the NBSG Headquarters and Southern Area Blood Centre

The NBSG is an agency of the Ministry of Health, responsible for the provision of blood services in Ghana. Currently, the NBSG coordinates the activities of one stand-alone blood centre, the Southern Area Blood Centre (SABC) which is located in Accra in the southern zone of Ghana and 153 hospital-based blood collection points (NBS Ghana, 2011). The hospital-based blood collection points are located in teaching, regional and district hospitals, and operate their respective hospital-based transfusion facilities The SABC is responsible for procuring and supplying blood and blood components to hospitals and clinics that transfuse blood in the five southern administrative regions of Ghana with a total population of about 13 million. However, the SABC does not collect enough blood to supply all facilities; therefore, some hospitals in its catchment area collect and test blood for use, to supplement the supply by the SABC. The Transfusion Medicine Unit (TMU) of the Komfo Anokye Teaching Hospital (KATH), and the Tamale Teaching Hospital Blood Bank (TTH-BB) perform functions of blood centres in the middle and northern zones of Ghana, and will form the fulcrums for the proposed Central Area Blood Centre (CABC) and Northern Area Blood Centre (NABC) of the NBSG respectively. Some hospitals in the catchment areas of the CABC and NABC also collect and test blood for use, to supplement supplies by the TMU-KATH and TTH-BB.

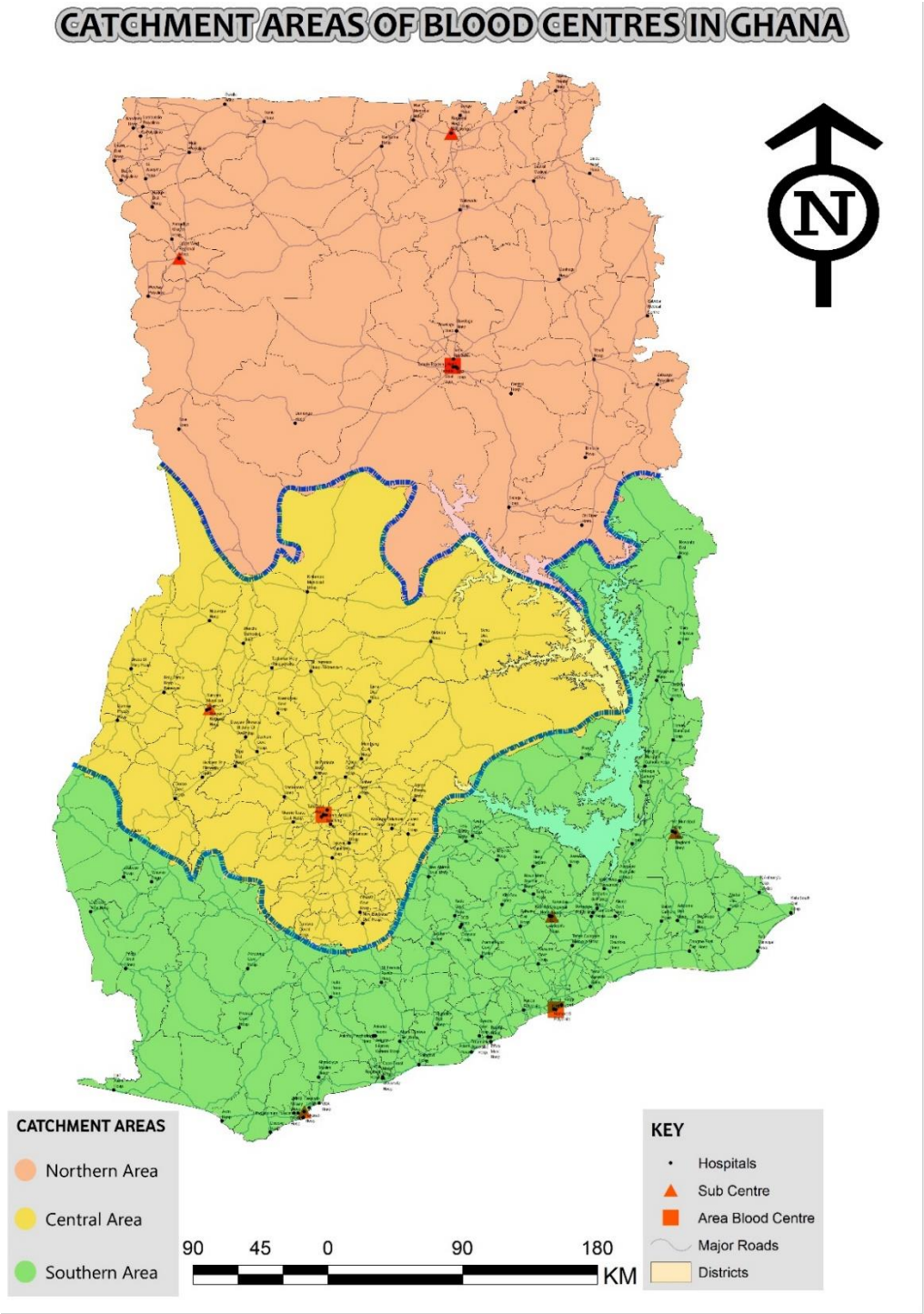

Figure 1-2: A map of Ghana showing the catchment areas of the Southern, Central and Northern Area Blood Centres

1.3. Blood safety in Sub-Saharan Africa (SSA)

The WHO recommends the collection of blood from repeat VNRBD, as key to adequate, safe and sustainable blood supply (WHO/BTS, 2009). The WHO African Regional Strategy, adopted in 2001, also aims to assist countries in the African Region

to set up effective systems of recruitment of low risk voluntary and regular donors and to achieve 80% donations by VNRBDs by 2012 (WHO/AFRO, 2001). This strategy however has proved to be expensive and has required extensive external funding in those countries where it has been pursued (Koster and Hassall, 2011). Although this strategy for blood safety and availability has been implemented in most developed countries, it has been far from successful in the African Region where FRDs are the main source and provide about 60-90% of the total blood supply (Allain et al., 2010; WHO, 2008). The 2013 report of the survey on the status on blood safety and availability in the WHO African Region showed that 17 of the 21 countries with more than 80% VNRBD had at least 75% VNRBD in 2001/2002. Only five of these countries (Botswana, Namibia, South Africa, Mauritius, and Swaziland) met target for the minimum blood requirement of 10 units per 1000 population (BCI 10) (WHO, 2017b). The remaining 16 countries collect between 1.4 and 7.8 units per 1000 population, although with at least 80% from VNRBDs.

In Sub-Saharan Africa (SSA), FRDs have remained dominant because they are readily available and are the cheapest source of blood (Allain et al., 2010; Bates and Hassall, 2010). However, the replacement blood donation system has failed to provide adequate blood and blood products for countries in SSA. Evidence has shown that blood from VNRBDs is safer and has lower rate of Transfusion Transmissible Infection (TTI) sero-reactivity than FRDs, but some studies have also shown that when stratified by age, blood from first time VNRBDs is not safer than FRDs and that only repeat donors provide improved blood safety (Allain, 2010; Allain et al., 2010; Sarkodie et al., 2001).

In Africa blood transfusion is usually an emergency treatment for severe anaemia of varying aetiology that if not given, can be fatal to the patient. Inadequate blood supplies are therefore a major factor in preventable deaths among women and children

(Bates et al., 2007; Merali et al., 2014; Tagny et al., 2008). Africa has the highest maternal mortality in the world (Tapko et al., 2009). The Maternal Mortality Ratio (MMR) in Africa is about 1,000 per 100,000 live births and accounted for 247,000 of the 500,000 maternal deaths in the world in 2000 (WHO, 2005). About 37.6% of maternal deaths are attributable to anaemia and haemorrhage (Khan et al., 2006). Infant mortality rate and prevalence of malaria are high, with considerably high mortality due to severe malarial anaemia, which is mainly in children (Marsh, et al., 1995; Tapko, et al., 2009). All of these conditions often require blood transfusion as part of their management (Tapko, et al., 2009)

1.4. Study location

Ghana is situated on the south-central coast of West Africa and covers an area of about 238,537 square kilometres. The country is bound north by Burkina Faso, east by Togo, west by Cote d'Ivoire and south by the Atlantic Ocean. Administratively, Ghana is divided into 10 regions and 138 districts. The estimated population of Ghana was about 24.6 million by census in 2010 (Ghana Statistical Service, 2012), and projected to be up to 27.7 million in 2015 (Ghana Statistical Service, 2016; World Bank Group, 2016).

Figure 1-3: Map of Ghana showing boundaries and regions

Table 1.1: Relevant Demographic, Health and Economic Indicators of Ghana

Indicator	
Under-5 mortality rate (per 1000 live births), 2012	72
Infant mortality rate (per 1000 live births), 2012	49
Neonatal mortality rate (per 1000 live births), 2012	28
Annual no. of births (thousands), 2012	794.3
Annual no. of under-5 deaths (thousands), 2012	56
Maternal mortality ratio , 2008-2012, Reported	450
Maternal mortality ratio , 2010, Adjusted	350
Maternal mortality ratio, 2010, Lifetime risk of maternal death (1 in :)	68
Gross national income per capita (US$), 2012	1550
Life expectancy at birth (years), 2012	61
Total adult literacy rate (%), 2008-2012	71.5
Comprehensive knowledge of HIV among young people, 15-24 (%) 2008-2012	37.7
HIV prevalence among young people, 15-24 (%), 2012	0.4
Population below international poverty line of US$1.25 per day (%), 2007-2011	28.6

Source: https://www.unicef.org/infobycountry/ghana_statistics.html

1.4.1. The Southern Area Blood Centre of the NBSG

The study was based at the SABC of the NBSG. The SABC is located near the Korle-Bu Teaching Hospital in Accra, the capital city of Ghana. It was one of the three Area Blood Centres proposed in the medium term within the first and second five-year strategic frameworks of the NBSG (NBS Ghana, 2006; SBfAF, 2012) and currently the only stand-alone blood centre in Ghana. Under the restructuring of the NBSG, funded by the Nordic Development Fund, the SABC will eventually be responsible for procuring and supplying blood and blood products to the five southern administrative regions of Ghana with a total population of about 13 million. Currently, the SABC provides services for the whole of Greater Accra, part of Eastern and part of Central Regions with a total population of about 5 million, and collects about 34,000

(SABC/NBS Ghana, 2017) donations of blood annually from blood donors within the catchment area of the Centre. The estimated blood requirement for the catchment area is about 50,000 units per annum based on the WHO formula of 1% of the population. The Centre has seven fixed (static) blood collection sites. Six of these are located in various health facilities, that is, the Korle-Bu Blood Centre, La General, Tema General, LEKMA and Ridge Regional Hospitals, and the Maamobi Polyclinic. Blood collection at these sites is predominantly from FRDs. The seventh site is located at the Accra Shopping Mall and blood collection is from VNRBDs. Three of the static sites have permanent blood collection staff. Three ad hoc mobile blood collection teams collect blood from mobile blood collection sites and the remaining static sites. Mobile blood collection sessions are scheduled on weekly basis. Mobile blood collection sites are planned to be easily accessible to a group of individuals or organisation. Such sites could be located at the centre of the city or much further, to the rural parts of the catchment area.

1.5. Problem statement

Blood donation and collection in Ghana has consistently remained far below estimated national requirements. Available data show that progress on total blood collection and percentage voluntary donations has been very slow (Table 1.2).

Table 1.2: Annual National Blood Collection in Ghana

Year	Replacement	Voluntary	Total
2009	124,030	41,396	**165,426**
2010	111,194	40,126	**151,320**
2011*	60,063	32,132	**92,247**
2012	110,122	41,021	**151,143**
2013	107,398	52,897	**160,295**

2014	104,863	45,459	**150,322**
2015	102,465	52,785	**155,250**
2016	102,423	58,201	**160,624**

*Incomplete data

The NBSG through the Health Services Rehabilitation Project III, Component 2, has made significant improvement to facilities, equipment, logistics and supply, and human resources. The technical assistance component of the project resulted in the establishment of systems and development of policies, procedures and guidelines. This improvement has however not resulted in an increase in blood collections (Table 1.2).

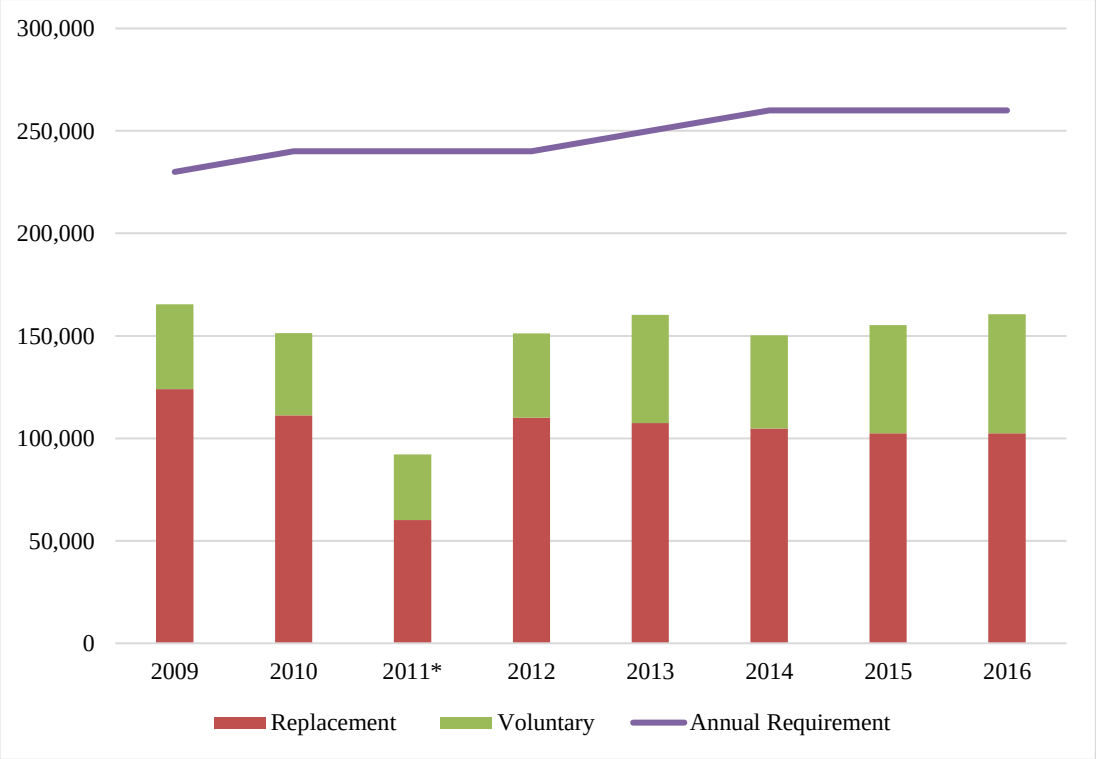

Figure 1-4: Graph showing estimated annual requirement versus collection of blood in Ghana

The increase in percentage of the total annual blood collected by the NBSG, that is donated by VNRBD has been rather slow, going from 25% in 2009 to 36% in 2016; considering the objectives of the WHO African Regional Strategy to achieve 80% donations by VNRBDs by 2012 (WHO/AFRO, 2001). Although evidence has showed

that blood from repeat blood donors is the safest (Allain et al., 2010), about 61% of blood is collected from first time donors (SABC/NBS Ghana, 2017).

One important question, which remains unanswered, is how to achieve adequacy of blood supply through donor mobilisation and retention in SSA. There are divergent views on feasibility of focusing on VNRBD only as key to ensuring adequacy and safety of blood supply (Allain and Sibinga, 2016; WHO, 2016, 2010). However, the safest blood is from repeat blood donors, either VNRBD or FRDs (Allain et al., 2010). The critical issue, therefore, is how we can encourage the VNRBD or the FRDs to return as a repeat donor. Suggested strategies to address this issue include recruiting the FRDs to donate again as a repeat VNRBDs or FRDs (Allain, 2010; Bates and Hassall, 2010). However, no strategies for conversion and retention of FRDs have been tested, and no strategies for the recruitment of FRDs for repeat donations in SSA have been described (Allain, 2010; Koster and Hassall, 2011). The significance of the FRD in SSA is high because of the high percentage and substantial contribution of this category of blood donors to the blood supply, and also because the distinction between the FRDs and two other categories of donors is not always clear-cut (Bates and Hassall, 2010).

1.6. Justification

A study on attitudes towards blood donation and transfusion argued that a donor's willingness to donate blood is determined by the net influence of motivating and deterring factors (Koster and Hassall, 2011). It is therefore crucial, when developing models to increase repeat blood donations from existing blood donors, to understand from the donor's perspective what will make the first time donor come back to donate and the repeat donor continue donating (Koster and Hassall, 2011).

There are only a few studies that have examined issues that influence donor motivation and perceptions in Sub-Saharan African donors (Burzynski et al., 2016; Koster and Hassall, 2011) and there is very little published evidence of similar studies in Ghana (Asenso-Mensah et al., 2014). However, a group of repeat VNRBDs has been generated in Kumasi in Ghana by creating a socially acceptable environment for donation: this shows that appropriate interventional strategies that look at enhancing motivating factors and reducing deterrents may be used to successfully recruit and retain repeat donors (Allain et al., 2008; Owusu-Ofori et al., 2010).

The aim of this research was to identify the perceptions, motivators and deterrents that are specific to the local setting, culture and beliefs and recommend locally appropriate intervention strategies for increasing repeat blood donations. It also sought to determine the predictors of "intention" and "blood donor return" among first time blood donors, using the theory of planned behaviour (TPB) model.

1.7. Research questions

The overarching research question for the study was:

> What are the motivating factors for, and deterrents to blood donation in southern Ghana; what is the effect of these factors on first time blood donors' intention to return, and on actual return; and what would encourage first time donors to return to donate?

The specific research questions were:

1. What are the perceptions of blood donors and non-donors about blood, blood donation and the blood donation process?
2. What are the motivators and perceived motivators for blood donation among blood donors and non-donors?
3. What are the deterrents to blood donation among blood donors and non-donors?
4. What are the socio-demographic characteristics of first time VNRBDs and FRDs?
5. How significant are the effects of the identified motivators, deterrents and socio-demographic characteristics on first time blood donors' intention to return, and on actual donor return to donate blood.

1.8. Objectives

1.8.1. Main objective

To identify the motivating factors for, and deterrents to blood donation in southern Ghana and recommend intervention strategies to encourage repeat blood donations among first time blood donors in Southern Ghana.

1.8.2. Specific objectives

1. To assess the perceptions of blood donors and non-donors on blood, blood donation and the blood donation process.
2. To identify motivators for blood donations among blood donors and non-donors.
3. To identify the deterrents to blood donation among blood donors and non-donors
4. To examine the socio-demographic characteristics of first time VNRBDs and FRDs
5. To identify the potential predictive power of the identified motivators, deterrents and socio-demographic characteristics on first time blood donors' intention to return, and on actual donor return to donate blood, using the TPB model.

1.9. Theoretical perspectives and framework

The current study draws its theoretical perspective from the Theory of Planned Behaviour (TPB). According to the TPB, intention is a strong predictor of behaviour (Ajzen, 1991). The TPB (Ajzen, 1991) (Fig. 1), a well-known theory for behavioural decision making under volitional control (Ajzen, 1991), has been used to model blood donor behaviour by a number of studies (Ferguson et al., 2007; Masser et al., 2008, 2009). The TPB expounds that human behaviour is guided by beliefs about outcomes of the behaviour (behavioural beliefs), normative expectations of others (normative beliefs) and the presence of factors that may affect the performance and the perceived power of these factors (control beliefs) (Ajzen, 2006a).

These factors in turn determine attitude towards the behaviour. Attitude towards the behaviour, subjective norm, and perception of behavioral control lead to the formation

of a behavioural intention. Intention is thus, assumed to be the immediate antecedent of behaviour. However, because a behaviour may pose difficulties of execution that may limit volitional control, it is useful to consider perceived behavioural control in addition to intention. Perceived behavioural control therefore can serve as a proxy for actual control and contribute to the prediction of the behaviour in question.

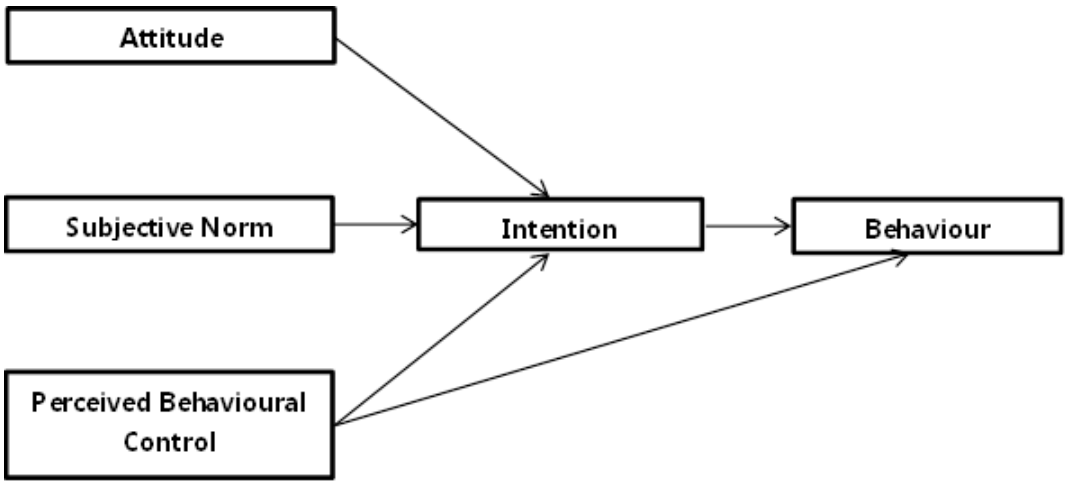

Figure 1-5: The Theory of Planned Behaviour (Ajzen, 1991)

This study adopted the TPB model to determine the predictors of donor return based on the constructs of the TPB and variables from the first qualitative phase.

1.10. Conceptual framework

This research is a mixed method research, which follows interpretivist/constructivist and interpretivist/post-positivist paradigms for the qualitative components (Creswell, 2007). At the initial stage of data collection, individuals with different perspectives were consulted to construct concepts on the understanding of blood donation and what constitutes motivators and deterrents to blood donation from the perspectives of the study population. In addition to this, a list of documented motivators and deterrents from the literature were introduced as probes in the in-depth interviews, and as vignettes in the focus group discussions; and thus examined documented phenomena or realities from a qualitative perspective.

The second phase followed a positivist paradigm, where a clear quantitative approach was employed to investigate the focal event, which is blood donors' intention to return to donate, and return behaviour. At the point of integration of the qualitative and quantitative methods which were conducted sequentially, a list of variables were created based on the themes that emerge from the analysis of qualitative data; documented perceptions, motivators and deterrents to blood donation from the literature; and constructs of the TPB model, using the proposed TPB model below.

The measures for deterrents, perceptions, attitude, subjective norms, perceived behavioural control, motivators, intention, and blood donation behaviour (Figure 1.5) have been outlined in chapter three under data analysis.

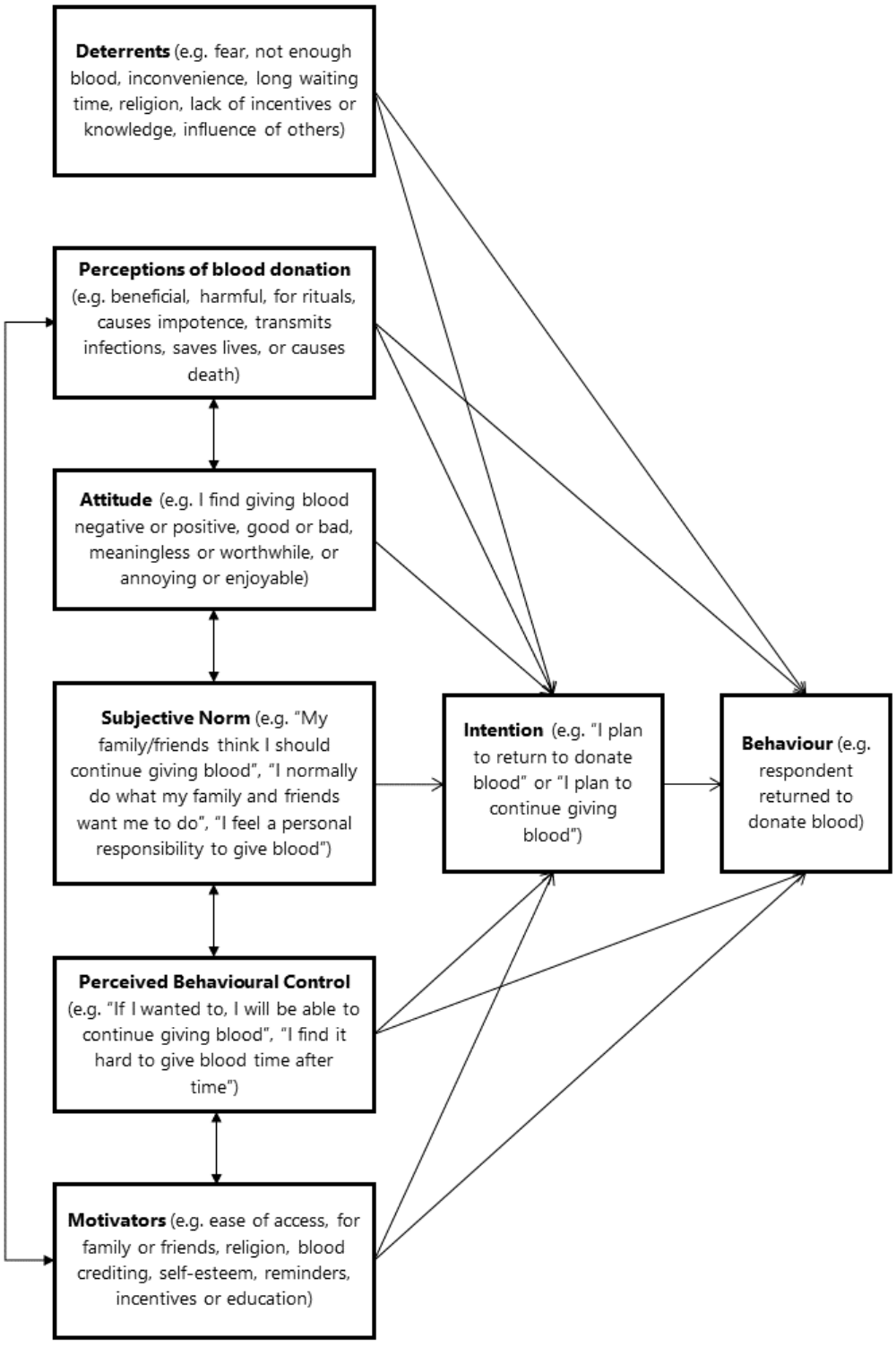

Figure 1-6: Schematic representation of conceptual framework

1.11. Thesis outline

In chapter one, a brief introduction and structured background to the study have been presented. The justification, study objectives, theoretical perspectives and framework, and conceptual framework have also been presented.

Chapter two provides a review of literature in the subject area and is organised into five main sections. It begins with a brief introduction on the literature review, the perceptions of blood in Ghana, and the application of the TPB to blood donation. These are followed by two scoping reviews on blood donors' perceptions, motivators and deterrents to blood donation in SSA; and on interventions promoting blood donation in SSA in the next two sections.

Chapter three outlines the general research methodology of the current study. It describes in detail the qualitative and quantitative methodologies, the sequence of data collection and point of integration of the two methods.

Chapter four describes blood donor perceptions, motivators and deterrents in Ghana, the results of the qualitative component of the study, including triangulation of the results of the separate methods employed in the qualitative component. It concludes with a discussion and recommendations based on the findings of the qualitative study and the literature review.

Chapter five describes the socio-demographic and attitudinal factors to blood donation among first time donors and includes the triangulation of the qualitative and quantitative components of the study. The results on blood donor perceptions, motivators and deterrents, described in chapter four are integrated with quantification of the identified factors in the second part of chapter five through the quantitative component, and the calculation of the predictive power of the factors in determining

blood donor intention and actual return, using the TPB model. This chapter also outlines triangulation of the results of the qualitative and quantitative methods.

Chapter six summarizes the of findings and conclusions of the study, and outlines this in relation to the objectives. This is followed by a general discussion, recommendations, and conclusions.

CHAPTER 2

LITERATURE REVIEW

2.1. Introduction

The following review of selected literature on research done in the area of this study is organised to highlight perceptions of blood and blood donation; blood donor motivation and deterrents to blood donation; and interventions to promote blood donation in SSA.

Two types of literature review were conducted. The first type was a general review that looked at blood and perceptions of blood in Ghana, and the TPB and blood donation. The second was a scoping review (Arksey and O'Malley, 2005), two of which were undertaken. Scoping review one was on blood donor perceptions, motivators and deterrents to blood donation; and scoping review two was on interventions promoting blood donation in SSA.

The review aimed to collect such evidence that could be used to inform research into factors that influence blood donation, and the development of locally adapted interventions to promote blood donation in Ghana. Scoping reviews can be used to provide a broad overview of a topic and to gather evidence for a research with a series of question, unlike systematic reviews that address relatively precise questions (The Joanna Briggs Institute, 2015). They can also be used to map available evidence in a research area in relation to time, location and source among others; identify gaps in the evidence; clarify key concepts; and report on the types of evidence that address and inform practice in a topic area. The objectives of the review were to gather evidence on perceptions about blood and blood donation; motivators for, and deterrents to blood donation; and interventional strategies that have been used to promote blood donation in sub-Saharan Africa. The review therefore needed to address

a series of questions rather than one specific question. Therefore, this study used scoping reviews instead of systematic reviews.

2.2. Blood and perceptions of blood in Ghana

2.2.1. Blood

Blood is a body fluid composed of about 45% fluid medium, the plasma; and 55% formed elements: the red blood cells, white blood cells and platelets. Blood is a complex tissue of the human body that has the vital role of supporting the functions of all other tissues in the body. Blood transports oxygen to, and carbon dioxide from tissues, nutrients and hormones to tissues, metabolic wastes to kidney, liver and skin for excretion. Blood also defends the body against infections and regulates acid-base balance in the body. The volume of blood in the body in litres is approximately 8% of a person's body weight in kilogrammes. Blood also prevents excessive bleeding by forming a clot at the site of injury. Blood is considered a precious fluid by virtue of its functions (Dean, 2005). Despite significant advancements towards researching into the manufacture of red blood cells for transfusion, there are still challenges with the successful production of transfusable red blood cells (Bouhassira, 2008; Keerthivasan et al., 2011).

Blood is grouped based on the presence of antigens on the surface of the red cell, and corresponding antibodies in the serum. The most significant, and most immunogenic, are the ABO antigens with four corresponding basic ABO phenotypes which are O, A, B, and AB. The next significant group is the RhD antigen which has two basic phenotypes, the presence or absence of which determines the Rh-positive and Rh-negative type of blood (Dean, 2005). The ABO antigens were discovered in 1900 by Karl Landsteiner (Dean, 2005), and RhD between 1939–1940 by Landsteiner, Weiner,

Levine and Stetson (Shaz et al., 2013). The combination of the ABO and Rh groups result in eight major blood types, presented in Table 2.1 below:

Table 2.1: Blood Types by ABO and RhD Systems

ABO	**RHD**	
	RhD positive	**RhD negative**
O	O RhD positive	O RhD negative
A	A RhD positive	A RhD negative
B	B RhD positive	B RhD negative
AB	AB RhD positive	AB RhD negative

2.2.2. Alternatives to blood transfusion in Ghana

A key recommendation by the WHO for blood safety is the use of alternatives to allogenic blood transfusion where indicated (WHO, 2001). This is also prescribed by the Ghana National Guidelines on Clinical Use of Blood and Blood Products (CBTC/NBS Ghana, 2009). Alternatives to allogenic blood transfusion, described in the literature includes predeposit autologous blood donation before surgery, intraoperative cell salvage (ICS), tranexamic acid (antifibrinolytic), erythropoiesis stimulating agents, such as recombinant erythropoietin, and safe parenteral iron preparations (Norfolk, 2013). With the exception of predeposit autologous blood donation, these alternatives are also acceptable to patient from religious groups that do not accept blood transfusion and patients who have concerns about allogenic blood. In Ghana, preoperative oral or parenteral (where oral iron is not tolerated) administration of iron is a common practice, and may be given in combination with recombinant erythropoietin (Aniteye E et al., 2012). In the 1990s, the NBSG actively promoted predeposit autologous blood donation in combination with oral iron and recombinant erythropoietin patients scheduled for orthopaedic and gynaecological surgeries (Ansah, 2006). Alternatives to blood transfusion and bloodless surgeries

are advocated for by anaesthesiologists, surgeons, haematologists, transfusion doctors and Jehovah's Witnesses among others.

2.2.3. Perceptions of blood

Blood donation is a life-saving activity, the absence of which can lead to increased morbidity or mortality, and is usually triggered by local needs for blood transfusion, either planned or immediate.

The decision to donate blood is the result of the net influence of factors that encourage donors to donate blood and the factors that discourage donors from donating blood (Koster and Hassall, 2011). According to the Theory of Planned Behaviour, blood donor behaviour is the direct antecedent of intention to donate, which in turn is influenced by norms (Ajzen, 1991).

Blood donor behaviour studies have been conducted extensively in HICs in the past two decades (Ferguson et al., 2007; Masser et al., 2008). The resultant knowledge of blood donor motivation and psychology has facilitated the establishment of a reliable blood supply from VNRBDs in HICs. The situation in LMIC, however, is different.

"Blood was once regarded as the fluid of infinite complexity, the very essence of life; the blood of each person seemed to carry in it the secret of individuality" (Mollison et al., 1993). The general perceptions of blood and blood donation in the Ghanaian culture are similar to this statement. Blood is scientifically defined as a specialised connective tissue that performs vital functions in the body, but in the Ghanaian culture, the perceptions of blood sometimes encompass both the spiritual and the physical.

Despite the cultural differences between the various tribes of Ghana, the perception of blood as the life and the very existence of human beings is common to all tribes. There

is however a paucity of published information on these perceptions. These perceptions are not limited to the older population of the Ghanaian communities, but are shared by younger persons who constitute the majority of the eligible donor population. A study on sociocultural and clinical aspects of anaemia in female adolescents in Ghana showed that blood is perceived as the "soul, strength, spirit and life force within a person, the determinant of a man's ability to have children, the determinant of the gender and the resemblance of a child to either parent, and as an absolute requirement for being and staying alive" (Agyepong et al., 1997). These perceptions may influence, on one hand, the decision making process of some members of a community who are wary of parting with their blood through blood donation, and on the other hand, by other members who may be willing to donate blood, especially as FRDs for family members and friends. Similar to the perception identified by the study by Agyepong, et al. are those by a study on donors in Cameroon (Koster and Hassall, 2011) where the perceptions about blood and its properties ranged from biological to spiritual. In this study, blood was described by participants as something which is common to family or kin, which possesses inherited character and physical traits that are precious, and which must not be spilled outside the body.

Different studies from various countries have identified both positive and negative perceptions that may influence the blood donation decision process. The perception that a man gives out some of his blood in the form of semen during sexual intercourse, thus "weakening" the man's blood whereas a woman could gain more blood (Agyepong et al., 1997) serves as a basis for the general belief by some Ghanaians that donating blood can cause impotence in men.

2.3. The Theory of Planned Behaviour and blood donation

The current study draws its theoretical perspective from the Theory of Planned Behaviour (TPB). According to the TPB, intention is a strong predictor of behaviour

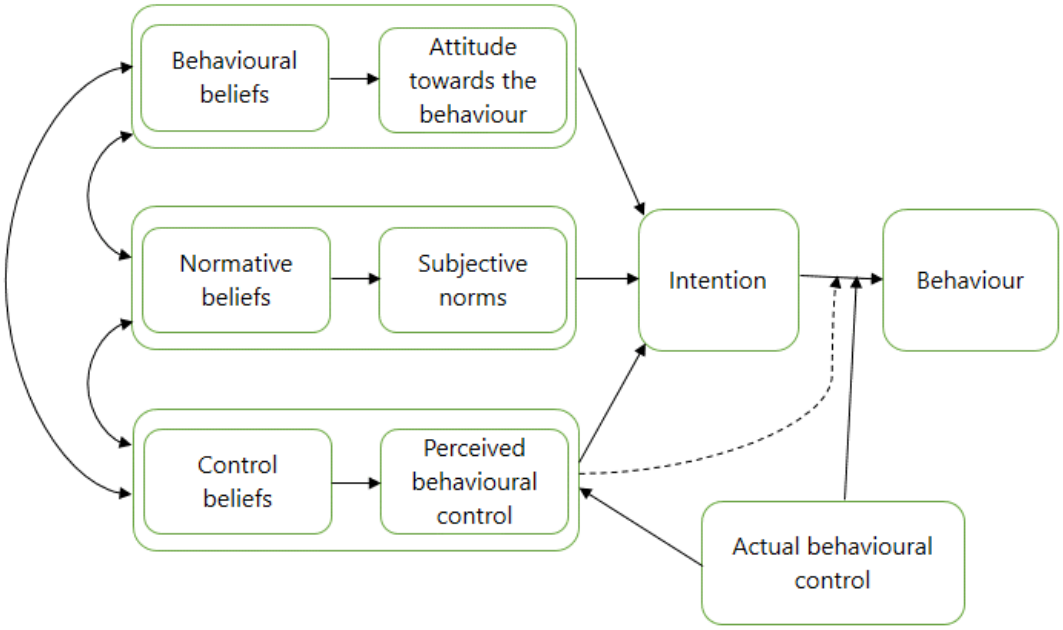

Figure 2-1: The Theory of Planned Behaviour (Ajzen, 2006a)

(Ajzen, 1991). The TPB also postulates that three determinants — attitude, subjective norm, and perceived behavioural control (PBC) — in turn predict intention (Ajzen, 2006b). These three determinants are also influenced by behavioural beliefs, normative beliefs and control beliefs, respectively (Figure 2.1).

Intentions may be assumed to indicate the influential factors that motivate individuals or show people's readiness to perform a given behaviour. The extent to which undertaking a given behaviour is positively or negatively valued is said to be attitude. Subjective norms are perceived pressure from families, friends or relatives that may influence people to be involved or not involved in a given behaviour. Perceived behavioural control refers to people's perceptions that they will be able to perform a given behaviour.

A behavioural belief is the likelihood that the behaviour may lead to a given result, with a person expected to have a relatively accessible small number of beliefs at any particular moment despite possessing many such beliefs. Normative beliefs describe the perception that important referent individuals or groups such as the person's spouse, family or friends expect people to engage or not engage in a given behaviour. Control beliefs describe the factors perceived to be motivators of, or deterrents to, the performance of a given behaviour.

2.3.1. Application of TPB in blood donation research

In the context of blood donation, the TPB has been applied in a number of studies (Armitage and Conner, 2001; Godin et al., 2007; Masser et al., 2009; Robinson et al., 2008). For example, the feelings and beliefs of the general population towards blood donation represent attitudes (Giles et al., 2004) whereas a measure of the degree to social pressure from people connected to individuals to engage or not engage in blood donation describes subjective norms (Ajzen, 2006b; Conner and Sparks, 2005)

The extended TPB has been assessed in a number of blood donation studies, with key constructs including anticipated regret, donation anxiety, and self-identity (Masser et al., 2009; Robinson et al., 2008); norm (Giles et al., 2004), moral norm (Armitage and Conner, 2001; Conner and Sparks, 2005) and, self-efficacy (Giles et al., 2004).

Most of the blood donation studies on TPB have been conducted in HIC, and have largely focused on student populations (Masser et al., 2009), and non-blood donors (Armitage and Conner, 2001). A study in Ethiopia (Mirutse et al., 2014) tested the TPB and found that knowledge, subjective norm and attitude explained 12.7% of the variance of the intention to donate blood.

2.4. Scoping Review I: Blood donors' perceptions, motivators and deterrents in sub-Saharan Africa

2.4.1. Introduction

Blood collection agencies worldwide are increasingly faced with the problem of recruitment and retention of adequate numbers of blood donors. In HIC, this has been attributed to difficulty in retaining young donors to replace the ageing donor population (France et al., 2013), increasing demand for blood, and increasing donor deferrals on medical grounds among others (Custer et al., 2005). Lack of blood donors in sub-Saharan African (SSA) countries on the other hand, is due to factors such as, lack of well-established structures for provision of blood service; poor infrastructure and logistics for blood donor recruitment and retention; inaccessible populations, many of whom live in rural areas with poor access to blood centres and poor communication networks; high prevalence of Transfusion Transmissible Infections (TTIs); misperceptions about blood and blood donation due to lack of knowledge and cultural influences; and resource constraints (Reddy, 2012; Salaudeen et al., 2011; Tapko et al., 2014). The median blood donation rate per 1,000 population in HIC is 33.1, compared with 11.7 in middle-income countries and 4.6 in low-income countries (WHO, 2016).

This translates into an inadequate supply of safe blood for transfusion, which is a major challenge to healthcare provision in LMIC. In SSA, blood transfusion is usually an emergency treatment for severe anaemia of varying aetiology, and an inadequate blood supply is a major factor in preventable deaths among women and children (Bates et al., 2008). SSA has the highest maternal mortality in the world (Khan et al., 2006; WHO, 2015). Up to 50% of transfusions given to children are for treatment of malaria-associated anaemia (Dhingra, 2006). Under-five mortality rates and the prevalence of

malaria are high, with considerably high mortality due to severe malaria and anaemia (Marsh et al., 1995; Tapko et al., 2009). Other conditions such as road traffic accidents, sickle-cell anaemia, HIV, and anaemia induced by anti-retroviral therapy are also frequent reasons for blood transfusion in SSA (Lagarde, 2007).

Blood donation in LMIC compared to HIC

Evidence has demonstrated that blood from VNRBD is safer and has a lower incidence of TTI sero-reactivity than that from FRDs (Clark et al., 2005; Sarkodie et al., 2016). However, even in this setting, the safest type of donor is one who donates repeatedly, because they have lower TTI prevalence compared to first time or occasional donors (Allain et al., 2010; WHO, 2001). This is because such donors have had repeated serological screening for TTI (WHO, 2002).

Achieving an adequate blood supply in SSA through donor mobilisation and retention is crucial. In SSA, blood collection is locally driven and strategies have been put in place by a number of blood collection organisations to address the inadequate blood supply (Allain et al., 2008; Basavaraju et al., 2010; Dahourou et al., 2010; Owusu-Ofori et al., 2010; Reddy, 2012). However, as the blood donation deficit described above demonstrates, these strategies have only been successfully implemented in very few countries. The blood donor recruitment models in SSA have largely been based on those designed and used in different, more wealthy contexts, and where these have not worked, modifications have been implemented. In addition, the evidence for such strategies and methods of their evaluation may sometimes be inadequately described. To illustrate this, in a systematic review of the efficacy of interventions promoting blood donation by Godin et al (Godin et al., 2012), not a single study from SSA was included because they did not meet the selection criteria. Beliefs, social norms and perceived behavioural control have been found to influence blood donation behaviour

(Ajzen, 1991). Since these constructs vary between HIC and LMIC, factors that motivate or deter blood donation may also vary between HIC and LMIC in accordance with beliefs and social norms. Therefore, understanding the factors that influence blood donation behaviour in SSA is vital to developing local, culturally sensitive strategies to address blood donor motivation and retention.

Aim

The aim of this review was to identify the perceptions on blood and blood donation, motivators and deterrents to blood donation that influence blood donation in sub Saharan Africa.

Objectives

1. To highlight the available evidence on perceptions about blood and blood donation, motivators and deterrents to blood donation in sub Saharan Africa
2. To identify the perceptions of blood donors and non-donors on blood and blood donation, motivators and deterrents to blood donation in sub Saharan Africa, and
3. To identify how these perceptions, motivators and deterrents influence voluntary and replacement blood donation in sub Saharan Africa.

2.4.2. Retrieving the literature for the review

Study design

A study protocol was developed based on a scoping review framework (Arksey and O'Malley, 2005) and the Methodology for JBI Scoping Reviews (The Joanna Briggs Institute, 2015). Identified studies were selected for the review using the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) of health care

interventions (Moher et al., 2009). Data extraction and a thematic analysis were conducted using "the framework method for analysis of qualitative data" (Gale et al., 2013). A coding scheme based on the taxonomy of blood donor motivators (Bednall and Bove, 2011), but modified to capture the perceptions of blood and blood donation found in SSA blood donors was used for reporting the results.

Inclusion criteria

Type of participants

The review considered studies that included persons from SSA who have donated blood before, who have never donated blood or who have experiences about blood donation.

Concept

The review considered quantitative, qualitative, mixed-method and case studies that examined attitudes, perceptions, motivations and deterrents to blood donation.

Context

The review considered studies conducted in countries in SSA (Appendix 1) and that reported in either English or French

Types of sources

The sources of information for this review were reports and published literature.

Search strategy

The search strategy aimed at identifying published literature from the selected databases. There was no limitation on the year of publication. The literature search was conducted in three stages (The Joanna Briggs Institute, 2015). In the first stage, PUBMED was searched with the initial keywords. The identified literature was

reviewed by abstract and additional keywords were identified. In the second stage, the additional keywords identified at stage one were added and further used to search PUBMED and Google Scholar. The references of selected studies, as well as "Similar Articles" to identified studies in PubMed were searched for any other relevant studies in the third stage. Online searches of the International Society of Blood Transfusion (ISBT) journals and newsletter, Vox Sanguinis, Transfusion Today and ISBT Science Series were further performed for additional relevant reports and conference abstracts. The database searches were conducted by the researcher and independently checked by a second person. The online searches of journals and newsletter were conducted by the researcher and three assistants.

Initial keywords were "blood, blood donation, blood donor, perceptions, motivators, deterrents, attitudinal factors, Africa, sub-Saharan Africa, Africa south of Sahara". The keywords were placed in the following format for the initial searches - [[blood OR blood donor OR blood donation] AND [perceptions OR motivators OR deterrents OR attitudinal factors] AND [sub-Saharan Africa OR Africa OR Africa south of Sahara]]. Additional keywords identified were "barriers, misperceptions, attitudes, beliefs, obstacles".

Study selection, extraction of data and analysis

The selection of studies for the review followed the PRISMA Flow Diagram (Figure 2.2).

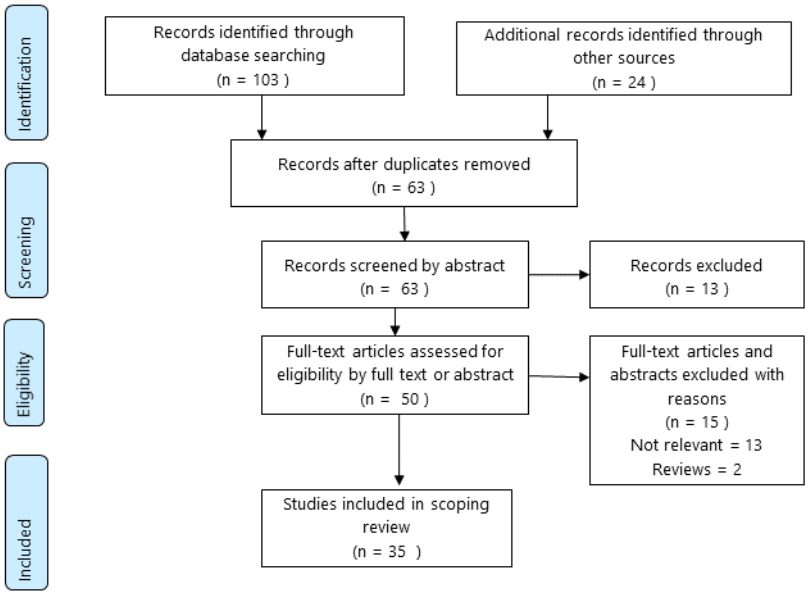

Figure 2-2: PRISMA Flow Diagram for the scoping review on "Blood donors' perceptions, motivators and deterrents in sub-Saharan Africa" (Moher et al., 2009)

To describe the studies included in the review, a matrix was designed to capture the population, contextual and conceptual categories such as year, country, aim, type of study, study population, sample size, sampling methods and themes relevant to the objective of the review. The key findings were extracted using a data extraction sheet which was designed based on "the framework method for analysis of qualitative data" (Gale et al., 2013) and pilot tested on the first three identified papers. This was reviewed by three supervisors. The key findings were reorganised and reported in accordance with the major themes addressing the objectives of the review.

2.4.3. Outcome of the review

Overview of studies included in the review

Table 2.2: Overview of the Studies Included in the Review on "Blood Donors' Perceptions, Motivators and Deterrents in SSA"

No.	Study	Country	Type of Study	Study Population	Sample Size	Method	Relevant Themes
1	Pule et al 2014	Botswana	Quantitative	Blood donors	384	CSS	D
2	Nébié et al 2007**	Burkina Faso	Quantitative	Blood donors	544	CSS	M
3	Koster and Hassall 2011	Cameroon	Qualitative	Community members	Not specified	KII, FGD	P M
4	Rolseth et al 2014	Cameroon	Qualitative	community members	49	KII	P M D

No.	Study	Country	Type of Study	Study Population	Sample Size	Method	Relevant Themes
5	Gobatto 1996	Central African Republic	Qualitative	Donors, non-donors	Not specified	KII	P M D
6	Agasa and Likwela 2014**	D R Congo	Quantitative	Community, adults	1067	CSS	D
7	Kabinda 2014	D R Congo	Quantitative	Community, adults	416	CSS	P M D
8	Melku et al 2016	Ethiopia	Quantitative	adult population	768	CSS	P D
9	Asenso-Mensah et al 2014	Ghana	Quantitative	FRD	513	CSS	M
10	Haoses-Gorases and Katjire 2013	Namibia	Mixed methods	Donors, non-donors	434	CSS, FGD	P M D
11	Salaudeen et al. 2011	Nigeria	Quantitative	Community members	936	CSS	P M
12	Umeora et al 2005	Nigeria	Quantitative	Non donors	143	CSS	D
13	Sekoni et al 2014	Nigeria	Mixed methods	adults in community	400 for CSS 3 FGDs of 27	CSS and FGDs	P M D
14	Salaudeen and Odeh 2011	Nigeria	Quantitative	students	400	CSS	P M D
15	Obi 2007	Nigeria	Quantitative	spouses of pregnant women	700	CSS	P M D
16	Durosinmi et al 2003	Nigeria	Quantitative	blood donors	Not specified	CSS	M
17	Olaiya et al 2004	Nigeria	Quantitative	Blood donors	542	CSS	M D
18	Ottong et al. 1990	Nigeria	Case study	Spouses, patients, hospital staff	Not specified	FGDs, KII	P D
19	Okpara 1989	Nigeria	Quantitative	Not specified	246	CSS	P M D
20	Ahmed et al 2006	Nigeria	Quantitative	Blood donors	100	CSS	P D
21	Duboz et al 2010**	Senegal	Quantitative	Adults	600	CSS	M D
22	Muthivhi et al 2015	South Africa	Qualitative	Black South Africans	97	FGD	M D
23	Mwaba et al 1995	South Africa	Quantitative	students	40	CSS	P D
24	Jacobs and Berege1995	Tanzania	Quantitative	adult residents	1141	CSS	P M D
25	Alinon et al 2014	Togo	Quantitative	400 adults	400	CSS	D
26	Agbovi et al 2006**	Togo	Quantitative	General population	300	CSS	P D
27	Natukunda et al 2015	Uganda	Mixed methods	Community, adults	QS 250, FGDs 72, KIS 23	CSS, FGD, KII	P M D
28	Asamoah-Akuoko et al 2016)	Ghana	Quantitative	First time donors	505	CSS	P M D
29	Chandrasekar et al 2015	Malawi	Qualitative	students, BTS staff	24	FGD, Interviews	P M D
30	Adegoke 2016	Nigeria	Quantitative	hospital staff	246	CSS	M D
31	Adewuyi and Olawumi 2006	Nigeria	Quantitative	Adults, 16-25 years	3000	CSS	M D
32	von Zahran and von Ali 2013	Sudan	Quantitative	students	400	CSS	P M D
33	Los et al 2009	Uganda	Case study	Teachers, students	1600	CSS, workshop	P D
34	Von Bukenya 2012	Uganda	Quantitative	Blood donors	1677	CSS	M
35	Harrington 2012	Ghana	Quantitative	Church youth group	50	CSS	P

Key: P = Perception; M = Motivators; D = Deterrent; CSS = Cross Sectional Study; KII = Key Informant Interviews; FGD = Focus Group Discussion
***** Studies reported in French***

Thirty-five studies from SSA were included in the review (Table 2.2). These were 27 peer-reviewed studies, seven peer-reviewed conference abstracts (Adegoke, 2016;

Adewuyi, and Olawumi, 2006; Asamoah-Akuoko et al., 2016; Chandrasekar et al., 2015; Los et al., 2009; von Bukenya, 2012; von Zahran and von Ali, 2013), and one peer reviewed, published report (Harrington, 2012). Nigeria (12 studies) had the highest number of published studies, followed by Ghana and Uganda (three each), Cameroon, Democratic Republic of Congo, South Africa and Togo (two each) and one each from the remaining countries. Sixty percent (27) of the included studies were published between 2010 and 2016. Most studies focused on knowledge attitude and practice of blood donation. Blood donor perceptions, motivators and deterrents were the focus of 22, 24 and 28 studies respectively.

Table 2.3: Perceptions of Blood and Blood Donation in SSA

Perceptions	Reference
Of blood	
Physical or Medical	
Essential for life; fuel of the body; source of life	Agbovi et al 2006; Kabinda et al 2014; Rolseth et al 2014; Asamoah-Akuoko et al 2016
Determines health, physical strength; protect from illness; receiving "weak" blood makes one weak	Gobatto 1996
Volume increases with physical work; cannot have enough to give spare	Koster and Hassall 2011;
Physical; fluid in the body	Rolseth et al 2014; Koster and Hassall 2011;
Source of contagion; associated with accidents, menstruation or labour, laboratory exams, transfusion	Rolseth et al 2014;
Spiritual	
Spiritual; used for rituals and occultism	Asamoah-Akuoko et al 2016
Blood can transfer character and witchcraft to recipient	Ottong et al 1997;
Religious	
Sacred	Agbovi et al 2006; Kabinda et al 2014; Asamoah-Akuoko et al 2016
Source of salvation for Christians; signifies impurity for Muslims.	Agbovi et al 2006
Gift from God; Created by God	Koster and Hassall 2011; Rolseth et al 2014
Private or common to family and kin	
Common to family and kin	Koster and Hassall 2011; Rolseth et al 2014
Private, precious, not to be taken outside the body; can only be shared in extreme circumstances, for good reasons	Koster and Hassall 2011; Gobatto 1996
Of Blood Donation	
Physical or Medical	
Can transmit diseases, infection	Mwaba and Keikelame 1995; Salaudeen et al 2011; Sekoni et al 2014; Obi 2007; Jacobs and Berege1995; Harrington 2012; von Zahran and von Ali 2013
Can cause health problems; harmful	Mwaba and Keikelame 1995; Sekoni et al 2014; Obi 2007; Gobatto 1996; Jacobs and Berege1995; von Zahran and von Ali 2013
Cause weakness	Harrington 2012
Is painful	Mwaba and Keikelame 1995
Can shorten life due to psychological effect of knowing HIV status	Koster and Hassall 2011
Dizziness, fainting attacks; helps know blood group, Hb genotye, HIV and other TTI status	Salaudeen et al 2011
Can result in sudden deaths, death of donor; anaemia	Salaudeen et al 2011; Sekoni et al 2014; Harrington 2012
Invokes fear; means something is wrong; help get rid of excess blood	Sekoni et al 2014
Help reduce obesity; weight loss	Salaudeen et al 2011; Harrington 2012

Perceptions	Reference
Saves the life of recipients	Salaudeen et al 2011; Sekoni et al 2014; Salaudeen and Odeh 2011; Harrington 2012; Haoses-Gorases and Katjire 2013
Help a person in need, distress	Koster and Hassall 2011; Sekoni et al 2014
Spiritual	
Reduce ability to protect oneself spiritually	Gobatto 1996
Gives spiritual satisfaction	Salaudeen et al 2011
Donated blood can be used for occultism	Koster and Hassall 2011; Asamoah-Akuoko et al 2016
Religious	
Against religious belief	Harrington 2012
Selective	
Racial discrimination	Muthivhi et al 2015
Females cannot donate blood	Salaudeen et al 2011; Sekoni et al 2014; Olaiya et al 2004; Ahmed et al 2006
Males cannot donate blood	Sekoni et al 2014
Is reserved for the military	Obi 2007
Family or kin	
Better to donate for family member than stranger or institution	Koster and Hassall 2011
Trust Issues	
Fear that blood may not be used for what is intended for	Gobatto 1996
Blood donation is good, important	Agbovi et al 2006; Sekoni et al 2014; Koster and Hassall 2011; Jacobs and Berege 1995; Melku et al 2016
Should be given for free	Salaudeen and Odeh 2011
Sacrificial, sacrificing oneself	Gobatto 1996

Perceptions about blood and blood donation in SSA identified by the review

A common perception of blood, identified in the majority of the studies on this topic, was the perception that blood is essential for the sustenance of life, expressed as, for example, “blood is life”, “blood is the source of life”, “blood is the fuel of life” (Agbovi et al., 2006; Asamoah-Akuoko et al., 2016; Kabinda et al., 2014; Rolseth et al., 2014). This perception of blood is cited by 88.7% and 97.2 % of respondents in Kabinda et al (2014) and Asamoah-Akuoko et al (2016) respectively. Blood donation was also commonly perceived as a good and lifesaving act (Agbovi et al., 2006; Haoses-Gorases and Katjire, 2013; Harrington, 2012; Jacobs and Berege, 1995; Koster and Hassall, 2011; Melku et al., 2016; Salaudeen et al., 2011; Salaudeen and Odeh, 2011; Sekoni et al., 2014). Blood was also considered a determinant of physical strength and health (Gobatto, 1996) and therefore donating blood was considered to have the potential to make a person weak (Harrington, 2012), unhealthy, ill (Gobatto, 1996; Jacobs and Berege, 1995; Mwaba and Keikelame, 1995; Obi, 2007; Sekoni et al., 2014; von Zahran and von Ali, 2013), or lead to death (Harrington, 2012; Salaudeen et al., 2011;

Sekoni et al., 2014). To this extent, receiving "weak" blood was also believed to make the recipient weak (Gobatto, 1996).

Despite the recognition that blood donation is important, several studies found that a common perception was that one could catch a disease through donating blood. This was mentioned in eight studies, and cited by 25.0% to 53.5% of respondents in some studies (Harrington, 2012; Jacobs and Berege, 1995; Obi, 2007; Rolseth et al., 2014; Salaudeen et al., 2011; Sekoni et al., 2014; von Zahran and von Ali, 2013). Some perceptions identified in the review reflect spiritual (Asamoah-Akuoko et al., 2016; Gobatto, 1996; Koster and Hassall, 2011; Salaudeen et al., 2011) and religious (Agbovi et al., 2006; Asamoah-Akuoko et al., 2016; Gobatto, 1996; Harrington, 2012; Kabinda et al., 2014; Koster and Hassall, 2011) connotations of blood donation. In SSA blood is considered a substance that is common to family, kin or tribe (Koster and Hassall, 2011; Rolseth et al., 2014), private, precious (Koster and Hassall, 2011) and not to be shared or taken outside the body except under the extreme circumstances of saving a life, especially that of a family member (Gobatto, 1996; Koster and Hassall, 2011). A South African study (Muthivhi et al., 2015) identified the perception that there is racial discrimination regarding the acceptability of donated blood for transfusion. This was an isolated finding among the SSA studies, although in Nigeria other beliefs such as "females cannot donate blood" or even males in some cases, and that blood donation is reserved for the military were identified by some studies (Ahmed et al., 2006; Obi, 2007; Olaiya et al., 2004; Salaudeen et al., 2011; Sekoni et al., 2014).

Motivating factors for blood donation in SSA identified by the review

Table 2.4: Motivators for Blood Donation in SSA

Motivator	References
Convenience	
Convenience	Chandrasekar et al 2015
of collection site	Asenso-Mensah et al 2014; Muthivhi et al 2015
Prosocial Motivation	
Altruism	Nébié et al 2007; Koster and Hassall 2011; Rolseth et al 2014; Kabinda 2014; Asenso-Mensah et al 2014; Haoses-Gorases and Katjire 2013; Salaudeen et al 2011; Sekoni et al 2014; Salaudeen and Odeh 2011; Olaiya et al 2004; Okpara 1989; Duboz et al 2010; Muthivhi et al 2015; Jacobs and Berege1995; Natukunda et al 2015; Asamoah-Akuoko et al 2016; Chandrasekar et al 2015; Adewuyi and Olawumi 2006
Passion for donating	Asenso-Mensah et al 2014
Collectivism – help community	Rolseth et al 2014; Gobatto 1996 ; Duboz et al 2010; Muthivhi et al 2015;
Collectivism – donate for or help friends and family	Nébié et al 2007; Rolseth et al 2014; Gobatto 1996 ; Kabinda 2014; Salaudeen et al 2011; Sekoni et al 2014; Salaudeen and Odeh 2011; Duboz et al 2010; Muthivhi et al 2015; Jacobs and Berege1995; Asamoah-Akuoko et al 2016; Adegoke 2016; Adewuyi and Olawumi 2006
Personal Values	
Personal moral norms	Muthivhi et al 2015
Religiosity	Sekoni et al 2014; Muthivhi et al 2015; von Zahran and von Ali 2013
Reputation of collection agency	
To help or support blood bank	Rolseth et al 2014
Perceived need for blood donation	
Everyday	Muthivhi et al 2015
Emergency	Gobatto 1996; Muthivhi et al 2015; Salaudeen and Odeh 2011;
Blood shortage	Duboz et al 2010
Awareness of donation campaigns	Obi 2007
Indirect Reciprocity	
Upstream (friends and family)	Obi 2007; Muthivhi et al 2015
Downstream	Gobatto 1996; Muthivhi et al 2015; Asamoah-Akuoko et al 2016
Upstream (self)	Nébié et al 2007; Muthivhi et al 2015
Intrinsic Motivation	
Intrinsic motivation; self-esteem	Muthivhi et al 2015
Curiosity	Haoses-Gorases and Katjire 2013; Muthivhi et al 2015
Promotional Communications	
General advertising	Nébié et al 2007; Haoses-Gorases and Katjire 2013; Muthivhi et al 2015; von Zahran and von Ali 2013
Direct marketing, invitation; being asked to donate	Asenso-Mensah et al 2014; Muthivhi et al 2015; Jacobs and Berege1995
Blood drives	Muthivhi et al 2015
Educational approaches	Muthivhi et al 2015; Chandrasekar et al 2015
Awareness campaigns	Duboz et al 2010
Incentives	
General	Asenso-Mensah et al 2014; Duboz et al 2010; Muthivhi et al 2015; Jacobs and Berege1995; Von Bukenya 2012
Health check	Gobatto 1996 ; Von Bukenya 2012
Money	Koster and Hassall 2011; Agasa and Likwela 2014; Kabinda 2014; Umeora et al 2005; Sekoni et al 2014; Salaudeen and Odeh 2011; Durosinmi et al 2003; Olaiya et al 2004; Muthivhi et al 2015; Asamoah-Akuoko et al 2016; Adewuyi and Olawumi 2006
Non-cash compensation	Koster and Hassall 2011; Olaiya et al 2004; Asamoah-Akuoko et al 2016; Adewuyi and Olawumi 2006
Perceived health benefits	Jacobs and Berege1995, Muthivhi et al 2015
Know blood group	Gobatto 1996; Haoses-Gorases and Katjire 2013; Duboz et al 2010; Von Bukenya 2012
Infectious disease screening	Nébié et al 2007; Gobatto 1996 ; Haoses-Gorases and Katjire 2013; Duboz et al 2010; Adewuyi and Olawumi 2006; Von Bukenya 2012
Gift items	Gobatto 1996 ; Muthivhi et al 2015; Salaudeen and Odeh 2011
Donor certificate	Gobatto 1996 ; Olaiya et al 2004; Jacobs and Berege1995
Awards; recognition	Olaiya et al 2004; Chandrasekar et al 2015
Blood crediting	Gobatto 1996 ; Jacobs and Berege1995
Reimbursement of transport cost	Chandrasekar et al 2015
Social Norms	
Sense of belonging	Gobatto 1996
Peer pressure or influence	Nébié et al 2007; Chandrasekar et al 2015
Knowledge/Information	
Information; knowledge on benefits of BT	Salaudeen and Odeh 2011
Previous donation	Obi 2007
If my health allows it	Asenso-Mensah et al 2014

Key: BT = Blood Transfusion

Altruism, cited as for example, “to save lives”, or “to help a person in need”, was identified as a major motivator for blood donation in SSA. It was mentioned in 20 studies and cited by 43% to 92% of participants in some studies (Adewuyi, and Olawumi, 2006; Asamoah-Akuoko et al., 2016; Asenso-Mensah et al., 2014; Chandrasekar et al., 2015; Duboz et al., 2010; Haoses-Gorases and Katjire, 2013; Jacobs and Berege, 1995; Kabinda et al., 2014; Koster and Hassall, 2011; Muthivhi et al., 2015; Natukunda et al., 2015; Nébié et al., 2007; Okpara, 1989; Olaiya et al., 2004; Owusu-Ofori et al., 2010; Salaudeen et al., 2011; Salaudeen and Odeh, 2011; Sekoni et al., 2014). Altruism was an important motivator for FRDs who were willing to donate again (Rolseth et al., 2014) and even among groups where some form of compensation was expected for donating blood (Koster and Hassall, 2011; Salaudeen et al., 2011). Reciprocity and an identified need for blood by a family or friend was a strong motivator cited by 77.8% to 95.3% of participants in some studies (Adegoke, 2016; Adewuyi, and Olawumi, 2006; Asamoah-Akuoko et al., 2016; Duboz et al., 2010; Gobatto, 1996; Jacobs and Berege, 1995; Kabinda et al., 2014; Muthivhi et al., 2015; Nébié et al., 2007; Rolseth et al., 2014; Salaudeen et al., 2011; Salaudeen and Odeh, 2011).

In addition to altruism, in a study in Bamenda, Cameroon, Koster and Hassall (2011) identified monetary and non-monetary compensation as key motivators for blood donation. In this study, some participants expected compensation for donating blood, citing the perceived risks, effort and time expended. Compensation was expected for donations to non-family members and to family members, while still regarding the donation to be “voluntary”. However, a study by Rolseth et al. (2014) in Cameroon

found that compensation for blood donation, although offered, was not expected by 87% of participants.

Monetary compensation as a motivator, cited by 50% of participants in a study by Umeora et al., (2005), was supported by other studies from Nigeria (Adewuyi, and Olawumi, 2006; Durosinmi et al., 2003; Olaiya et al., 2004; Salaudeen and Odeh, 2011; Sekoni et al., 2014), Democratic Republic of Congo (Agasa and Likwela, 2014; Kabinda et al., 2014) and Ghana (Asamoah-Akuoko et al., 2016). Although cited as a motivator, it was not significant in South Africa (Muthivhi et al., 2015). Non-cash incentives reported included health benefits such as health checks (Gobatto, 1996; von Bukenya, 2012), infectious diseases screening and blood group results (Adewuyi, and Olawumi, 2006; Duboz et al., 2010; Gobatto, 1996; Haoses-Gorases and Katjire, 2013; Nébié et al., 2007; von Bukenya, 2012); awards, recognition; certificate and blood crediting (Chandrasekar et al., 2015; Gobatto, 1996; Jacobs and Berege, 1995; Olaiya et al., 2004); gift items (Gobatto, 1996; Muthivhi et al., 2015; Salaudeen and Odeh, 2011) and transport reimbursement (Chandrasekar et al., 2015).

Other key motivators were promotional communication such as advertising, direct marketing, educational approaches and blood drives; awareness campaigns, access to information and knowledge of the need for blood and benefits of blood donation; and social norms and perceived need for blood (Table 3).

Deterrents to blood donation in SSA identified by the review

Table 2.5: Deterrents to Blood Donation in SSA

Deterrent	References
Low self-efficacy	
Low self-efficacy; lifestyle barriers	Haoses-Gorases and Katjire 2013; Muthivhi et al 2015
Not enough blood	Rolseth et al 2014; Umeora et al 2005; Duboz et al 2010; Muthivhi et al 2015; Alinon et al 2014
Perceived poor health (making one unfit to donate)	Rolseth et al 2014; Melku et al 2016; Umeora et al 2005; Sekoni et al 2014; Obi 2007; Muthivhi et al 2015; Agbovi 2006
Fear of transmitting infection to recipient; being HIV positive	Rolseth et al 2014; Gobatto 1996; Umeora et al 2005
Medical reasons	Duboz et al 2010

Deterrent	References
Low involvement	Pule et al 2014; Haoses-Gorases and Katjire 2013; Duboz et al 2010; Muthivhi et al 2015; Alinon et al 2014; Agbovi 2006
Inconvenience	Pule et al 2014; Rolseth et al 2014; Melku et al 2016; Haoses-Gorases and Katjire 2013; Salaudeen and Odeh 2011; Ahmed et al 2006; Duboz et al 2010; Muthivhi et al 2015; Mwaba and Keikelame 1995; Agbovi 2006; Natukunda et al 2015; Chandrasekar et al 2015
Lack of marketing communications	Muthivhi et al 2015
Knowledge/Information	
Lack of knowledge	Pule et al 2014; Haoses-Gorases and Katjire 2013; Muthivhi et al 2015; Adewuyi and Olawumi 2006
Lack of information	Melku et al 2016; Haoses-Gorases and Katjire 2013; Salaudeen and Odeh 2011; Duboz et al 2010; Alinon et al 2014; Agbovi 2006; Chandrasekar et al 2015; von Zahran and von Ali 2013
Unaware of need for blood	Muthivhi et al 2015
Unaware of donation site	Muthivhi et al 2015; Haoses-Gorases and Katjire 2013
General	Salaudeen and Odeh 2011; Muthivhi et al 2015
Negative experience of blood service	
Negative service experience	Muthivhi et al 2015
Poor staff attitude	Kabinda 2014; Muthivhi et al 2015
Servicescape	Muthivhi et al 2015
Payment of processing fee	Ottong et al 1997
Fear	
Fear	Pule et al 2014; Ottong et al 1997; Duboz et al 2010; Muthivhi et al 2015; Adegoke 2016; von Zahran and von Ali 2013
Rumours and misconceptions	Ottong et al 1997; Muthivhi et al 2015
Needles	Agasa and Likwela 2014; Melku et al 2016; Haoses-Gorases and Katjire 2013; Muthivhi et al 2015; Alinon et al 2014; Natukunda et al 2015
Physical injury	Muthivhi et al 2015
Non-specific	Gobatto 1996; Muthivhi et al 2015
Reduced health after donation; falling sick	Rolseth et al 2014; Agasa and Likwela 2014; Kabinda 2014; Melku et al 2016; Umeora et al 2005; Duboz et al 2010; Muthivhi et al 2015; Jacobs and Berege 1995; Alinon et al 2014; Agbovi 2006; Natukunda et al 2015; Adewuyi and Olawumi 2006
Contagion; HIV infection	Gobatto 1996; Agasa and Likwela 2014; Haoses-Gorases and Katjire 2013; Umeora et al 2005; Sekoni et al 2014; Salaudeen and Odeh 2011; Olaiya et al 2004; Muthivhi et al 2015; Jacobs and Berege 1995; Agbovi 2006
Fainting, dizziness, collapse, convulsion	Rolseth et al 2014; Umeora et al 2005; Salaudeen and Odeh 2011; Olaiya et al 2004; Muthivhi et al 2015; Mwaba and Keikelame 1995
Blood	Muthivhi et al 2015
Testing for HIV, discovering illness, knowing HIV results; stigmatisation	Gobatto 1996; Kabinda 2014; Haoses-Gorases and Katjire 2013; Umeora et al 2005; Obi 2007; Ahmed et al 2006; Muthivhi et al 2015; Mwaba and Keikelame 1995; Agbovi 2006
Fear of harm from donation process	Salaudeen and Odeh 2011
Losing blood frequently/large volume of donation	Rolseth et al 2014; Gobatto 1996; Melku et al 2016; Mwaba and Keikelame 1995; Alinon et al 2014
Pain	Mwaba and Keikelame 1995
Fear of medical settings	Alinon et al 2014
Fear that blood will be used for rituals or witchcraft, others	Gobatto 1996; Alinon et al 2014; Umeora et al 2005
Lack of courage; general fear	Alinon et al 2014
Not recovering after blood donation	Rolseth et al 2014; Gobatto 1996
Risk of ill health	Gobatto 1996; Sekoni et al 2014; Olaiya et al 2004
Loss of manhood/ libido/impotence	Umeora et al 2005; Olaiya et al 2004; Nébié et al 2007
Reduced life span/death	Gobatto 1996; Umeora et al 2005
Sudden death	Olaiya et al 2004
That donation results in weight loss	Melku et al 2016; Salaudeen and Odeh 2011; Olaiya et al 2004
Negative attitudes	
Negative attitudes	Muthivhi et al 2015
Negative word-of-mouth	Melku et al 2016
Scepticism or cynicism; mistrust	Muthivhi et al 2015; Chandrasekar et al 2015; von Zahran and von Ali 2013
Outgroup prejudice	Muthivhi et al 2015
Don't like blood donation process, idea of giving blood	Melku et al 2016; Sekoni et al 2014; Jacobs and Berege1995
Personal values	
Personal values	Muthivhi et al 2015
Personal moral norms	Haoses-Gorases and Katjire 2013; Muthivhi et al 2015; Alinon et al 2014
Religiosity (JW, Pentecostals/ Revival Church)	Koster and Hassall 2011; Agasa and Likwela 2014; Kabinda 2014; Melku et al 2016; Haoses-Gorases and Katjire 2013; Umeora et al

Deterrent	References
	2005; Sekoni et al 2014; Obi 2007; 23; Muthivhi et al 2015; Alinon et al 2014; Agbovi 2006; Adegoke 2016
Lack of, or ineffective, incentives	
Monetary	Kabinda 2014; Umeora et al 2005
Non-monetary; lack of appreciation	Alinon et al 2014
General	Muthivhi et al 2015
Previous deferral	
Not been asked or invited	Agasa and Likwela 2014; Rolseth et al 2014; Sekoni et al 2014; Adewuyi and Olawumi 2006
Difficult socio-economic factors	Gobatto 1996; Agasa and Likwela 2014; Ahmed et al 2006; Duboz et al 2010
Perceived physical and spiritual weakness after donation	Agasa and Likwela 2014; Sekoni et al 2014; Salaudeen and Odeh 2011; Ottong et al 1997; Alinon et al 2014
Perceived sale of blood by hospital or staff	Agasa and Likwela 2014; Kabinda 2014; Alinon et al 2014; Agbovi 2006
Cultural values; traditional norms	Haoses-Gorases and Katjire 2013; Umeora et al 2005; Alinon et al 2014; Adegoke 2016
Others	
Lack of family; spouses permission	Rolseth et al 2014; Sekoni et al 2014
Not related to patient; relation not needing blood	Umeora et al 2005; Obi 2007
BT not medically helpful	Umeora et al 2005
Don't know my blood group	Sekoni et al 2014
Availability of paid blood donors	Obi 2007

Key: BT = Blood Transfusion; JW = Jehovah's Witness

The review identified fear as the single most reported deterrent to blood donation, mentioned in 25 studies and cited by 35% to 86.7% in these studies. Fears related to pain from the blood donation process (Koster and Hassall, 2011), adverse effects (Muthivhi et al., 2015; Mwaba and Keikelame, 1995; Olaiya et al., 2004; Rolseth et al., 2014; Salaudeen and Odeh, 2011; Umeora et al., 2005), the sight of blood (Muthivhi et al., 2015) and contagion (Agasa and Likwela, 2014; Agbovi et al., 2006; Gobatto, 1996; Haoses-Gorases and Katjire, 2013; Jacobs and Berege, 1995; Muthivhi et al., 2015; Olaiya et al., 2004; Salaudeen and Odeh, 2011; Sekoni et al., 2014; Umeora et al., 2005) or perceived side effects of donation, such as fear of falling sick (Agasa and Likwela, 2014; Agbovi et al., 2006; Alinon et al., 2014; Jacobs and Berege, 1995; Kabinda et al., 2014; Melku et al., 2016; Muthivhi et al., 2015; Natukunda et al., 2015; Rolseth et al., 2014; Sekoni et al., 2014; Umeora et al., 2005); and fear of the spirituality of blood (Alinon et al., 2014; Gobatto, 1996; Umeora et al., 2005). Other deterrents cited were lack of knowledge, information and awareness of need; as well as low self-efficacy (lack of control over events that affect a person's life and own

functioning), inconvenience of time and donation site, and religiosity (religious affiliation or spiritual commitment).

In South Africa, Muthivhi et al., (2015) identified cynicism or scepticism due to the belief that blood donated by black people will be discarded as a key deterrent. Other issues of trust (Chandrasekar et al., 2015; von Zahran and von Ali, 2013) including a belief that donated blood would be sold (Agasa and Likwela, 2014; Agbovi et al., 2006; Alinon et al., 2014; Kabinda et al., 2014) and socio-economic difficulties (Agasa and Likwela, 2014; Ahmed et al., 2006; Duboz et al., 2010; Gobatto, 1996). Perceived lack of capacity to recover from possible or perceived effects of blood donation, or not having been asked to donate (Agasa and Likwela, 2014; Durosinmi et al., 2003; Rolseth et al., 2014; Sekoni et al., 2014), were also deterrents. Although incentives were cited as strong motivators for blood donation, lack of incentives as a deterrent was cited by only three studies (Alinon et al., 2014; Kabinda et al., 2014; Umeora et al., 2005). Previous deferral as a donor was not cited as a deterrent in any study.

2.4.4. Synthesis of the review

Many studies have evaluated the motivators and deterrents of blood donation globally, but currently little is known about what factors influence blood donation in SSA. This scoping review identified and analysed 35 studies on perceptions, and enabling and deterring factors that affect blood donation in SSA. Although blood is scientifically defined as a specialised connective tissue that performs vital functions in the body, the perceptions identified encompass the spiritual as well as the physical. The main themes that emerged were altruism and fear; influence of cultural environment and perceptions; and voluntary blood donation, socio-economic difficulties and compensation. Some themes are common to other parts of the world, but this study has

shown that SSA has its own unique factors that should be considered when designing interventions for improving blood donation.

Altruism and fear

Similar to blood donors in the rest of the world, blood donors in SSA countries would like to contribute to society by saving lives. Altruism was a common motivator irrespective of donation status and type of donor (Rolseth et al., 2014; Salaudeen et al., 2011) but this needs exploring further in SSA because, despite the commonly reported altruistic intentions, voluntary blood donation rates are still far below what is required.

The review identified fear as a major deterrent. While fears such as of the needle, pain, adverse effects of donation, sight of blood and contagion may be common among people of other regions, other aspects of fear such as fear of blood being used for rituals, and the fear that able-bodied men who donate blood may become impotent, are important to people of SSA. This suggests a need for targeted interventions that address these specific issues. As an example, to address the fear of men becoming impotent after blood donation, older blood donors with children could be used as agents of change. The review found that lack of information was a deterrent since it led to misconceptions and fear associated with blood donation experience. Donor recruitment agencies in SSA therefore need to have a much more in-depth understanding of what information is required by donors so they can improve their interventions to address these fears and misconceptions.

Influence of cultural environment and perceptions

Linked to altruism and fear is the impact of culture on blood donation. In SSA, people believe that blood is sacred and thus should be preserved, and that blood is common

to kin (Asamoah-Akuoko et al., 2016). Perhaps, this explains why many people prefer to donate blood for a family member rather than to give to someone unknown to them. In SSA where the concepts of kinship and communalism are so deeply rooted, donating blood for families is clearly a strong incentive, which is not reflected in current policies that seek to eliminate the FRDs system (WHO, 2010). However, hidden "paid" donors may occasionally abuse the FRDs system, therefore the issue of encouraging FRDs remains contentious.

The influence of culture is reflected in spiritual and religious connotations ascribed to blood and blood donation, and impacts on blood donation. For example, individuals who view blood as gift from God and a source of salvation may be more willing to donate than those who view blood as being able to transfer character or witchcraft to a recipient, as important for rituals, or being prohibited by religion.

Voluntary blood donation, socio-economic difficulties and compensation

In Ghana, over 72% of FRDs state that they are voluntary donors because, although they donated for family, they were not compelled to donate and had the option of not donating (Asamoah-Akuoko et al., 2016). Rolseth et al. (2014) identified that compensation for blood donation, which could be expected even for persons donating for family, was considered consistent with voluntary blood donation. The concept of 'voluntary blood donation', and campaigns that focus on this concept, may therefore not resonate with populations in SSA and will have to be re-framed around new, yet to be determined, concepts (Koster and Hassall, 2011).

To effectively discuss socio-economic difficulties and compensation in relation to blood donation, it is important to clearly define what constitutes an incentive, compensation and payment. This is difficult since it is related to the context and factors

associated with the individual socio-economic conditions of each potential blood donor. This review identified different views on what constitutes compensation or incentives for blood donation in SSA. Non-cash incentives such as using blood donation as a health check (Gobatto, 1996; von Bukenya, 2012) including knowing one's blood group (Duboz et al., 2010; Gobatto, 1996; Haoses-Gorases and Katjire, 2013; von Bukenya, 2012) have implications for blood donor recruitment and retention efforts. A worrying observation in SSA is the expectation of cash incentives, which could make it difficult to sustain blood services and risks commercialising blood donation. Thus, it is worthy to explore more non-cash incentives such as awards and recognition (Chandrasekar et al., 2015; Olaiya et al., 2004) for dedicated blood donors. In addition, better education, targeted at de-bunking some of the myths may make people become less demanding of incentives.

Strengths and limitations

This scoping review employed a standard approach and rigorous, transparent methods that was developed by the researcher and reviewed by all supervisors. The review only included published literature and did not appraise the quality of individual studies.

2.4.5. Conclusion

This scoping review identifies a number of important factors that influence blood donation in SSA. A common factor that was identified was the belief that blood is lifesaving and consequently that blood donation saves lives. Not surprisingly, altruism was a prevalent motivator. Monetary and non-monetary incentives were also strong motivators for blood donation. Fear, due to lack of knowledge and information, and the discouraging religious, spiritual and cultural connotations associated with blood and blood donation were common deterrents to donating blood. The interplay between the motivating and deterring factors identified in this review demonstrates that

potential donors in SSA who regard themselves as “altruistic” may donate only to save a family or friend, or may donate in expectation of an incentive or a compensation. They would therefore not be regarded as “VNRBD” according to the WHO definition (WHO, 2010).

Moving forward, there is a need for the use of robust qualitative and quantitative methodologies to undertake in-depth exploration of motivators and deterrents relevant for blood donors in SSA, to address the gaps in available evidence. This will help to prioritise interventions that are targeted and culturally appropriate in the SSA context. In this regard, culturally sensitive efforts should explore ways to enhance altruism by linking blood transfusion to the benefit of families. This strategy should include efforts to motivate FRDs to continue donating as VNRBDs. Educational and awareness information should describe the medical use of blood and directly tackle various misconceptions such as the use of blood for rituals, and blood donation causing weakness and impotence. Researchers will need to work closely with National Blood Services and their collaborators to provide scholarly support to improve policy and practice.

It is important to note that while some factors, such as the need for information and sensitisation may be common to many countries; a number of factors such as payment for donations were only identified in a few countries. SSA countries will therefore benefit from a country-by-country approach aimed at addressing the specific needs of countries, measures that have already been put in place and available resources.

2.4.6. Summary on scoping review

This review identified 35 studies, majority of which are KAP studies with focus on perceptions, motivators and deterrents to blood donation. There is therefore the need for need for the use of robust qualitative and quantitative methodologies to undertake

in-depth exploration of motivators and deterrents relevant for blood donors in SSA, to address the gaps in available evidence. The study has also identified factors that influence blood donation in SSA, and has shown that SSA has its own unique factors that should be considered when designing interventions for improving blood donation. These findings are relevant for designing recommendations on interventions for promoting blood donation, and as a baseline for designing blood donor studies in SSA.

2.5. Scoping Review II: Interventions promoting blood donation in sub-Saharan Africa

2.5.1. Introduction

Blood donation rates in a number of sub-Saharan African (SSA) countries have seen improvement since 2003 (Chevalier et al., 2016). However, the deficit in blood supply is still very significant. A survey of 43 member states of the WHO African Region showed a 56.7% deficit in collection of the estimated 8.13 million units of blood, which is the estimated minimum requirement in the SSA region (Tapko et al., 2014). This deficit is compounded by the fact that up to 80% of the blood collected is donated by family or replacement donors (FRDs) who donate only in response to need for transfusion by family members, friends or acquaintances (Bloch et al., 2012; Tapko et al., 2014). Contributions from voluntary non-remunerated blood donors (VNRBDs) who donate for altruistic reasons and are considered to be a safer source of blood in terms of transfusion transmitted infection positivity, constitute between 0% to 74.8% in countries in SSA (Tapko et al., 2014). The reasons leading to this deficit in blood supply are multifactorial, and include donor level factors and service level factors (Bates et al., 2007; Bloch et al., 2012).

A blood donor's decision to donate blood is the result of the combined influence of factors that promote or discourage blood donation behaviour (Koster and Hassall,

2011). Therefore, culturally appropriate and economically feasible interventions are necessary for the attainment of self-sufficiency in blood supply in in SSA. Such interventions should be supported by local evidence of factors that encourage blood donation behaviour. Unlike the trend in HIC, there is paucity of studies on blood donor psychology and factors that influence blood donation in LMIC. Recent reviews concerning blood donation have identified a few studies on motivators and deterrents, and some knowledge attitude surveys from SSA countries (Burzynski et al., 2016; Zanin et al., 2016). These studies have identified problems of lack of motivation to donate blood, deterrents to blood donation and misperceptions about blood and blood donation as major factors that contribute to blood shortfalls in SSA countries. These include: general fears of donating blood (Duboz et al., 2010; Muthivhi et al., 2015; Rolseth et al., 2014); fear of contagion (Adewuyi, and Olawumi, 2006); fear of needles and the sight of blood (Agasa and Likwela, 2014; Alinon et al., 2014; Haoses-Gorases and Katjire, 2013; Muthivhi et al., 2015; Natukunda et al., 2015); fear of discovering illness (Gobatto, 1996; Kabinda et al., 2014; Umeora et al., 2005); misperceptions about use of blood for rituals and witchcraft (Alinon et al., 2014; Gobatto, 1996; Umeora et al., 2005); inconvenience due to difficult socio-economic conditions (Agasa and Likwela, 2014; Ahmed et al., 2006; Duboz et al., 2010); absence of monetary (Kabinda et al., 2014; Umeora et al., 2005) and non-monetary incentives (Alinon et al., 2014); lack of knowledge and information (Salaudeen and Odeh, 2011); and trust issues (Agasa and Likwela, 2014; Agbovi et al., 2006; Alinon et al., 2014; Muthivhi et al., 2015).

Very little is known about interventions that promote blood donation. For example, a review of the efficacy of interventions for promoting blood donation did not identify a single study in SSA (Godin et al., 2012). To the best of our knowledge, there is no

review of interventions for promoting blood donation in SSA. Published interventions from SSA include Pledge Clubs in Zimbabwe (de Coning, 2004), radio station sponsored campaigns in Ghana (Allain et al., 2008; Owusu-Ofori et al., 2010), blood credits (Jacobs and Berege, 1995), and pre-deposit of a unit of blood for ante-natal women before delivery (Obi, 2007). Blood crediting, which in Ghana is an arrangement whereby donated blood is credited to the donor's account, and by which the blood bank/centre is obliged to provide an agreed number of blood units to a donor or his/her relations when the need arises, has been used as an incentive since the 1970s (Asamoah-Akuoko et al., 2017a). This is in addition to another form of blood crediting is the "group assurance" scheme for members of groups to receive blood credits. Blood crediting has also been cited by some studies as a strategy for motivating blood donors in other SSA countries (Jacobs and Berege, 1995; Ottong et al., 1997; Salaudeen et al., 2011). However, blood crediting as a policy is currently being phased out by the NBSG (Asamoah-Akuoko et al., 2017a) due to the inability of blood banks and centres to honour credits to blood donors, making it counterproductive as an incentive. The phasing out is also part of recent changes to make blood donation non-incentive based. However, the decision to phase out has not been effectively implement and the practice may be observed in a number of facilities that use this as a means of blood mobilisation.

Aim

The aim of the review was to generate evidence on interventions that have been recommended or implemented to promote blood donation in SSA to inform policies and practices.

Objectives

1. To identify interventions that have been recommended or implemented to promote blood donation in SSA
2. To summarise evaluations of interventions to promote blood donation in SSA
3. To identify knowledge gaps for further research into blood donation interventions in SSA

2.5.2. Retrieving the literature for the review

This review follows published methods and frameworks for scoping reviews (Arksey and O'Malley, 2005; The Joanna Briggs Institute, 2015).

Inclusion criteria

The sources of information for this review were published reports and literature on quantitative, qualitative, mixed-method and case studies with a focus on interventions, strategies or recommendations that promote blood donation in countries in SSA (Appendix 1). Included persons were those who had donated or never donated blood before, or who had experiences about blood donation. Studies reported in English or French were included. There was no limitation on the year of publication.

Search strategy

A literature search was conducted from 23 August 2016 to 13 January 2017. A three-step search strategy was utilised to identify papers from the selected databases (The Joanna Briggs Institute, 2015). Firstly PubMed and African Journals Online (AJOL) were searched using keywords consisting of the three main themes [[[blood donation] AND [[interventions] OR [strategies] OR [recommendations]] AND [sub-Saharan Africa]]]. PubMed was searched using the keyword and Mesh Term combination and AJOL, using only keywords. Secondly, the identified papers were reviewed and

additional keywords (perceptions, beliefs, motivators, enablers, deterrents, barriers) were added, and further used to search PubMed, AJOL, and Google Scholar. Thirdly, similar articles to selected papers in PubMed and references of included studies were searched for additional papers. Online searches of the International Society of Blood Transfusion (ISBT) journals, Vox Sanguinis and ISBT Science Series, were performed to identify additional papers and conference abstracts. The database search was conducted by the researcher and independently checked by a second person. The researcher and three research assistants conducted the search of ISBT Science Series journal for additional papers, and the Vox Sanguinis for conference abstracts.

Study selection, extraction of data and analysis

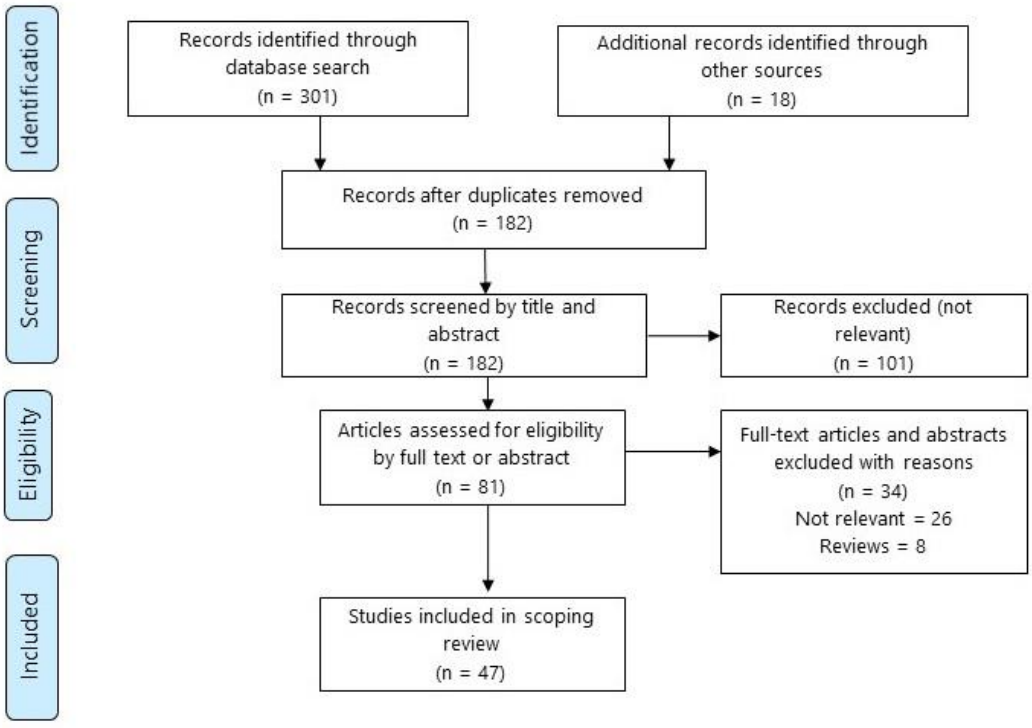

Figure 2-3: PRISMA Flow Diagram for the scoping review on "Interventions promoting blood donation in sub-Saharan Africa" (Moher et al., 2009)

Identified studies were selected for inclusion in the review using the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) of health care interventions (Moher et al., 2009) (Figure 2.3). Data on contextual and conceptual

categories such as author, year, country, aim, type of study, study population, sample size, data collection methods, status of interventions were mapped onto a predesigned matrix and used to describe the studies included in the review. A datasheet for extraction of key findings was designed based on "the framework method for analysis of qualitative data" (Gale et al., 2013). The data was analysed iteratively for relevant themes to describe interventions for promoting blood donation.

2.5.3. Outcome of the review

Overview of studies included in the review (Table2.6 and Table 2.7)

Table 2.6: Overview of the Studies Included in the Review on "Interventions Promoting Blood Donation in SSA"

Study	Country	Type of Study	Study Population	Sample Size	Method	Status
Pule et al (2014)	Botswana	Quantitative	Blood donors and non-donors	384	CSS	R
Nébié et al (2007)*	Burkina Faso	Quantitative	Blood donors	544	CSS	R
Dahourou et al (2010)	Burkina Faso	Case study	Blood donors	Not specified	review of data	I
Koster and Hassall (2011)	Cameroon	Qualitative	Community members	Not specified	KII, FGD	R
Rolseth et al (2014)	Cameroon	Qualitative	Community members	49	KII	R
Agasa and Likwela (2014)*	D R Congo	Quantitative	Community, adults	1067	CSS	R
Kabinda et al (2014)	D R Congo	Quantitative	Community, adults	416	CSS	R
Mekonnen and Melesse (2016)	Ethiopia	Quantitative	Civil servants	387	CSS	R
Melku et al (2016)	Ethiopia	Quantitative	Adult population	768	CSS	R
Allain et al (2008)	Ghana	Case study	Blood donors	Not specified	review of data	I
Owusu-Ofori et al (2010)	Ghana	Case study	Blood donors	Not specified	review of records	I
Asenso-Mensah et al., 2014).	Ghana	Quantitative	FRD	513	CSS	R
Basavaraju et al (2010)	Kenya	Quantitative	General population	17940	Analysis of data	I
Haoses-Gorases and Katjire (2013)	Namibia	Mixed methods	Donors, non-donors	434	CSS, FGD	R
Salaudeen et al (2011)	Nigeria	Quantitative	Community members	936	CSS	R
Umeora et al (2005)	Nigeria	Quantitative	Non donors	143	CSS	R
Sekoni et al (2014)	Nigeria	Mixed methods	Adults in community	400 for CSS 3 FGDs of 27	CSS and FGDs	R
Salaudeen and Odeh (2011)	Nigeria	Quantitative	Students	400	CSS	R
Obi (2007)	Nigeria	Quantitative	Spouses of pregnant women	700	CSS	R
Ehimen et al (2016)	Nigeria	Quantitative	General public	422	CSS	R
Nwogoh et al (2013)	Nigeria	Quantitative	Hospital staff	163	CSS	R
Ogboghodo et al (2015)	Nigeria	Quantitative	Medical students	220	CSS	R
Ogunbona et al (2013)	Nigeria	Quantitative	Students	419	CSS	R
Olaiya et al (2004)	Nigeria	Quantitative	Blood donors	542	CSS	R
Ottong et al (1997)	Nigeria	Case study	Spouses, patients, hospital staff	Not specified	FGDs, KII	I

Study	Country	Type of Study	Study Population	Sample Size	Method	Status
Okpara (1989)	Nigeria	Quantitative	Not specified	246	CSS	R
Ahmed et al (2006)	Nigeria	Quantitative	Blood donors	100	CSS	R
Duboz et al (2010)*	Senegal	Quantitative	Adults	600	CSS	R
Muthivhi et al (2015)	South Africa	Qualitative	Black South Africans	97	FGD	R
Mwaba and Keikelame (1995)	South Africa	Quantitative	Students	40	CSS	R
Jacobs and Berege (1995)	Tanzania	Quantitative	Adult residents	1141	CSS	R
Alinon et al (2014)	Togo	Quantitative	Adults	400	CSS	R
Agbovi et al (2006)*	Togo	Quantitative	General population	300	CSS	R
Natukunda et al (2015)	Uganda	Mixed methods	Community, adults	CSS 250, FGDs 72, KIS 23	CSS, FGD, KII	R
Appiah et al (2013)	Ghana	Quantitative	VNRBD, journalists, clinicians	Not specified	KII, FGDs	R
Asamoah-Akuoko et al (2016)	Ghana	Quantitative	First time donors	505	CSS	R
Wangendo (2012)	Kenya	Quantitative	Donors, potential donors	552	CSS	R
Mukuria et al (2006)	Kenya	Case study	Blood donor clubs	64 clubs	review of data	I
Chandrasekar et al (2015)	Malawi	Qualitative	Students, BTS staff	24	FGD, Interviews	R
Adegoke (2016)	Nigeria	Quantitative	Hospital staff	246	CSS	R
Adewuyi, and Olawumi (2006)	Nigeria	Quantitative	Adults, 16-25 years	3000	CSS	R
von Zahran and von Ali (2013)	Sudan	Quantitative	Students	400	CSS	R
Los et al. (2009)	Uganda	Case study	Teachers, students	1600	CSS, workshop	R
Wangendo (2006)	Kenya	Case study	Community	Not specified	Plans	R
Reddy (2012)	South Africa	Case study	14 countries	Not specified	Review of data	R
Harrington (2012)	Ghana	Quantitative	Church youth group	50	CSS	R
de Coning (2004)	South Africa	Case Study	–	–	Review of activities	I

R, Recommended intervention; I, Implemented intervention; D, Deterrent; CSS, Cross Sectional Study; KII, Key Informant Interviews; FGD, Focus Group Discussion

**** Studies reported in French***

The review identified 47 quantitative, qualitative, mixed-method, and case studies that recommended, or described implemented interventions aimed at promoting blood donation in SSA (Table 2.6). These included 34 papers, nine conference abstracts and three reports published between 1989 and 2016. Ninety-one per cent of papers (n=43) were published after year 2000, and 74% from 2007 to 2017. The studies were conducted in Botswana, Malawi, Namibia, Senegal, Sudan, Tanzania (n=1); Burkina Faso, Cameroon, Democratic Republic of Congo, Ethiopia, Togo, Uganda, (n=2); South Africa (n=3); Kenya (n=4); Ghana (n=7); and Nigeria (n=15). Only nine of the studies were case studies specifically on interventions promoting_blood donation (Allain et al., 2008; Basavaraju et al., 2010; Dahourou et al., 2010; de Coning, 2004;

Los et al., 2009; Mukuria et al., 2006; Ottong et al., 1997; Owusu-Ofori et al., 2010; Wangendo, 2006). Twenty-two out of the 47 (46.8%) studies were knowledge, attitude and practice (KAP) studies on blood donation or transfusion, 14 were on blood donor motivation and/or deterrents/barriers, and two were on other areas but with focus on interventions. Of the 47 studies, 35 (74.5%) focused on promotion of donor recruitment and retention, six (12.8%) focused mainly on blood donor recruitment, five (10.6 %) on blood donor retention and one (2.1%) on reducing Transfusion Transmissible Infections (TTI) but with focus on interventions that promote blood donation (Table 2.7).

Table 2.7: Overview of the Focus of Studies Included in the Review on "Interventions Promoting Blood Donation in SSA"

Focus of Study	Reference
Interventional Studies	
Focus on Recruitment	Dahourou et al 2010
Focus on Retention	Basavaraju et al 2010
Focus on Recruitment and Retention	Allain et al 2008; de Coning 2004; Los et al 2009; Mukuria et al 2006; Ottong et al 1997; Owusu-Ofori et al 2010; Wangendo 2006
Blood Donor Motivation Studies	
Focus on Recruitment	Umeora et al 2005
Focus on Retention	Ahmed et al 2006; Asamoah-Akuoko et al 2016; Chandrasekar et al 2015
Focus on Recruitment and Retention	Adewuyi and Olawumi 2006; Agasa and Likwela 2014; Alinon et al. 2014; Appiah et al 2013; Asenso-Mensah et al 2014; Duboz et al. 2010; Harrington 2012; Mekonnen and Melesse 2016; Muthivhi et al. 2015; von Zahran and von Ali 2013
Knowledge, Attitude/Beliefs, Practice Studies	
Focus on Recruitment	Ehimen et al 2016; Mwaba and Keikelame 1995; Nwogoh et al 2013; Obi 2007
Focus on Retention	Olaiya et al 2004
Focus on Recruitment and Retention	Adegoke 2016; Agbovi et al 2006; Haoses-Goraces and Katjire 2013; Jacobs and Berege, 1995; Kabinda 2014; Koster and Hassall 2011; Melku et al 2016; Natukunda et al 2015; Ogboghodo et al 2015; Ogunbona et al 2013; Okpara 1989; Rolseth et al 2014; Salaudeen and Odeh 2011; Salaudeen et al. 2011; Sekoni et al 2014; Wangendo 2012
Other Focus (TTI)	Nébié et al 2007
Studies on Intention to Donate	
Focus on Recruitment and Retention	Pule et al 2014
Overview of regional data	
Focus on Recruitment and Retention	Reddy 2012

Description of interventions identified in the review (Table 2.8)

Table 2.8: Description of Interventions Promoting Blood Donation in SSA, Identified in the Review

Intervention	References	Country
Motivational Interventions aimed at increasing motivation toward blood donation		
Cognitions based: Interventions targeting psychosocial cognitions related to motivation, such as social norms, attitudes, and barriers		
Targeting barriers or deterrents		
NGOs e.g. Red Cross to educate and recruit blood donors	Koster and Hassall (2011); Los et al (2009)	Cameroon, Uganda
Address trust issues	Muthivhi et al (2015); Chandrasekar et al (2015); von Zahran and von Ali (2013)	Malawi, South Africa, Sudan
Ensure confidentiality	Ahmed et al (2006)	Nigeria
Address misperceptions about sale of blood	Alinon et al (2014)	Togo
Dispel misperceptions about women not eligible to donate blood, encourage women to donate	Ahmed et al (2006); Jacobs and Berege (1995); Ogboghodo et al (2015)	Nigeria, Tanzania
Dispel the myths, misperceptions about dangers of blood donation	Mwaba and Keikelame (1995); Alinon et al (2014); Salaudeen et al (2011); Jacobs and Berege (1995)	Nigeria, South Africa, Tanzania, Togo
Address fears	Agasa and Likwela (2014); Olaiya et al (2004); von Zahran and von Ali (2013); Wangendo (2006); Mekonnen and Melesse (2016); Ogboghodo et al (2015)	Dem Rep of Congo, Ethiopia, Kenya, Nigeria, Sudan
Address cultural issues	Alinon et al (2014); Salaudeen et al (2011)	Nigeria, Togo
Awareness and blood donation campaigns		
Special commitment campaigns e.g. 'four time commitment campaign'	Reddy (2012); de Coning (2004)	South Africa
Donor awards and recognition, donor day celebration	Reddy (2012); Olaiya et al (2004); Owusu-Ofori et al (2010); Appiah et al (2013)	Ghana, Nigeria, South Africa
Use of media to promote blood donation, create awareness	Reddy (2012); Sekoni et al (2014); Natukunda et al (2015); Asenso-Mensah et al (2014); Haoses-Gorases and Katjire (2013); Appiah et al (2013); Wangendo (2006); Basavaraju et al (2010); Nwogoh et al (2013); Allain 2008	Ghana, Kenya, Namibia, Nigeria, South Africa, Uganda
Targeted, strategic campaigns, behaviour change communication	Ahmed et al (2006); Owusu-Ofori et al (2010); Haoses-Gorases and Katjire (2013); Basavaraju et al (2010); Ogboghodo et al (2015)	Ghana, Namibia, Nigeria
Social marketing campaigns	Muthivhi et al (2015)	South Africa
Awareness campaigns	Agbovi et al (2006); Kabinda et al (2014); Salaudeen et al (2011); Duboz et al (2010); Ottong et al (1997); Haoses-Gorases and Katjire (2013); Adegoke (2016); von Zahran and von Ali (2013); Ogunbona et al (2013); Mekonnen and Melesse (2016); Ehimen et al (2016)	Dem Rep of Congo, Ethiopia, Namibia, Nigeria, Senegal, Sudan, Togo
Use Parent-Teacher Association meetings for awareness campaigns, role of teachers	Los et al (2009)	Uganda
Public health campaigns	Umeora et al (2005); Melku et al (2016)	Ethiopia, Nigeria
Faith-based organization led campaigns	Sekoni et al (2014)	Nigeria
Include blood donation campaigns in faith-based organisations, faith-based organisation youth clubs, week activities	Olaiya et al (2004)	Nigeria
Inter-schools' competitions (donation, drama etc.)	Los et al (2009)	Uganda
Use sociologists, psychologists, anthropologists and communicators for education and sensitization	Kabinda et al (2014)	Dem Rep of Congo
Use invitation message as themes for national and global celebrations	Kabinda et al (2014)	Dem Rep of Congo
Blood drives at regular times of the year, regular school visits	Allain et al (2008); Los et al (2009)	Ghana, Uganda
Recruitment programmes		

Intervention	References	Country
Active tele-recruiting programmes	Reddy (2012)	South Africa
Active mobile/SMS recruiting programmes	Reddy (2012); Appiah et al (2013); Wangendo 2012	Ghana, Kenya, South Africa
Direct communication/marketing	Agasa and Likwela (2014); Los et al (2009)	Dem Rep of Congo, Uganda
NGOs e.g. Red Cross to educate and recruit blood donors	Koster and Hassall (2011); Los et al (2009)	Cameroon, Uganda
Hospital blood bank to recruit replacement donors, patients relatives as a voluntary, repeat donor	Koster and Hassall (2011); Olaiya et al (2004); Ahmed et al (2006); Asamoah-Akuoko et al (2016)	Cameroon, Ghana, Nigeria
Comprehensive annual donor recruitment programme	de Coning (2004)	South Africa
Dedicated structures, units for donor recruitment	de Coning (2004)	South Africa
Recruit public relations, donor recruiters from the community	de Coning (2004); Owusu-Ofori et al (2010)	Ghana, South Africa
Education, information and communication		
Conducting motivational talks in various communities	Reddy (2012); Owusu-Ofori et al (2010)	Ghana, South Africa
Education, educational programmes, educational campaigns, question-and-answer sessions	Muthivhi et al (2015); Mwaba and Keikelame (1995); Alinon et al (2014); Kabinda et al (2014); Salaudeen et al (2011); Umeora et al (2005); Olaiya et al (2004); Okpara (1989); Ahmed et al (2006); Nébié et al (2007); Ottong et al (1997); Jacobs and Berege l (1995); Owusu-Ofori et al (2010); Harrington (2012); Haoses-Gorases and Katjire (2013); Chandrasekar et al (2015); von Zahran and von Ali (2013); Appiah et al (2013); Los et al (2009); Adewuyi and Olawumi (2006); Pule et al (2014); Nwogoh et al (2013); Ogboghodo et al (2015)	Botswana, Burkina Faso, Dem Rep of Congo, Ghana, Malawi, Namibia, Nigeria, South Africa, Sudan, Tanzania, Togo, Uganda
Integration of blood donation information in school curricula	Agbovi (2006); Los et al (2009)	Togo, Uganda
Educate populations on charges for blood services	Agasa and Likwela (2014)	Dem Rep of Congo
Education on the physiology of blood donation (cardiovascular benefits, regeneration of blood)	Koster and Hassall (2011); Duboz et al (2010); Melku et al (2016)	Cameroon, Ethiopia, Senegal
Education around the benefits of HIV testing	Koster and Hassall (2011); Wangendo (2006)	Cameroon, Kenya
Targeted information about blood donations	Rolseth et al (2014)	Cameroon
Communication platforms (newsletter, workshops)	Appiah et al (2013); Los et al (2009); Mukuria (2006)	Ghana, Kenya, Uganda
Develop, review communication strategy	Los et al (2009)	Uganda
Modelling: Interventions showing another person promoting blood donation or giving blood to motivate		
Models (community or religious leaders, opinion leaders, celebrities)		
Enlisting traditional authorities to publicly demonstrate support for blood donation	Alinon et al (2014); Dahourou et al (2010); Pule et al (2014)	Botswana, Togo
Peer promoter, donor associations, youth and educational clubs		
Peer promoter programme in schools e.g. Pledge/Club 25, high school campaign, elementary school programme, pre-primary, voluntary blood donor clubs	Reddy (2012); Muthivhi et al (2015); de Coning (2004); Salaudeen and Odeh (2011); Jacobs and Berege (1995); Owusu-Ofori et al (2010); Chandrasekar et al (2015); Mukuria (2006); Ogunbona et al (2013)	Ghana, Kenya, Malawi, Nigeria, South Africa, Tanzania
HIV post-test clubs	Mukuria (2006)	Kenya
Blood donor associations	Haoses-Gorases and Katjire (2013); Dahourou et al (2010)	Burkina Faso, Namibia
Blood drives		
Conducting youth blood donation days	Reddy (2012)	South Africa
Conducting open blood donation days include blood donation drive in monthly, annual activities of university	Reddy (2012) Salaudeen and Odeh (2011)	South Africa Nigeria
Motivational intervention targeted at inconvenience		
Mobile clinics	Ahmed et al (2006); Owusu-Ofori et al (2010)	Ghana, Nigeria

Intervention	References	Country
Permanent mobile collection teams	Owusu-Ofori et al (2010)	Ghana
Appointments for blood donation	Kabinda et al (2014)	Dem Rep of Congo
Increase number of blood collection sites and sessions	Owusu-Ofori et al (2010); Haoses-Gorases and Katjire (2013); Dahourou et al (2010); Pule et al (2014); Mekonnen and Melesse (2016)	Botswana, Ethiopia, Ghana, Namibia
Convenient access to donation site and blood collection times	Muthivhi et al (2015); Salaudeen et al (2011); Mekonnen and Melesse (2016)	Ethiopia, Nigeria
Partnerships or community mobilisation		
Partnerships	Haoses-Gorases and Katjire (2013); Appiah et al (2013)	Ghana, Namibia
Partnership with blood donor associations	Kabinda et al (2014); Appiah et al (2013)	Dem Rep of Congo, Ghana
Partnership with existing groups	Natukunda et al (2015); Jacobs and Berege (1995); Dahourou et al (2010)	Tanzania, Uganda
Partnership with leadership of religious community	Agasa and Likwela (2014); Harrington (2012); Allain et al (2008); Owusu-Ofori et al (2010); Dahourou et al (2010); Pule et al (2014)	Botswana, Dem Rep of Congo, Ghana
Community mobilisation	Salaudeen et al (2011); Sekoni et al (2014); Natukunda et al (2015); Ehimen et al (2016)	Nigeria, Uganda
Contact with key people in local government, organisations etc.	Ottong et al (1997)	Nigeria
Involve local resource persons with good grassroots contacts	Ottong et al (1997)	Nigeria
Community based, focused and ownership of blood service	de Coning (2004)	South Africa
Blood donors as part of foundation and leadership of blood service	de Coning (2004)	South Africa
Teachers associations	Los et al (2009)	Uganda
Family and friends	Pule et al (2014)	Botswana
Retention programmes		
Establish long distance relationship with donors	Kabinda et al (2014)	Dem Rep of Congo
Donor retention strategies (targeted messages, visit donation sites regularly, register of rare donors, donor reminders)	Owusu-Ofori et al (2010); Chandrasekar et al (2015); Pule et al (2014)	Botswana, Ghana, Malawi
Donor records, electronic donor records	Los et al (2009)	Uganda
Donor management programmes		
Establish, review systems for donor counselling, counsel donors	Kabinda et al (2014); Ahmed et al (2006); Ottong et al (1997); Jacobs and Berege (1995); Owusu-Ofori et al (2010); Haoses-Gorases and Katjire (2013)	Dem Rep of Congo, Ghana, Namibia, Nigeria, Tanzania
Deferred donor clinic, iron supplementation	Allain et al (2008); Owusu-Ofori et al (2010)	Ghana
HIV management programme for staff	de Coning (2004)	South Africa
Introduce, review pre-donation selection	Nébié et al (2007); Jacobs and Berege (1995); Haoses-Gorases and Katjire (2013)	Burkina Faso, Namibia, Tanzania
Donor satisfaction		
Customer service programme for staff	de Coning (2004)	South Africa
Address problems with staff skills and attitude.	Ottong et al (1997)	Nigeria
Train, educate, motivate staff	Nébié et al (2007); Ottong et al (1997); Haoses-Gorases and Katjire (2013); Dahourou et al (2010)	Burkina Faso, Namibia, Nigeria
Creating enabling donation environment		
Create festive environment for drives, provide equipment for fun	Allain et al (2008); Mukuria (2006)	Ghana, Kenya
Reminders: Interventions using reminders about the next eligibility date and/or the next appointment to give blood (e.g. telephone call prompt)		
Reminders to first time blood donors	Kabinda et al (2014); Owusu-Ofori et al (2010)	Dem Rep of Congo, Ghana
Incentives: Interventions using incentives for donating blood such as a T-shirt, money, prizes, tickets, and other		
Non-monetary		
Introduce donor incentives e.g. free medical service, certificates, beverage, gift items (t-shirts, wrist bands), haematinics	Salaudeen et al (2011); Salaudeen and Odeh (2011); Ahmed et al (2006); Ottong et al (1997); Allain et al (2008); Jacobs and Berege (1995)	Ghana, Nigeria, Tanzania
Free HIV and blood group testing results	Umeora et al (2005)	Nigeria

Intervention	References	Country
Blood crediting	Ottong et al (1997); Jacobs and Berege (1995)	Nigeria, Tanzania
Donor awards and recognition, donor day celebration	Reddy (2012); Olaiya et al (2004); (1996), Owusu-Ofori et al (2010); Appiah et al (2013)	Ghana, Nigeria, South Africa
Monetary		
Reimbursement of transport cost/other expenses		
Transport reimbursement	Chandrasekar et al (2015)	Malawi
Remuneration		
Financial remuneration	Umeora et al (2005)	Nigeria
Other interventions		
Deposit of unit of blood by patient's relations	Obi (2007)	Nigeria
Commit resources to awareness and education, private sector resources	Adewuyi and Olawumi (2006); Wangendo (2006)	Kenya

The classification used to describe the identified interventions was adapted from two previous studies (Ferguson et al., 2007; Godin et al., 2012) to reflect specific needs of SSA studies. A total of 83 individual interventions were identified, and these were mentioned 216 times by all the included studies. These interventions were of four main types: motivational interventions aimed at increasing motivation toward blood donation, reminders about when to donate blood, use of incentives to encourage blood donation, and other interventions (Table 2.6).

Interventions for increasing motivation for blood donation

Of the 83 individual interventions that were identified, 73 (88%) were motivational interventions. Motivational interventions were mentioned 195 times in the studies and have been presented under 10 sub-categories. These subcategories are cognition based, altruism, and modeling interventions; blood drives; interventions targeting inconvenience; partnerships, and community mobilisation; retention, and donor management programmes; interventions addressing donation satisfaction; and others.

Cognition based interventions

Under cognition based interventions, 14 types of awareness and blood donation campaign interventions were mentioned 42 times together by 28 studies from Democratic Republic of Congo, Ethiopia, Namibia, Nigeria, Senegal, Sudan, Togo,

Ghana, South Africa, Kenya and Uganda. Awareness creation was recommended to address general deterrents, socio-cultural factors, myths, misperceptions and misinformation about blood donation (Agbovi et al., 2006; Duboz et al., 2010; Kabinda et al., 2014; Salaudeen et al., 2011; von Zahran and von Ali, 2013) and misinformation about paid blood donation (Salaudeen et al., 2011). Awareness creation was also recommended to increase knowledge and information on blood donation and its significance (Adegoke, 2016; Haoses-Gorases and Katjire, 2013; Mekonnen and Melesse, 2016; Ottong et al., 1997); and to facilitate attitude change (Salaudeen et al., 2011). Special commitment campaigns in South Africa (de Coning, 2004; Reddy, 2012); blood donor awards and recognition (Appiah et al., 2013; Gobatto, 1996; Olaiya et al., 2004; Owusu-Ofori et al., 2010; Reddy, 2012); faith-based organisation led, media channeled and targeted campaigns (Ahmed et al., 2006; Appiah et al., 2013; Basavaraju et al., 2010; Ogboghodo et al., 2015; Owusu-Ofori et al., 2010); collaboration with teachers and parent-teacher associations to create awareness (Los et al., 2009); and collaborations with communications and behavioural change specialists (Kabinda et al., 2014) were identified as awareness and blood donation campaign interventions.

Other cognitive based interventions were those that target deterrents. These are interventions that target trust issues, misperceptions, myths and fears (Agasa and Likwela, 2014; Ahmed et al., 2006; Alinon et al., 2014; Chandrasekar et al., 2015; Jacobs and Berege, 1995; Muthivhi et al., 2015; Mwaba and Keikelame, 1995; Olaiya et al., 2004; Salaudeen et al., 2011; von Zahran and von Ali, 2013); blood donor recruitment programmes (Appiah et al., 2013; Asamoah-Akuoko et al., 2016; de Coning, 2004; Koster and Hassall, 2011; Olaiya et al., 2004; Reddy, 2012); and education interventions.

The review identified nine categories of education, information and communication interventions. These were recommended or described 38 times in 32 of the studies and include motivational talks to communities (Reddy, 2012), innovative educational programmes targeting young people (Kabinda et al., 2014; Muthivhi et al., 2015; Mwaba and Keikelame, 1995), education that target fears, beliefs, myths and misperceptions associated with blood donation (Alinon et al., 2014; Kabinda et al., 2014; Mwaba and Keikelame, 1995; Okpara, 1989; Olaiya et al., 2004; Umeora et al., 2005); to encourage altruism and voluntary blood donation (Ahmed et al., 2006; Haoses-Gorases and Katjire, 2013; Owusu-Ofori et al., 2010; Salaudeen et al., 2011); to discourage paid donation (Ahmed et al., 2006; Salaudeen et al., 2011); and to provide information on blood donation (Appiah et al., 2013; Duboz et al., 2010; Koster and Hassall, 2011; Melku et al., 2016; Nébié et al., 2007; Ottong et al., 1997; Rolseth et al., 2014), and information on charges for blood services (Agasa and Likwela, 2014).

Partnerships or community mobilisation as an intervention for promoting blood donation was one of the categories of interventions identified. The review identified 10 sub-categories under this category. These were mentioned 23 times by 17 studies from Botswana, Democratic Republic of Congo, Ghana, Namibia, Nigeria, South Africa, Tanzania and Uganda. These include partnerships with various leaders of religious communities (Agasa and Likwela, 2014; Allain et al., 2008; Dahourou et al., 2010; Harrington, 2012; Owusu-Ofori et al., 2010; Pule et al., 2014), groups, organisations and government (Ottong et al., 1997) for support to, and ownership of programmes and initiatives. It also includes working with existing groups and association to mobilise blood donors (Appiah et al., 2013; Ehimen et al., 2016; Haoses-Gorases and Katjire, 2013; Kabinda et al., 2014; Los et al., 2009; Natukunda et al., 2015; Salaudeen et al., 2011; Sekoni et al., 2014).

Interventions using reminders about when to donate blood

The use of reminders in making people aware of when to donate blood was mentioned in two papers (Kabinda et al., 2014; Owusu-Ofori et al., 2010).

Interventions using incentives to promote blood donation

Two main types of incentives were identified as having the potential to aid blood donation: non-monetary and monetary incentives. Non-monetary incentives included free medical service or certificates, beverages or gift items such as branded T-shirts and haematinics (Ahmed et al., 2006; Allain et al., 2008; Jacobs and Berege, 1995; Ottong et al., 1997); free HIV and blood group testing results (Umeora et al., 2005); blood crediting (Jacobs and Berege, 1995; Ottong et al., 1997; Salaudeen et al., 2011; Salaudeen and Odeh, 2011); or blood donor awards and recognition such as those given during blood donor day celebration (Appiah et al., 2013; Olaiya et al., 2004; Owusu-Ofori et al., 2010; Reddy, 2012). Monetary incentives included reimbursement for transportation and other expenses (Chandrasekar et al., 2015); or financial rewards (Umeora et al., 2005).

Other interventions

Other interventions mentioned in the literature included requiring patients' family members to deposit units of blood in anticipation of the patient's need (Obi, 2007), or committing resources to awareness and education, (Adewuyi, and Olawumi, 2006); and engaging the private sector for support in the form of expertise and resources (Wangendo, 2006).

2.5.4. Synthesis of the review

The current review identifies interventions that have been suggested, or implemented, to promote blood donation in SSA. The findings suggest a number of opportunities

and challenges for blood collection agencies, researchers and policymakers to promote blood donation in SSA. The following themes emerged from the review.

Strength of evidence to-support the interventions

All the included studies described multiple concurrent interventions. Of the 47 papers and abstracts that identified interventions, only seven had evaluation data, one involved evaluation of programme activities (Mukuria et al., 2006), one used retrospective survey data analysis (Basavaraju et al., 2010) and the rest used retrospective analyses of activities. Thus, it could be argued that a number of the implemented interventions lacked adequate robust scientific evidence, especially because none involved testing of socio-behavioural theories on promoting blood donations. However, this represents the best available evidence for policy and practice Also some level of success has been achieved by blood services implementing these interventions. Operational research on testing evidence-based interventions for promoting blood donation in SSA is needed to support practice.

Young people as window of opportunity

A number of approaches for promoting blood donation focus on younger people. Persons aged five to 30 years old constitute about 50 percent of the African population and therefore present a window of opportunity for sustainable blood donor recruitment programmes (Economic Commission for Africa, 2016; Salaudeen et al., 2011). Younger people can serve as agents of change in blood donor recruitment and retention (Salaudeen et al., 2011) and continue to donate for longer periods, and therefore can support blood requirement in the SSA region with its continuing high population growth (Economic Commission for Africa, 2016). These recommended and implemented approaches include the pledge/club 25 programme in high schools, social and community based groups (Allain et al., 2008; Chandrasekar et al., 2015; de

Coning, 2004; Muthivhi et al., 2015; Owusu-Ofori et al., 2010; Reddy, 2012).The pledge/club 25 initiative, which originated from Zimbabwe and has been adopted by Ghana, South Africa, Nigeria and other countries, requires high school students of blood donation age to pledge to donate blood 25 times by age 25. However, the initial concept may have been redefined by the other countries for applicability and feasibility. Perhaps, club 30, 40 or 50 could be initiated for those who have donated blood until they are 25 years. The approaches also include the involvement of faith-based organisation youth clubs, competitions among schools (Los et al., 2009), educating and sensitising pre-primary and elementary school children (de Coning, 2004; Reddy, 2012)

Some motivational interventions were suggested for schools (de Coning, 2004; Kabinda et al., 2014; Los et al., 2009; Salaudeen and Odeh, 2011) and churches (Harrington, 2012).

Incentives as an intervention for promoting blood donation

The use of incentives in promoting blood donation is a controversial subject. This review finds evidence of the potential of promoting blood donations through non-monetary incentives such as free medical service, certificates, beverage, gift items (t-shirts, wrist bands), haematinics (Ahmed et al., 2006; Allain et al., 2008; Jacobs and Berege, 1995; Salaudeen et al., 2011; Salaudeen and Odeh, 2011); free HIV and blood group testing (Umeora et al., 2005); blood crediting (Jacobs and Berege, 1995; Ottong et al., 1997); and donor awards and recognitions, especially during blood donor day celebrations (Appiah et al., 2013; Olaiya et al., 2004; Owusu-Ofori et al., 2010; Reddy, 2012). A gift, token or incentive may be given to show appreciation to a donor or to entice a person to donate blood. Evidence from the US, Sweden and Switzerland demonstrate that incentives are economically inefficient in terms of increasing the

quantity of the blood donated and introducing additional costs (Niza et al., 2013), although previous studies in the US identified an increase in donation with incentives (Godin et al., 2012). Therefore, if non-monetary incentives may need to be used to promote blood donation in SSA, there will be the need for blood collection agencies that wish to consider this form of incentive to describe clearly the mechanisms to define, promote and sustain such interventions. This will prevent abuse, commercialisation of blood donation and demotivation of blood donors who donate blood primarily for altruistic reasons. This is especially important, considering that altruism has been identified as a key motivator for blood donation in SSA (Burzynski et al., 2016; Zanin et al., 2016). The same applies to reimbursement of direct cost to the donor for donating blood, such as transportation cost, in deprived communities.

Family and community as recognised units for intervention

The family as a cultural unit and the community as a social unit are highly recognised in SSA. Prosocial motivation, including collectivism or the desire to help family, friends or community, has been identified by other reviews as the single most cited motivator for blood donation in SSA (Burzynski et al., 2016; Zanin et al., 2016).

In SSA, the HIC definition of "family" may be unsuitable because even very distant relations may be seen as nuclear families. Because in SSA many people do not have valid forms of national identification, even strangers could present themselves as family members and donate blood for money. This situation facilitates a hidden paid donation system seen in some countries, which compromises the safety of blood. In SSA countries where paid donation is not recognised the discrimination shown to hidden commercial donors may also be experienced by FRDs by extension. However, the prominence of the FRD in SSA and other developing countries cannot be ignored. The FRD system has also proved itself to be a sustainable and affordable mechanism

for blood donation in SSA, which is an important, but often neglected factor. (Allain and Sibinga, 2016). Although the current review did not identify implemented interventions that incorporated the need to involve family members or friends, such interventions were suggested by a number of the studies (Ahmed et al., 2006; Asamoah-Akuoko et al., 2016; Koster and Hassall, 2011; Olaiya et al., 2004; Pule et al., 2014). Suggested interventions include involving FRDs as change agents in community mobilisation (Pule et al., 2014); as repeat VNRBDs (Ahmed et al., 2006; Asamoah-Akuoko et al., 2016; Koster and Hassall, 2011; Olaiya et al., 2004); and as repeat FRDs (Allain and Sibinga, 2016). Such interventions may need to be empirically tested. Similar to families, the role of community involvement and ownership is key to the success of interventions. Thus five of the seven interventions that were evaluated included community focused interventions. South Africa has achieved significant success in mobilising VNRBDs. While many other factors may contribute to this, the community based and ownership approach to the organisation and management of blood services is an important factor (de Coning, 2004; Muthivhi et al., 2015). Community mobilisation (Ehimen et al., 2016; Natukunda et al., 2015; Salaudeen et al., 2011; Sekoni et al., 2014), community based resource persons (Ottong et al., 1997) and community ownership among other have been identified. Going forward, SSA blood services may need to develop comprehensive community programmes, using well-documented, empirical approach. Involving partners from the planning stage and assigning them shared responsibility for availability of blood to their communities are important. Concepts such as competitions, awards at the community level and forum on blood donation for community leaders could add value to blood mobilisation.

Figure 2-4: Practical actions to promote blood donation in SSA

Strengths and limitations

This scoping review addresses a very important area for achieving adequacy of blood for transfusion in SSA. It employed a systematic approach and rigorous, transparent methods, which was developed by the researcher and reviewed by all supervisors. The review only included published literature; however, it did not appraise the individual studies for quality.

2.5.5. Conclusion

This scoping review has generated evidence on interventions that have been recommended or implemented to promote blood donation in SSA. Key areas of interventions that were identified are education and information on blood donation, need for blood, target populations, adverse effects, myths and misperceptions of blood donation; partnerships with faith-based organisations, existing groups and communities; and interventions targeting FRDs. A few of the interventions have been implemented and described; and the evidence supporting these are often not very clearly defined, and not always adequately documented. However, this is the best available evidence for practice. The low proportion of documented evaluated interventions is indicative of the fact that there may be other interventions that have been implemented but not described, considering that blood services have been running for many years, and are locally driven. The review has also identified the gaps for further research into blood donation interventions in SSA. Moving forward, SSA blood services will need to collaborate with various stakeholders to conduct research into the effectiveness of the interventions described in this review using robust scientific methods. This should be done on country-to-country basis, based on country-specific needs.

2.5.6. Summary on scoping reviews

This scoping review identified a number recommended, or described implemented interventions aimed at promoting blood donation in SSA. This information will be used as a basis for designing interventions for promoting blood donation in conjunction with identified factors that influence blood donation. Majority of the studies were knowledge, attitude and practice (KAP) studies on blood donation or transfusion, other areas but with focus on interventions. Although the scoping review

did not evaluate the quality of the papers, a previous systematic review of studies on interventions to promote blood donation did not include even a single paper on studies conducted in SSA. In addition, a few of the interventions that were identified had been implemented and described; often not adequately documented. These are gaps for further research into blood donation interventions in SSA. Collaboration of SSA blood services with the academia to implement intervention in an empirical manner and to conduct research into the effectiveness of such interventions will be helpful in promoting blood donation in SSA.

CHAPTER 3

MATERIALS AND METHODS

3.1. Research design

This study used a mixed methods approach. The mixed methods approach is a research approach that employs rigorous qualitative methods to explore the meaning and understanding of concepts, and rigorous quantitative methods to assess the frequency and magnitude of these concepts. This approach combines and integrates the two methods to draw on the strength of each (Meissner et al., 2011). The rationale for using a mixed methods design in this study was that neither quantitative nor qualitative methods on their own could provide an adequate understanding of the concept of blood donor behaviour towards blood donation and the factors that influence this behaviour in the Ghanaian population. In combination, these methods provide a better understanding of this research problem (Creswell and Clark, 2004), and a stronger evidence for developing locally informed intervention strategies to increase repeat blood donations in Ghana.

3.1.1.1. Strategies of enquiry

Four issues were considered when deciding the strategy of enquiry for this mixed methods research. These were priority, implementation, integration and a theoretical perspective (Creswell, 2002).

Priority is the weight given to the qualitative and the quantitative phases and depends on what the researcher seeks to emphasise in the study. In this study, equal priority was given to the two phases. While the second quantitative phase measured the effect of the factors and their association with the outcome variable, the first qualitative phase looked in-depth at the aspects that the study sought to emphasise, namely the factors affecting the decisions to donate blood, or not, that are peculiar to the religious and cultural beliefs of the study population.

Implementation refers to the sequence of data collection, which can be done at the same time (concurrent) or in phases (sequential). This study used a sequential exploratory design (Creswell, 2002; Creswell and Clark, 2004; Meissner et al., 2011) in combination with a linked trajectory of method triangulation (Bailey and Hutter, 2008), which linked the scoping reviews, the in-depth interviews, the focus group discussions and the survey to inform the methods at each level, thus validating information at each level. By this method, findings from the scoping review were used to guide the in-depth interviews and focus group discussions; the opinions expressed by individual interviewees were also validated in the focus group discussions and then quantified in the survey.

The sequential exploratory strategy facilitated the use of quantitative data and results to assist in the measurement and interpretation of qualitative findings; and to explore the phenomenon of blood donor behaviour towards repeat blood donation.

Since the key findings from the qualitative analysis were incorporated into the survey instrument for quantitative data collection, integration of the qualitative and quantitative methods occurred at the beginning of the quantitative phase. Integration of qualitative and quantitative results occurred again at the end of the study during the discussion of the outcome of the study.

The qualitative methods used in the study were in-depth interviews and focus group discussions to identify motivators and deterrents to blood donation that were not captured in previous reports or studies in Ghana. These factors were added to a questionnaire that was used to determine the predictors of intention to return to donate blood in blood donors using the Theory of Planned Behaviour model (Ajzen, 1991). This study also adopted online search techniques as well as review of documents and reports to collect secondary data. These searches facilitated the refining of the research questionnaires aimed at filling some of the gaps in the literature. The initial draft of the questionnaire was piloted with 10 donors at the SABC.

3.2. Study site

The study was conducted within the catchment area of the SABC of the NBSG (See 1.3 Study Location). Data collection was conducted at blood donation clinics and sessions. The specific locations of mobile blood donation clinics within the three regions of the catchment area where data were collected were:

Greater Accra Region: Accra, Tema, Dodowa, Nungua.

Eastern Region: Somanya, Nsawam, Torgorme.

Central Region: Gomoa Fetteh, Kasoa.

Participants, therefore, comprised of inhabitants of metropolitan, municipal and district areas of the regions. The donors were mobilised from secondary and tertiary

schools, religious organisations (churches and other religious groups), a social youth group, a soccer academy, shopping malls and workplaces.

3.3. Study population

The study population was blood donors and non-donors. Blood donors were VNRBDs and FRDs who had donated blood at the SABC, either as first time or repeat donors, with the last donation within the last five years.

3.3.1. Inclusion criteria

Blood donors:

- Donors had to be within the age limits of 18 to 60 years, and to meet all other donor selection criteria of the SABC.
- Had donated blood at a static or mobile blood donation session of the SABC.
- Last date of donation was 1st August, 2008 or later.
- Were either first time VNRBDs or FRDs, repeat VNRBDs or FRDs, or lapsed donors.

Non-donors:

- Were between the ages of 18 and 60 years old.
- Located within the catchment area of the SABC.

3.3.2. Exclusion criteria

- Blood donors and non-donors who had been permanently excluded from donating blood for the reason of not meeting the donor selection, medical assessment or testing criteria.
- Blood donors who did not meet the donor selection criteria on the day of recruitment.

- Blood donors below the age of 18 years, due to the complexity of obtaining informed consent for this group.
- Autologous blood donors, that is, patients who had donated blood for their own use.
- Polycythaemia and haemochromatosis patients who had therapeutic venesection, that is, who had donated blood as part of their medical treatment.
- Lapsed blood donors whose last donation was before 1st August 2008.

3.4. Data collection and analysis

3.4.1. Phase 1 qualitative

The first phase of this research looked at identifying factors that influence the complex phenomenon of the decision to donate or not to donate blood from the individual's point of view. Qualitative research has its roots in the social and psychological sciences where it has been used to gain insights into human experience, thought and behaviour, and is focused on exploring human or social problems from the perspective of participants (Arnold and Lane, 2011). Qualitative research method was therefore appropriate for this phase. This phase was made up of two research components: in-depth interviews and focus group discussions, through which primary data were collected.

In-depth interviews

The in-depth interview is a technique designed to elicit a vivid picture of the participant's perspective on the research topic (Mack et al., 2005), during which the interviewer learns from the interviewee. The purpose for employing this technique at this stage of the study was to obtain in-depth information on perceptions about blood and blood donation from the personal perspectives of the interviewees, using a

relatively small sample of participants, comprising of current and past blood donors, volunteers and donor services staff of the SABC. The interviews were face-to-face, using a semi-structured interview guide with open-ended questions. A minimum sample size of 22 persons, for initial data analysis (Francis et al., 2010), representing the different categories of participants (Table 3.1) was proposed. Data collection however continued until data saturation was reached. A total of 24 in-depth interviews were conducted (Table 3.2). These participants were persons with knowledge, and who could provide in-depth information on the topic.

Table 3.1: Selection of Respondents for In-depth Interviews

Target Group	No. of Respondents	Sub-group	Gender	Age Distribution in Years
Voluntary Blood Donors	8	Repeat blood donors	2 Males	17-30
				30-60
			2 Female	17-30
				30-60
		First time blood donors	2 Male	17-30
				30-60
			2 Female	17-30
				30-60
Family Replacement Blood Donors	4	Repeat blood donors	1 Male	17-30
				30-60
			1 Female	17-30
				30-60
		First time blood donors	1 Female	17-30
				30-60
			1 Male	17-30
				30-60
Lapsed Donors	2	Repeat blood donor	1 Male/Female	17-30
		First time blood donor	1 Female/Male	30-60
Blood Donor Services Staff	2	Donor recruitment officer	1 Male	17-60
		Nurse	I Female	17-60
Volunteers	2	N/a	1 Male	17-60
		N/a	1 Female	17-60
Non-donors	4	School	Male/Female	17-60
		Community	Male/Female	17-60
		Church	Male/Female	17-60
		Mosque	Male/Female	17-60

Participant selection for in-depth interviews

To account for the small sample size, participants were selected for the in-depth interview in a purposive manner. The reason for using purposive selection for in-depth interviews in this study was to select information-rich participants who will throw light on those factors that are peculiar to the culture and beliefs of the study population among others. The maximum variation selection strategy for purposive selection was employed for heterogeneity (Palinkas et al., 2015). This means that people with specific demographic or social characteristics were chosen to represent a defined target group. Blood donors were therefore selected from the subgroups by type of donor, number of donations, age and gender, where applicable, using the blood donor records during or after blood donation sessions. Blood Donor Services staff, comprising of blood donor recruitment officers, donor care nurses, and donor assistants, were selected by profession and gender from a staff list. Volunteers were selected from current records on volunteers. Non-donors were selected by convenience from communities within which blood donation sessions were held.

Interviewer

The researcher and two other trained interviewers conducted the interviews. All three interviewers had a one-day orientation to prepare for fieldwork.

In-depth interview protocol

Semi-structured interview guides with open ended questions were used to guide the in-depth interviews. Different interview guides for a 30-minute interview were developed for the different groups of interviewees (Appendix 2). The interview guides were pretested and refined by interviewing eight blood donors, a blood donor services staff and a non-donor, selected by convenience at the SABC The protocols were

translated, and back translated into two local Ghanaian (Twi and Ga) languages by different bilingual translators.

Focus group discussions

In focus group discussions, one or two researchers and several participants meet as a group to discuss a given subject. Focus groups are effective for accessing a broad range of views on a specific topic in a short time and can be used to assess how a given problem affects the community at large (Mack et al., 2005). In this study, focus group discussions were held with different groups of VNRBDs, FRDs, non-donors, and donor services staff as listed under "sampling" below. The purpose of using this strategy was to obtain a broader range of opinions on the research problem and thus validate the findings of the in-depth interviews. This strategy was also used to identify terms used locally in relation to blood and blood donation.

Participant selection for FGD

This was done by purposive selection of blood donors who donated within the catchment area of the SABC, that is, the static and mobile clinics within the city of Accra, the rest of the Greater Accra Region, and parts of Eastern and Central Regions of Ghana. Selection of volunteers was by purposeful selection from records of blood donor groups. Selection of donor services staff was purposeful, by category and gender from a staff list. To ensure feasibility, walk-in VNRBDs were selected by convenience.

Focus group participants were between the ages of 18 and 60 inclusive, and were recruited by word-of-mouth through one-on-one interviews. An initial analysis sample size (Francis et al., 2010) of five focus groups were conducted, with each group consisting of 6 to 8 participants.

The five focus groups were:

1. Student blood donors:

   This was a group of first time and repeat VNRBDs. The first time donors donated blood for the first time at the session from which they were recruited. The repeat VNRBDs had donated at least one time as VNRBDs before donating at the session from which they were recruited. They had donated blood without requesting the blood unit to be credited to another person, without being coerced to donate or paid for the donation, and without requesting for any kind of favour in return. This group was recruited from a tertiary educational institution.

2. Repeat VNRBDs:

   This was a group of VNRBDs who had also donated more than once as VNRBDs. They were recruited from a meeting of the National Blood Donor Association of Ghana.

3. FRDs:

   This group consisted of first time and repeat FRDs. The first time FRDs donated blood for the first time at the session from which they were recruited, to be given to a family member, a friend or an acquaintance who required blood transfusion. The repeat FRDs donated at least one time as FRDs before donating at the session from which they were recruited. This group was recruited from a fixed blood collection site.

4. Non-donors:

   This group was recruited from a mobile blood collection site in a tertiary educational institution/university, and comprised of persons who had never donated blood before and did not intend to donate blood at the session on the

donation site from where they were recruited. The group comprised of students from the tertiary institution.

5. Blood Donor Services staff:

   This group consisted of donor care nurses, blood donor recruitment officers and donor assistants. Three were repeat VNRBDs and four were non-donors. They were selected from the staff list of the SABC.

Venue

The focus group discussions were conducted in a conference room or an office within the NBSG premises in Accra or close to a blood donation site from where participants were selected, for ease of access.

Moderator

The researcher and an experienced moderator facilitated the focus group discussions.

Focus group discussion protocol

The Discussion Guide (Appendix 2) features eight questions for a 90-minute discussion.

Qualitative data analysis

Data collection and analysis proceeded simultaneously. All interviews and focus group discussions were audio recorded with consent from the participants, and transcribed verbatim. The transcripts were translated where appropriate. Data were analysed using the Grounded Theory Methodology of organising data into codes and themes. The steps in qualitative analysis included:

i. Preliminary exploration of the data by listening to the tapes and reading through the transcripts;

ii. Establishing nodes/categories from the objectives of the study and the text.

iii. Coding the data by selecting and labeling the relevant information;

iv. Aggregating similar codes together as sub-nodes under predefined nodes and additional nodes; deleting redundant sub-nodes

v. Connecting and interrelating nodes (Creswell, 2002).

vi. Constructing a narrative.

Data were coded and analysed for themes using the Qualitative Software and Research (QSR) NVivo11.(QSR International Pty Ltd, 2017) The unit of analysis was the number of individuals (for IDI) and sources (for FGD) who commented on an item, defined as sources, rather than the number of references, as one individual may have commented multiple times on one item. The "number of sources" was used as a measure to determine the major factors that were cited, rather than to quantify the results. Identified codes and nodes from the qualitative phase were used to develop the survey instrument for the quantitative study (Appendix 6).

3.4.2. Phase 2 quantitative

In quantitative research the aim is to determine the relationship between one thing (an independent variable) and another (a dependent or outcome variable) in a population. Since quantitative surveys are also useful for testing the results gained by a series of qualitative experiments, leading to a final answer (Shuttleworth, 2008), this method was employed for this phase. The primary technique for collecting quantitative data in this phase was a cross-sectional questionnaire survey. This means that data were collected from participants at one point in time. The survey questionnaire was developed based on the findings of the first phase and the constructs of the Theory of Planned Behaviour (Ajzen, 1991). This phase was concluded with the

recommendation of locally informed interventions based on the findings of the qualitative and quantitative studies.

Sample size

A pilot study was conducted at the SABC to determine the donor return rate for first time VNRBDs and FRDs donating at the centre (Asamoah-Akuoko, 2011). The donor return rate was used to calculate the sample size because the study aimed at predicting first time donor return rates. However, due to logistic challenges, the return rate was very low (3.1%), therefore the study looked at prediction of intention which is a predictor of donor return (Ajzen, 2006a).

A total of 256 first time donors, donating between January and June 2010 were sampled for a telephone survey. Out of this number, 164 were successfully contacted and interviewed. Of the 164 contacted, 25 had returned to donate, giving a return rate of 15.2 per cent. The donor return rates stratified for VNRBDs and FRDs were 25 per cent and 6.8 per cent respectively. There is no local data on first time donor return rate. The overall donor return rate has been shown to be 53 per cent compared to a first time donor return rate of 39 per cent in South Africa (van den Berg and Muthivhi, 2012), which has a relatively well developed National Blood Service.

The sample size was calculated as follows:

Using the module for calculation of sample size for proportions for cross-sectional surveys, available at *http://www.openepi.com/OE2.3/Menu/OpenEpiMenu.htm* to estimate the sample size based on an assumed first time donor return rate of 15.2% required a total number of 199 respondents; at 95% confidence level and 5% margin of error. However, in order to describe donor return separately among VNRBDs and FRDs, the model was multiplied by a design effect of two for a complex sample

resulting in a required number of 397 respondents. Allowing for a 10% non-response rate, the final estimated required number of respondents was about 440. (Appendix 5)

To account for loss to follow up with telephone interviews, the sample size was adjusted to 484 by increasing the calculated sample size by 10%. The sample size was therefore, approximated to 500.

Sampling for questionnaire survey

Blood donation patterns in Ghana vary over the year, with younger donors from educational institutions donating during school sessions and predominantly older donors from religious and social organisations donating during school vacation. To ensure that the sample was representative of the study population, data collection was planned to cover a three-month period, and was conducted from 24th June, 2015 to 12th October, 2015. A cross section of the 6250 blood donors who were expected to donate blood during the three-month survey period at the static or mobile clinics of the SABC were selected as follows. The required sample of first time blood donors was therefore, stratified by type of donor into first time VNRBDs and first time FRDs (Table 3.2). For each session within the selected region for the period of the study, all first time donors were approached and recruited, until the end of the particular session, for the survey. Data collection continued for first time donors from each qualifying session, based on the stratification until the required number of participants was achieved. At the end of three months, for groups for which the proposed sample size had not been surveyed, first time VNRBDs or FRDs were surveyed from available sessions until the sample size was reached (Table 3.2). This was to ensure that data collection did not extend beyond an additional one month of the proposed end of data collection, as there were no sessions in some of the regions or donor groups for the whole period of data collection.

Table 3.2: Table of Number of VNRBDs and FRDs in Sample of Survey Participants

	Type of Donors		
	Voluntary Donors (49.5%)	**Family Donors (50.5%)**	**Total (100%)**
No. of Participants	250	255	**505**

First time FRDs were selected from six facilities where blood donations were given by FRDs as per the table below:

Table 3.3: Table of Distribution of Sample of Family Donors by Facility

	Facilities						
	Korle-Bu (61%)	**Tema (9%)**	**La General (10%)**	**Ridge (9%)**	**Maamobi (3%)**	**Lekma (7%)**	**Total**
No. of Family Donors	156	24	25	24	8	18	**255**

First time VNRBDs were stratified by location and blood donor group, which is the group from which the blood donors were drawn. These were churches, mosques, educational institutions, social groups, workplaces and those who walked into the Korle-Bu donor clinic to donate. Because of the relatively small numbers of the last three groups, these were put together as “others”.

Table 3.4: Table of Proposed Distribution of Sample of Voluntary Donors by Region and Donor Group

	Regions			
Donor Group	**Greater Accra (60%)**	**Eastern (20%)**	**Central (20)**	**Total**
Schools (25%)	37	12	12	61
Churches (50%)	76	26	26	128
Others (25%)	37	12	12	61
Total	**150**	**50**	**50**	**250**

Table 3.5: Table of Actual Distribution of Sample of Voluntary Donors by Region and Donor Group

Donor Group	Regions			Total
	Greater Accra (60%)	Eastern (20%)	Central (20)	
Schools (25%)	81	0	5	86
Churches (50%)	78	37	0	115
Others (25%)	38	0	11	49
Total	**198**	**37**	**16**	**250**

School groups were selected in accordance with mobile blood collection schedules on first come first serve basis. Blood donors were selected during a mobile session. Once the facility had been identified, the leaders of the facility and the blood donor recruitment officer responsible for the area were informed to facilitate data collection.

Questionnaire design and administration

To adapt the study to local situation, determinants of blood donation that were identified from the qualitative study in first phase were included in the structured questionnaire (Appendix 6). The questionnaire was designed to determine the significant perceptions, motivators and deterrents to blood donation among first time donors, as well as assess predictors of donors' intention to return and actual return using the Theory of Planned Behaviour model. The questionnaire contained different formats of items, which were multiple-choice with one or multiple answers, five point Likert-type, dichotomous and open-ended questions. To measure perceptions about blood, a 17-item questionnaire was used. For perception about blood donation 13-item questionnaire was used. For motivators 30-item questionnaire was used and 33-item questions was used for deterrents to blood donation. For attitudes, 6-item questionnaire was used while for subjective norms, behavioural control, altruism and intention to return, two items questionnaire each was used. TPB measures were based

on published measures (Jalalian et al., 2010; Lemmens et al., 2005). The completed survey questionnaire was submitted to the LSTM Research Ethics Committee for approval. The questionnaire was translated, and then back translated by two independent translators into two local languages: Twi and Ga. The United States Census and Survey Processing System (CSPro) software (U. S. Census Bureau, 2015) was used as a platform for the questionnaire administration and data entry.

The English version of the developed questionnaire was captured into the software by a database developer.

Six persons were trained to administer the questionnaire and collect data alongside the researcher. A three-day training session with repeated role-plays and a pilot in all the three languages, namely English, Twi and Ga was conducted for the interviewers to reduce interviewer bias.

The first training was mainly to explain the questions, their background and relevance to the trainees. The questionnaire was edited to address comments and suggestions on clarity from the trainees. The questionnaire was piloted with 10 respondents at the start of administration; the first four were administered by the researcher and observed by the rest of the team.

Table 3.6: Table of Objectives, Methods, Source of Information and Outcome

Objective	Methods	Source of information	Outcome
1. To identify the perceptions of blood donors and non-donors on blood, blood donation and the blood donation process.	Qualitative: In-depth Interviews, Focus Group Discussions Quantitative: Survey	Blood donors: first time and repeat FRDs and VNRBDs, lapsed donors. Non-donors, volunteers and Blood Donor Services staff	Perceptions on blood, blood donation.
2. To identify the motivators and deterrents to repeat blood donations among first time blood donors.	Qualitative: In-depth Interviews, Focus Group Discussions Quantitative:	Blood donors: first time FRDs and VNRBDs	Motivators and deterrents.

	Survey		
3. To identify the factors that motivate existing repeat blood donors to continue donating blood and factors that would deter them from donating.	Qualitative: In-depth Interviews, Focus Group Discussions	Blood donors who have donated at least two times as voluntary or replacement donors	Motivators and perceived deterrents.
4. To identify the factors that deter lapsed donors from donating blood and factors that would motivate them to return to donate.	Qualitative: In-depth Interviews, Focus Group Discussions	Blood donors who have not donated blood within 24 months of being recruited for the study	Perceived motivators and deterrents.
5. To identify factors that deter non-donors from donating blood and factor that will encourage them to donate blood	Qualitative: In-depth Interviews, Focus Group Discussions	Non-donors who fall within the age category of blood donors and have not been permanently deferred from donating blood	Deterrents and perceived motivators.
6. To identify the potential predictive power of the identified determinants of blood donation in 1-5 above on donors' intention to donate and donor return, using the extended TPB model.	Quantitative: Survey, review of donor records	440 blood donors, first time and repeat FRDs and VNRBD, electronic donor records retrieved from the Blood Bank Management software of the SABC	Data on age, gender, type of donor, ethnicity, religion, profession, number of donations, significance of identified motivators and deterrents and constructs of the extended TPB.

Data entry and analysis

Data were entered using the CS Entry interface of the CSPro and exported into Microsoft Excel and cleaned. After this, data were exported into SPSS version 22.0 for analysis. Descriptive summaries were generated for socio-demographic and household characteristics such as age, sex, marital status, education, employment and income. Descriptive summaries were also generated for perceptions about blood and blood donation, motivators and deterrents to blood donation and the constructs of the TPB. Chi-square test was used to determine associations between demographic characteristics and the perceptions about blood and blood donation, motivators and deterrents to blood donation and the constructs of the TPB as well as type of donor. Intention to return to donate was categorised into binary outcome as intend to return or not. Binary logistic regression analysis was done to determine the predictors of intention to return to donate blood, using intention to return to donate blood as the dependent variable and the demographic characteristics as well as perceptions,

motivators and deterrents to blood donation as independent or explanatory variables. Significant level was set at alpha equal to 0.05 (α=0.05; thus $p<0.05$).

Table 3.7: Predictor Variables in the Quantitative Analysis

Theme/ Construct of TPB	Survey Items
Perceptions about blood	• "Blood is life" • Blood is sacred • Blood has a spiritual significance • Blood determines a person's character • Blood determines a person's inherited physical traits • Blood can transfer a donor's behaviour to the one who receives it, if transfused • Blood is used for religious cleansing in the religious • Blood is used for rituals and sacrifice to deities • Blood is used medically to save lives • Blood is used spiritually to save lives • Blood is used for covenants with other persons • Blood is used to link with the supernatural • A person who has access to another person's blood can harm him/her spiritually • The presence of blood means pain or physical injury • A person's blood is unique to him/her and should not give it out • Blood is unique for each tribe/kin • Blood should not be mixed between tribes by donation or marriage
Perceptions of blood donation	• Blood donation is beneficial to the donor's health • Blood donation is harmful to the donor's health • A person can catch an infection through blood donation • Blood donation is important for saving lives • Donating blood is a waste of time • Blood donation reduces the donor's physical strength • Blood donation makes a woman unable to menstruate • Blood donation can cause impotence • When I donate blood, I give away part of my life • Donating my blood to someone will create a bond or a covenant with the person • Giving blood can cause the donor to die • Blood donation reminds me of pain • Giving blood can help to find out if I have a disease

Theme/ Construct of TPB	Survey Items
Motivators	I am/would be motivated to donate blood to help save lives: • … if it is easy to get to the blood donation site • … to help save lives • … if my friends or relatives needed blood • … to help my community • … if it meant that there will be blood available in future when my family or friends need it • … if it meant that there will be blood available in future when I need it • … because my religion encourages me to donate blood • … to help the Blood Bank • … if Ghana needs blood • … for blood credits for me and my family • … because it would make me feel good about myself • … to know how it feels like • … if I am notified through SMS/email reminders • … by educational talks on blood • … if I was asked by my peers who are blood donors • … by radio, TV or newspaper advertisement on blood donation • … by an appeal for blood donation on radio or TV • … by a blood drive at my school or workplace • … if I will get to know my blood group • … if I will get to know my other (TTI) test results • … if I will get a free medical check-up • … if I will get cash payment • … if I will get cash gifts • … because it is good for my health • … if I will get incentives such as milk, milo, T-shirts, blood tonic etc. • … to get the motivational items given to donors such as pens, exercise books etc. • … by the awards/prizes given on blood donor day • … because it is a way to make a difference • … because many of my friends/family are blood donors • … if my friends, relatives or co-workers asked me to donate blood

Theme/ Construct of TPB	Survey Items
Deterrents	One of the reasons that would deter me from donating blood is: • … that, I do not have time to donate blood • … that, I think do not have enough blood • … that, I think blood donation is for other people • … that, the blood collection times are not convenient to me • … that, I do not like to complete the blood donor questionnaire • … if, the queues are too long • … if I am not called or asked to give • … because, the TV/Radio advertisements do not convince me to donate blood • … because, the motivational items that are given to blood donors are not good enough • … because I do not receive money for donating blood • … if I do not know there is a need for blood • … if I do not know where the nearest blood donation site is • … that, I do not know what happens to the blood after donation • … if I am not treated well by the Blood Bank staff • … if, the blood donation clinic setting is poor • … that, I am scared of the needle or pain/discomfort • … that, I am afraid of bruising/having a sore arm • … that, it can make me sick • … that, it can make me weak spiritually • … that, it can make me impotent (where applicable) • … that, it can affect ability to menstruate (where applicable) • … that, it can affect ability to get pregnant (where applicable) • … that, I am afraid of catching HIV if I donate blood • … because I had a bad reaction or fainted when I gave blood • … because I heard that others had a bad reaction or fainted after donating • … that, I am afraid of the sight of blood • … that, I am afraid of finding out about my HIV status • … that, I think the blood bank sells the blood that is donated for free • … that, I think blood mostly goes to people who are rich • … that, I am afraid the blood bank gives away donated blood to occultists/“sakawa” practitioners • … that, it is against my personal beliefs • … that, it is against my culture • … that, it is against my religion
Intention to return	• I plan to donate blood in 4 months when I will be due for donation
Actual return (Behaviour)	• Have you ever donated blood again after your first donation?
Attitude	I find giving blood: • negative/positive • bad/good • meaningless/worthwhile • unpleasant/pleasant • annoying/enjoyable • unappealing/appealing

Theme/ Construct of TPB	Survey Items
Subjective norm	• My family and friends think I should continue giving blood as long as my health allows it • I normally do what my family and friends want me to do
Perceived behavioural control	• If I wanted to, I would be able to continue giving blood as long as my health allows it. • I find it hard to give blood time after time
Altruism	• I prefer working toward my own well-being than toward the well-being of others • I try to work towards the well-being of society • I am not very interested in helping others • It is important to me that I help others • I think it is important to help the poor and the needy

3.5. Ethical considerations

The study was carried out in compliance with the ethical regulations of the Ghana Health Service, the Liverpool School of Tropical Medicine and the Helsinki Declaration on human Experiments 1964 (revised in 2000). Ethical approval was obtained from the Ghana Health Service Ethics Committee (GHS-ERC: 10/09/13) and the Liverpool School of Tropical Medicine Research Ethics Committee (Research Protocol (13.27), attached as "Appendix 7".

In conducting the study, voluntary participation, confidentiality and anonymity of participants were ensured. Written informed consent was also obtained from the participants before start of interviews.

CHAPTER 4

RESULTS: PERCEPTIONS OF BLOOD AND BLOOD DONATION, MOTIVATORS OF, AND DETERRENTS TO BLOOD DONATION IN GHANA

4.1. Characteristics of participants

Twenty-four individual in-depth interviews (IDIs) and five focus group discussions (FGDs), with a total of 37 participants, were conducted. In the results, sources refer to the 24 IDI and five FGD, making a total of 29 sources. References refer to the number of times a theme or sub-theme was mentioned by sources. The IDI and FGD participants were made up of about 77% blood donors. By frequency of donation, about 23% of all participants were first time donors and 54% were repeat donors. VNRBDs constituted about 54% of participants and FRDs, about 23%. Donor Services staff (DSS) of the NBSG; and volunteers were 18% and 8% respectively and were either blood donors or non-blood donors. The volunteers were members of the communities, churches, workplaces, organised groups that assist with mobilising blood donors and organising sessions. They function as the liaisons between the NBSG and their various blood donors groups. All the participants were between the ages of 18 and 60 years and were eligible for blood donation. Characteristics of participants, including age range, gender and donation status have been presented in tables 4.1, 4.2 and 4.3. Of the 61 participants, 38 (62.3%) were within the age range of 18 – 34 years. The age of participants has been presented as a range, from 18 years to 34 years and from 35 years to 60 years, which reflects respondents that fall into and outside the category of youth, as defined in the African Youth Charter (AU Commission, 2012).

Table 4.1: Characteristics of In-depth Interview Respondents

Participant ID	Age Group (years)	Gender	Category of Respondents	Donation Status/ Type of Donor	Frequency of Donation
FTRBD1	18-34	M	Blood donor	Replacement	First time
FTRBD2	35-60	M	Blood donor	Replacement	First time

Participant ID	Age Group (years)	Gender	Category of Respondents	Donation Status/ Type of Donor	Frequency of Donation
FTRBD3	18-34	M	Blood donor	Replacement	First time
FTRBD4_LD	35-60	M	Blood donor	Replacement	First time
RRBD1	18-34	M	Blood donor	Replacement	Repeat
RRBD2	18-34	M	Blood donor	Replacement	Repeat
FTVBD1	18-34	M	Blood donor	Voluntary	First time
FTVBD2	18-34	F	Volunteer	Voluntary	First time
RVBD1	18-34	M	Blood donor	Voluntary	Repeat
RVBD2	18-34	M	Blood donor	Voluntary	Repeat
RVBD3	35-60	M	Blood donor	Voluntary	Repeat
RVBD4	18-34	M	Blood donor	Voluntary	Repeat
RVBD5	35-60	F	Blood donor	Voluntary	Repeat
RVBD6	18-34	F	Blood donor	Voluntary	Repeat
RVBD7	18-34	F	Blood donor	Voluntary	Repeat
RVBD8	35-60	M	Volunteer	Voluntary	Repeat
RVBD9	35-60	M	Blood donor	Voluntary	Repeat
DSS1_RVBD	18-34	F	Donor Services staff	Voluntary	Repeat
DSS2_ND	35-60	M	Donor Services staff	Non-donor	N/A
DSS3_ND	35-60	F	Donor Services staff	Non-donor	N/A
DSS4_ND	35-60	M	Donor Services staff	Non-donor	N/A
VBDO1_ND	18-34	M	Volunteer	Non-donor	N/A
VBDO2_RVBD	35-60	M	Volunteer	Voluntary	Repeat
VBDO3_ND	18-34	F	Volunteer	Non-donor	N/A

Table 4.1 shows the characteristics of IDI participants by age, gender and donation status.

Table 4.2: Characteristics of Focus Group Discussion Participants

Group	Age Group (years)	Gender	Category of Respondents	Donation Status/ Type of Donor	Frequency of Donation
1 Donor Services Staff	35-60	M	Donor	Voluntary	Repeat
	35-60	M	Donor	Voluntary	Repeat
	18-34	F	Non-donor	N/A	N/A
	35-60	F	Non-donor	N/A	N/A
	35-60	F	Non-donor	N/A	N/A
	18-34	F	Donor	Voluntary	Repeat
	35-60	M	Donor	Voluntary	Repeat
2 Student blood donors	18-34	M	Donor	Voluntary	Repeat
	18-34	M	Donor	Voluntary	Repeat
	18-34	M	Donor	Voluntary	First time
	18-34	F	Donor	Voluntary	First time
	18-34	F	Donor	Voluntary	First time
	18-34	F	Donor	Voluntary	Repeat
	18-34	F	Donor	Voluntary	First time
	18-34	M	Donor	Voluntary	First time
3	35-60	M	Donor	Voluntary	Repeat
	35-60	M	Donor	Voluntary	Repeat

Group	Age Group (years)	Gender	Category of Respondents	Donation Status/ Type of Donor	Frequency of Donation
Repeat voluntary blood donors	35-60	M	Donor	Voluntary	Repeat
	35-60	M	Donor	Voluntary	Repeat
	18-34	F	Donor	Voluntary	Repeat
	35-60	M	Donor	Voluntary	Repeat
	35-60	M	Donor	Voluntary	Repeat
	18-34	M	Donor	Voluntary	Repeat
4 Family replacement donors	18-34	M	Donor	Replacement	First time
	18-34	M	Donor	Replacement	Repeat
	18-34	M	Donor	Replacement	Repeat
	35-60	M	Donor	Replacement	Repeat
	18-34	F	Donor	Replacement	First time
	35-60	M	Donor	Replacement	Repeat
	18-34	M	Donor	Replacement	Repeat
	35-60	M	Donor	Replacement	First time
5 Student non-donors	18-34	M	Non-donor	N/A	N/A
	18-34	M	Non-donor	N/A	N/A
	18-34	F	Non-donor	N/A	N/A
	18-34	F	Non-donor	N/A	N/A
	18-34	F	Non-donor	N/A	N/A
	18-34	M	Non-donor	N/A	N/A

Table 4.2 shows the characteristics of FGD participants by age, gender and donation status.

The total number of participants in the IDIs was 24, with 17 (70.8%) males and 7 (29.2%) females. There were 37 individual participants in the FGDs with a gender distribution of 73.0% males and 27.0% females.

Table 4.3: Characteristics of Participants in the Study

Sample Characteristic	IDI		FGD		Total	
	n	(%)	n	(%)	n	(%)
Number of participants	24	(39.3)	37	(60.7)	61	(100)
Age group						
18 -34	14	(23.0)	24	(39.3)	38	(62.3)
35 - 60	10	(16.4)	13	(21.3)	23	(37.7)
Gender						
Male	17	(27.9)	27	(44.3)	41	(67.2)
Female	7	(11.5)	13	(21.3)	20	(32.8)
Donation status						
Donor	19	(31.1)	28	(45.9)	47	(77.0)
Voluntary						
First time	2	(3.3)	5	(8.2)	7	(11.5)
Repeat	11	(18.0)	15	(24.6)	26	(42.6)
Replacement						
First time	4	(6.6)	3	(4.9)	7	(11.5)
Repeat	2	(3,3)	5	(8.2)	7	(11.5)
Non-donor	5	(8.2)	9	(14.8)	14	(23.0)

Sample Characteristic	IDI		FGD		Total	
	n	(%)	n	(%)	n	(%)
Other						
Donor Services staff	4	(6.6)	7	(11.5)	11	(18.0)
Volunteers	5	(8.2)	Not defined		5	(8.2)

Overall the total number of participants in the IDIs and FGDs was, therefore 61, with 67.2% males and 32.8% females.

4.2. Perceptions of blood and blood donation

The current study identified several key themes and sub-themes associated with perceptions of blood and blood donation (Table 4.4).

Table 4.4: Table of Perceptions of Blood and Blood Donation

Themes (Codes) Factor	Description	Number of Sources	Number of References
PERCEPTIONS	Respondents beliefs about blood and blood donation, and perceived and known beliefs among the general population	29	466
Blood donation perceptions	Perceptions about blood donation	28	226
Can transfer character	Donor's character, other physical traits can be transferred to blood recipient	4	5
Frightening	Blood donation is scary, induces fear, one is or was afraid of blood donation	9	32
Needle	Because of fear of needle	3	6
Sight of blood	Because of fear of sight of blood	2	3
The unknown	Fear of the unknown, non-specific fear	7	17
Giving out life or self	Donor loses part of his life, himself or something important from within	4	9
Donor's life	The donor gives out his own life or part of it	3	6
Lose part of self	Donor loses "something special", part of himself	2	3
Good	Giving blood is a good	12	22
Health benefits	Has health benefits including better health and medical screening	6	15
Negative health effects	Perceived negative effects on health	12	34
Affects fertility	The perception that blood donation affects fertility and ability of the donor to have children	3	4
Can cause death	Blood donation can cause death of donor	5	6
Cause impotence	Can make a donor sexually impotent	2	4

Themes (Codes) Factor	Description	Number of Sources	Number of References
Cause sickness	Donor can get sick after donating, poor recovery from effects of donation	7	8
Cause weight loss	Blood donation leads to weight loss	3	6
Normal process	Blood donation is a normal or an ordinary procedure	3	3
Other perceptions	Other perceptions of blood donation expressed	4	4
Depicts suffering	Implies another person is suffering, in need, has health problems	1	1
Laboratory testing	Links blood donation to medical laboratory testing	2	2
Time wasting	Blood donation is time wasting and not worthwhile	1	1
Reciprocity	Donor gets blood or someone to donate for him/her when in need for self or relatives, takes away need to replace blood	4	4
Restrictions to blood donation	Restricted categories of persons or circumstances for blood donation	6	13
Donate same group	the perception that one can only donate for a person of same blood group	1	1
Gender related	Women, and menopausal women, cannot donate blood	3	9
Weight related	One has to be fat to donate blood	3	3
Sale of donated blood	Blood donated voluntarily is sold to patients	7	9
Saves lives	Blood donation saves lives, helps others who need blood to get better or live	14	41
Healing	Blood donation as an act that leads to healing of another person	2	3
Religious	Religious beliefs about saving lives	1	1
Spiritual	Spiritual perceptions about blood donation	8	18
Covenant	the perception that donating blood for someone creates a covenant/bond with the person	6	9
Donated blood used for rituals	the perception that donated blood is used for rituals, sacrifice and occultism	2	3
Spiritual influence	the perception that receiving one's blood can lead to spiritual influence	4	6
Voluntary and self-sacrificing	Blood donation is a voluntary and self-sacrificing act	6	10
Special and self-sacrificing act	Blood donation is a sacrifice, self-sacrificing act	4	5
Voluntary	Blood donation as a voluntary act	2	5
Perceptions of blood	Participants perceptions of blood and that of other persons they know, this also includes what they have heard from the general population	28	220

Themes (Codes) Factor	Description	Number of Sources	Number of References
Anxiety and pain	The assertion that the mention of need for blood brings anxiety or "fear"	4	9
Biological	Perception of blood as medical or biological substance	9	22
Blood is life	Perception of blood as the essence of life, strength and vitality	21	42
Saves life	The perception that blood is used to save lives, either spiritually or physically	5	6
Strength and vitality	Blood is what gives strength, or is that which fuels the body	2	4
Cultural	Cultural, family, individual connotations to blood, relating to personal ownership, kinship, ethnicity etc.	6	13
Individual	A belief that blood constitutes one's personal life, that losing it implies parting with part of life, that it must be protected, must not be shared or mixed with others' blood.	6	11
Religious	Religious connotations of blood	13	33
Sacred or extraordinary	Blood is sacred or special, not ordinary, not something to joke with	5	30
Should be donated	Perception that if anyone is found fit to donate, the person should donate to help others	5	6
Spiritual	Blood is spiritual or used for spiritual activities	14	61
Blood covenants	Use of blood for covenants, bond between people	4	14
Occultism and sacrifice	Blood is used for occultism and sacrifice to deities	11	28

4.2.1. Perceptions of blood

These perceptions were cited by 28 out of the 29 sources; and span from physical to spiritual, cultural, and religious. These perceptions were grouped into eight broad themes. The five most cited categories of perceptions were the perceptions that blood is the life force of a person, spiritual connotations to blood, religious connotations to blood, the perception that blood is medical or biological, and cultural perceptions of blood. Other perceptions were that blood is sacred or extraordinary, blood conveys a sense of anxiety or reminds one of pain, and blood is something, which must be donated to others by those who have.

"Blood is life"

> "*...What I know about blood… I know blood is life.*" - Repeat FRD, male, more than 35 years old.

The expression "blood is life" was used by respondents to express the perception that blood is the life force of a man, without which the body cannot function, and therefore, a person cannot stay alive. This perception was cited 42 times in 21 of the sources, by all the categories of respondents.

> "*...it's something that… if it is not in your body it's like your body cannot function*" - repeat FRD, male, more than 35 years old.

It also conveys the urgency of the situation where there is need for blood for the medical treatment of a patient. The perception that blood is a life force is further supported by other facts and belief factors. These included the knowledge of the biological functions of blood; religious beliefs, and beliefs about the spirituality of blood. Blood as a life force was also explained by the use of blood to save lives medically, and religiously as Jesus Christ dying and shedding his blood to save lives. It was also explained by the belief that blood fuels the body, keeps the heart beating, provides energy and vitality to the body, and also signifies "*power*" or spiritual authority in the religious sense.

> "*It makes you active and enables you to do whatever you want to do. If you don't have it you can't do anything.*" - First time FRD, male, less than 35 years old.

This perception translates to the perception that the absence or shortage of blood in the body is inconsistent with life, or renders a person weak. Sometimes participants

had no explanation to why blood is life. The expression "blood is life" was mostly spontaneous in response to the question on perceptions of blood.

Religious perceptions of blood

Religious connotations to blood were expressed by respondents in relation to three religions: Christianity, Muslim and the African traditional religion. Blood was cited as a medium of sacrifice to God, Allah and the gods in relation to all three religions.

Generally, respondents expressed belief that with regards to the Christian religion blood is a medium of sacrifice to God, for saving lives, for the "remission of sin", saving from death and that by which God joins a man and woman in marriage. Respondents therefore believed that giving blood for another person implied giving to God, which therefore may bring blessings from God.

> "*If you donate your blood … blood for someone, it's something like you have given something for God.*" - Repeat FRD, male, less than 35 years old.

These perceptions supported donating blood for another person. However, respondents cited that the Jehovah's Witnesses denomination of the Christian religion was perceived as being against spilling blood outside the body, donating blood or receiving blood.

In relation to Islam religion, respondents cited that:

> *"…I think God was emphatic on the fact that, the blood belonged to him God…. …and that is why when animals are slaughtered, we are not supposed to eat the blood, but let the blood go through the natural process that goes through the ground so that God can take his thing back. …so the aspect of blood actually coming out and probably being given to somebody or wasted will have a lot of spiritual or*

religious question in the minds of some religious scholars…..." - Male repeat VNRBD, DSS, more than 35 years old.

This, according to participants, may be interpreted as a religious prohibition with regards donating blood. However, as cited by a male DSS, repeat VNRBD:

"…in the Muslim sector there is something we call Allah Sunna. That they believe in giving so any time they organise this crusade they also organise blood donation and because they believe in giving, they believe they have to save lives so they donate that life."

From the perspective of the traditional religion, participants cited blood sacrifices to "gods", as a means of worship, sacrifice and pacifying the gods.

"…they will always have to sacrifice fowls, ducks and what have you for rituals you see this "traditional" priest visiting your place"; "…this our … traditional way, because they put that kind of fear …" – DSS, male, VNRBD, more than 35 years old

The traditional religious beliefs about blood was perceived to invoke a kind of fear and caution in relation to it.

"we believe in the … supernatural, … traditional way, fetish way of that because they put that kind of fear … if there is a blood on this thing and you touch it this will happen to you or this is what will be the consequences". – DSS, male, VNRBD, more than 35 years old.

Spiritual connotations to blood

These included the perception of blood as being linked to the spirit of a person, and therefore being a medium through which a spiritualist can communicate with the

supernatural. To this extent, it was believed that donating blood amounts to giving away one's spirit.

> "*If I give my blood that means, I have given my spirit, taken part of... my life...*" - DSS, female, repeat VNRBD, less than 35 years old.

Because of the perceived spirituality of blood, it was also believed to be used for rituals and sacrifices to gods and deities, for occultism and for blood covenants between persons.

> "*Oh, I've heard about it and I know erm…yeah! I sometimes believe that erm…erm…someone can use your blood for some rituals and all kind of stuff but I don't believe maybe if you have my blood…*" - volunteer, non-donor, male, less than 35 years old.

Blood covenants were believed to be usually between two persons who want to establish a lasting bond, but also sometimes between a number of persons. Significant among the use of blood for occultism was the term "*Sakawa*". "Sakawa", which is a Ghanaian term for illegal practices that combine modern internet-based fraud with fetish rituals (Oduro-Frimpong, 2014) was often used by respondents in relation to the use of blood for occult practices.

> "*Where I live, to be honest with you err there are some guys who do this "sakawa", these scammers and stuff like that so have not seen them doing erm with the blood ... but I heard they're more into it*." - Repeat FRD, more than 35 year old.

It therefore matters who receives the blood and how any remaining blood will be disposed of. These perceptions, according to participants, may be linked to personal

experiences with use of animal blood for rituals, stories from books and movies or even those told by other persons of their experiences.

Cultural perceptions

Cultural perceptions identified by the qualitative phase included connotations relating to personal ownership, kinship, and ethnicity. Blood was perceived an individual, personal, private "possession" which should not be shared beyond the defined "cultural borders", either through blood donation or marriage.

"... Wow. ... I would not do that (donate regularly) because I believe strongly that my blood is my life and I need to eh... I need to keep it and I'll not come in frequently to donate" ...." – First time FRD, Male, less than 35 years

"...in our Ghanaian culture that (people do not like to mix blood between tribes) is the main thing that we really think of, our Ghanaian culture. Because from my personal experience ... they call the ... thick blood and the ... are all light blood. So if you marry a ... you are diluting your thick blood, but if you marry ... your blood is still thick. That's, that's how they believe blood is. ...." – First time VNRBD, female, student, less than 35 years.

Blood as a physical of biological substance

This perception included the normal anatomy and physiology of blood, such as being a red fluid that is pumped around the body to supply oxygen and nutrients and fight diseases; or as being a tissue in the body.

"...you have red blood cells and then white cells, the plasma and everything you know that comes together and it's a fluid that helps to transport, eh transport oxygen from various parts of the body to other parts and then carries the

deoxygenated blood and oxygenated blood through the body (laughter) and it helps you to go on. You know the white blood cells eh mm, they help to fight diseases when you are sick and the red blood cells they make the blood red you know…" – VBDO, repeat VNRBD, male, more than 35 years old.

It also included the belief that due to its vital functions in the body, blood was used to improve the health or save the lives of patients who do not have enough blood. It however goes further to include the perceptions that a person's blood determines other factors in life, such as the type of person that can be one's spouse or partner.

> "*Right now if maybe you want to marry somebody and you have negative Rhesus factor, like opposite Rhesus factors …you can't be with the person, so it determines who you should be with*" - first time VNRBD, female, student, less than 35 years old

Blood as something sacred or beyond the ordinary

Some respondents expressed the perception that blood is unordinary, sacred or something special.

> "*...I always thought blood was something sacred that you are not even supposed to talk about...*" - DSS, female, non-donor, less than 35 years old.

This perception was based on such factors as the lifesaving properties of blood, and the spiritual and religious connotations to blood among others; with the resultant belief that one should not take issues related to blood lightly, as the consequences of any errors relating to blood, whether physical, spiritual or religious, could trouble a person's life forever. These perceptions are so deeply rooted among some groups that

women are not allowed to slaughter an animal as stated by a male repeat VNRBD, more than 35 years old:

> "*...back at home eh…, when we want to slaughter an animal we don't allow women to do, we allow the men to do it just because of….Yes just because blood is taken as special something women are not supposed to… Are not supposed to get closer to it.*"

Anxiety and pain

Blood was perceived by respondents to be associated with pain and anxiety. This was said to be due to the fact that for blood to come out of the body, there is usually pain. Also most situations that are related to "spilling" of blood from the body, such as injury, cause anxiety. The anxiety associated with blood is partly due to the urgency and anxiety that is experienced when there is a need for blood for the treatment of a patient, especially a friend or relative.

> "*...so when you hear of blood or when you bring your child to the hospital or something happens and the health professionals make mention of blood you get scared.*" - First time FRD, male, more than 35 years old.

Donate blood if you can...

A few respondents shared the belief that for the lifesaving nature of blood, one should donate if one is fit to donate.

> "*... If you are fit to donate that is what you should do...*" Repeat VNRBD, male, less than 35 years old

4.2.2. Perceptions of blood donation

Major perceptions of blood donation that were identified were the perceptions that blood saves lives, has negative effect on health, is good, frightening, spiritual, and that donated blood is sold.

Blood donation saves lives

The perception that blood saves lives translated into the perception that blood donation saves lives. This perception was cited 41 times by 14 sources and by all categories of respondents. The expression that blood donation saves lives was often followed by a call to donate blood. This also included the perception that blood donation helps to heal sick people.

> "*I'd say blood donation is willingly saving a life, giving willingly saving a life*." – Female non-donor, student, less than 35 years old.

Donating is good

The perception that blood donation is good was also cited by all categories of respondents and was usually cited spontaneously in response to the question on perceptions of blood donation. Comments on the perception were mostly accompanied by comments encouraging people to donate blood.

"*I think blood donation is good*" – First time VNRBD, student, female, less than 35 years old.

Health benefits of donating blood

Some respondents also cited the belief that blood donation has health benefits. Such benefits included improved sleep, not falling sick or falling sick less frequently, generally feeling better or healthier, receiving education on healthy living, medical

checks and being seen by a blood centre doctor when one is sick; as well as the perception that donating blood helps to lose excess weight. These were cited as personal experiences or experiences of others.

> "*So as you donate more, in a way it's a way of giving yourself fresh blood, as you donate. And so in the long run, it is good for the body. The more you donate the better it is for the body health-wise*." – Repeat VNRBD, male, more than 35 years old.

Negative health effects of donating blood

Perceived negative health effects of blood donation include the perceived risk of contracting HIV or other infectious diseases, falling sick after donating and the fear of losing too much blood during donation or losing all of one's blood.

> "*I think about AIDs. And it's not only HIV, other diseases.*" – repeat VNRBD, male, student, less than 35 years old.

Impotence

The perception that blood donation causes impotence was linked to the perception that losing blood makes one lose strength and vitality.

> "*You know some people even think that especially in some women, they think that when you are a man and you donate blood your performance in bed will easily be affected. Yes. You know … when some women get to know that I've donated blood around 36 times, they say if you were my husband I'll let you stop because it is going to affect you. You need your blood to be very functional.*" - Repeat VNRBD, male, more than 35 years old.

Affects fertility

Some respondents also cited the belief that blood donation could make a woman stop menstruating and make it impossible for her to become pregnant. For both men and women, it was perceived that it becomes impossible to have children.

> *"…one lady came to tell us that after she has donated she has not had her period again. I have seen this twice.*" – DSS, repeat VNRBD, male, more than 35 years.

Sickness and death

There were perceptions that one may not be able to recover all the blood lost, may become weak, may have sores from needle prick that take a long time to heal, may become ill or even die as a result of donating blood. For blood donors, these were initial perceptions prior to blood donation. For non-donors, these perceptions were the basis of fear to donate blood.

"…when I first had an encounter with the blood donation team I was sceptical about going to donate because I thought of "what about if I donate, what will happen to me you know probably I may fall sick and die…?" – DSS, male, repeat VNRBD more than 35 years old.

Lose weight

Blood donation was perceived to cause unhealthy weight loss or make the donor lean. Some donors therefore may donate purposely to lose weight while others go back to the weighing scale to check if they have lost weight through donation.

> "*For me my first blood donation… I was in the Senior High School. It got to a time that I have become fat, so when they came to the, for the blood donation*

exercise, I thought that if I go and donate my blood I'll lose weight … So that was the first thing that made me, …go and donate blood so that I'll lose weight". – Repeat VNRBD, female, student, less than 35 years old.

Frightening

Some respondents perceived blood donation as a frightening experience. The fear maybe due to a personal experience, for example witnessing a donor reaction. Therefore, prospective donors may opt for alternate means of getting blood even for close relations, rather than donate.

"*I think blood donation is good but, at times it's fear… Me for instance I have never done it before and I don't know how it is going to be like. I saw someone who donated blood and at the end, he was weak, like the way he was behaving, like he was very, very weak. So whenever they are saying we should donate blood I fear, yeah I feel scared*." – Non-donor, student, female, less than 35 years old.

Such fear may also be attributed to the following:

Fear of needles

While some people may be afraid of needles in general, the perception that the needle used for collecting blood is larger than usual worsens this fear.

"Okay I was scared, I don't like, I don't, I don't like needles at all." – First time VNBRD, student, male, less than 25 years old

Fear of sight of blood

This was explained by a person's fear of sight of blood or seeing "a lot" of blood coming out of his or her body.

"*But the only erm… one thing that I have about blood is that sometimes, I can't withstand…The sight of blood*." – Volunteer, non-donor, male, less than 35 years old

Non-specific fear or fear of the unknown

The fear associated with blood donation may also be associated with the lack of knowledge or understanding on the blood donation process, what happens to the blood after donation and what to expect during and after the donation. This fear is also often not due to any specific reason.

"*You know… it's something you have not done before. You do not know how it is whether you will feel pain in the process of donating and also the health problems to encounter after donating. But after donating I don't even feel I have donated blood"* - - Repeat VNRBD, male, more than 35 years old.

Spiritual

Such perceptions were in line with similar beliefs about blood. The belief that blood was linked to the spirit translates into beliefs that when donated blood is given to a patient, the recipient can influence the donor spiritually and vice versa. The influence was usually considered evil.

"*…After donating the blood who is my blood going to be given to, what about if that person is a witch, a wizard or what have you, won't that trait be transferred back to me because I have given blood …?*." – Repeat VNRBD, male, DSS, more than 35 years old.

Blood covenants

"Sharing" blood was perceived as a medium for creating a covenant between the blood donor and recipient, just as blood was perceived to be used for blood covenant, as for example, between two people in a relationship.

> "*…if your blood is runs into another person's vein, there is this connection, like you can't just walk by, like you can't see your blood brother suffering, you need to help and there is something spiritual, there is something powerful between you guys.*" – Non- donor, student, male, less than 35 years old.

This perception was cited by donors and non-donors, and was interpreted both positively and negatively. With reference to the Christian religion, respondents were of conflicting opinion. While some respondents mentioned that the bible instructs believers not to make blood covenants, therefore such covenants were considered negative, others believed that Jesus shed his blood to save lives and this gesture should be emulated.

Rituals

Although cited by a few respondents, there was the perception that donated blood was given to "sakawa" boys for rituals (Fig. 4.1) or, at least, there was the possibility of donated blood getting into the "wrong hands" and being used for "juju", which is another local terminology for occult rituals.

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See Page 3

Sherry Ayittey Minister for Health

Figure 4-1: Newspaper item on use of blood for rituals

Sale of donated blood

> "*Sometimes…, sometimes if I sit down and think about, I donate the blood freely, I don't take any money, but then some people go to hospitals, there is blood but because they don't have money they'd be left to die. So I think why should I give my blood for free and you would want to go and sell it to somebody. It is not like they are selling it for some… Sometimes fifty cedis, over fifty cedis, so it's really, you sit down and think why should I donate freely when some are, some people are leaving other people to die.*." – First time VNRBD, female, student, less than 35 years old.

Donors and non-donors alike cited the perception that blood which is donated freely was sold to patients in hospitals, therefore making it impossible for patients who cannot afford to pay or "buy blood" to access blood transfusion therapy. There was also the belief that donated blood was sold by blood service and hospital staff (namely doctors and nurses) to "sakawa" or "juju" men for rituals.

Restrictions to blood donation

The study identified perceived restrictions to blood donation in relation to blood group, gender and weight.

Gender

Perceptions that women should not donate blood were cited in relation to the regular loss of blood through menstruation, loss of blood during childbirth, the "weakness" that may result from blood donation and its effect on pregnancy and childbirth.

> *"…To me my knowledge I think I think the females, it affects the females. …because you see, excuse me to say this when a female has her err …menses*

you see yea she shorts some blood in her system so she has to regain it..." – First time FRD, male, less than 35 years old.

This perception was also linked to the donor selection criteria of the SABC, NBSG that excludes menstruating females from blood donation. Men were seen to be more physically fit, healthier and have better veins. Perceptions on gender restrictions on blood donation included the perception that pre-menopausal and menopausal women should not donate blood and, also that women rather than men should donate blood.

Weight restrictions

There is the belief that you have to be fat or big to donate blood.

"…So there is a perception that people think they have to grow stout and big before they can… ah ha" – Female repeat VNRBD, less than 35 years old,

Blood group

"*If I am not compatible with you or you're not having my blood group you can't donate for me. So you have to get the right kind of blood.*" – First time FRD, male, more than 35 years old.

Voluntary, self-sacrificing and special act

Blood donation was perceived as voluntary act, which comprises of giving blood willingly to save lives

"*I'd say blood donation is willingly saving a life, giving willingly saving a life.*" – Non-donor, student, female, less than 35 years old.

It was also perceived as a self-sacrificing act in which one has to overlook fears and inconveniences such as pain in order to save a life. An example was given of a case where a blood donor considered blood donation so special that, *"…he was like oh this*

is my first time I am donating …it means so much to me …and every year he calls me to say this is my first anniversary, second anniversary and this year he called he called to remind me of his third anniversary and he feels like it is so special." – DSS, non-donor, female, more than 35 years old.

Reciprocal act

Respondents had the perception that donating blood enhances the chance of getting blood for self or loved ones when needed, either due to experiencing this at some point in life of respondents who are donors, or information that is provided by the DSS. Both donors and non-donors were of the opinion that this could be an incentive for donating blood.

> "*The only thing that comes to mind is sometime… I myself might have a problem that I might need blood. So if I choose to give, I know one day when I am also in need someone will also give me. So it is better to donate. Not even me, any of my family members also.*" – First time VNRBD, male, less than 35 years old.

Giving out one's life to another

The belief that blood is life and is linked to a person's spirit leads to the belief that giving blood could mean giving out part of one's life or even spirit.

> "*It means that blood is life and you are giving your life to somebody.*" – Repeat VNRBD, male, more than 35 years old.

> "*Before joining the Blood Service I thought blood was life… I was battling with my mind that how can someone take somebody's life, add someone's life to his or her life… but now I got to know that putting the spiritual aspect aside*

it is a therapeutic exercise so…now advising people to donate" – DSS, female, more than 35 years old.

Transfers character

Respondents also cited the perception that a person's character, behaviour and even characteristics can be transferred through blood donation and transfusion. Some explained that this is possible as blood carries the genetic traits of individuals.

"*And then we can also have people who think, "Hey, if I give blood to another person, or if I take that blood I am going to have the characteristics of the person I have received the blood from*" – Repeat VNRBD, male, 35 – 60 years old.

Just an ordinary process

There were respondents who perceived blood donation as an ordinary process that does not cause any harm and does not have any effect on the donor

"*I see it as nothing extraordinary."* The first time I donated… *"People tried to dissuade me by passing all kinds of comments but I insisted I will go and try*." – Repeat FRD, male, less than 35 years old.

Other perceptions

These included associating blood donation with testing for TTIs and Sexually Transmitted Diseases (STIs), the perception of blood donation as an indication that someone is ill or suffering, and the perception that blood donation is time wasting and not financially rewarding.

4.3. Motivators for blood donation

The study identified factors that motivate blood donation among the study population. Blood donation motivators were cited by all 29 sources a total of 595 times. The top five group of motivators cited by respondents were prosocial motivation (comprising of altruism, collectivism and reciprocity), education and educational talks, incentives (monetary and non-monetary), awareness and influence of others.

Table 4.5: Motivators for Blood Donation

Themes (Codes) Factor	Description	Number of Sources	Number of References
MOTIVATORS	Factors that encourage persons to donate blood, including perceived factors	29	595
Access to information	Providing information on blood donation	5	13
Addressing fears	addressing fears; or overcoming one's fears, as a motivator for donating blood	3	3
Awards and recognition	Awards, appreciation and recognition	9	15
Awareness of need	Awareness of need for blood, importance of donating blood etc.	15	29
Awareness of importance	Awareness of the importance of donating blood	5	5
Awareness of need	Awareness of the need for blood, having been asked to donate, emergency situations that require blood	10	19
Being fit to donate	Being declared fit to donate after medical or lab screening; having tested TTI negative as a motivator	5	6
Blood donation campaigns and drives	Blood donation campaigns and blood drives	8	13
Convenience of access and time	Convenience with regards session times, distance from donation site and ease of access	7	15
Education and educational talks	Non-personal and personal communications aimed at providing knowledge and information; and/or gaining a direct response, such as a blood donation	25	69
Experiencing need	Experiencing need for blood for a relative or friend; experiencing blood related death, knowing someone died because there is no blood	12	24
Good customer relations	Good staff attitude, relationship; respect to donors as a motivator	14	31
Good staff skill	Good staff skill as a motivator	1	2
Habit of donating	Blood donation becoming one's habit, forming a habit of donating as a motivator	3	5
Incentives	Events or objects that increase or induce drive or determination to donate blood	23	131

Themes (Codes) Factor	Description	Number of Sources	Number of References
Monetary	Money, given to a donor or potential donor to increase determination to donate blood	11	23
Payment or reward	Receiving payment or a monetary reward for donating blood	9	19
Reimbursement of direct cost	Giving money to directly reimburse costs associated with going to donate blood	3	3
Non-monetary	Non-monetary incentives as motivators	21	86
Blood credits	An arrangement by which donated blood is credited to the account of a donor and by which the blood centre is obliged to provide the agreed number of blood units to a donor or his/her relations when the need arises	10	16
Gift items	Receipt of gift items such as milk, milo, t-shirts etc. in return for donating	15	37
Health screening	Health screening or medical assessment performed on donors during the process of blood donation	6	10
Medical care	Getting free medical care by blood centre staff or preferential treatment at the hospital	3	4
Social gatherings	Social gatherings, including parties, games, musical activities etc.	3	3
Test results	Getting to know blood group, TTI and other results	6	10
Perceived health benefits	A belief that blood donation will provide positive health effects	8	12
Influence of others	The influence of a significant other, family, friend or a trusted person as a motivator	14	45
A role model	Influence of a mentor or a role model	9	14
Ambassadors	The influence of individuals with experience in blood donation as ambassadors	3	3
Family	Positive influence of family towards blood donation	3	3
Peers	Peer pressure, positive influence of peers towards blood donation	5	13
Trusted person	Positive influence of a trusted person such as a doctor, pastor, other professional	6	8
Intrinsic motivation	The need or desire, which arises from within the individual and causes action toward some goal.	10	26
Curiosity	An impulse to investigate, observe, or gather information, particularly when the experience is novel or interesting.	3	9
Self-esteem	A desire to enhance attitudes of self-acceptance, self-approval, and self-respect	6	12
Willingness	A person's willingness/intrinsic to give as a motivator for blood donation	4	4
Persuasion and pressure	Pressure form family, acquaintance to donate; persuasion or "being pushed" to donate	11	18
Prosocial motivation	Desire to have a positive impact on other people or social collectives through blood donation.	28	127
Altruism	Motivation with the ultimate goal of increasing the welfare of one or more individuals (especially strangers) through blood donation without regard for social or material rewards.	25	73
Help others	Donating blood to help in general, not specifically for a person or community	12	19

Themes (Codes) Factor	Description	Number of Sources	Number of References
Save lives	Donating to save lives	23	54
Donating for family or friends	Donating blood for or in response to need by family or friends	19	35
Reciprocity	Engaging in blood donation, in response to or in anticipation of an act in kind (blood donation) by a third party	14	19
Downstream	A belief that if a person helps, he/she/family has a greater chance of receiving help in the future if needed.	11	15
Upstream	A motivation to help someone else, prompted by self, a friend or a family member receiving a blood product in the past	3	3
Publicity and advertisement	Publicity and advertisement in the form of announcements, posters, leaflets, jingles, TV advertisements, publicity in the form a sketch, skit or play, interview and more personal requests rather than talks and speeches	13	21
Religious belief	Motivation to donate blood, arising from personal religious affiliation or spiritual commitment	8	13
Reminder	Sending messages and reminders to blood donors as a motivator	11	21
Special blood group	Having a "special" blood group, usually group "O" negative or recognition of this	2	2
Special occasions	special occasions, as for example, a celebration, birthday as a motive for donating blood	1	1
Successful donation	A first successful blood donation, having been able to overcome the initial barriers to give a successful donation	8	9

Prosocial motivation

Sub-nodes that reflect the desire to have a positive impact on other people or social collectives through blood donation were merged under this node. The sub-nodes under this were altruism, donating for family and friends (collectivism), helping the community or blood bank, and reciprocity.

Prosocial motivation was the most cited category of motivators cited 127 times by 28 sources and included major sub-nodes such as altruism, collectivism (family and friends) and reciprocity. These factors were often clustered.

Altruism

Altruism was cited as donating to save lives or donating to help others.

Donating to save lives

> "*So me this is not my first time, this is my third time of donating blood and whenever I think of blood donation I am just excited …because I know my blood is going to be given to someone. …and I'm going to save someone's life ….*" – Repeat VNRBD, student, male, less than 35 years old.

Saving lives as a motivation for donating blood was cited by all categories of donors that were interviewed. It was also cited as a perceived or potential motivator by non-donors, volunteers and DSS. (Participants however cited various forms of altruism). For respondents who were donating for the first time, and those who spoke about their motivation for donating for the first time, although they may not have known much about blood donation, learning about its life saving purpose became a motivation to either donate or continue donating.

> *"…the first time of going to do it so just a little bit nervous. Yeah, and then I got there and I saw the videos and spoke to couple of the guys around and then I realised that you know what actually that's the long way to save someone life, so it is a worthy cause…"* – Repeat VNRBD, student, male, less than 35 years old

The motivation to, in some instance, save lives was linked to teachings of the Bible or Quran. Even for respondents who cited other motivating factors for initially donating blood, saving lives became a frequently cited motivation for continuing donation.

> *"…I started in 1991 when I in was school. One of our tutors' wife was in labour and needed blood and I had not even involved myself in that, …the people were not coming and I volunteered, ... So we went there and donate and since then*

it gave me the joy of donating the blood to save others." – Repeat VNRBD, male, more than 35 years old.

In most instances, however, this motivator is coupled with others such as reciprocity, collectivism, religiosity and others.

"…the first time I donated was through, a friend encouraged me …, it's almost seven years …I don't know who that blood is going to save. It might save even the president of the nation. It might save my own self. Or any of my relatives." – Repeat FRD, male, more than 35 years old.

Donating to help others, do something good for others

Another way in which respondent cited altruism as a motivator is "to help others". This was also cited by all categories of donors, and as perceived motivator by non-donors, volunteers and DSS. Such motivation could be influenced by empathy or sympathy and appreciation of human suffering. These respondents donated or would have donated to help persons who were known or unknown to them, to prevent them from suffering or dying. Again, some respondents linked their motivation to religious beliefs and prescriptions of the Bible and Quran.

"*What made me decide is that as a human being, when someone is in need you have to help that person. Jesus Christ died to save us one has to save his fellow's life."* – First time FRD, male, less than 35 years old.

Donating for family or friends (collectivism)

"…my main decision to donate blood was because of my pregnant wife... Because my wife is in the state of still getting pregnant so I can donate when

for instance I receive a call that I am needed to come and donate blood, I will come and donate…." - First time FRD, male, more than 35 years old.

This was cited by all categories of respondents. For FRD participants and one VNRBD, donating for family, friends or acquaintances was cited as the primary reasons why they presented/donated at the blood donation session at which they were recruited for the interviews. Respondents had often been called upon by a family member, a friend, colleagues, acquaintances or even previously unknown persons, who require blood transfusion as part of their medical treatment and had been requested by the hospital to pre-deposit blood, for help. In some circumstances, the patient would have been given blood and asked to replace before being discharged home. This motivator was often coupled with other altruistic reasons such as saving a life or helping others. VNRBDs cited reciprocity as a potential/perceived motivator. Although there was however, a repeat VNRBD who presented to donate because his relative needed blood at that moment.

"…this month my mom will be having an operation and she'll be needing blood…. So I came here to make enquiries and the man that spoke to me …he encouraged me to donate…" - Repeat VNRBD, male, less than 35 years old.

Respondents often admitted to donating either because of their relationship with the patient or the person who invited them; or because they were asked, because they felt morally obliged to save lives of loved ones, and because it became a necessity to donate. Some respondents even stated that they had not felt ready to donate or were scared to donate; but mostly they insisted that donating was voluntary, without cohesion, and that they could have opted not to donate.

"*…where you think that you are being forced to do something that you really don't want? No, for me I have never experience some before. …willingly."* – Repeat FRD, male, more than 35 years old.

Reciprocity

Downstream reciprocity

This is defined as a belief that if a person helps, he/she/family has a greater chance of receiving help in the future if needed (Bednall and Bove, 2011).

> *"…for me I understand people need blood, I've seen people who need blood and then I'll probably need blood sometime, so if, it's more like do unto others what you want others to do unto you. I believe if I continue to donate other people will donate when I need it I'll get it."* – First time VNRBD, female, less than 35 years old.
>
> *"…we were convinced we donating blood is going to save a live and sometimes too when you need it maybe there is an accident some emergency you'll be given it when you come here, so these are some of the things that…"* – Repeat VNRBD, male, less than 35 years old.

This was cited as a motivator or potential motivator by 10 sources, comprising of VNRBDs and FRDs, as well as the student blood donor, non-donor and FRD focus groups.

Respondents were motivated by the belief that by donating blood to save other people, they stood a better chance of getting blood for themselves or relatives and friends. They explained that they could be either saving the people who will help them in future directly, contributing to the blood stocks and therefore availability, or more increasing their chances of getting preferential treatment by the blood bank as blood VNRBDs.

Upstream reciprocity

Other respondents who had experienced or who had received blood either for themselves or for relatives were motivated to reciprocate by donating blood. This motivation is upstream reciprocity.

> *"The first time it was my daddy was not feeling well and this time round it's a friend… I came to donate because during my daddy's time friends also came to help me; came in to help me donate for him. So I believe this is an opportunity to reshow that kindness, that love to someone too. That's why I came."* – Repeat FRD, male, less than 35 years old.

Incentives

Incentives was the third most cited motivating factor and bordered on monetary and non-monetary incentives, and perceived health benefits.

Monetary incentives

> *"I think it will be eh great incentive, if they give eh mm financial aid to those who donate, so people can make it a point that I'll get something if I go every three months, four months to donate"* – First time VNRBD, student, female, less than 35 years old

Participants cited two types of monetary incentives; payment or reward, and reimbursement of direct costs. Together, these were cited by 11 out of 29 sources. Payment or reward was always cited as a perceived motivator and not even once cited as a self-reported motivator. Respondents were of the view that certain categories of donors such as faith-based organisations were more motivated by payment/ monetary rewards. Other respondents believed that this could be of interest to persons without jobs or persons who are poor. Respondents frequently cited first – hand experiences with people who demanded payment to donate or those who refused to donate because there is no payment.

> *"…there are times that you are there, somebody comes in to donate blood and after the person has finished he thinks you have to maybe give something for him to join "trotro" or taxi back home…"* – DSS, non-donor, male, more than 35 years old.

Reimbursement of direct costs was cited only by three sources and only in relation to transport to and from donation site.

Non-monetary incentives

These included blood credits, gift items, health screening, medical care, social gatherings and entertainment, test results; and were cited by 21 out of the 29 sources. Blood credits were cited mostly by DSS and volunteers. They cited instances where blood donors who needed blood for relatives and were asked to donate became very upset. This was because crediting was expected. Although in the minority, blood donors cited blood crediting as a self-reported motivator.

> *"…My father was at the point of dying and I went to … he wrote and I went there my father was given four pints of blood, I didn't bring people to donate. So these are the positive effects of blood donation..."* – Repeat VNRBD. female, less than 35 years old.

Gift items were cited by all categories of blood donors and described as personalised wrist band, milo (a chocolate beverage), milk, a meal, sugar, malt drink, health insurance card, blood donation paraphernalia, books, among others; as shown in the word cloud below, created using Nvivo 11 (QSR International Pty Ltd, 2017)

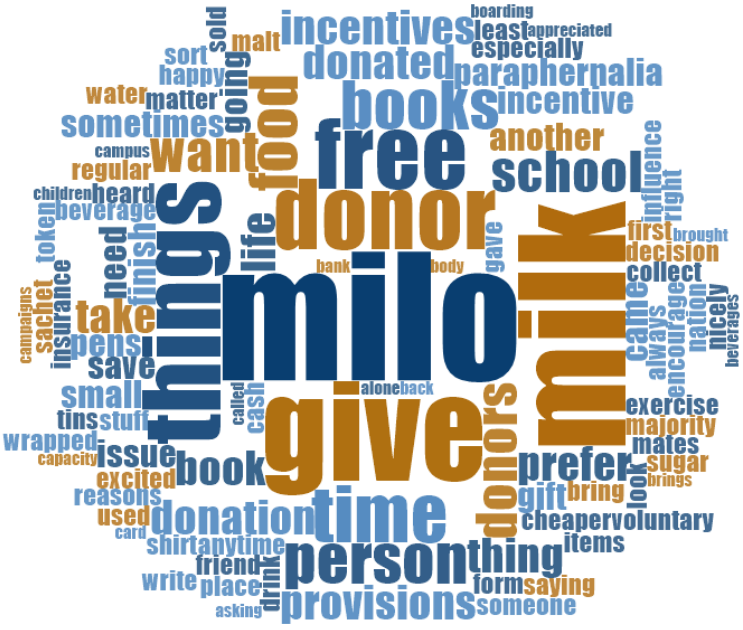

Figure 4-2: Word Cloud representing incentives for blood donation

> *"…my personal experience, my first time, actually I donated the blood because by then they were giving some Milo, milk … I didn't understand … that my blood was going to save someone's life. …it was the immediate items around the blood donation activity that actually attracted me."* – DSS, repeat VNRBD, male, more than 35 years old.

Receiving free medical check and laboratory testing for TTI's was cited as a motivator. For some respondents, the fact that they were allowed to donate again confirmed good health status and the absence of TTIs.

> *"When we of blood donation, it really means a lot because you have to screen your blood. If … there is sickness in your blood they will just caution you so that you know how to go about it… So, it is good for the people out there to know that blood donation is very good, because it will highlight you if you have a sickness."* – Repeat VNRBD, male, more than 35 years old

In addition to this, receiving medical care was cited by repeat VNRBD as a self-reported motivator, and so was getting to know one's test results for TTI's and blood groups. There was however contrary views to the motivating effect of knowing TTI results as some respondents considered it as a deterrent.

Education and educational programmes

The second most cited motivator/perceived motivator. A number of participants stated that education, especially on the day of donation was the immediate reason why they presented to donate. Education was said to motivate by emphasising on the lifesaving attributes of blood donation; explaining the process and providing information on blood donation, thereby demystifying blood donation; addressing fears and misperception on blood donation among others.

A number of participants explained that there are certain groups of people who purposefully go from place to place to talk to people against blood donation and positive education on blood donation is the only way to prevent misinformation about blood donation.

Some participants expressed the view that educational talks are a more effective way of communicating about blood donation, while others were of the view that face-to-face with everyone is daunting for the educators, and therefore advertisement was preferable.

> "*Okay, so I wanted to donate because the woman who came to talk to us, I was writing a paper when she came. …if the nurse didn't come to the lecture room and talk to me today, I don't think I would have given blood today but because she came to me, came to explain, how it's being done, what is going on and*

how my blood is going to save someone else, that's how come I donated my blood....." –Repeat VNRBD, student, male, less than 35 years old.

"I think we need much education. People because most people think that when you give out blood I mean your life is at risk. ...so I think much attention has to be paid to education." – First time FRD, male, less than 35 years old.

Perceived health benefits

Health benefits to blood donation were cited as reduced probability of developing cardiovascular diseases, having better sleep and feeling better, falling ill less frequently, better mood, influence of education and being a blood donor as one's lifestyle:

"The reason why I'll continue donating is that since I started I've not had any problems. I am healthy. I am very healthy, I play football. I move up and down, I do not have any problem in life and in my body" – Repeat VNRBD, male, more than 35 years old

"*Some people told me, when I start donating, formally every year people said they attend hospitals, but when they start donating about six years ago, 8 years ago, they haven't been at a hospital before. So blood donation I think, when I donate then my blood will be changed."* – Volunteer, repeat VNRBD, male, more than 35 years old.

This was self-reported among repeat VNRBDs.

Awareness

Awareness of need for, or importance of donating blood

Knowing that there is the need for blood or to donate blood, being asked or invited to go and donate, being invited to a blood donation session, especially special sessions, and knowing that a specific person needed blood were cited as motivators to donate blood.

> *"One thing I quite remember them saying is that should there be any accident, considering that our road was in a very bad state and was accident prone and that I commuted to and from school by car, if there should be an accident and assume I am involved, lying down and dying in need of blood; ... what will happen. They then proceeded to say ...if I donate, I'll be saving lives. I thought about it and said I will donate to save lives.* – Repeat VNRBD, female, less than 35 years old.

Others would be motivated by being aware of more specific need such as being aware of a patient of same blood group or of a patient in critical need of blood. This awareness was often expressed as the result of opinion.

Positive influence of other persons

Respondents cited the influence of other persons such as role models, ambassadors, family members, friends and peers and other professionals or mentors who they trust as having influenced their decision to donate blood. Role models were teachers in schools, religious leaders such as the National Chief Imam, local celebrities, accomplished blood donors. However, there were those with contrary opinion on engaging religious leaders and celebrities, citing the fact that those who oppose specific religions or celebrities may be discouraged from donating. A third opinions supported engaging leaders of all religions. Ambassadors were managers at

workplaces and experts in the field of healthcare. Some respondents believed that the influence of the person leading a blood donation or awareness campaigns is a factor of trust in the person. Family mentors and peers/friends/colleagues were also cited as a significant influence on blood donation.

> *"…my son, …he said you going to the funeral, someone is sick and needs the blood to survive you are leaving the sick person to attend a funeral. Have you analysed the situation at hand? Truly, I was really ashamed that night, so the next morning… I went to … After donating they gave me money for my transportation but I refused, I was really ashamed of what the child told me…. So from that point I decided …I will voluntary donate blood …"* – Repeat VNRBD, female, more than 35 years old.
>
> *"…we the Moslem, we all respect the national chief Imam, anything that he will say or certain good things we are all going to take it because we know that he is the prophet…"* – First time FRD, male, less than 35 years old.

Student donors cited having been influenced by peer pressure to donate so as not to be the odd person.

Customer care

Aspects of customer care cited include being greeted/received well at the donor clinic, recognition, appreciation, donor care, staff chatting with donors and speaking clearly and politely. Respondents were of the belief that customers who left with a smile would bring numbers of customers.

> *"…the women... they were chatting with us … they said good morning … sweetheart how are you. I felt happy …what will encourage me to come and always come back is …experiences I have …with the nurses here. When I go*

I'll share it with people back home." – Repeat FRD, male, more than 35 years old.

"…me the reason why I even felt happier doing it was the one who was taking my blood, the way she engaged me in conversation I didn't even felt that I was donating blood. She was really nice to me…" – First time VNRBD, student, female, less than 35 years old

Publicity and advertisement

Types of publicity cited included T.V., billboards and radio announcements. Respondents cited being motivated by publicity and advertisement, which directly influenced their decision. People are moved by sight and therefore seeing and hearing about the need for blood /to donate blood on TV or radio was cited as being effective. Although this form of education and awareness creation was considered effective, the DSS were worried about the time that media houses allot to blood donation adverts, citing that the rather late hours are not useful in mobilising students. Other concerns about issues that negatively influences effectiveness of blood donation publicity include their limiting to urban areas and to mostly English language. Respondents were of the opinion that adding sound and songs to adverts, using celebrities, explaining the benefits of blood donation and using images to explain the need for blood will make the adverts more effective.

"… It was in the morning and then they were running the advert all over and over again and so it was like life, life telecast from there. And so the station was transmitting life from the base where they were having the donation, …they were saying like the way they can save children, those who have been involved in accidents and mothers who want to give birth and people who

needed blood and are suffering... So that was the only thing that made me prepare to go and donate. I don't need anything else." Repeat VNRBD, male, more than 35 years old.

Experiencing a need for blood

Respondents cited donating because they experienced a situation where blood was needed. This could be a way of also showing gratitude for the fact that a relative, friend, or acquaintance received blood, but the primary reason was the awareness that is created about the need for blood.

"…in fact my first blood donation was when a girl in our school got sick and she needed blood transfusion. We were in dining hall that afternoon when one master came to talk to us that he needed blood seriously for the girl so anybody can volunteer to go and give blood. …I began seriously talking to the people…" – Repeat VNRBD, male, more than 35 years old.

In this respect, some respondents went ahead to donate blood even in situations where the patient did not receive blood or died. Such awareness was sometimes created as a result of the plight of an unknown person or even based on visual story.

"…I did a mentorship program at a hospital and then there was a child with sickle cell that needed blood and the parents didn't want to donate blood. …so the child died eventually…. I was motivated to donate …so when there was an opportunity, I decided to donate. So that, I think that's what actually drove me to donate." – First time VNRBD, female, less than 35 years old.

Reminders

Respondents cited reminders such as paraphernalia with message reminding the donor to return in four months, text messages, phone calls, and regular interactions such as inviting students to visit the blood centre or organised events. Respondents believed that reminders are effective in helping those who do not intend to stop donating but forget, due to busy schedules or other reasons, to go and donate.

> *"…to be reminded, actually I will say I will like to be reminded every four months I'll like to be reminded"*- First time FRD, male, less than 35 years old.

> *"So if somebody has prompted me even once I'll not have wasted all those years, about four five years without donating. So the prompting for the members of the group is very, very important...."* – Repeat VNRBD, male, more than 35 years old.

Persuasion and pressure

"Pressure" sometimes referred to as persistence in persuading another person to donate, and does not necessary mean inducing people to donate against their will. Respondents were of the opinion that although a person may want to donate the barriers to donating are sometimes so strong that it may require a lot of persuasion to overcome it. Respondents also cited having donated to look good, to show leadership, having had to donate because nobody else would or because a loved one would have died. Respondents' generally believed all this was essential for overcoming deterrents and often becoming a VNRBD. Some participants referred to pressure as donating against a donor's will and it was expected that FRDs predominantly experienced this. However, it was identified that this occurred in some "voluntary" groups or donor

institutions from whom blood is collected. A respondent gave an example of having been coerced to donate with food offer at a time when he was not ready to donate.

> *"Some people need to be pushed. Actually if my uncle had not said that I would not be touched, so he pushed me. Sometimes you have to use some words on a person for that person to also realise it is good to…."* – First time VNRBD, male, less than 35 years old.

Intrinsic motivation

This motivation arises from within the individual and causes action toward some goal. Three sub-nodes were merged under this node: willingness to donate, self-esteem and curiosity.

> *"…I need to go and do that to save people's lives, so that is the real motivation; because sometimes I feel good when I am donating I know that I am going to save somebody. So sometimes, I say to myself that I have saved about 36 people. I don't have, maybe I don't have money to donate to people, I don't have anything to give out there, people have monies and people do all sorts of things to, they go and then they get the hyping, everything out there. I mean I am doing my own in a very special way, you know I am doing it in my own special way to save lives and I am cool with that…."* – Repeat VNRBD, male, more than 35 years old.

Respondents who cited self-esteem as a reason for donating mostly cited it as a result of having saved a life or helped others, (altruism), having fulfilled religious responsibilities (religiosity), and overcoming their fears related to blood donation. Willingness to donate was cited as coming from the person and not subjected to other people's opinion and influence.

"No, no, no, nothing will stop me, I have my full support. Only me, I don't need anybody, from my mind you know, only me. If you say no, even ah, nobody can stop me." - Repeat VNRBD, male, more than 35 years old.

"For me I would just say it's my own decision so when the time comes I would donate." – Non-donor, male, less than 35 years old.

One repeat VNRBD cited wanting to know how blood donation felt like as a motivator.

Awards and recognition

Awards that were cited as motivators or potential motivators include citations, prizes for the donor with the highest number of donations, milestone awards such as "silver donor" and "gold donor" plagues or card, and certificates. Respondents were of the view that presenting these awards was an added motivation. However, respondents also thought that recognition and appreciation would encourage donors even more. These were cited as a text message, phone call to say thank you, saying thank you to the donors when they donate at the clinic. These awards or certificates could also serve both as a motivator or challenge to peers to also donate blood.

> *"In our err in our place you see … if you tell someone that "God bless you" … the person finds it that it's something big that you have given to him. Telling me that "God bless you", you know that you have given you, you have given me all the world. Not giving me money oo."* – First time FRD, male, less than 35 years old.
>
> *"A simple thank you will be okay for me"* - Repeat FRD, male, more than 35 years old.

Blood donation campaigns/ blood drives with appeal to donors

These categories of motivators refer to programmes, planned activities that are targeted at collecting blood from blood donors. These could be organised as a number of blood donation sessions in many venues across the country over a period, or as one session in conjunction with other activities. Although the purpose of donation campaigns is to collect blood, there is usually a component of awareness creation, sensitisation to the target population to donate blood. The campaigns/drives also brings a donation venue closer to the target group. Respondents suggested having these during periods of blood shortages such as Christmas season.

> "…a*nywhere and anywhere and anyhow I hear there is "blood donation" provided I am healthy, I'm in good health and I have the time, I will not hesitate.*" – Repeat FRD, male, male than 35 years old.

> *"I think we need much education. People because most people think that when you give out blood I mean your life is at risk. …so I think much attention has to be paid to education."* – First time FRD, male, less than 35 years old.

Religious beliefs

Religious beliefs were cited by most categories of respondents. Religions cited as encouraging blood donation were Christians and Muslims. From the point of view of the Muslim, the Quran says that,

> *"…who will give me something that is genuine, something that is… who what I need from the person which is genuine and he will receive it here after"; …meaning if you donate blood to someone you haven't given it to the person … because … you have save a life, and if you save a life you have saved God…. So you giving out something to someone to help the person means you have*

given it to God, you have not given it to the person" – First time FRD, male, less than 35 years old; and, *"Prophet Mohammed ... said that ... visit the sick one and feed the hungry ones. If you donate your blood donate your blood for someone ... you have given something for God. And God said in the Quran what you have to give to me is there waiting for you. Hereafter."* – Repeat FRD, male, less than 35 years old.

Muslims therefore saw donating blood as positive. This was perceived to override the general belief that blood must not be donated to another person. Muslims, therefore, organise

"...something we call Allah Sunna that they believe in giving so any time they organise this their crusade they organise blood donation and they believe in giving so they believe they have to save lives so they donate that life". – DSS, male, repeat VNRBD, more than 35 years old.

With regards to the Christians religion,

"... Christians ... believe that without the shedding of blood there is no remission of sin, there is no salvation. So on that note that if Christ came to die for us, why don't we also live to lay down our lives for somebody? So religiously we think it (blood donation) is a good thing." – Repeat VNRBD, male, more than 35 years old.

They cited the belief that Christ,

"...through his teachings from the bible, showed that donating blood means you are laying down your soul for someone who is in need, like a person who needs blood but does not have the money to pay for it, or does not have someone

to donate for him. So if you offer yourself to donate for that person, to enable them save that person's life it becomes like you've laid down your life for that person" – Repeat VNRBD, male, more than 35 years old.

They also believed that spreading the Christian gospel to save "sinners" is not only about preaching, therefore when one donates to save the life of a person who is not a believer, then it gives the unbeliever a second chance to be saved, and to avoid the repercussions of dying as a sinner. The donor was therefore, perceived to save a life physically for the recipient to be saved spiritually.

"And it's a blessing" – FGD Stud, Stud 7.

Although respondents cited general beliefs about blood in relation to traditional beliefs as something that is used for sacrifices, pacification of the gods, for cleansing,

"I don't know anything about Christianity and blood but I can say something about Traditional beliefs. …some of the gods… they think without blood they cannot function so …at times … they slaughter animal … blood to pour it on the gods. That is where the gods can function." – First time FRD, male, less than 35 years old.

Two respondents who are blood donors and practice traditional religion said that these perceptions do not influence their motivation to donate blood.

A successful first donation

A successful first donation implied a good initial experience for an anxious donor and is an indication that the donor is fit to donate. This is a way of overcoming various types of fears such as of pain, needle prick, sight of blood and discovering illness among others. The thought of having saved a life is an added motivation.

"…I told him I am afraid I can't donate. He said …, I should come and try. I said no …so he forced me. When we went there they took my sample and after taking my sample and everything I was asked to go and donate and from that time I come voluntarily to donate." – Repeat VNRBD, male, less than 35 years old.

Convenience of access and donation time

Respondents cited ease of access to donation site and convenience with respect to time of donation session and absence of competing engagements as a motivation. Respondents who commented on access agreed that a donation session closer to them is a strong motivator to donate blood, and went further to advice on having fixed (rather than ad hoc mobile) clinics set up in most places.

Respondents would also be motivated by the knowledge that they would not have to queue for long and that the donation clinic would be organised in a professional manner.

"…it can be blood donation … not only around this place but other places yeah because I'm staying at … and I can't come here to donate maybe I will be having something doing on that day, so if it might be close to me I would have donated it over there rather than coming here." – Repeat VNRBD, male, less than 35 years old.

Access to information

Mostly FRD and non-donors cited access to information as a perceived motivator. Information should address the importance of blood donation, the process of blood donation, fears and misperceptions, and post-donation information.

"...I believe what will encourage us to become regular donors ... is information, education. If we, we are given more light on, on the subject I believe ... we will be convinced. I think ... we'll become regular donors." – Repeat FRD, male, less than 35 years old.

Others

Other motivators identified by the study included being fit to donate, addressing one's fears, forming a habit of donating blood, convenient waiting time, having a "special" blood group, good staff skill with venesection and donating on special occasions.

Being fit to donate

"If I am fit to donate I'll do so" – Repeat VNRBD, male, less than 35 years old

Respondents indicated that being declared fit to donate took away doubts and fears, and encouraged them to donate blood. In the same way, addressing their fears, either through education, providing the results of their screening/testing, or a first donation served as an encouragement.

"Oh! for that one that fear is gone, so I'd love, I'd just love to donate each and every time." – First time VNRBD, male, less than 35 years old.

Three repeat VNRBD cited having formed a habit or a routine of donating blood regularly as the reason for donating repeatedly

"*I developed the habit of donating; it became part and parcel of me, every six months and I come, to donate. ...formerly it was every six months, now it has been reduced to four months…. Mine… it has become my hobby. If the time is due and I don't come to donate I don't feel happy. It has become part and parcel of me."* – Repeat VNRBD, male, more than 35 years old.

This habit was linked to a sense of responsibility, or feeling better/happier after donating.

Knowing that one has a **"special blood group"** such as group "O Rh negative" was cited as a motivator because donors were made to understand that they are rare and they are universal donors.

Also donating on a **"special occasion"** such as one's birthday, therefore acknowledging the occasion and inviting donors to donate on their birthday were cited as motivators.

Finally, donors would want the staff to be skilled with venesection for a pleasant donation experience. This would motivate them to donate.

4.4. Deterrents to blood donation

The study identified deterrent to blood donation among the study participants. These have been presented in Table 4.6

Table 4.6: Deterrents to Blood Donation

Themes (Codes) Factor	Description	Number of Sources	Number of References
DETERRENTS	Factors that discourage persons from donating blood, or factors that constitute a barrier to blood donation, including perceived factors.	29	340
Absence or loss of donor records	losing one's donor card which is given to voluntary donors as evidence of donation, or not receiving certificates after donating	2	3
Cultural factors	Cultural prohibition of blood donation and family beliefs	7	11
Blood is personal	The belief that blood is personal and should therefore not be given out to another person, or should be given out with care.	2	2
Fear	An unpleasant emotion aroused by a real or imagined impending danger, pain etc.,	21	86
Adverse donor reactions	A fear of fainting (a vasovagal syncope), as well as prodromal symptoms such as nausea and dizziness. or even death as a result of donating blood	7	15
Contagion	A fear of the risk of contracting an infectious disease from nonsterile equipment etc.	4	4

Themes (Codes) Factor	Description	Number of Sources	Number of References
Discovering illness	A concern that the medical screening and laboratory tests associated with the blood donation process will reveal illness.	6	11
Needle	The fear of needles or pain	8	12
Reduced health or vitality	The fear that giving blood will have a negative impact on energy level, resistance to disease, fertility, sexual potency or health in general.	11	20
Falling sick	Fear of falling sick as a result of donating blood	4	4
Impotence	Fear of a man becoming sexually impotent as a result of blood donation	1	1
Infertility	Fear that blood donation will affect menstruation in women, and or ability to conceive/have children	2	3
Losing blood	Fear of losing blood/losing too much blood through blood donation	5	5
Losing weight	Fear of unwanted weight loss, as a result of donating blood	2	3
Not recovering blood	Fear or belief that one cannot or may not be able to recover blood lost through donation	4	4
Sight of blood	Fear of, or uneasiness relating to the sight of blood	2	3
Use of blood for rituals	Fear that donated blood may be used for rituals, sacrifice or other spiritually related activities	4	9
Gender related	The belief that a woman (or man) should not donate blood for various reasons	4	7
Inconvenient location or time	Inconvenience with regards to busy schedule, clinic times, distance from, or difficult access to donation site	10	16
Change of routine	Change of routine such as school, a place of work or worship which affects access and regular visits by the blood collection team	2	2
Ineffective publicity	Ineffective messages, education and publicity	2	2
Influence of others	Discouraging influence of relations or of friends	11	19
Negative word-of-mouth	Negative comments about the donation experience made by an individual (usually a current or former donor) to another OR by a patient about hospital experience	7	11
Lack of confidentiality	Lack of confidentiality and/or privacy	4	8
Lack of incentives	Lack of incentives, withdrawal of existing incentives, ineffective or unwanted incentives; monetary or non-monetary	6	10
Lack of knowledge	Lack of knowledge, information or awareness	11	17
Lack of knowledge on blood donation	Lack of knowledge, information or awareness on the blood donation process, tests and effects of blood donation on the body	7	8
Lack of knowledge on what happens to blood	lack of knowledge/information on what happens to donated blood	1	1

Themes (Codes) Factor	Description	Number of Sources	Number of References
Lack of knowledge on where to donate	Lack of knowledge of where and how to donate blood	2	2
Not being asked	Not being asked, unaware of need to donate.	1	1
Long waiting time	Long waiting time, unexpected delays with donation process, disorganised clinic staff,	8	8
Low involvement	Lack of general interest in blood donation, or the lack of perceived relevance of the activity based on inherent needs, values, and interests	3	3
Low self-efficacy	Belief that one lacks control over events that affect his or her life, and own functioning, making donating seem too difficult or impossible	14	26
Lifestyle barrier	Participant has other commitments (e.g., work, family) they believe makes it too difficult for them to donate.	6	11
Not big enough	The belief that one is not big enough to donate blood	2	2
Not enough blood	Fear of not having enough blood to donate	8	10
Too young	A belief that one is too young to donate blood	1	1
Negative service experience	Negative experience with the blood service or even hospitals, such as staff skill, staff attitude etc.	20	67
No blood when needed	Not getting blood when needed for self, family or friends. Disappointment with blood crediting.	12	20
Poor staff attitude	Poor staff attitude or behaviour, lack of professionalism etc.	14	33
Poor staff skill	Poor staff skill, such as painful or multiple pricking, poor management of adverse reactions etc.	6	11
Poor health or death	Poor health, deferral by the donor clinic or death	12	18
Religious factors	Religious beliefs or influence	9	13
Sale of blood	Perceived sale of blood or participants' assertion of having "bought" or paid for blood	6	7
The donation process	Dislike for, or challenges with the blood donation process.	1	4

Deterrents to blood donation were cited in all 29 sources with 340 references.

Key deterrents identified by the study included fear relating to blood donation (of the unknown, adverse reactions, ill health induced by donation, needles, pain, sight of blood, fears relating to spiritual connotations to blood etc.), negative service experience, lack of knowledge, myths and misconceptions, and negative influence (Table 4.6). This is also illustrated in Figure 4.3.

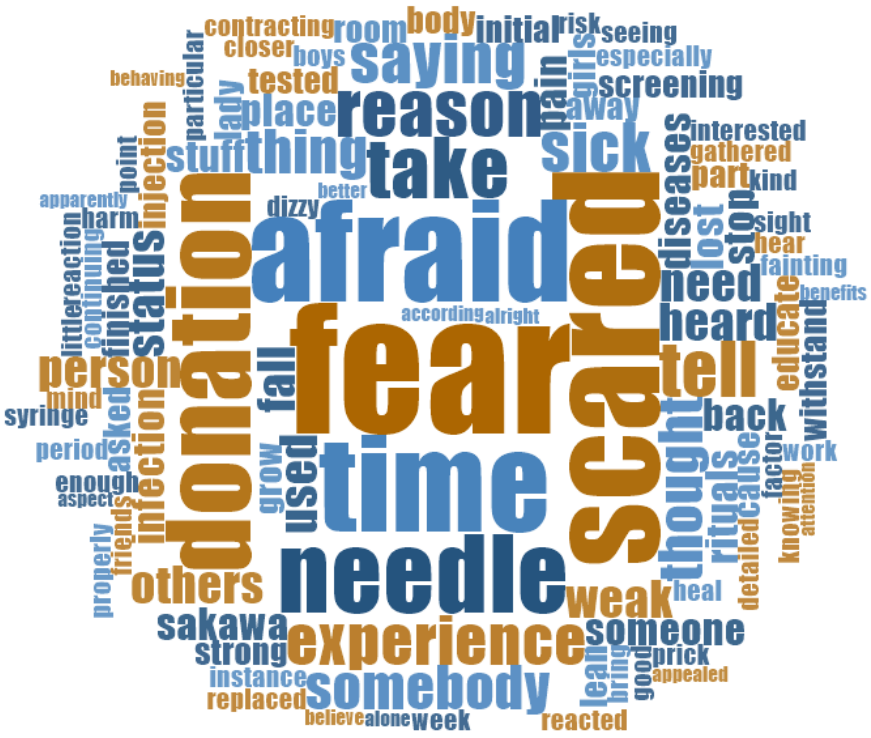

Figure 4-3: Illustration of fear as a deterrent

Absence or loss of blood donor cards

Blood donor cards in Ghana are manually written and has evidence of the blood donor's details such as name, age, gender, blood group, information on "donor group", donation venue, due date for next donation and coded TTI results. In the absence of a computerised blood donor database, the purpose of the donor card is to make available the blood donor records when the donor presents to donate without having to search for copies, and sometimes through archives of documents. However, the erstwhile controversial system of blood crediting to blood donors, which is still used by recruiters as an easy means of convincing prospective blood donors, has assumed the main purpose of the blood donor card for most VNRBDs. The loss of a donor card therefore implies the loss of a donor's records and therefore perceived privileges. This translates into a deterrent to donate blood as quoted below.

"*Someone will stop donating blood because actually, ... like if you donate the blood they would give you a certificate or like a card to show that you've given out your blood so, when you are in need or your family member is in need, when you issue that certificate or a card then they would give you the blood free of charge. Yeah, but they waited and waited, no certificate came, nothing showed that they've donated the blood*" - Non-donor, student, female, 18-35 years old.

"Some people have told me like they used to donate but they lost their card so they stopped going to donate. People believe if you have the card and you need blood you'll be given some special treatment, they know you have some … So, if I don't have my card and I go then something they'll treat me like any other person." Volunteer, VNRBD, female, 18-34 years old.

Cultural factors

Cultural prohibitions within communities and negative family beliefs relating to blood and blood donation were identified as deterrents to blood donation.

"...my family they don't really believe in this donation of blood, they don't really do it, though we pick something from our parents and our religion, they don't really do it. I have never seen them donating blood or anything, instead they would buy blood, they don't really believe in donating" - Non-donor, male, student, 18-25 years old.

"...I remember there was this student... I didn't know that among their traditional area they shouldn't be donating blood. ...we went to the school the students were donating she also donated and just after we have finished and

came back the mother came by "you should transfuse the blood you collected from her back"." - A DSS, non-donor, male, 35 - 60 years old.

This also included the belief that blood belongs to the family, or must be preserved for the family; and the belief that blood is personal, belongs to the person, and must not be shared.

"...I would not do that because I believe strongly that my blood is my life and I need to eh… I need to keep it and I will not come in frequently to donate because also I don't know the period at which I will eh… I would recover the blood which I've given and then… So when there is the need, as for that one I'll sacrifice. But then let's say every four months I come in to donate, I'll NOT do that." - First time FRD, Male, less than 35 years

Cultural influence as a deterrent to blood donation was cited by all categories of respondents: VNRBDs, FRDs, first time, repeat donor, non-donors, DSS and volunteers.

Fear

Fear was identified as the most frequently cited deterrent to blood donation with 86 references by 21 sources. Participants cited different reasons for the fear associated with blood and blood donation, which have been presented in detail below.

Fear of the unknown

Some participants cited general fear of blood donation, without being able to state specifically what about blood and blood donation induces the fear. A female student non-donor expressed this general fear as: *"I think blood donation is good but, at times it's fear. Like* me*, for instance I've not done it before. Me for instance I've never done it before and I don't know how it's going to be like."*

Some participants cited this fear as the reason why they have not donated despite having been tested and told that they have enough blood to donate. This fear was expressed more frequently by non-donors, first time donors or by DSS in relation to these two categories, as in the following statement:

> *"...especially with first time experience some people are actually just afraid, fear of the unknown. When you ask them what are you even afraid of they cannot even tell you but ...they are afraid , they don't know what will come out of the blood donation"* - DSS, male, VNRBD, 34 - 60 years old.

The fear that one may develop **an adverse transfusion reaction** after donation was identified as a deterrent. This may be due to either a personal experience with a donor reaction during a blood donation or having observed another donor react, as well as the perception that blood donation is associated with donor reaction. The experience may also be due to blood draw in a hospital, which is unrelated to blood donation.

> *"There was this blood donation at Kasoa Presby Church. So they were in the queue donating and then one lady donated and she went into the church, in fact the room was very hot and she reacted, so all the attention came on the lady and then they brought her out. Oh, they all scattered so you see and then we have to stop the session."* - DSS, Repeat VNBRD, male, 35 - 60 years old.

> *" ....because I remember when I just came level hundred, the medical exams, I regret giving them my blood because the pain I went through when giving them my blood, since then, that was the last time I saw…, put something for my body. So me having pain back and knowing that pain I went through now."* - Non-donor, student, male, less than 35 years old.

Another type of fear that was cited by participants was the **fear of contracting disease** through blood donation. This deterrent was cited mostly by first time donors, and was attributed to lack of knowledge about the equipment used by one participant.

> "*... about sometimes some kind of diseases and other stuff. ...Actually, some transmitted diseases, sometime I don't know where the equipment and other things are coming from so, I don't know..."* – VNRBD, male, less than 35 years old.

As expressed by a male volunteer non-donor, who is a youth leader in a faith-based organisation, **finding out about an existing illness or possible positive results** of a TTI test is a major deterrent: *"Actually, initially I didn't know about my erm…blood group and my HIV status and stuff. That was the initial reason why I didn't donate."* In this case, a prospective donor may not know his or her TTI or health status and therefore may be worried about discovering it. This is especially so for the youth as stated by a male non-donor, youth leader and volunteer *"HIV is the main reason why people will not donate. People will say as for me I don't know my HIV status, I don't want to donate…. That is the main reason. Maybe if I heard it today I will die tomorrow, but if I don't know I may be there for ten years".*

The **fear of needles** was cited as a strong deterrent because of which prospective donors who have walked into the donation clinic were deterred from donating blood. This is mainly due to the perception that the blood collection needle is big. This fear was expressed by respondents as "*And the thing that they use in taking the blood is a little bit big, so me for instance when I see that thing I'm scared...*" - a female non-donor, student, 18 - 34 years old; and "*You know, sometimes we put their names down, so we prepare according to the number, when you reach there and you start one, two*

and they see the needle most of them will run away."- Female DSS, non-donor, 35 - 60 years old.

Fear of **adverse health effects from donating blood**, which included the fear of becoming weak or falling sick, becoming impotent or infertile, being unable to menstruate, loosing too much blood or being unable to recover the blood that is taken out during donation, and losing weight.

> "*So with that and the fear that is in me, because today I went to the place where they were donating the blood, I saw people and the quantity that they were taking my heart started pumping..., fear is the main point that people are not donating the blood, because they feel that maybe they can be weak for some months, for some days and it can cause them some harm*." a female non-donor, student, 18 - 34 years old

This fear could be influenced by perceived lack of ability, due to lack of financial resources, for example, to get a balanced meal that is necessary to recover blood loss, or to get hospital care if one becomes ill.

> "*Others are thinking of I am not employed, if I go and donate my blood what am I going to eat after I have donated my blood? ... He is thinking after donating, he has lost something, that something lost must be replaced. Replaced with what?*" - DSS, male, non-donor, female repeat VNRBD, 35 - 60 years old.

Although cited by only two sources, the **fear of the sight of blood** especially the sight of one's own blood flowing through the donation set, was also identified as a deterrent.

"*I thought when you are donating the sight of blood could put you off. The way I'll see my own blood through the transparent bag…*" – First time FRD, male, below 35 years

The fear that **donated blood may be used for rituals**, occultism and other evil spiritual activities by persons who get access to it was identified only during the FGDs and was cited predominantly in the FGD of FRDs. This has been illustrated in the word cloud below (Figure 4.4)

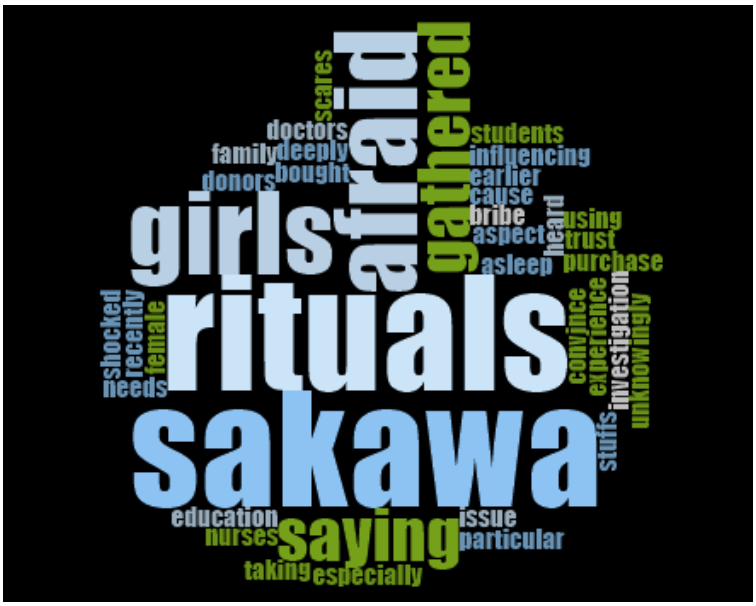

Figure 4-4: Illustration of fear of use of blood for ritual

This fear was influenced by such factors as lack of trust in hospital staff and the belief that hospital staff sell blood to spiritualists, opinion and comments of family, friends and acquaintances, perceived cultural practices such as the use of menstrual blood for rituals and occasional news items.

> "*…as for me I don't trust doctors and nurses because some of them take a bribe or take a money from the "sakawa" boys and then they give them blood.*" - Repeat FRD, male, less than 35 years old.

Gender related barriers

Gender related deterrents to blood donation were based on belief about which gender is healthier or has more blood. While some respondents said that males should not donate more because females have more blood, do less work, stay at home and eat more food; others cited menstruation and childbirth with associated loss of blood and strength as a deterrent for females. There was also the belief that men are more physically active, have better veins, and therefore should donate.

> "*To my knowledge I think ... it affects the females. Yea because you see, excuse me to say this when a female has her ...Menses ... she shorts some blood ... so she has to regain it*." - First time FRD, male, less than 35 years old.

> "*I heard and my friend said that women have more blood. ... so if we donate at least some will remain in our system for us to donate, but I am not sure about the guys. So I think the ladies we have enough blood to donate, so it's good for us to donate*" - female student, non-donor, less than 35 years old.

Negative service experience

Respondents cited negative experiences regarding services of the blood centre, or even hospitals in general, as a deterrent or perceived deterrent to blood donation. Such experiences included poor staff attitude and skill, and not getting blood when needed for donors or their relatives, friends or acquaintances.

Poor staff attitude and staff skill

This was cited by all categories of respondents as a potential deterrent to blood donation. Donors recounted their own experiences and experiences of other donors that they had witnessed, and which could pose as deterrents. This was corroborated by the DSS who were interviewed.

"…Staff attitude, sometime the way we react, or deal with them or receive them, at times it puts some people off. … So sometimes we the staff we have to know how to handle our, even if they are replacement donors, they are potential voluntary donors because we can convert them … to voluntary donors." – DSS, non-donor, female, more than 35 years old.

Examples of attitude cited included being rude to client, not exercising patience when answering questions or giving advice, not being sensitive to clients concerns and fears, not giving a pleasant reception to clients. These experiences were not linked only to Blood Service staff but also to previous experiences with hospital staff and governmental employees in general.

"…And you see one thing about, in my opinion I'd say about government workers, some of them when you come they just relax and do what they like, so thinking about those kind of things it doesn't motivate me to come here. ...there was one other girl also there she was also pissed because I was challenging the one taking the temperature, she was like tell her, tell him to go away when the … is finished with the meeting so that he'll go to him direct and speak to him…. So if maybe when I was about to donate someone discourage me from donating when I came to her and she spoke to me … I'd say yeah what the person told me is true." – Repeat VNRBD, male, less than 35 years old.

Respondents cited that as persons who are volunteering to save lives, they deserve a better attitude from staff.

"…I want to give an example about me myself. I think I said earlier that initially I was thinking twice about going back. Apart from just the stress and the pain, the woman wouldn't even smile at me. So I'm like dude, let's be frank I am doing this for free, you are not giving me … I am doing this because I

want to save a life and you are frowning like, I mean, hello…" – Repeat VNBRD, student, male, less than 35 years old.

All respondents citing staff skill as a deterrent cited multiple pricking and painful venesection.

"The other experience that I had was a lady … when you come you go to a table where they take sample of your blood. She did it for me, she did it over here and in fact how the thing pained me I decided not to donate again. So … one nursing sister who heard me saying I wouldn't donate came and spoke to me and then I gave in to donate. That was the worst experience that I've ever had." – Repeat VNRBD, male, more than 35 years old.

Failed crediting system and not being able to access blood and blood products

This was cited by blood donors as a strong deterrent, especially if the blood was needed for a parent or other close relation.

"What will make me stop? That will be when I should come here for a help (blood) and they are not able to…. It might be especially my mom or dad, I should come here and then ask for a help and then they decided not to help me and that all I'll have to do is to buy. That will make me sometimes stop." – Repeat VNRBD, male, less than 35 years old.

For DSS respondents, this factor was of concern because it affects the outcome of mobile sessions. Respondents were of the opinion that providing true information on blood availability could potentially prevent disappointment and reduce demotivation to donate.

"Some say that they were told that when they are in need of it they will be given that privilege … they say that when they donate blood as voluntary

donors later when they are in need of blood they asked to either bring people to (donate)… sometimes it does not really go down well with them. (So they say) … "I will keep it (my blood) and then when my relative needs it I will give it to the relative"" – DSS, female, non-donor, more than 35 years old.

"I remember once we went to one of this … church at … we had only one (unit of blood). We went in not knowing that one of the church members came to the Blood Bank for help(blood) and she was turned down and when she went she went and told the whole group that look, stop donating, keep your blood…." – DSS, female, repeat VNRBD, less than 35 years old.

Low self-efficacy

This is the belief that one lacks control over events that affect his or her life and own functioning, making donating seem too difficult or impossible This may be due to lifestyle or feeling physically inadequate to donate.

Lifestyle barriers

These were competing schedules or duties that makes it difficult for donors to donate. Respondents cited not being able to donate because of a busy schedule, jobs that require frequent travel or long periods of being away from home or unpredictable schedules.

"*It's because of my work. We travel a lot. … So you can see I don't get the time. I don't have time.*" – First time FRD, male, more than 35 years old.

"Not enough": physical inadequacy

"…some people even also fear that they don't have what it takes, they don't have even enough…." – DSS, repeat VNRBD, male, more than 35 years old.

The belief that one does not have enough blood, or "weight", or is too young to donate blood was identified as a deterrent by the study.

"I intended doing but sometimes I feel anaemic. I don't know how you…. And sometimes my necks can be very stiff, my hands, maybe if I … be in some position for a….yeah… I believe I always have shortage of blood…yeah…that's why…" – Volunteer, non-donor, male, less than 35 years old.

"Only if I fall sick" (Poor health/illness)

This factor was cited mostly by blood donors, and it conveyed a determination to donate blood until could not donate anymore.

"The only thing that will prevent me from coming here is … if I'm sick, God forbid or I die." – Repeat FRD, male, more than 35 years old.

"It's my prayer to God that I'll not fall sick… there are diseases which when you are suffering from you cannot donate. It is my prayer I don't get any such disease. And if I am not restricted by any such disease I'll continue donating blood." – Repeat VNRBD, male, more than 35 years old.

Influence of others and negative word-of-mouth

The negative influence of family or friends and negative comments about blood donation was said to deter people from donating. These include advice from parents not to donate, religious preachers who go round and advice that blood donation is not godly, health professionals such as some pharmacist who advice against donation and promote herbal concoctions in place of blood transfusion.

"There are some … spiritual groups …saying that if you give the blood do you know where they send it to …so you see during Sundays they go round. Also she told me that donating blood to someone is not what God has said. God told us to worship Him he did not ask us to… it confused me so I didn't … do it. …"

– Repeat FRD male, more than 35 years old.

Lack of knowledge

Respondents cited lack of knowledge of the blood donation process, what happens to the donated blood and even where to donate blood, as a deterrent. Such lack of knowledge was said to translate into fears and doubts about blood donation and deter people from donating. Not being aware of the need of blood or not being asked/invited to donate was also cited.

"…Yes! It is fear. I am afraid … I don't know what might happen to me. I don't know that amount of blood I have. Do you understand me? I don't know whether I will be tested to see this or that before they take away my blood. I don't know the process. As I am seated now I can't tell whether I will continue donating or stop donating. It will depend on the problems I will face after donating my blood. Are u listening carefully? If I don't get any problem, fine.

– First time FRD. male, more than 35 years old.

Inconvenient location

This may be due to distance to the nearest clinic or difficulty in locating the clinic, change of venue of a regular donation session or donation campaign. On the other hand, this could be due to the donor moving after completing boarding school or moving to live at a different location.

“Coming to donate? Yes and no. Yes if it were to be my area, definitely I will donate. But coming all the way down here, how do I donate?... For me personally to come and donate, yes I think I can do that, but … coming all the way down here, that’s another problem” - First time FRD, male, more than 35 years old.

Change of routine

Majority of VNRBDs donate at mobile blood session in schools, religious organisations, workplaces and communities. Therefore, a change in routine such as moving from the community, completing school or the cessation of regular visit of the blood collection teams to the session venue was identified as a deterrent. This was expressed by participants as:

"...I wasn’t pushed to come here as compare to when I was in school because for that one they come to the school." - Repeat VNRBD, male, less than 35 years old

"One problem that we even have as donor recruiters is that our donors, the students, we get the bulk of blood from them. But when they finish school that is the end. Some will be willing to do it but, when they finish school they tell you that nobody came to where I was for blood donation" - DSS, repeat VNRBD, male, more than 35 years old.

Religious factors

Respondents cited the beliefs and practices of the Jehovah’s Witnesses as activities that deter blood donation. No other religious factors were cited in relation to barriers to blood donation.

"...I've heard only about ... one religious group, yeah. They say they don't donate blood, The ..., even if you are dying and even if they are the parent, the sister they don't donate blood and won't donate blood, they'll allow the person to die, because it is their belief and I don't know where." – Non-donor, female, student, less than 35 years old.

Other deterrents

These included long waiting time, lack of incentives, sale of blood, lack of confidentiality, low involvement, ineffective publicity, and dislike of the processes one has to go through to donate.

Long waiting time

This was linked to long queues, poor flow of blood due to small veins and the processes that the donor has to go through to donate blood. This was said to be even worse if the donation area is small resulting in blood donors having to queue standing.

"I was in school because for that one they come to the school.... me walking to this place I thought maybe when I come here I am going to join some kind of queue here and moreover I was working after school so I wasn't having that time to..." – Repeat VNRBD, male, less than 35 years old.

Lack of incentives

Not giving, or giving incentives that was considered inadequate to donors was cited as a deterrent. Some donors expect gift items such as beverages, canned milk and others. The situation is even worse when there is distribution of items at sponsored sessions. Some donors tend to compare and complain. Some respondents cited lack of monetary incentives as the reason why they or their friends considered not donating blood.

"…So when she finished taking the malt drink we gave her the carrier bag with the water and she looked into it and said "is this all you are giving me" …. Then she said ah look at the kind of things they gave at yesterday's donation and look at what you are giving to me". She threw the bag at us and I was like wow …." – DSS, non-donor, female, more than 35 years old.

Perceived sale of blood

Whilst some respondents cited concerns about money that has to be paid for blood in the hospital, other respondents attributed this to the wrong perception that the charges for services were confused with selling the blood. One respondent cited that

"…but what disturbs me is the way they collect money. It has not been once or twice that they asked her to buy. Yes, that disturbs me. Yes, you just told me they don't sell, but they collected money from her..." – First time FRD, male, less than 35 years old.

Lack of confidentiality and privacy

FRDs and non-donors expressed concern about lack of confidentiality with regards to test results and privacy during the medical assessment of the donor:

""You see; some people are scared to donate because maybe … if I come before they'll do... I will go through screening and … somebody will say … "if I go and it is detected that I have HIV", you see so he will think that they will publicly tell him that "you have this". …a personal experience …he was told that he couldn't donate… they called him aside and told him why. Up to now I don't know what they told him because they said it's confidential; they said he shouldn't tell anybody."" – Repeat FRD, male, more than 35 years old.

The DSS and volunteers cited complaints from clients about confidentiality as a potential deterrent and stated that this a potential deterrent to blood donation.

Low involvement

Low involvement expresses the lack of general interest in an activity. Blood donors cited this as a self-reported deterrent prior to donating blood. Respondents mentioned that they had not bothered, were not interested or had not thought about donating blood, although they knew about blood donation and it sounded like a worthy cause.

> "*But we were kid and were not part of it. When I got to secondary school they came and that if you are willing to donate, but I was not interested by then. I was a little bit scared about those things."* – First time VNRBD, male, less than 35 years old.

Ineffective publicity

VNRBDs expressed the view that the publicity by the NBSG does not motivate one to go out of his house to donate blood. They believe that announcement only comes occasionally and that it is not convincing enough and needs to be stepped up.

> *"…There are people who will accept the message if it gets to them. If they … go to the villages to go and publicise blood donation … it would help. … but if one goes on the tele and speaks for just about thirty minutes and speaks on the topic not much people will hear.… so I'll plead that they step up. … I believe that the message they bring does not really touch the heart."* – Repeat VNRBD, male, more than 35 years old.

Dislike of the blood donation process

Dislike of the donation process was cited with respect to completion of donor clinical record forms and the pre-donation testing. Specifically, with providing lifestyle information and dislike of the test procedure.

> *"…he said he can't come because he heard that on the form when you come you will be given a form to fill before they screen your blood and stuff like that…." "…they will say before they will donate the blood you will run tests you see your blood will be screened."* – Repeat FRD, male, more than 35 years old.

4.5. Intention towards future donation

The study explored the respondents' intention to return to donate blood. Of the 29 sources, 18 were in favour of returning to donate blood (Table 4.7).

Table 4.7: Respondent Willingness to Donate or Repeat Donation

Themes (Codes) Factor	Description	Number of Sources	Number of References
INTENTION TO RETURN	Respondent's intention to return to donate blood	18	29
Not return	Donors who DO NOT intend to return to donate blood either by themselves or by invitation	1	1
Return	Donors who intend to return to donate blood either by themselves or by invitation	18	28

> *"…we take the scenario where I came to donate, I could also educate people that blood donation is not something frightful so they could also come and donate. …I have decided to continue donating blood. Now that I have experienced it, I can do so next time."* First time FRD, male, less than 35 years old.

Donors were willing to return to donate for various reasons. The majority of respondents would donate to save lives or help someone; others would donate: when someone they know needs blood, because they have overcome their initial fear, if they received adequate education on blood donation, when the need to donate arose, because they know that they could walk in freely to donate without being invited, because a friend/peer has committed to continue donating, if they get food to eat when they donate (students), if they remain healthy because they are committed to donating and it has become a routine; and if it would not have ill effect on them. One donor who had donated for the first time to celebrate his birthday planned to continue donating because it would mean doing something special on his special day.

One comment was in favour of not returning.

"…Actually I don't have any interest in donating blood. … But the way they speak about when you donated blood you go through process and things and when you're donating blood too they have to check you … and so I don't have that interest to donate blood" – First time FRD, male, less than 35 years old.

4.6. Suggestions for practical action to increase blood donation

The interviews and the FGDs explored participants' opinion and suggestions on practical action towards addressing issues and enhancing blood collection (Table 4.8)

Table 4.8: Participants Suggestions for Practical Action

Themes (Codes) Factor	Description	Number of Sources	Number of References
SUGGESTIONS FOR PRACTICAL ACTION	Suggestions for change, comments on issues, and on satisfaction or otherwise with processes, procedures, services and conditions relating to the blood donor mobilisation and donation process	29	308
Associations	Blood donor clubs, associations etc.	2	3
Communication	Content and effectiveness of communication of information to donors/potential donors	8	17

Themes (Codes) Factor	Description	Number of Sources	Number of References
Trust	Trust issues	1	1
Convenience	Access to current or past donation site, convenience of time	11	13
Customer care	Customer care issues	9	13
Good customer relations	Suggestion on good relations	5	5
Donation process	Satisfaction or otherwise with the whole donation process	6	7
Donor reactions	Donor reactions, post donation health	7	7
Education and information	Comments or satisfaction with the type content and nature of education or information given	14	41
Direct marketing	Calls, text messaging, notice on upcoming sessions etc.	4	6
Fees and charges	Blood processing fees	2	2
Incentives	Incentives	11	23
Blood crediting	Blood crediting as an incentive	4	7
Information, publicity and advertisement	Publicity, advertisement, educational talks, emails, phone calls, text messaging etc.	19	39
Partnerships	Partnership by participants for change	5	15
Ministries Departments and Agencies (MDAs)	Partnerships with MDAs	1	1
Organisations	Partnerships with organisations	4	5
Role models	Role model such as a blood donor etc. to talk to prospective donors	3	3
Schools	Partnerships with schools	3	4
Pre and post donation care and counselling	Experiences and satisfaction with the pre and post donation care provided by staff	11	17
Pre and post donation counselling	Experiences and satisfaction with the pre and post donation counselling provided by staff	7	9
Recognition and awards	Recognition and awards for donors	3	6
Refreshment	Experiences or satisfaction with the refreshment offered during/after blood donation	16	21
Regular visits	Regular visits to donor groups and mobile blood donation sites	1	1
Reminders	Reminders and donor recall	2	3
Research	Participants call for more research on blood donor motivations and deterrents	2	2
Sale of blood	Comments on sale or perceived sale of blood	1	1

Themes (Codes) Factor	Description	Number of Sources	Number of References
Staff skill	Experiences or satisfaction with the skill, knowledge and confidence with which staff perform duties in relation to donor mobilisation and blood collection	14	19
Staff attitude	Experiences or satisfaction with staff attitude and professionalism	16	24
Staff punctuality	Comments on staff punctuality	1	1
Venue	Donor satisfaction or otherwise, with donation venue	10	14
Waiting time	Comments on waiting time	15	26

The interview and discussion, questions explored participants' opinion and suggestions on practical action towards addressing issues and enhancing blood collection. Twenty-nine sources made 308 comments on practical actions for change (Table 4.8). The following is a summary of participants' comments and suggestion for practical action.

Information and communication

Nineteen sources made a total of 45 comments on improving information exchange to influence blood donation. Suggestions for practical action on information border on publicity, advertisement and marketing.

Publicity and advertisement

Among recommendations on advertisement was the need to step up publicity in order to create awareness. Respondents recommended making the advertisement visual and designed to attract children. Respondents were of the belief that children have a lot of influence on their parents and older siblings because they would want to maintain the child's confidence. There was the belief that the advertisements run only in urban areas, and there is the need to increase the coverage. Respondents had varied views on effectiveness of the advertisement. Recommendations on this was that the message should be engaging, regular and passionate, with focus on donating to save lives.

Means of publicising recommended were radio, TV, billboards, posters and leaflets, newspapers. On TV, this was suggested to include jingles during breaks or scrolls as well. Additional suggestions include getting the clergy to support advertisements and running them in local Ghanaian languages.

Staff attitude

Staff attitude had the next highest number of comments, suggestions on practical changes to address poor staff attitude. Respondents commended staff for the positive attitudes. While the DSS participants showed concern about staff attitude and stated that staff must treat donors well, they recommended that management of NBSG need to place more focus on staff welfare and satisfaction, citing that well motivated staff will motivate donors. FRD respondents described an incident with a particular staff who they said was an example of what keeps donors away. They recommended that staff should be professionals and well trained. The student donors suggested that staff should be trained to control their temper and emotion and should be given an enabling environment to go and calm down when they are stressed up during work.

Refreshment

Respondents were generally fine with the refreshment that is served, however they expressed concerns that is was not adequate. A few respondents however suggested some changes to the refreshment. These are as follows: providing other options to the chocolate drink that is served, serving soft drinks instead of the chocolate, giving out packed snack and drink for those who would want to take it out, increasing the quantity of refreshment served and providing an average meal instead of the biscuit.

Waiting time

VNRBD were generally happy with waiting time as they are given priority attention at the donor clinic.

> *"Usually with blood donors when you come, you just walk straight to the table"* - Repeat VNRBD, male, more than 35 years old.

> *"oh I do not wait for long because I am a donor, so as soon as I come here, even if there are people they do mine fast for me to leave"* - Repeat VNRBD, male, more than 35 years old.

This category of donors usually referred to being a "donor" and getting priority treatment. Some VNRBDs however commented on the waiting time for the FRDs, which they considered too long. This was confirmed by the FRDs who complained about the waiting time at the clinic. The preferential treatment given to VNRBDs was said to be a cause of conflict with the FRDs. Both VNRBDs and FRDs attributed the waiting time to the fact that staff are always late to the clinic. For many FRDs', this results in problems at the workplace where they ask for permission to attend the clinic. Suggestions include augmenting staff strength, ensuring that staff report on time, and encouraging staff to handle work with some level of urgency once they start work.

Education (donors and non-donors)

Participants suggested more regular visits to schools, churches and organisations. They also recommended increasing the number of institutions/organisations that were visited as direct marketing was considered to be efficient. Suggestions also include going to the communities and educating them in their local languages.

Respondents gave comments on the need to intensify education to address myths and misconceptions. Suggestions included partnership with faith-based organisations;

getting key religious leaders to give messages; targeted messages, for example using the bible passages to support blood donation education in churches; addressing fears, myths and misconceptions; telling donors and non-donors about health benefits of blood donation, emphasising that when they donate they save lives; making sure that every prospective donor receive adequate education before donating; and using social media to disseminate information and generate discussions.

Staff skill

Comment on staff skill were generously commendations. Respondents expressed satisfaction with venesection. There were minor comments on lack of confidence of new and inexperienced staff which respondents were ready to pardon since this is rather exception. Respondents suggested that staff should engage clients in conversation to ensure that they are relaxed in order to facilitate successful venesection.

Convenience

A few respondents reported having experienced issues with the distance to donation site and difficulty finding the location of a donation site. This sometimes had transport cost implications. Suggestions included setting up more community donation sites, increasing number of mobile collections, and providing good directions and directional signs to donation site.

Incentives

Suggestions on incentives to encourage blood donors included organising health screening for donors and their families to give them a sense of belonging to the "donor community"; blood crediting to VNRBD; donor awards, including milestone awards and prizes; specially designed donor certificates, mobile phones top up credit cards;

food items to take away and meals. Some respondents spoke against payment for blood, citing that it diminishes the worth of blood donation.

Venue

These were comments on the appropriateness of the clinic set up, satisfaction with the set up and suggestions for improvement. Respondents were generally happy with the set up in terms of space and cleanliness. There were a few negative comments on venues that were previously used and commendation for changing these venues. DSS suggested the procurement of mobile blood vans to provide standard environment for blood collection at mobile sessions.

Customer care and customer relations

VNRBDs generally gave positive feedback on customer relations. Some staff expressed concern about how FRDs were treated especially those who were suspected to be hidden paid donors. DSS suggested that "staff care" should be a priority, and that in this twenty first century nobody talks about customer care. They recommended that staff satisfaction would translate into donor satisfaction.

Communication

DSS expressed concern about the quality and credibility of information that go out to the public, especially during media sponsored donation campaigns. Of major concern was the incentives. Respondents advised that this approach by the media is counterproductive in the sense that it attracts the wrong targets to the session and discourages prospective donors from subsequent regular sessions, which cannot give such incentives. Blood donors made comment on communication of wrong information at sessions on blood crediting; and lack of communication on untoward event during the donation process. They suggested that the press communication

should be guided by the NBSG; thus, the correct information should always be given out to avoid discouraging clients; and that staff should communicate with donors during the donation process.

Pre- and post- donation counselling and care

All FRDs and some VNRBDs stated that they did not receive any form of counselling pre- or post- donation. Most VNRBDs admitted to receiving counselling and information. DSS cited inadequate resting time due to excessive workload. No suggestions were given but recommendations have been given on augmenting staff strength in the previous section.

Partnership and associations

Suggestions on partnerships included forming partnerships with relevant individuals such as blood donors who will serve as ambassadors; Ministries, Departments and Agencies (MDAs); faith-based organisations; and schools. Respondents also suggested that partners should be well educated in order to educate their target group.

Recognition and awards

Suggestions included milestone awards, citations and public handshake by prominent persons.

Fees, charges and sale of blood

Comments were made on the sale of blood and one FRD insisted on buying blood as the hospital collected money. Suggestions to address the perceived sale of blood included transparency on charges for blood services and effective education of the population on these charges.

Suggestions also included strengthening pledge/club 25, groups in secondary schools, to recruit new donors, forming blood donor clubs, facilitating a social environment for club/association activities.

Reminder and recall

Participants were of the opinion that recalling donors to come and donate and sending reminders is a strong motivator for donors to return. Suggestions were to set up a system to send reminders and recall donors for when they are due for donation, provide feedback on test results.

Research

DSS and students suggested research to guide donor recruitment and retention. This included surveys on donation experience, using electronic platforms such as survey monkey.

Visits to donor groups

DSS had concerns about regularity of visit to donor groups and communities. They suggested that visits should be regular to prevent the large number of donors who lapse because the blood collection teams do not visit them regularly for blood donation.

4.7. Most frequently cited perceptions, motivators and deterrents in the IDIs and FGDs

The linked trajectory of method triangulation, employed in this study included integration of data between the two qualitative approaches for data collection. Key themes identified in the IDI were incorporated into the FGD discussions to validate, and also as vignettes to elicit response to sensitive issues. Table 4.9 is a display of the most frequently cited perception, motivators and deterrents to blood donation. The table shows the five most frequently cited perceptions of blood, and blood donation;

and ten most frequently cited motivators, and deterrents. The motivators and deterrents that were identified were more widespread and therefore many more as compared to the perceptions that were fewer, hence the comparison of fewer factors for perceptions. The table shows similar factors among the most frequently cited, identified through the two approaches for all categories. Therefore, the FGD findings, from interaction of a broader group, support and validate the findings from the IDIs (Bailey and Hutter, 2008). Despite the similarities of the most cited factor for the two approaches, the FGD identified spiritual connotations to blood, and incentives as the most cited perception of blood, and motivator for blood donation respectively. These factors were more sensitive, as compared to the perception that blood is life, and prosocial motivation as a motive for donating, which were identified by the IDI. This supports the use of vignettes to obtain more information about sensitive topics (Bailey and Hutter, 2008)

Table 4.9: Most Frequently Cited Factors by Data Collection Approach

Perceptions of blood		
IDI + FGD	**IDI**	**FGD**
Blood is life	Blood is life	Spiritual perceptions
Spiritual perceptions	Spiritual perceptions	Blood is life
Religious perceptions	Religious perceptions	Biological/physical
Biological/physical	Should be donated	Blood is sacred/ extraordinary
Cultural	Biological/physical	Religious perceptions
Perceptions of blood donation		
IDI + FGD	**IDI**	**FGD**
Saves lives	Negative health effects	Saves lives
Negative health effects	Saves lives	Frightening
Good	Good	Good
Frightening	Frightening	Spiritual
Spiritual	Restrictions to blood donation	Health Benefits
Motivators		
IDI + FGD	**IDI**	**FGD**
Prosocial motivation	Prosocial motivation	Incentives
Education and educational talks	Education and educational talks	Prosocial motivation
Incentives	Incentives	Education and educational talks

Awareness of need	Awareness of need	Influence of others
Influence of others	Good customer relations	Experiencing need
Good customer relations	Influence of others	Intrinsic motivation
Publicity and advertisements	Publicity and advertisements	Good customer relations
Experiencing need	Pressure	Publicity and advertisements
Reminders	Experiencing need	Reminders
Pressure/coercion	Reminders	Blood donation campaigns and drives
Deterrents		
IDI + FGD	**IDI**	**FGD**
Fear	Fear	Fear
Negative service experience	Negative service experience	Negative service experience
Low self-efficacy	Low self-efficacy	Lack of knowledge
Poor health/illness	Poor health/illness	Influence of others
Influence of others	Influence of others	Religious factors
Lack of knowledge	Inconvenient location	Low self-efficacy
Inconvenient location	Lack of knowledge	Long waiting time
Religious factors	Religious factors	Inconvenient location
Long waiting time	Cultural factors	Lack of confidentiality
Cultural factors	Lack of incentives/ Sale of blood	Poor health/illness

4.8. Credibility of findings

Credibility of findings was ensured by triangulation of data collected using different qualitative approaches (IDI and FGD), member checking, external audit by academic supervisors (Creswell, 2012), and rich and thick description of findings (Ivankova et al., 2006)

4.9. Discussion

The qualitative component of this study conducted and analysed 24 individual IDIs and five FGDs with the objective of identifying factors that influence blood donation behaviour in Ghana. The study has identified key perceptions of blood and blood donation, motivators and deterrents to blood donation among blood donors and non-donors in Ghana. A key perception of blood among the study population was identified as the perception of blood as the "life force" of man and animals, without which there will be no life or vitality. The belief that blood is a spiritual entity, religious connotations to blood, the understanding that blood is a biological substance and part

of the human body, the beliefs that blood is cultural, sacred, and that anyone who has enough blood and can donate, should donate to save lives were also major perceptions. Similarly, the major perceptions of blood donation were identified as the perceptions that it saves lives, it is good, it has health benefits; and that it also has negative health effects, it is frightening or invokes fear, it is spiritual, and that there are certain restrictions such as gender, weight and blood group of prospective donor to blood donation. These perceptions have been outlined below.

4.9.1. Perceptions of blood and blood donation

Blood: a symbol of life, a medium for saving lives

This study revealed a strong perception of blood as life-source, among the study population. The perception of blood as life was explained in several ways: as the source of health, life and vitality, which also represents the souls and spirit, and without which one cannot stay alive. In this regard, it is believed that having enough blood equates to health and vitality, whereas lack or shortage of it is believed to make one weak, ill or even cause death. This finding is consistent with the findings of the literature review (Asamoah-Akuoko et al., 2017b), which identified this as a common perception cited by majority of the reviewed studies. This perception is prevalent among Ghanaians of all age groups, and was identified by two previous studies that were conducted in Ghana on beliefs about blood draw for clinical research in Ghana, and on clinical and sociocultural aspects of anaemia among adolescent girls (Agyepong et al., 1997; Boahen et al., 2013). This perception of blood as "life" is not limited to people in Ghana, and was identified by three studies that were conducted in other countries in SSA with focus on attitudes and perceptions towards blood donation (Agbovi et al., 2006; Kabinda et al., 2014; Rolseth et al., 2014), and on beliefs about blood draw for clinical research in the Gambia (O'Neill et al., 2016). This perception

of blood as life can potentially elicit empathy towards a person who has lost blood and requires this "source of life" to live, and thereby encourage blood donation behaviour. It may also elicit a fear of losing blood and "life", on the other hand due to the belief that the lack or loss of it is associated with sickness and loss of vitality (O'Neill et al., 2016), and thus discourage blood donation behaviour.

Although expressed differently and variously, the perception of blood as life resonates the vital physiological functions of blood as the tissue that supports life through circulation of oxygen and other life-essential substances through the human body, and the interruption of which can be fatal. Perhaps this belief may have evolved through personal observations of blood related health conditions and subsequent oral transmission of knowledge and information among the population. The belief that blood is one's life, soul, spirit and a necessity for existence may underpin other beliefs about blood and blood donation. These include, for example, the belief that blood is sacred and beyond ordinary, and therefore should be handled with caution; the perception that blood donation is life saving and good; the fear and perceived negative health effects that are associated with blood donation.

Blood: a physical, biological, religious, cultural and spiritual phenomenon

Blood as a physical or biological substance

The perception that blood is life can also be aligned with the scientific understanding that blood is a vital "physical" or biological substance that supports life in the body, as cited by participants in this study. This perception was also identified by other studies in, and outside SSA (Charbonneau and Tran, 2013; Koster and Hassall, 2011; Rolseth et al., 2014). This represents the expressing of the structure and functions of blood, in a similar way to the biological and medical definition of blood. Such an understanding of the scientific attributes of blood should facilitate the understanding

of the implications of the need for blood transfusion as well as understanding of the essence of blood donation. This could also potentially address the knowledge gap, necessary for motivating blood donation (Duboz et al., 2010; Koster and Hassall, 2011; Melku et al., 2016). However, the actual effect of this encouraging perception on blood donation motivation will need to be determined quantitatively. This effect will also be influenced by other perceptions that were identified among the study population, including the religious and spiritual connotations to blood, which may have the potential of having a contrary influence on blood donor motivation.

Religious connotations to blood

Religious connotations to blood and blood donation were cited in reference to Christian, Islam and the African Traditional religions in Ghana. These perceptions are similar to those identified in studies by (Agbovi et al., 2006; Kabinda et al., 2014; Koster and Hassall, 2011; Rolseth et al., 2014) In this study, participants cited blood sacrifices which could be seen as positive or negative depending on the individuals opinion of the particular religion, and possibly also, the means of sacrificing. For example, description of the blood of Jesus, sacrificed on the cross to save lives of generations, by the Christian religion may have a positive influence on blood donation. In addition, Christians believe that one can receive blessings from God by donating blood.

According to Islam beliefs, the body of a person belongs to Allah. Therefore, "giving part of this body to another person is considered a religious theft from Allah and the bearer of the body, to whom it has been loaned for the purpose of fulfilling his destiny on earth, is prohibited from giving any part away (Grassineau et al., 2007). One would expect that this belief would negatively influence blood donation. Contrary to this, this study identified that the Islam religion has been used to promote blood donation, These

findings are similar to that of (Abohghasemi et al., 2011) from Iran and (Grassineau et al., 2007) among minorities in Canada. In fact, Islamic religious events have been used as fora to, successfully, promote blood donation. This is attributed to a message from the Holy Quran that "whosoever saves a human life saves the life of the whole of mankind" which may be interpreted as encouraging blood donation (Abohghasemi et al., 2011; Grassineau et al., 2007). In a religious country such as Ghana, this could provide a basis for a targeted intervention to improve blood donation among Muslim groups, and implemented by enlisting the support of Muslim leaders.

Traditional religious beliefs about blood, identified in this study, include the use of blood as a medium of communication with the gods, and with the spiritual realms. This is believed to be effected by sacrificing animals that are then slaughtered, and by using the blood of the slaughtered animals to perform rituals. The manner in which such traditional procedures and rituals are carried out is believed to confer a level of sacredness along with a mixture of fear and importance to these rituals. This in turn, invokes fear in association with blood as identified by the study.

In Ghana, traditional religious practices, local traditions that guide the way of life of the people, and cultural practices, are very closely inter-related. This study also identified that culture and tradition, within which a person is formed, play a major role in shaping a person's perception of blood and blood donation. According to participants, these practices and norms influence one to be cautious of contact with, and of issues related to, blood. Therefore, these fundamental perceptions have the resultant effect of a cautious attitude toward blood and blood donation. In agreement with this finding, a number of studies conducted in SSA have cited traditional norms and cultural values as barriers to blood donation (Adegoke, 2016; Alinon et al., 2014; Haoses-Gorases and Katjire, 2013; Umeora et al., 2005).

Symbolism of blood as a spiritual phenomenon

The symbolism of blood as a spiritual phenomenon, identified by this study echoes findings from other studies in SSA (Gobatto, 1996; Koster and Hassall, 2011; Ottong et al., 1997; Salaudeen et al., 2011). The belief about the spirituality of blood is deeply entrenched in local traditions and cultural practices, and assumes that there is a sustained link of a person to his or her blood, even after it has left the body. Therefore leaving one's blood anywhere, for example exposing a woman's menstrual blood, is perceived to pose a risk of attracting spiritual harm or negative influence. This translates into the perception and fear that donating blood can cause spiritual harm to the donor (Agasa and Likwela, 2014; Alinon et al., 2014; Gobatto, 1996; Ottong et al., 1997; Salaudeen and Odeh, 2011; Sekoni et al., 2014; Umeora et al., 2005). This strong fundamental belief is sustained by continued interaction with local cultural practices and tradition, and therefore may diminish among persons who are withdrawn from the traditional environment. This is supported by the fact that it was not identified as a significant factor in studies that were conducted among migrant African populations in countries outside SSA (Charbonneau and Tran, 2013; Polonsky et al., 2011b; Renzaho and Polonsky, 2013).

The symbolism of blood, as a spiritual entity, was sometimes perceived by respondents as encouraging for blood donation. Some respondents related the spirituality of blood to saving of the lives of others in accordance to the Christian religion, where Jesus Christ shed his blood to save sinners. They also sometimes related it to the formation of a positive bond with the recipients. Therefore, interventions aimed at addressing the negative aspects of spirituality of blood, and at building trust that the donated blood "will be guarded against getting into the wrong hands" have the potential to improve encouraging perceptions of blood donation and thereby increase blood donation rates.

Cultural perceptions of blood: "blood belongs to family and community"

Other cultural perceptions of blood identified by the study include the perception that blood belongs to the individual, family, or kin; and should not be shared across cultural boundaries. It is also believed that blood, when kept within family boundaries, remains pure. Previous studies by Koster and Hassall (2011), Rolseth et al (2014) and Gobatto (1996) identified cultural interpretations of blood as belonging to individual, family, and tribes; and associated perceived restrictions to sharing of blood by donation as well as mixing by marriage. Although such cultural beliefs clearly set boundaries to blood donation beyond the perceived cultural barriers, they also promote blood donation for persons within the family, the community or group with which people identify themselves. For example, Koster and Hassall (2011) identified, in addition to these cultural perceptions, the belief that it is better to donate blood to family, than to complete strangers. Donating blood within a group or community promotes a sense of responsibility towards kin and friends, and of belonging. These factors therefore augment the motivation associated with family bonds.

Blood donation: an act of giving life with perceived health effects for the blood donor

The belief that blood is "life force" translates into the belief that blood donation is a life-saving act. The study identified this perception of blood donation as the most frequently cited by all sources in this study. This was identified by the literature review (Asamoah-Akuoko et al., 2017b) and is consistent with findings by (Harrington, 2012) in a study in Kumasi, Ghana, which had a focus on perceptions of blood donation. This had also been identified by studies conducted in other countries in SSA (Agbovi et al., 2006; Haoses-Gorases and Katjire, 2013; Harrington, 2012; Jacobs and Berege, 1995; Koster and Hassall, 2011; Melku et al., 2016; Salaudeen et al., 2011; Salaudeen and

Odeh, 2011; Sekoni et al., 2014); in Brail (Conceição et al., 2016), and among minority groups in Canada (Charbonneau and Tran, 2013). While this perception may have been shaped by personal, or other people's experiences with giving blood or receiving blood transfusions, it may also have been influenced by publicity on blood donation and specific messages that have been used to promote blood donation in these countries, as identified by (Charbonneau and Tran, 2013). This belief demonstrates an understanding of the ultimate purpose and importance of blood donation, expressed in very simple terms. In relation to this, and in agreement with findings by previous studies, blood donation was perceived to be an important, good (Agbovi et al., 2006; Jacobs and Berege, 1995; Koster and Hassall, 2011; Melku et al., 2016; Sekoni et al., 2014), voluntary and sacrificial act. This act is also seen as a means of helping a person in distress who may benefit from blood. The belief encompasses the symbolism of blood as that which is linked to life and therefore, blood donation as a symbol of giving out one's life having less of it remaining, becoming weaker both physically and spiritually, or less healthy, or possibly less of a person. Such interpretation of blood as a symbol of life was not identified by previous studies that were conducted in SSA, or elsewhere among SSA migrant populations.

Positive and negative health effects of donating blood

In addition to saving lives, respondents expressed beliefs of both positive and negative health implications of donating blood. These are perceived health benefit effects to the donor, and ill or reduced health of the donor. The perceived health benefits associated with blood donation that was identified by this study as a significant perception and motivating factor for donating blood supports the findings of previous studies by Jacobs and Berege (1995) in Tanzania; Muthivhi et al., (2015) in South Africa ; and Charbonneau et al., (2013) in Canada in a population that included African migrants.

Contrary to the perceived positive consequences of blood donation is the negative belief of ill health strongly expressed by participants. In Ghana, impotence and infertility are highly frowned upon, and having one's biological children constitutes a form of social and financial security. Therefore, linking blood donation to unfounded perceptions of impotence, infertility or amenorrhoea can be a major disincentive to blood donation. Likewise, other perceived negative health effects such as weakness, falling sick and losing weight translate into deterrents especially in the face of poverty and inadequate support systems for health care. These beliefs may be related to people's experiences with donor reactions. The current system for supporting blood donors who sustain a donor reaction after donating is not well structured. The lack of resources and dedicated funding to support this makes such care unreliable.

Blood is donated with the purpose of making blood components available for transfusion to decrease morbidity and mortality as part of patient management, among others. Therefore, one can argue that the understanding that blood donation is life-saving implies that there is appreciable knowledge on the relevance of blood and is therefore a positive perception of blood donation. While the positive perception of blood donation as life-saving is expected to influence blood donation behaviour, in Ghana between 60% to 64% of annual estimated blood requirements is donated every year, with 30% to 36% of the donate blood collected from VNRBDs (NBS Ghana, 2017).

The perception of blood donation as lifesaving is a strong motivator that should form a basis for interventions. However, the other factors associated with it needs to be addressed in planning such interventions. Perceptions of negative health effects should be addressed effectively. Using existing blood donors with good attitude to blood donation as ambassadors to tell their stories is a good approach. The NBSG may want

to work with the MOH Ghana to secure a group insurance for blood donors. This will reduce the anxiety of not receiving the necessary care in the event of an adverse reaction.

4.9.2. Motivators of blood donation

This study examined the factors that motivate Ghanaians to donate blood. The study identified key motivators to blood donation as prosocial motivation, including altruism (donating blood to help others or to save lives), collectivism (donating blood for family and/or friends), reciprocity (donating blood in response to or in anticipation of a kind act); education and educational talks on blood donation; and incentives. Other major motivating factors that were identified included awareness of need for blood, influence of other persons such as role models and various leaders, good customer relations, experiencing the need for blood, intrinsic motivation, publicity and advertisement, pressure and persuasion to donate, reminders, and blood donation campaigns and drives. These findings are largely consistent with findings from previous studies, identified in the literature review (Asamoah-Akuoko et al., 2017b). However, monetary incentives (Koster and Hassall, 2011; Salaudeen et al., 2011; Umeora et al., 2005) although cited in some studies, was not a strong motivator.

Prosocial motivation: altruism, collectivism and reciprocity

Prosocial motivation as a motivator, identified by this study, is consistent with findings of the literature review on motivators to blood donation, and is in agreement with many of the studies with focus on blood donor motivation. Altruism was identified as the most cited motivating factor to blood donation. As a motivator it is supported by a previous study in Ghana (Asenso-Mensah et al., 2014); other SSA countries (Adewuyi, and Olawumi, 2006; Chandrasekar et al., 2015; Dahourou et al., 2010; Duboz et al., 2010; Haoses-Gorases and Katjire, 2013; Jacobs and Berege, 1995; Kabinda et al.,

2014; Koster and Hassall, 2011; Muthivhi et al., 2015; Natukunda et al., 2015; Okpara, 1989; Olaiya et al., 2004; Rolseth et al., 2014; Salaudeen et al., 2011; Salaudeen and Odeh, 2011; Sekoni et al., 2014); and those including SSA migrant populations (Charbonneau and Tran, 2013; Polonsky et al., 2011a).

Altruism

It has been generally advocated that VNRBDs are altruistic while FRDs may be incentive focused (WHO, 2010) However, similar to this study, findings of a study, which examined factors that influence blood donation in FRDs, identified altruism as a major enabling factor (Asenso-Mensah et al., 2014). Even in studies that identified monetary incentives as a motivation, or where participants expect payment for donating blood, altruism (donating blood to save lives) was cited as a major motivator (Adewuyi, and Olawumi, 2006; Kabinda et al., 2014; Koster and Hassall, 2011; Olaiya et al., 2004). It is therefore important to explore the concept of altruism as perceived by such study populations in order to find ways of increasing blood donations.

The perception of blood as life, and blood donation as an act of giving or saving lives, together with altruism, provide evidence in support of the use of altruistic based interventions that aim at motivation blood donors. Practical actions should include messages designed to focus on the life saving attributes of blood and blood donation, facilitating interaction of blood donors with actual patients, tours to hospital for those who have not had a chance, among others. However, it is worthy of note that these strong life-saving motivations and perceptions have, evidently, not translated into blood donation behaviour in Ghana. Therefore, this study further examined how these factors predict a donor's intention to donate or actual donation behaviour. It is also important to look at the interaction of this factor with other factors that may enhance or deter blood donation behaviour.

Collectivism

The significance of collectivism, as a form of prosocial motivation, identified by the study, cannot be overemphasised. Family is a very significant cultural unit in Ghana and in Africa. The concept of family in SSA extends beyond the nuclear family, and even the clan, to the entire community. Such family structure is characterised by a feeling of belonging, creation of a support system and assumption of responsibilities towards one another (Wilson and Ngige, 2006). Family and communal collectivism, as a motivator for donating blood, is supported by findings of previous studies on donor motivation in SSA (Adegoke, 2016; Adewuyi, and Olawumi, 2006; Duboz et al., 2010; Gobatto, 1996; Jacobs and Berege, 1995; Kabinda et al., 2014; Muthivhi et al., 2015; Nébié et al., 2007; Rolseth et al., 2014; Salaudeen et al., 2011; Salaudeen and Odeh, 2011; Sekoni et al., 2014). Collectivism was also identified by two previous studies that included SSA migrant or minority populations (Ben Natan and Gorkov, 2011; Charbonneau and Tran, 2013). A study of blood donation intention among ethnic minorities in the United Kingdom by (Amponsah-Afuwape et al., 2002) identified a high "in-group altruism", which measured among others, the willingness of a donor to donate for family and friends, among ethnic minorities.

In a limited resource environment as Ghana, with unreliable access to health care and resultant anxiety about accessing health care for family and friends, there is the tendency for people to want to keep what they own as a form of security. Hence, the motivation to "keep one's blood" until needed for self, family or friends. Collectivism, or the motivation to donate for family or friends explains, in part, the prevalence and persistence of FRDs in Ghana and SSA in general despite the WHO/AFRO resolution for member countries to attain at least, 80% collections from VNRBD by year 2012

(WHO/AFRO, 2001); and the WHO for 100% by year 2020 per the Melbourne Declaration (WHO, 2009).

The significant role of family, kin and community in blood donation for their own is entrenched in the role of family as a cultural unit in Ghana and in SSA (Wilson and Ngige, 2006). This translates into a very strong motivation and offers a basis for development of interventions to motivate blood donors. Donation of blood by FRDs, based on direct need by a family member has been debated widely (Allain and Sibinga, 2016). Although self-driven and sustainable with minimal resources, key disadvantages of the FRD system are the fact that a blood donation is almost always based on immediate need, and there is no donation unless a family member is sick; and also that families may not be able to replace all the blood required for a patient. Planning with the FRD system for a sustainable supply of blood for transfusion for a country is, therefore, not feasible. However, a communal system, for example, of community based donor groups that gradually merge to form larger groups could be a more feasible approach and possibly, effective approach and need to be evaluated empirically. The community approach, will also effectively address reciprocity as a motivator for donation blood, which is another sub-theme under prosocial motivation that was identified by this study. Communal blood donation system will ensure that persons who donate blood with the hope of having someone donate for them in future as well as those who wish to donate because of having received for themselves or family are connected to the right groups to be able to have their expectations met.

Incentives

Non-monetary incentives

Various forms of incentives were identified by the study as motivators for donating blood. These include monetary and non-monetary incentives, and perceived health

benefits of donating blood. Non-monetary incentives, including blood credits for the donor and his family; gifts such as beverages that are believed to facilitate recovery of blood; and t-shirts and other NBSG paraphernalia were identified as strong motivators. A number of previous studies in SSA (Adewuyi, and Olawumi, 2006; Gobatto, 1996; Jacobs and Berege, 1995; Koster and Hassall, 2011; Muthivhi et al., 2015; Olaiya et al., 2004; Salaudeen and Odeh, 2011) also identified non-monetary incentives as a motivator for blood donation.

Blood Crediting

Blood crediting was one of the key motivators among the non-monetary incentives that were identified. Blood credits and group assurance, a form of blood credit system for blood donor groups, have been used to motivate blood donors in SSA countries, and was identified by previous studies in the Central African Republic and Tanzania (Gobatto, 1996; Jacobs and Berege, 1995). The persistent, inadequate supply of blood and blood components and unreliable health care access, coupled with strong perception of blood as the source of life feeds into blood donors' anxiety about what can happen in the case where there is a need for blood for themselves of their family members. Therefore requesting for a form of security for blood services is not surprising. In Ghana, blood crediting was introduced as a form of incentive at the inception of NBSG in the 1970s. This was however, later found to be unsustainable due to the short shelf life of blood and expectations of blood donors to receive the exact numbers owed them through credits, irrespective of the time that will elapse between donation and the request for a credit. However, attempts by the NBSG to stop or reorganise the credit system have been viewed as a breach of contract by donors has become a major disincentive for blood donation in Ghana. Inability to meet blood

crediting or group assurance requirements by the NBSG translates into a very strong deterrent.

Gift items

Gift items as a motivator for blood donors vary widely across countries and is supported by findings by studies by Gobatto (1996), Muthivhi et al., (2015), and Salaudeen and Odeh (2011). While gift items that are given in appreciation for blood donation should not have commercial value, it is important that gifts that have been suggested by blood donors in return for donating are systematically documented, and evaluated for appropriateness and feasibility of implementation. Such gift items as milk and various kinds of beverages that were cited by respondents are associated with general beliefs among the Ghanaian populace to facilitate the recovery of donated blood. Addressing these beliefs through education, and educating donors on why some incentives cannot be given can help manage blood donor expectations. Incentive requests, such as improved refreshment may be legitimate. Comprehensive evaluation and planning will ensure effective use of limited resources and a uniform approach to donor motivation in Ghana, and other SSA countries.

Monetary incentives

Monetary incentives, although cited, was not identified as a strong motivator. This is in agreement with findings of Muthivhi et al., (2015). This is contrary to the findings of the literature review (Asamoah-Akuoko et al., 2017b) and previous studies in SSA (Adewuyi, and Olawumi, 2006; Agasa and Likwela, 2014; Durosinmi et al., 2003; Kabinda et al., 2014; Koster and Hassall, 2011; Olaiya et al., 2004; Salaudeen and Odeh, 2011; Sekoni et al., 2014; Umeora et al., 2005). Payment for blood donation has been found to be associated with high prevalence of TTIs in blood donors (Sanchez et al., 2001); to discourage pro-social behaviour (Abolghasemi et al., 2010); and to

undermine the voluntary unpaid system (WHO, 2001) Moreover, in Ghana, the major users of blood are the relatively poor in society such as children with anaemia secondary to infectious diseases, and women with pregnancy complications. These categories of clientele cannot support a paid system, more so when there is no government subvention and the blood services are financed by "partial" cost recovery. The NBSG should discuss alternatives to financial incentives for donations and disseminate widely.

Awareness, information, publicity and advertisement

Awareness of need (Duboz et al., 2010; Gobatto, 1996; Muthivhi et al., 2015; Obi, 2007; Salaudeen and Odeh, 2011), availability of information on, and knowledge of blood and blood donation (Salaudeen and Odeh, 2011), identified by the current study as motivators, are in line with findings of previous studies in SSA. Awareness and knowledge creation activities such as education, face-to-face talks (Chandrasekar et al., 2015; Jacobs and Berege, 1995; Muthivhi et al., 2015), advertisement (Haoses-Gorases and Katjire, 2013; Muthivhi et al., 2015; Nébié et al., 2007; von Zahran and von Ali, 2013), blood drives, and donation campaigns (Muthivhi et al., 2015), cited by previous studies, were also major findings of the current study. In Ghana, a study with focus on motivation of FRDs in Ghana identified "being asked to donate" as a key motivator cited by 65.4% of participants (Asenso-Mensah et al., 2014). Reminders to donors about when to donate was also identified as a significant motivator. Although this was not identified as a major motivator by the review (Asamoah-Akuoko et al., 2017b), successfully implemented interventions using reminders via text messages in Ghana have been documented (Owusu-Ofori et al., 2010).

Awareness of everyday and emergency need for blood, where to donate blood, and ongoing activities relating to blood donation is logically, a basic first step towards the

decision for blood donation. The key perception and misperceptions identified by this study, such as the spiritual connotations to blood, the negative health effects of blood are due to lack of knowledge about blood and blood donation. It is therefore not surprising that knowledge and awareness creation are perceived by participants as motivators. Interventions should therefore aim at addressing misperception and misconceptions, as well as education of donors and potential donors on blood and blood donation. This should be done in a systematic and well-planned manner. Information should be targeted and well adapted to the different categories of donor groups. However, this information should be developed in advance and all educators, including community volunteers, should be well trained to avoid confusing the populace with contradictory information. Information that is given to blood donors should be truthful. For example, blood credits, was cited mainly by Blood Donor Services staff and community volunteers who continue to use it to incentivise the populace to donate blood, but is currently being phased out, and not endorsed by management of NBSG. This results in conflicts between donors and the NBSG, with donors feeling unfairly treated and losing trust in the NBSG, and refusing to donate again.

Persuasion, pressure and coercion

It is a general perception that, as opposed to VNRBDs, FRDs may not donate out of their own free will and may be coerced into donating blood (WHO, 2010, 2001). Pressure and coercion as described by this study, referred to two opposing concepts. The perception that the request to donate blood was not persuasive enough and believed that persuasion could put blood donation on the priority list of a potential donor, considering the barriers posed by day-to-day competing responsibilities. Blood donation decision is a complex behaviour change process (Amoyal et al., 2013),

therefore the persistent presence or encouraging information can be beneficial while the donor decides. This is key message for addressing such deterrents as low involvement and inconvenience due to busy schedule, identified by the study. Another key finding, consistent with findings by Asenso-Mensah et al., (2014) is that FRDs mostly do not feel coerced to donate blood. The study identified that the members of some groups and institutions that are classified by the NBSG as VNRBD groups cited being forced against their will by superiors to donate. This could apply to educational institutions, workplaces and even social groups. This renders questionable, the arbitrary classification of VNRBD as the donor who is donating without coercion, not donating for a family member or a friend, and not receiving payment for donation. It is important to discuss and redefine who a voluntary blood donor is in the Ghanaian context. There is also a clear need to acknowledge the motivation of the actual family and friends who donate as FRDs in Ghana as prosocial. One must however, consider the presence of the hidden paid blood donors among the FRDs when planning FRD focused interventions. This will help to prevent genuine FRDs from being, and feeling, ostracised, to ensure that interventions to encourage voluntary donations from this group of "low hanging fruit" donors, is acceptable to them and thereby effective. The FRD in the Ghanaian and SSA context should be considered as a "low-barriers-to-entry" group having overcome for a number of reasons. The first reason is that a limited resource environment, their presence at donation clinic eliminates the cost of going out to reach/contact them. The second reason is that the blood service has the opportunity to make a very good impression on these donors at its own facility that is equipped with the requisite staff skills. The NBSG needs to take advantage and invest in ensuring a good donation experience for the donors. Although quality is expensive, this approach is a less costly alternative than head hunting for potential donors in the

community. A good customer service and donation experience for "human" blood donors is not an option, but the default for promoting blood donation. The third reason is that the FRD has experienced the donation process, and has overcome, if any, fears and misperceptions about blood donation well enough to have donated blood. The fourth and final reason is that the FRD has gone through medical selection, donation testing and counselling, and is a safer donor after the first donation. A study in Sweden identified that while 51% of 505 participants donated blood for the first time because they were referred/accompanied by friends of a sick relative, and only 3.6% donated the first time due to altruistic reasons; 84.4% of 487 cited altruism and social responsibility as the reason for continuing to donate blood (Sojka and Sojka, 2008). This supports the proposition that "beyond the circumstances of donating blood the motivation for FRD and VNRBD may be similar" (Asenso-Mensah et al., 2014), which is also supported by the findings of this study.

Good customer relationship, staff attitude and customer care

The majority of participants cited good customer relations as appreciation for the kindness of the clinic staff. A review of Blood Service activities showed that interventions aimed at improving staff skill in customer care had a positive effect on donor recruitment and blood collection (de Coning, 2004). Blood donors attend the donor clinic with the overall purpose of giving to the service. Therefore stepping up customer service in provision of blood donor services is even more binding on the NBSG. Blood donors' expectations for good customer relations were very basic. Basic respect, smiling and chatting with them to minimise pain, anxiety and fear. The donor care clinic is the first point of call for a blood donor or potential blood donor during a visit, and therefore has a potential to strengthen or weaken recruitment and retention programmes. "Putting the best foot forward" by investing in staff training, adequate

supervision of staff and holding staff accountable to ensure a high standard of care is mandatory for a successful blood donor recruitment and retention programme. With shortages in clinical staff, employing middle level customer care staff to support the clinical staff could be a possible approach in Ghana.

4.9.3. Deterrents to blood donation

Fear was identified as the single most cited deterrent to blood donation, and in line with the findings of the literature review (Asamoah-Akuoko et al., 2017b) this includes different types of fear. Other key deterrents to blood donation identified by the study included negative service experience, low self-efficacy, lack of knowledge, poor health (illness) , negative influence by others, inconvenient location, religious factors, long waiting time, cultural factors, lack of confidentiality and perceived sale of blood. Similarly, cynicism or scepticism (Muthivhi et al., 2015) was not identified by this study, and socio-economic difficulties (Agasa and Likwela, 2014; Ahmed et al., 2006; Duboz et al., 2010; Gobatto, 1996), were not key deterrents.

Fear and lack of knowledge

Fear

Fear as a deterrent has been previously cited by numerous studies in SSA. This includes fear of physical phenomena such as needles/pain (Agasa and Likwela, 2014; Alinon et al., 2014; Haoses-Gorases and Katjire, 2013; Melku et al., 2016; Muthivhi et al., 2015; Mwaba and Keikelame, 1995; Natukunda et al., 2015); catching infection (Agasa and Likwela, 2014; Agbovi et al., 2006; Gobatto, 1996; Haoses-Gorases and Katjire, 2013; Jacobs and Berege, 1995; Muthivhi et al., 2015; Olaiya et al., 2004; Salaudeen and Odeh, 2011; Sekoni et al., 2014; Umeora et al., 2005); and discovering illness (Agbovi et al., 2006; Ahmed et al., 2006; Gobatto, 1996; Haoses-Gorases and Katjire, 2013; Kabinda et al., 2014; Muthivhi et al., 2015; Mwaba and Keikelame,

1995; Obi, 2007; Umeora et al., 2005). Such fear, which may be formed as a result of personal/other people's experiences, may result in fright of the immediate activity such as a needle prick, or in anxiety about what may happen next. Either way, this can stop a potential blood donation. Participants cited that overcoming such fear and doing a first successful donation, for example, encourages them to return to donate blood. As such, fear may not always be communicated, it is important that guidelines and processes at the donation clinic, focus on addressing such fear, and especially safeguards/ prevent outcomes that confirm such fear. Fear due to myths and misconceptions, such as witchcraft (Alinon et al., 2014; Gobatto, 1996; Umeora et al., 2005); impotence in men (Nébié et al., 2007; Olaiya et al., 2004; Umeora et al., 2005); falling sick after donating (Adewuyi, and Olawumi, 2006; Agasa and Likwela, 2014; Agbovi et al., 2006; Alinon et al., 2014; Duboz et al., 2010; Jacobs and Berege, 1995; Kabinda et al., 2014; Melku et al., 2016; Muthivhi et al., 2015; Natukunda et al., 2015; Rolseth et al., 2014; Umeora et al., 2005) have also been cited by previous studies. Such fear, usually caused by rumours, stories, news and even local movies that emphasise spirituality of blood should be addressed by/through provision of information and education on blood and blood donation. Information about blood, the processes of blood testing, processing, storage and transfusion are important in addressing this. Education that is targeted at demystifying blood donation is important in addressing this fear. Open days; tours of the blood centre and possibly hospitals can be important in addressing fears. Creating platforms for interactions between dedicated blood donors and novice/non-donors can be beneficial. A practical approach to such platform can be outreach services by members of the National Blood Donors Association of Ghana, and a television or radio question and answer forum. A well-resourced blood donor contact and information centre is very important in addressing

concerns of donors and the populace, which is possibly fed by myths and misconceptions in the absence of relevant structures.

Lack of knowledge about blood, and blood donation

Lack of knowledge creates anxiety about blood donation. This has been identified by previous studies as a major deterrent (Adewuyi, and Olawumi, 2006; Agbovi et al., 2006; Alinon et al., 2014; Chandrasekar et al., 2015; Duboz et al., 2010; Haoses-Gorases and Katjire, 2013; Melku et al., 2016; Muthivhi et al., 2015; Pule et al., 2014; Salaudeen and Odeh, 2011; von Zahran and von Ali, 2013). A systematic approach by blood agencies to develop education, information and communication materials that target the deterrent myths and misperceptions is key to effective information dissemination. Knowledge creation need to start with blood services staff and community volunteers. Interventions that aim at creating knowledge among schoolchildren by including education in school curricula can help to empower younger people who will share information with peers and parents, and prevent spreading of rumours.

Negative service experience

Prospective donor and blood donor experiences, which have a negative impact on their motivation, were identified as lack of confidentiality, poor staff attitude and skill, inconvenience of location and time of blood donation sessions and the inability of the NBSG to honour blood credits and to meet the transfusion needs of blood donors and their families. Studies in the Democratic republic of Congo by Kabinda (2014); and in South Africa by Muthivhi et al., (2015) also identified poor staff attitude as a deterrent to blood donation.

Poor staff attitude

Poor staff attitude, as cited by participants in this study, show the expectation of blood donors from the employees of blood services and hospitals, and the effect of poor standards of professionalism and care on donor motivation, recruitment and retention efforts of the NBSG and its allies. Blood donors, expect to be respected and appreciated. Poor staff attitude can result in immediate withdrawal of the services of the affected donor or prospective donor and others who witness the incident at the donor clinic or hear about it DSS staff who were interviewed, attributed this to possible staff dissatisfaction with conditions at work, and recommended that more focus should be placed on staff satisfaction (Table 4.8), which they believe will translate to client satisfaction. In resource-constrained countries, employees have to make sacrifices considering the prevalent unattractive working conditions. Lack of basic equipment and supplies, can cause client anxiety and dissatisfaction. While it is important for employers to address adequately, employee satisfaction and motivation, it is also important that employees understand their responsibilities and obligations towards clients. Knowledge about the intrinsic and extrinsic components of motivation at work is essential for all players to appreciate the processes, roles and responsibilities, and the best approach to improving staff satisfaction and motivation. Combining employee satisfaction evaluation, improvement and customer care training could be a practical way of addressing poor staff attitude, in addition to an effective and functioning system for customer feedback and organisational actions to address donor concerns. Blood Donor Services staff will benefit from training on professionalism, confidentiality and ethical issues on working with donors.

Perceived lack of confidentiality

Perceived lack of confidentiality, specifically regarding the outcome of health screening and TTI results, is also a major deterrent to blood donation due to fear of TTI status being made public and the resultant stigmatisation. Confidentiality is the "obligation of health-care professionals and healthcare institutions not to disclose personal and sensitive information about their patients or blood donors to third parties" (WHO, 2014). A study by Ahmed et al., (2006) in Nigeria, recommended ensuring confidentiality of blood donor information and TTI results to gain their confidence, as a strategy to improve blood donation. Perceived lack of confidentiality can be based on previous experiences, rumours or lack of professionalism exhibited by blood service employees. Confidentiality is a vital part of a professional service. Blood donor provide information which is personal and is given solely to assist the service in ensuring the safety of the blood supply, and such information should never be disclosed to another person without the donor's specific consent. Similarly, other personal medical information such as donor TTI result must not be discussed without prior consent. The trust between the donor and the blood service is broken if confidentiality is not maintained. Employee training must emphasise the ethical and legal implications of breach of confidentiality. To address perceptions of lack of confidentiality, the NBSG has to clearly define in writing, its policy on blood donor notification and counselling. Pre-donation counselling of blood donors should elaborate on the existing policy, and staff must adhere strictly to the policy and guidelines. For example, in Ghana, the lower age limit for donation is 17 years of age. In this study, fear of discovering illness, especially HIV status, was identified by this study as a key deterrent to blood donation among young people in Ghana. The WHO recommends addressing confidential notification of minors who donate blood through

the policy and legislation of the Blood Service under such circumstances (WHO, 2014). This should be addressed by the next revision of the National Blood Policy of the NBSG. Such an intervention will be helpful in addressing the fear of discovering illness, since fear of stigmatisation is part of that fear.

Inability to access blood and blood credits

The NBSG does not meet the expectation of blood donors concerning blood crediting against blood donations. In line with identifying blood credits as a motivator for blood donation, not being able to redeem blood credits is a key deterrent to blood donation, and frustration to blood donors. Due to the continuous shortage of blood, the current crediting expectation of depositing blood, a perishable product indefinitely until needed is not practical. In addition, managing blood credits is cumbersome, as the time and place of use of such credit is unpredictable (Christopher D. Hillyer et al., 2006). However, due to inadequacy, discussions on terminating blood credits are very sensitive and has a potential to affect blood donation very quickly and significantly. A programme to educate the general populace on the difficulties with managing a feasible and practical blood crediting should be developed and implemented. This should also explore the opinion of the populace and blood donors on acceptable alternatives to blood crediting as an incentive. In addition to access to blood, respondents also cited payment of blood processing fees, also previously identified by Ottong et al., (1997) as a deterrent. The blood processing fees is currently funded by cost recovery in Ghana, with no government subvention, and therefore waiving for any group of persons is difficult. However, awarding blood donors credit points towards a processing fee waiver, could be a more feasible intervention than crediting blood units. Such an intervention will need to be tested empirically, supported with the evidence generated and documented as a policy of the NBSG and well disseminated. This will

help avoid negative consequences resulting from misunderstanding and miscommunication. The symbolism of blood as life frowns upon exchanging blood, hence life, for money. Although individuals give hidden payment for blood, and there are allegations of sale of blood, any facts that will link the NBSG as an organisation could be damaging to its reputation. Secondly, if not properly implemented, such credits could soon be seen as entitlement by donor and can become counterproductive as a motivator to donate blood.

Inconvenient location, schedules, and long waiting time

Poor or difficult access, competing schedules, and waiting times at the donation clinics as deterrents have been identified by previous studies in SSA (Agbovi et al., 2006; Ahmed et al., 2006; Chandrasekar et al., 2015; Duboz et al., 2010; Haoses-Gorases and Katjire, 2013; Melku et al., 2016; Muthivhi et al., 2015; Mwaba and Keikelame, 1995; Natukunda et al., 2015; Pule et al., 2014; Rolseth et al., 2014; Salaudeen and Odeh, 2011). In line with this, convenience of access and time which was also identified by this study as a motivator for donating blood had been identified by a study in Ghana (Asenso-Mensah et al., 2014) and in other SSA countries (Chandrasekar et al., 2015; Muthivhi et al., 2015). In line with the previous findings, making access to donating site and donation times convenient have been suggested in studies by Mekonnen and Melesse, (2016), Muthivhi et al., (2015) and Salaudeen et al., (2011) in SSA. Interventions suggested by Ahmed et al., (2006); and implemented and described (Dahourou et al., 2010; Owusu-Ofori et al., 2010) include identification of new mobile sites, creating or increasing mobile blood collection teams and increasing the number of mobile collections. The NBSG would need to pursue collaboration and support of volunteers, including the members of the National Blood Donor Association to help on the ground to counteract the effect of staff shortage on mobile sessions.

Negative influence by self, other persons, religion and cultural beliefs

Negative influence by family, friends and acquaintances, religion, and religious and cultural beliefs, and low self-efficacy were identified as key deterrents by this study. Negative influence by self, through perceptions of low self-efficacy (Haoses-Gorases and Katjire, 2013; Muthivhi et al., 2015); the perception that one does not have enough blood (Alinon et al., 2014; Duboz et al., 2010; Muthivhi et al., 2015; Rolseth et al., 2014; Umeora et al., 2005); or is not in good enough health (Agbovi et al., 2006; Gobatto, 1996; Melku et al., 2016; Muthivhi et al., 2015; Obi, 2007; Rolseth et al., 2014; Sekoni et al., 2014; Umeora et al., 2005) to donate blood, were also identified by previous studies in SSA. In the absence of adequate information and resources to, conveniently, have access to advice or support from dedicated NBSG staff; such perceptions translate into fear of possible negative consequences of blood donation. Negative word-of-mouth (Melku et al., 2016), regarding other people's experiences, beliefs, and rumours has also been identified by previous studies. This also creates fears and mistrust in the absence of knowledge and information, as does discouraging religious (Adegoke, 2016; Agasa and Likwela, 2014; Agbovi et al., 2006; Alinon et al., 2014; Haoses-Gorases and Katjire, 2013; Kabinda et al., 2014; Koster and Hassall, 2011; Melku et al., 2016; Muthivhi et al., 2015; Sekoni et al., 2014; Umeora et al., 2005; Wangendo, 2006) and cultural beliefs (Adegoke, 2016; Alinon et al., 2014; Haoses-Gorases and Katjire, 2013; Umeora et al., 2005) Such deterrents should be addressed through education, information and collaborations with relevant opinion, religious or traditional leaders.

Lack of incentives

In line with identifying incentives as a motivator, lack of incentives was also identified as a deterrent to blood donation among the study population. Lack of monetary

(Kabinda et al., 2014; Umeora et al., 2005) and non-monetary (Alinon et al., 2014; Muthivhi et al., 2015) was identified by previous studies in SSA. A review of the literature on blood donor incentives identified a trend of use of rewards and incentives to motivate blood donors by the USA and some European countries such as Greece, Macedonia, Romania, Croatia, Czech Republic, and Italy (Abolghasemi et al., 2010). While monetary and non-monetary incentives have the potential of crowding out altruistic donors, promoting the wrong culture regarding voluntary blood donation and attracting high-risk donors, "selective non-monetary incentives" could be useful for motivating blood donors (Abolghasemi et al., 2010).

In Ghana, a study has identified that creating a social environment for blood donation contributed to an increase in voluntary blood donations (Owusu-Ofori et al., 2010). In Ghana, this could include interventions such as creating donor friendly clinics with adequate, decent refreshment and snacks as suggested by participants in this study.

Perceived sale of blood and trust issues

Perceived sale of blood by blood service and hospital staff (Agasa and Likwela, 2014; Agbovi et al., 2006; Alinon et al., 2014; Kabinda et al., 2014); and trust issues that bother on who has access (Alinon et al., 2014; Gobatto, 1996; Umeora et al., 2005) to blood, were identified by the study as deterrents to blood donation and supported by findings from previous studies in SSA.

The perceived sale of blood was explained by participants as having been asked by the hospital to "buy blood". The blood-processing fee that is charged for blood services, is often confused by users as having paid for the blood. Therefore, the NBSG should adequately educate the general population on such charges and widely advertise current charges.

4.10. Recommendations

This study has identified key factors that drive blood donation decision in Ghana. The evidence generated should be used for developing interventions to increase blood donation. The key recommendations of interventions, presented in Table 6.1, are supported by the findings of qualitative component of this study and the literature on other studies in SSA. The classification is adopted from the review of interventions (Table 2.8), which was based on classifications by Godin et al., (2012) and Ferguson et al., (2007). The blood agency or service, implementing the recommendations, has the responsibility to review the recommendations and prioritise activities based on needs and resources.

A review identified lack of planning, commitment and systems for monitoring and evaluation and key reasons for failure of interventions that are implemented in SSA (Asamoah-Akuoko et al., 2017a). Implementation should address these gaps.

4.11. Conclusion

The qualitative component of this study has identified key factors that influence blood donation in Ghana. Key perceptions of blood and blood donation have been identified as the perceptions that blood is the source of life, and blood donation is lifesaving. Other major perceptions of blood are the symbolism of blood as a spiritual, religious, and cultural entity; and the understanding of blood as a physical or biological entity. Consistent with the perception of blood donation as lifesaving is the finding that prosocial motivation, including altruism and collectivism, which focus on donating blood to save lives, is a key motivator for donating blood. The study also identified that strengthening knowledge and awareness through general educational activities and face-to-face educational talks, publicity and advertisements would motivate prospective donors and existing blood donors to donate. Monetary and non-monetary

incentives were identified as motivators, although non-monetary incentives was a stronger motivator. A key deterrent to blood donation was identified as fear due to rumours, myths and misconceptions, and lack of information about blood and blood donation. Other major deterrents were negative service experience, negative influence by self and by others, lack of incentives and trust issues.

These findings generally supported the findings of the literature review, and previous studies in SSA.

It is worthy of note, that although majority of respondents who made comments on donating blood in future had a positive attitude toward donating, only under 65% of the annual blood requirement of 250,000 units of blood is donated in Ghana, and 34 % of the units donated are from VNRBD (NBS Ghana, 2017). The current blood collections reflect the net effect of deterring factors on potential donors' motivation and willingness to donate. Fear of the immediate act of donating blood or anxiety about the consequences of the act is worsened by lack of knowledge or information to address this fear. This fear is further worsened by rumours, low self-efficacy, the negative influence of others, and of the cultural environment. The possible cost to the donor, of saving a life, is therefore compared to the value of it. Under the circumstances of socio-economic difficulties where participants lack basic necessities and have no security for health care, the value of saving lives may diminish compared to the cost of losing one's health or life. Although a significant number of such fears may be unfounded, and based merely on misconceptions and rumours, these perceptions and fears are important to acknowledge because they become a driving counter-force to the blood agency's donor recruitment efforts.

It is also important to note that although, not the most cited motivator, awareness and knowledge creation activities as motivator was found to have been cited in relation to addressing most of the deterring factors. Blood agencies, in implementing the recommended interventions, should seek to strengthen communication with clients and target populations, and adequately disseminate plans and feedback on progress and outcomes. The importance of knowing the outcome of interventions require that these should be planned and implemented empirically to generate evidence. Collaborations with academic institutions are key in ensuring that valid data are generated for evaluation purposes. Key areas of interest for evaluation through interventional studies should include the effectiveness of incentives and education in motivating blood donors in SSA.

This study has identified key factors that influence blood donation behaviour in SSA. These findings should translate into policy and action to improve blood donation in Ghana and in SSA. Although this is supported by evidence generated in Ghana and in other SSA countries, blood agencies seeking to implement recommendations should prioritise based on needs. Collaboration with researchers and academies is vital in generating evidence to guide implementation.

CHAPTER 5

RESULTS: PERCEPTIONS OF BLOOD AND BLOOD DONATION, MOTIVATORS OF, AND DETERRENTS TO BLOOD DONATION; AND INTENTION TO RETURN TO DONATE BLOOD AMONG FIRST TIME DONORS IN GHANA

5.1. Introduction

This section outlines the quantitative component of this study. A total of 505 respondents were surveyed, comprising of 250 first time voluntary non-remunerated blood donors (VNRBDs) and 255 first time family replacement blood donors (FRDs), and were selected from blood donation sessions and clinics in Ghana. Survey questions covered several issues including socio-demographic and household characteristics; factors related to the respondents' decision to donate blood; perceptions about blood and blood donation; motivators for blood donation; deterrents to blood donation; and predictors of intention to return to donate blood among first time VNRBDs and FRDs in Ghana.

The chapter presents the findings obtained from the survey in five main sections. These are characteristics of respondents; first time blood donors' perception about blood and blood donation in Ghana; motivators for blood donation among first time VNRBDs and FRDs in Ghana; deterrents to blood donation among first time VNRBDs and FRDs in Ghana; and determinants of intention to repeat blood donation among first time VNRBDs and FRDs in Ghana.

First time blood donors' perceptions, motivators and deterrents to blood donation in southern Ghana

The distribution of socio-demographic and household characteristics; factors related to the respondents' decision to donate blood; perceptions of blood and blood donation;

motivators for blood donation; deterrents to blood donation among first time VNRBDs and FRDs in Ghana has been presented below.

5.2. Characteristics of respondents

The current study examined the following characteristics of respondents: donation status, age, sex, marital status, whether the respondent had children, respondent's home situation, regular means of transport, level of education, employment, monthly income, ethnic background, religion, and whether the respondent, who has been classified as a VNRBD or FRD, perceived himself or herself as a voluntary donor.

5.2.1. Demographic characteristics of respondents

The demographic characteristics of respondents are presented in Table 5.1.

Table 5.1: Demographic Characteristics of Respondents in the Study

Characteristics	Categories	Frequency (n = 505)	Percentage %
Age in years			
	18-24	239	47.3
	25-34	189	37.4
	35-44	63	12.5
	45-60	14	2.8
Sex			
	Male	366	72.5
	Female	139	27.5
Marital status			
	Single	370	73.3
	Married	119	23.6
	Other	16	3.2
Level of education			
	No formal education	10	2.0
	Basic	157	31.1
	Secondary	185	36.6
	Tertiary	153	30.3
Ethnic background			
	Akan	199	39.4
	Ewe	122	24.2
	Ga/Dangbe	130	25.7
	Hausa/Dagbani	27	5.3
	Other	27	5.3
Religion			
	Christian	473	93.7
	Muslim	32	6.3
Employment			
	Student	165	32.7
	Unemployed/Homemaker	38	7.5
	Employed/formal/self	297	58.8
	Other	5	1.0

The age of respondents ranged from 18 years to 58 years. Those aged from 18 to 24 years formed the largest group, and constituted 47.3% of respondents. Respondents below 35 years of age formed 84.7% of the study population. The respondents were predominantly of male gender, with 72.5% (366) males, and 27.5% females. Most respondents were single (73.3%). Majority of respondents (98.0%) had, at least, basic education; with 31.1%, 36.6%, and 30.3% having basic, secondary and tertiary education respectively. The largest ethnic group among the study population was the Akan ethnic group (39.4%), followed by Ga/Dangbe (25.7) and Ewe (24.1%) as other majorities. A large proportion of the respondents were Christians (93.7%). Respondents were mostly employed (58.8%). These were informal, part-time, formal or self-employment. The next largest employment category was students (32.7%).

5.2.2. Household characteristics of respondents

The household characteristics of respondents are presented in Table 5.2.

Table 5.2: Household Characteristics of Respondents in the Study

Characteristics	Categories	Frequency (n = 505)	Percentage
Children **(n = 505)**	No	352	69.7
	Yes	153	30.3
Home situation **(n = 504)**	Live alone	97	19.2
	Single parent/with partner/with partner and children	133	26.4
	With parents/family	274	54.4
Means of transport **(n = 505)**	Private	90	17.8
	Public	415	82.2
Monthly income (GHC) **(n = 505)**	No income	144	28.5
	1 – 500	142	28.1
	501 – 1000	53	10.5
	1001 – 2000	41	8.1
	>2000	15	3.0
	Prefer not to say/not sure	110	21.8

Respondents who had children constituted only 30.3% of the total number (n=505). The largest category of respondents lived with parents or family members (54.1%; n=504). A large proportion of respondents used public transport (82.2%). The largest

of the income categories was the “no income” category (28.5%). Of the 49.7% of respondents with income, majority had an income below GH¢ 501.00.

5.2.3. Factors related to the respondents’ decision to donate blood

Table 5.3 shows Factors related to the respondents’ decision to donate blood.

Table 5.3: Factors Related to the Respondents’ Decision to Donate Blood

Factors Related to the Decision to Donate Blood	Categories	Frequency (n = 505)	Percentage
Type of donor **(n = 505)**	Voluntary	250	49.5
	Replacement	255	50.5
Who the respondent donated blood for **(n = 505)**	Friend/acquaintance/colleague	63	12.5
	Relative	192	38.0
	Blood bank/Blood service	154	30.5
	Community	31	6.1
	No one in particular	65	12.9
Whether respondent perceives self as a voluntary donor **(n = 505)**	Yes	417	82.6
	No	54	10.7
	Don’t know	34	6.7
Incentive or other received for donating blood **(n = 505)**	Incentive/motivational item	330	65.3
	Money	1	.2
	Favour	3	.6
	Other (e.g. refreshment)	9	1.8
	I did not receive anything	162	32.1
Who gave the incentive/other motivational items **(n = 343)**	Blood bank	291	84.8
	Blood recipient/patient	4	1.2
	Other (Church, sponsors etc.)	48	14.0
Factor that mostly influence donor’s perceptions of blood **(n = 505)**	Culture	57	11.3
	Education	298	59.0
	Religion	129	25.5
	Other	21	4.2
Seen/heard advertisement from NBSG/Blood Bank **(n = 504)**	Yes	398	79.0
	No	106	21.0
Where advert was seen or heard **(n = 398)**	Radio	227	56.9
	Television	147	36.8
	Newspaper	2	0.5
	Other	23	5.8
Preferred means of receiving reminders **(n = 504)**	Telephone	235	46.6
	SMS	191	37.9
	Post	5	1.0
	Email	58	11.5
	Don’t want reminder	15	3.0

Respondents comprised of 49.5% first time VNRBDs and 50.5% first time FRDs. Majority of the respondents donated blood for sick relatives (38.0%). Together, those donating specifically for someone (for sick friends, acquaintances, colleagues, and for

family members) comprised of 50.5% of respondents. Based on their understanding of volunteering, majority of respondents (82.6%) perceived themselves as having donated voluntarily, with only 17.4% either not knowing or perceiving themselves as non-voluntary donors. In response to whether they received anything in the form of incentive for donating, 67.9% of respondents reported receiving "something" for donating. Of those who received something for donating, 96.2% received incentives in the form of motivational items such as branded pens, exercise books, and carrier bags; as well as refreshments. In addition, of those who responded to receiving "something", 84.8% received incentives from the Blood Centre or Blood Bank; and 1.2%, from blood recipients/patients. The factor that has mostly influenced respondents' perceptions about blood was education (59.0%), although religion and culture had also influenced perceptions. Those who reported seeing or hearing NBSG/Blood Bank advertisements on blood donation were 79.0% of respondents. Of 398 persons who responded to seeing or hearing NBSG/Blood Bank advertisements, 374 (93.7%), heard or saw the adverts via radio or television. Receiving reminders by phone or SMS was preferred by 84.5% of respondents.

5.3. First time blood donors' perception about blood and blood donation

The study identified perceptions about blood and blood donation among study respondents. The five-point Likert scale was converted to dichotomous outcomes, with "1" representing agree or completely agree and "0" representing neither agree nor disagree, disagree or completely disagree.

Table 5.4: Perceptions About Blood and Blood Donation Among Study Respondents

Characteristic		Frequency (n = 505)	Percentage
		N	%
BLOOD			
"Blood is life"	Disagree Agree	14 491	2.8 97.2
Blood is used medically to save lives	Disagree Agree	19 486	3.8 96.2
Blood is sacred	Disagree Agree	76 429	15.0 85.0
Blood is used for covenants with other persons	Disagree Agree	129 376	25.5 74.5
Blood has a spiritual significance	Disagree Agree	137 368	27.1 72.9
Blood is used for rituals and sacrifice to deities	Disagree Agree	150 355	29.7 70.3
The presence of blood means pain or physical injury	Disagree Agree	202 303	40.0 60.0
Blood determines a person's inherited physical traits	Disagree Agree	248 257	49.1 50.9
Blood is used to link with the supernatural	Disagree Agree	273 232	54.1 45.9
A person who has access to another person's blood can harm him/her spiritually	Disagree Agree	284 221	56.2 43.8
Blood is used for religious cleansing	Disagree Agree	295 209	58.4 41.5
Blood is used spiritually to save lives	Disagree Agree	297 208	58.8 41.2
Blood determines a person's character	Disagree Agree	308 197	61.0 39.0
Blood is unique for each tribe/kin	Disagree Agree	381 124	75.4 24.6
Blood can transfer a donor's behaviour to the one who receives it, if transfused	Disagree Agree	413 91	81.9 18.1
A person's blood is unique to him/her and should not give it out	Disagree Agree	427 76	84.9 15.1
Blood should not be mixed between tribes by donation or marriage	Disagree Agree	455 50	90.1 9.9
BLOOD DONATION			
Blood donation is important for saving lives	Disagree Agree	13 492	2.6 97.4
Giving blood can help to find out if I have a disease	Disagree Agree	67 438	13.3 86.7
Blood donation is beneficial to the donor's health	Disagree Agree	143 362	28.3 71.7
A person can catch an infection through blood donation	Disagree Agree	349 156	69.1 30.9
Blood donation reduces the donor's physical strength	Disagree Agree	396 109	78.4 21.6
When I donate blood, I give away part of my life	Disagree Agree	422 83	83.6 16.4
Blood donation reminds me of pain	Disagree Agree	428 77	84.8 15.2
Blood donation is harmful to the donor's health	Disagree Agree	437 68	86.5 13.5
Donating my blood to someone will create a bond or a covenant with the person	Disagree Agree	448 57	88.7 11.3
Donating blood is a waste of time	Disagree Agree	457 48	90.5 9.5
Giving blood can cause the donor to die	Disagree Agree	463 42	91.7 8.3
Blood donation can cause impotence	Disagree Agree	482 23	95.4 4.6
Blood donation makes a woman unable to menstruate	Disagree Agree	481 22	95.6 4.4

5.3.1. Perceptions about blood

A total of 17 and 13 items were used to assess perceptions of blood and blood donation respectively, as presented in Table 5.4. Out of the 17 items that were used to assess perceptions about blood, higher proportions of respondents (50.9% to 97.2%) agreed to eight items, as compared to those who disagreed. These included the perceptions that blood is life, blood is sacred, blood has a spiritual significance, blood is used for rituals and sacrifices, blood is used medically to save lives, and that blood is used for covenants with other persons. From 75.4% to 90.1% of first time donors who responded disagreed to perceptions that a person's blood is unique to him/her, and he/she should not give it out and that blood is unique for each tribe/kin.

5.3.2. Perceptions about blood donation

Thirteen items were used to assess perceptions about blood donation. Of the 13 items related to the perception of blood donation, higher proportions of respondents (71.7% to 97.4%) agreed to three items, as compared to those who disagreed. These included the perceptions that blood donation is beneficial to the donor's health, important for saving lives, and can help to find out if I have a disease. Those who disagreed to ten items, including the perceptions that blood donation is harmful to the donor's health, can transmit infection, is a waste of time, and implied giving away part of one's life constituted 69.1% to 95.6%.

5.4. Motivators for blood donation among first time VNRBDs and FRDs in Ghana

A total of 30 items were used to assess motivators for donating blood (Table 5.5).

Table 5.5: Motivators for Blood Donation among Study Respondents

Motivator		Frequency (n = 505)	Percentage
		n	%
… to help save lives	Disagree	14	2.8
	Agree	491	97.2

… if my friends or relatives needed blood	Disagree	18	3.6
	Agree	487	96.4
… if it meant that there will be blood available in future when my family or friends need it	Disagree	35	6.9
	Agree	470	93.1
… to help my community	Disagree	43	8.5
	Agree	462	91.5
… if it meant that there will be blood available in future when I need it	Disagree	43	8.5
	Agree	462	91.5
… to help the Blood Bank	Disagree	50	9.9
	Agree	455	90.1
… if Ghana needs blood	Disagree	58	11.5
	Agree	447	88.5
… by educational talks on blood	Disagree	70	13.9
	Agree	435	86.1
… by a blood drive at my school or workplace	Disagree	81	16.0
	Agree	424	84.0
… if I will get to know my other (TTI) test results	Disagree	84	16.6
	Agree	421	83.4
… if I will get to know my blood group	Disagree	89	17.6
	Agree	416	82.4
… if I will get a free medical check-up	Disagree	91	18.1
	Agree	413	81.9
… by an appeal for blood donation on radio or TV	Disagree	102	20.2
	Agree	403	79.8
… if it is easy to get to the blood donation site	Disagree	104	20.6
	Agree	400	79.4
… because it is a way to make a difference	Disagree	104	20.6
	Agree	400	79.4
… because it would make me feel good about myself	Disagree	118	23.4
	Agree	387	76.6
… by radio, TV or newspaper advertisement on blood donation	Disagree	120	23.8
	Agree	385	76.2
… for blood credits for me and my family	Disagree	123	24.4
	Agree	382	75.6
… because it is good for my health	Disagree	129	25.5
	Agree	376	74.5
… if I was asked by my peers who are blood donors	Disagree	138	27.3
	Agree	367	72.7
… because my religion encourages me to donate blood	Disagree	145	28.7
	Agree	360	71.3
… if I am notified through SMS/email reminders	Disagree	151	30.0
	Agree	353	70.0
… if my friends, relatives or co-workers asked me to donate blood	Disagree	154	30.5
	Agree	351	69.5
… to know how it feels like	Disagree	180	35.6
	Agree	325	64.4
… by the awards/prizes given on blood donor day	Disagree	228	45.1
	Agree	277	54.9
… because many of my friends/family are blood donors	Disagree	244	48.3
	Agree	261	51.7
… if I will get incentives such as milk, milo, T-shirts, blood tonic etc.	Disagree	262	51.9
	Agree	243	48.1
… to get the motivational items given to donors such as pens, exercise books etc.	Disagree	279	55.2
	Agree	226	44.8
… if I will get cash gifts	Disagree	299	59.2
	Agree	206	40.8
… if I will get cash payment	Disagree	372	73.7
	Agree	133	26.3

Of the 30 items used to assess motivators for donating blood, majority of respondents (more than 50.0%) agreed to 26 items. More than 50% of respondents agreed to each of the items on prosocial motivation; education; access; and, some non-monetary incentives, among others. Majority of respondents, however, disagreed to monetary incentives and other non-monetary incentives as motivators.

5.5. Deterrents to blood donation among first time VNRBDs and FRDs in Ghana

Deterrents to blood donation were assessed using 33 items (Table 5.6).

Table 5.6: Deterrents to Blood Donation among Study Respondents

Deterrent		Frequency (n = 505)	Percentage
		n	%
… if, the blood donation clinic setting is poor	Disagree	235	46.5
	Agree	270	53.5
… if I am not treated well by the Blood Bank staff	Disagree	250	49.5
	Agree	255	50.5
… if I do not know where the nearest blood donation site is	Disagree	254	50.3
	Agree	251	49.7
… that, I do not have time to donate blood	Disagree	318	63.0
	Agree	187	37.0
… if I am not called or asked to give	Disagree	321	63.6
	Agree	184	36.4
… that, I think I do not have enough blood	Disagree	322	63.8
	Agree	183	36.2
… if I do not know there is a need for blood	Disagree	334	66.1
	Agree	171	33.9
… that, the blood collection times are not convenient to me	Disagree	337	66.7
	Agree	168	33.3
… if, the queues are too long	Disagree	337	66.7
	Agree	168	33.3
… that, I do not know what happens to the blood after donation	Disagree	343	67.9
	Agree	162	32.1
… that, I am scared of the needle or pain/discomfort	Disagree	373	73.9
	Agree	132	26.1
… because, the TV/Radio advertisements do not convince me to donate blood	Disagree	378	74.9
	Agree	127	25.1
… that, I think the blood bank sells the blood that is donated for free	Disagree	397	78.6
	Agree	108	21.4
… that, it can make me sick	Disagree	411	81.4
	Agree	94	18.6
… because I heard that others had a bad reaction or fainted after donating	Disagree	413	81.8
	Agree	92	18.2
… that, I am afraid the blood bank gives away donated blood to occultists/"sakawa" practitioners	Disagree	420	83.3
	Agree	84	16.7
… that, I am afraid of bruising/having a sore arm	Disagree	422	83.6
	Agree	83	16.4
… that, I think blood mostly goes to people who are rich	Disagree	422	83.7
	Agree	82	16.3
… that, I am afraid of finding out about my HIV status	Disagree	430	85.1
	Agree	75	14.9
… that, it is against my personal beliefs	Disagree	435	86.3
	Agree	69	13.7
… because I had a bad reaction or fainted when I gave blood	Disagree	437	86.5
	Agree	68	13.5
… that, I do not like to complete the blood donor questionnaire	Disagree	439	86.9
	Agree	66	13.1
… that, I am afraid of the sight of blood	Disagree	438	87.1
	Agree	65	13.0
… because, the motivational items that are given to blood donors are not good enough	Disagree	441	87.3
	Agree	64	12.7
… that, I am afraid of catching HIV if I donate blood	Disagree	444	87.9
	Agree	61	12.1
… that, I think blood donation is for other people	Disagree	451	89.3
	Agree	54	10.7
… that, it is against my religion	Disagree	455	90.3
	Agree	49	9.7
… that, it can make me weak spiritually	Disagree	458	90.7
	Agree	47	9.3
… that, it can affect ability to menstruate *(where applicable)*	Disagree	133	91.1
	Agree	13	8.9

… that, it is against my culture	Disagree Agree	462 42	91.7 8.3
… because I do not receive money for donating blood	Disagree Agree	466 39	92.3 7.7
… that, it can make me impotent *(where applicable*)	Disagree Agree	342 27	92.7 7.3
… that, it can affect ability to get pregnant *(where applicable)*	Disagree Agree	138 10	93.2 6.8

Of the 33 items that were used to assess deterrents to blood donation among first time blood donors, majority of respondents (50.5% and 53.5%, respectively) agreed to two items as a deterrent to blood donation. The remaining items were disagreed on by more than 50.0% of all those who responded. Among these, from 81.4% to 93.2% of those who responded disagreed to 20 items.

5.6. Attitude, norms, behavioural control, altruism, and return rates among first time VNRBDs and FRDs

The study explored some constructs of the Theory of Planned Behaviour (TPB), namely attitude, social norms, and perceived behavioural control among respondent.

Table 5.7: Attitude, Norms, Behavioural Control, Altruism, Intention to Return, and Donor Return Rates

Characteristic	Categories	Frequency n	Percentage %
ATTITUDE			
I find giving blood	Positive Negative (n = 503)	459 44	91.3 8.7
	Good Bad (n = 503)	472 31	93.8 6.2
	Meaningless Worthwhile (n = 504)	63 441	12.5 87.5
	Pleasant Unpleasant (n = 503)	413 90	82.1 17.9
	Annoying Enjoyable (n = 503)	97 406	19.3 80.7
	Unappealing Appealing (n = 503)	108 395	21.5 78.5
SUBJECTIVE NORMS			
My family/friends think I should continue giving blood as long as my health allows it (n = 504)	Disagree Agree	162 342	32.1 67.9
I normally do what my family and friends want me to do (n = 504)	Disagree Agree	366 138	72.6 27.4
BEHAVIOURAL CONTROL			
If I wanted to, I would be able to continue giving blood as long as my health allows it (n = 504)	Disagree Agree	53 451	10.5 89.5
I find it hard to give blood time after time	Disagree	353	70.0

Characteristic	Categories	Frequency n	Percentage %
(n = 504)	Agree	151	30.0
ALTRUISM			
Active as a volunteer (n = 504)	Yes No	227 277	45.0 55.0
Helping others (n = 502)	Prefer working toward my own well-being Try to work towards the well-being of society Not very interested in helping others Important to me that I help others Important to help the poor and the needy	27 64 8 178 225	5.4 12.7 1.6 35.5 44.8
INTENTION TO RETURN			
I plan to return to donate blood in 4 months when I will be due for donation (n = 504)	Disagree Agree	158 346	31.3 68.7
I plan to continue giving blood as long as my health allows (n = 504)	Disagree Agree	62 442	12.3 87.7
SIX MONTH DONOR RETURN			
Return to donate blood after first donation	Yes No	13 409	3.1 96.9

Attitude was measured with six items. Majority of respondents saw blood donation as positive (91.3%), good (93.8%), worthwhile (87.5%), pleasant (82.1%), enjoyable (80.7%), and appealing (78.5%).

Two items were used to measure subjective norms. Of those who responded, majority (67.9%) agreed that their family and friends think that they should continue donating blood, while only 32.1% agreed that family and friends influence their actions.

Behavioural control was measured with two items. Most respondents (89.5%) agreed that they could continue to donate blood if health allows, while only 30.0% agreed that they find it hard to continue donating.

Two items were used to measure altruism. Most of respondents (55.0%) reported not being involved in other volunteer activities. A vast majority of respondents (93.0%) either preferred working towards the good of others or found it important to help others, compared to 7.0% who were not interested in helping others.

Respondents' intention to return to donate blood was assessed by two items. Majority of respondents agreed to planning to return to donate when they are due in four months (68.7%), and planning to continue donating for as long as health allows (87.7%). One item was used to measure actual return behaviour after six-months when donors were due. Only 3.1% of donors who were reached by phone during the six-month follow up interview had returned to donate blood.

5.7. Comparison of characteristics of first time VNRBDs and first time FRDs

5.7.1. Demographic characteristics of first time VNRBDs and first time FRDs

Table 5.8 shows the association between the demographic characteristics of respondents with the type of donor (VNRBD and FRD).

Table 5.8: Comparison of Demographic Characteristics of First Time VNRBDs and FRDs in the Study

Characteristic	Categories	Total	Percentage	Voluntary		Replacement		P-value
		n	%	n	%	n	%	
Age in years								
	18 – 24	239	47.3	143	59.8	96	40.2	< 0.001
	25 – 34	189	37.4	82	43.4	107	56.6	
	35 – 44	63	12.5	18	28.6	45	71.4	
	45 - 60	14	2.8	7	50	7	50	
Sex								
	Male	366	72.5	147	40.2	219	59.8	< 0.001
	Female	139	27.5	103	74.1	36	25.9	
Marital status								
	Single	370	73.3	207	55.9	163	44.1	< 0.001
	Married	119	23.6	33	27.7	86	72.3	
	Other	16	3.2					
Level of education	No formal education	10	2.0	2	20.0	8	80.0	0.157
	Basic	157	31.1	72	45.9	85	54.1	
	Secondary	185	36.6	96	51.9	89	48.1	
	Tertiary	153	30.3	80	52.3	73	47.7	
Ethnic background	Akan	199	39.4	98	49.2	101	50.8	< 0.001
	Ewe	122	24.2	70	57.3	52	42.7	
	Ga/Dangbe	130	25.7	63	48.4	67	51.6	
	Hausa/Dagbani	27	5.3	3	11.1	24	88.9	
	Other	27	5.3	16	59.2	11	40.8	
Religion								
	Christian	473	93.7	248	52.5	225	47.5	< 0.001
	Muslim	32	6.3	2	6.2	30	93.8	
Employment								
	Student	165	32.7	122	73.9	43	26.1	< 0.001
	Unemployed	38	7.5	36	34.2	69	65.7	
	Employed	297	58.8	91	39.5	139	60.5	
	Other	5	1.0	1	20	4	80	

The age of respondents was compared in four categories between first time VNRBDs and first time FRDs. Of those aged from 18 years to 24 years, majority were VNRBDs, while majority of those in the categories of 25–34 years and 35–44 years were FRDs. The difference in age between the first time VNRBDs and first time FRDs was significant ($p< 0.001$). There was a significant ($p<0.001$) difference in sex of respondents between the two types of donor, with majority (74.1%) of the 139 who were females among the respondents being VNRBDs while majority (59.8 %) of the 366 males were FRDs. The difference in marital status between the VNRBDs and FRDs was significant ($p<0.001$). Those who were single were more likely to be VNRBDs (55.9%) while those who were married were more likely to be FRDs (72.2%). There was no significant difference in education levels between VNRBDs and FRDs. Akans, Ga/Dangbes and Hausa/Dagbanis were more likely to be FRDs (50.8%, 51.6%, and 88.9% respectively) while Ewes were more likely to be VNRBDs. There was significant difference in ethnic background between the two donor types ($p<0.001$). There was a significant difference in religion ($p<0.001$) between VNRBDs and FRDs. Those that were students ($n = 165$) were more likely to be VNRBDs (73.9%); while 60.5% of all those that were employed ($n = 279$) were FRDs. The difference in employment categories between VNRBDs and FRDs was significant ($p<0.001$).

5.7.2. Household characteristics of first time VNRBDs and first time FRDs blood donors

Table 5.9 shows the association between the household characteristics of respondents with the type of donor (VNRBDs and FRDs).

Table 5.9: Comparison of Household Characteristics of First Time VNRBDs and FRDs in the Study

Characteristic	Categories	Total n	Percentage %	Voluntary n	Voluntary %	Replacement n	Replacement %	P-value
Children								
	No	352	69.7	198	56.3	154	43.7	< 0.001
	Yes	153	30.3	52	34.0	101	66.0	
Home situation (n=504)								< 0.001
	Live alone	97	19.2	44	45.4	53	54.6	
	Single parent/with partner/with partner and children	133	26.4	42	31.6	91	68.4	
	With parents/family	274	54.4	163	59.5	111	40.5	
Means of transport								< 0.001
	Public (Ref)	415	82.2	220	53.0	195	47.0	
	Private	90	17.8	30	33.3	60	66.7	
Income (GHC)								0.004
	No income (Ref)	144	28.5	90	62.5	54	37.5	
	1 – 500	142	28.1	65	45.7	77	54.3	
	501 – 1000	53	10.5	21	39.6	32	60.4	
	1001 – 2000	41	8.1	23	56.1	18	43.9	
	>2000	15	3.0	6	40.0	9	60	
	Prefer not to say	110	21.8	45	40.9	65	59.1	

FRDs were more likely to have children. Of all donors who had children, 66% were FRDs. The difference in home situation between VNRBDs and FRDs was significant ($p<0.001$). FRDs were more likely were more likely to live alone (54.6%), to be single parents/live with partner/with partner and children. (68.4%) while VNRBDs were more likely to live with parents or family members (59.3%).Of those who used public transport, a significant majority (53.0%) were VNRBDs, while a majority (66.7%) of those who used private transport were FRDs ($p<0.001$). Of the 251 respondents earning income, VNRBDs constituted 45.8% and FRD, 54.2%. The difference in income levels by type of donor was significant ($p=0.004$).

5.7.3. Factors related to the respondents' decision to donate blood among first time VNRBDs and first time FRDs

Table.5.10 shows the association between blood donation decision related factors with the type of donor (VNRBDs and FRDs).

Table 5.10: Comparison of Factors Related to the Respondents' Decision to Donate Blood between First Time VNRBDs and FRDs in the Study

Characteristic	Categories	Total n	Percentage %	Voluntary n	Voluntary %	Replacement n	Replacement %	P-value
Donated blood for (n=505)	Friend/acquaintance/colleague	63	12.5	0	0.0	63	100.0	< 0.001
	Relative	192	38.0	0	0.0	192	100.0	
	Blood bank/Blood service	154	30.5	154	100.0	0	0.0	
	Community	31	6.1	31	100.0	0	0.0	
	No one in particular	65	12.9	65	100.0	0	0.0	
Describes self as voluntary donor (n=505)	Yes	417	82.6	232	55.6	185	44.4	< 0.001
	No	54	10.7	5	9.3	49	90.7	
	Don't know	34	6.7	13	38	21	61.8	
What did you receive for donating blood (n=505)	Incentive/motivational item	330	65.3	174	52.7	156	47.3	0.207
	Money	1	.2	1	100.0	0	0.0	
	Favour	3	.6	2	66.7	1	33.3	
	Other	9	1.8	4	44.4	5	55.6	
	I did not receive anything	162	32.1	69	42.6	93	57.4	
Who did you receive from (n=505)	Blood bank	291	57.6	133	45.7	158	54.3	< 0.001
	Blood recipient/patient	4	.8	2	50.0	2	50.0	
	Other	48	9.5	45	93.8	3	6.3	
Factor that mostly influence perceptions of blood (n=505)	Culture	57	11.3	18	31.6	39	68.4	0.038
	Education	298	59.0	155	52.0	143	48.0	
	Religion	129	25.5	67	51.9	62	48.1	
	Other	21	4.2	10	47.6	11	52.4	
Ever seen/heard advertisement from NBSG /Blood Bank (n=504)	Yes	398	78.8	208	52.1	190	47.7	0.011
	No	106	21.0	41	39.0	65	61.3	
Where did you see/hear advert (n=399)	Radio	227	45.0	106	46.7	121	53.3	0.002
	Television	147	29.1	84	57.1	63	42.9	
	Newspaper	2	.4	2	100.0	0	0.0	
	Other	23	4.6	17	73.9	6	26.1	
Preferred means of getting reminders	Telephone	235	46.5	113	48.1	122	51.9	0.002
	SMS	191	37.8	88	46.1	103	53.9	
	Post	5	1.0	5	100.0	0	0.0	
	Email	58	11.5	39	67.2	19	32.8	
	Don't want reminder	15	3.0	4	26.7	11	73.3	

All respondents, categorised as VNRBDs during the participant selection process, donated for the blood bank, Blood Service, community, or for no one in particular. On the other hand, all respondents categorised as FRDs donated for a friend, acquaintance, colleague or relative. The difference, in whom the respondent donated blood for, between the types of donor, is significant ($p< 0.001$).

There was a significant difference in self-perception about having donated voluntarily or not ($p<0.001$). VNRBDs were more likely to perceive themselves as voluntary

donors (55.6%; n = 417), although a large proportion of FRDs also perceived themselves as voluntary donors (44.4%).

More VNRBDs reported receiving incentives, motivational items or favour than FRDs, while more FRDs than VNRBDs reported not receiving anything; although the difference between receiving items for donating in the two groups was not significant. A vast majority (93.8%) of VNRBD reported receiving incentives and motivational items from other sources while majority of FRD (54.3%) reported receiving items from the blood bank. The difference in the two groups was significant ($p<0.001$). There was a significant difference between the donor types for which factor mostly influenced perception ($p=0.038$). FRDs reported being mostly influenced by culture (68.4%); while VNRBDs reported being mostly influenced by education (52.0%) or religion (51.9%). Those who had seen adverts of the NBSG or blood banks were more likely to be VNRBDs (52.3%), while those who had not seen were more likely to be FRDs ($p=0.011$). The most reported medium of publicity was the radio for FRDs, and television for VNRBDs ($p=0.002$). There was a significant difference between the two types of donors for preferred means of receiving reminders ($p=0.002$). Those who preferred telephone (51.9%), Short Message Service (SMS) (53.9%), and those who did not want to receive reminders (73.3%) were mostly FRDs, while those who preferred email were mostly VNRBDs (67.2%).

5.8. Comparison of perceptions about blood and blood donation between first time VNRBDs and first time FRDs

Table 5.11 shows the association between the perceptions about blood and blood donation with the type of donors (VNRBD and FRD).

Table 5.11: Perceptions about Blood and Blood Donation and Association with Type of Donor

Characteristic		Total (n = 505) n	Percentage %	Type of Donor: Voluntary n	Voluntary %	Replacement n	Replacement %	P-value
BLOOD								
"Blood is life"	Disagree	14	2.8	12	85.7	2	14.3	0.006
	Agree	491	97.2	238	48.5	253	51.5	
Blood is sacred	Disagree	76	15.0	47	61.8	29	38.2	0.02
	Agree	429	85.0	203	47.3	226	52.7	
Blood has a spiritual significance	Disagree	137	27.1	81	59.1	56	40.9	0.008
	Agree	368	72.9	169	45.9	199	54.1	
Blood determines a person's character	Disagree	308	61.0	168	54.5	140	45.5	0.005
	Agree	197	39.0	82	41.6	115	58.4	
Blood determines a person's inherited physical traits	Disagree	248	49.1	127	51.2	121	48.8	0.452
	Agree	257	50.9	123	47.9	134	52.1	
Blood can transfer a donor's behaviour to the one who receives it, if transfused	Disagree	413	81.9	213	51.6	200	48.4	0.059
	Agree	91	18.1	37	40.7	54	59.3	
Blood is used for religious cleansing	Disagree	295	58.4	161	54.6	134	45.4	0.006
	Agree	209	41.5	88	42.1	121	57.9	
Blood is used for rituals and sacrifice to deities	Disagree	150	29.7	85	56.7	65	43.3	0.036
	Agree	355	70.3	165	46.5	190	53.5	
Blood is used medically to save lives	Disagree	19	3.8	16	84.2	3	15.8	0.002
	Agree	486	96.2	234	48.1	252	51.9	
Blood is used spiritually to save lives	Disagree	297	58.8	164	55.2	133	44.8	0.002
	Agree	208	41.2	86	41.3	122	58.7	
Blood is used for covenants with other persons	Disagree	129	25.5	78	60.5	51	39.5	0.004
	Agree	376	74.5	172	45.7	204	54.3	
Blood is used to link with the supernatural	Disagree	273	54.1	165	60.4	108	39.6	0.000
	Agree	232	45.9	85	36.6	147	63.4	
A person who has access to another person's blood can harm him/her spiritually	Disagree	284	56.2	168	59.2	116	40.8	0.000
	Agree	221	43.8	82	37.1	139	62.9	
The presence of blood means pain or physical injury	Disagree	202	40.0	125	61.9	77	38.1	0.000
	Agree	303	60.0	125	41.3	178	58.7	
A person's blood is unique to him/her and should not give it out	Disagree	427	84.9	222	52.0	205	48.0	0.004
	Agree	76	15.1	26	34.2	50	65.8	
Blood is unique for each tribe/kin	Disagree	381	75.4	201	52.8	180	47.2	0.010
	Agree	124	24.6	49	39.5	75	60.5	
Blood should not be mixed between tribes by donation or marriage	Disagree	455	90.1	228	50.1	227	49.9	0.412
	Agree	50	9.9	22	44.0	28	56.0	
BLOOD DONATION								
Blood donation is beneficial to the donor's health	Disagree	143	28.3	68	47.6	75	52.4	0.581
	Agree	362	71.7	182	50.3	180	49.7	
Blood donation is harmful to the donor's health	Disagree	437	86.5	230	52.6	207	47.4	0.000
	Agree	68	13.5	20	29.4	48	70.6	
A person can catch an infection through blood donation	Disagree	349	69.1	171	49.0	178	51.0	0.733
	Agree	156	30.9	79	50.6	77	49.4	
Blood donation is important for saving lives	Disagree	13	2.6	9	69.2	4	30.8	0.150
	Agree	492	97.4	241	49.0	251	51.0	

Characteristic		Total (n = 505)	Percentage	Type of Donor				P-value
				Voluntary		Replacement		
		n	%	n	%	n	%	
Donating blood is a waste of time	Disagree	457	90.5	242	53.0	215	47.0	0.000
	Agree	48	9.5	8	17.7	40	83.3	
Blood donation reduces the donor's physical strength	Disagree	396	78.4	211	53.3	185	46.7	0.001
	Agree	109	21.6	39	35.8	70	64.2	
Blood donation makes a women unable to menstruate	Disagree	481	95.6	241	50.1	240	49.9	0.093
	Agree	22	4.4	7	31.8	15	68.2	
Blood donation can cause impotence	Disagree	482	95.4	243	50.4	239	49.6	0.061
	Agree	23	4.6	7	30.4	16	69.6	
When I donate blood, I give away part of my life	Disagree	422	83.6	222	52.6	200	47.4	0.002
	Agree	83	16.4	28	33.7	55	66.3	
Donating my blood to someone will create a bond or a covenant with the person	Disagree	448	88.7	236	52.7	212	47.3	0.000
	Agree	57	11.3	14	24.6	43	75.4	
Giving blood can cause the donor to die	Disagree	463	91.7	239	51.6	224	48.4	0.002
	Agree	42	8.3	11	26.2	31	73.8	
Blood donation reminds me of pain	Disagree	428	84.8	226	52.8	202	47.2	0.000
	Agree	77	15.2	24	31.2	53	68.8	
Giving blood can help to find out if I have a disease	Disagree	67	13.3	34	50.7	33	49.3	0.827
	Agree	438	86.7	216	49.3	222	50.7	
New blood can transfer a donor's behaviour	Disagree	413	81.9	213	51.6	200	48.4	0.059
	Agree	91	18.1	37	40.7	54	59.3	
New blood determines person's character	Disagree	248	49.1	127	51.2	121	48.8	0.452
	Agree	257	50.9	123	47.9	134	52.1	
New blood determines a person's inherited physical traits	Disagree	308	61.0	168	54.5	140	45.5	0.005
	Agree	197	39.0	82	41.6	115	58.4	

5.8.1. Perceptions about blood between first time VNRBDs and first time FRDs

There was significant association between 14 items and the variable "type of donor" (VNRBD and FRD). Significantly higher proportions of VNRBDs as compared to the FRDs disagreed to the statements that "blood is sacred" (p=0.02), "blood has spiritual significance" (p=0.008), "blood determines a person's character" (p=0.005), "blood is used for religious cleansing" (p=0.007), "blood is used for rituals and sacrifice to deities" (p=0.036), "blood is used medically to save lives" (p=0.002), "blood is used spiritually to save lives" (p=0.002), "blood is used for covenants with other persons" (p=0.004), "blood is used to link with the supernatural" (p<0.001), "person having access to blood can harm the other person spiritually" (p<0.001), "presence of blood

means pain and injury" (p<0.001), "a person's blood is unique to him/her and should not give it out" (p=0.004), and "blood is unique for each tribe/kin" (p=0.010).

5.8.2. Perceptions about blood donation between first time VNRBDs and first time FRDs

There was a significant association between seven items and the types of donors. Significantly higher proportions of VNRBDs, as compared to FRDs disagreed to the statements "blood donation is harmful to the donor's health" (p<0.001), "donating blood is a waste of time" (p<0.001), "blood donation reduces the donor's physical strength" (p=0.001), "when I donate blood, I give away part of my life" (p=0.002), "donating my blood to someone will create a bond or a covenant with the person" (p<0.001), "giving blood can cause the donor to die" (p=0.002), and "blood donation reminds me of pain" (p<0.001).

5.9. Comparison of motivators for blood donation between first time VNRBDs and first time FRDs

Table 5.12 shows the association between the motivators to blood donation with the type of donors (VNRBD and FRD).

Table 5.12: Motivators to Blood Donation and Association with Type of Donor

Motivator		Frequency (n = 505)	Percentage	Type of Donor				P-value
				Voluntary		Replacement		
		n	%	n	%	n	%	
… if it is easy to get to the blood donation site	Disagree	104	20.6	42	40.4	62	59.6	0.039
	Agree	400	79.4	207	51.7	193	48.3	
… to help save lives	Disagree	14	2.8	6	42.9	8	57.1	0.614
	Agree	491	97.2	244	49.7	247	50.3	
… if my friends or relatives needed blood	Disagree	18	3.6	10	55.6	8	44.4	0.601
	Agree	487	96.4	240	49.3	247	50.7	
… to help my community	Disagree	43	8.5	13	30.2	30	69.8	0.008
	Agree	462	91.5	237	51.3	225	48.7	
… if it meant that there will be blood available in future when my family or friends need it	Disagree	35	6.9	15	42.9	20	57.1	0.415
	Agree	470	93.1	235	50.0	235	50.0	
… if it meant that there will be blood	Disagree	43	8.5	17	39.5	26	60.5	0.172
	Agree	462	91.5	233	50.4	229	49.6	

Motivator		Frequency (n = 505) n	Percentage %	Type of Donor Voluntary n	Voluntary %	Replacement n	Replacement %	P-value
available in future when I need it								
… because my religion encourages me to donate blood	Disagree Agree	145 360	28.7 71.3	75 175	51.7 48.6	70 185	48.3 51.4	0.527
… to help the Blood Bank	Disagree Agree	50 455	9.9 90.1	16 234	32.0 51.4	34 221	68.0 48.6	0.009
… if Ghana needs blood	Disagree Agree	58 447	11.5 88.5	20 230	34.5 51.5	38 217	65.5 48.5	0.015
… for blood credits for me and my family	Disagree Agree	123 382	24.4 75.6	69 181	56.1 47.4	54 201	43.9 52.6	0.093
… because it would make me feel good about myself	Disagree Agree	118 387	23.4 76.6	59 191	50.0 49.4	59 196	50.0 50.6	0.902
… to know how it feels like	Disagree Agree	180 325	35.6 64.4	95 155	52.8 47.7	85 170	47.2 52.3	0.274
… if I am notified through SMS/email reminders	Disagree Agree	151 353	30.0 70.0	77 173	51.0 49.0	74 180	49.0 51.0	0.683
… by educational talks on blood	Disagree Agree	70 435	13.9 86.1	33 217	47.1 49.9	37 218	52.9 50.1	0.670
… if I was asked by my peers who are blood donors	Disagree Agree	138 367	27.3 72.7	75 175	54.3 47.7	63 192	45.7 52.3	0.182
… by radio, TV or newspaper advertisement on blood donation	Disagree Agree	120 385	23.8 76.2	60 190	50.0 49.4	60 195	50.0 50.6	0.901
… by an appeal for blood donation on radio or TV	Disagree Agree	102 403	20.2 79.8	46 204	45.1 50.6	56 199	54.9 49.4	0.319
… by a blood drive at my school or workplace	Disagree Agree	81 424	16.0 84.0	27 223	33.3 52.6	54 201	66.7 47.4	0.001
… if I will get to know my blood group	Disagree Agree	89 416	17.6 82.4	48 202	53.9 48.6	41 214	46.1 51.4	0.357
… if I will get to know my other (TTI) test results	Disagree Agree	84 421	16.6 83.4	48 202	57.1 48.0	36 219	42.9 52.0	0.125
… if I will get a free medical check-up	Disagree Agree	91 413	18.1 81.9	57 192	62.6 46.5	34 221	37.4 53.5	0.005
… if I will get cash payment	Disagree Agree	372 133	73.7 26.3	188 62	50.5 46.6	184 71	49.5 53.4	0.438
… if I will get cash gifts	Disagree Agree	299 206	59.2 40.8	164 86	54.8 41.7	135 120	45.2 58.3	0.004
… because it is good for my health	Disagree Agree	129 376	25.5 74.5	73 177	56.6 47.1	56 199	43.4 52.9	0.062
… if I will get incentives such as milk, milo, T-shirts, blood tonic etc.	Disagree Agree	262 243	51.9 48.1	150 100	57.3 41.2	112 143	42.7 58.8	0.000
… to get the motivational items given to donors such as pens, exercise books etc.	Disagree Agree	279 226	55.2 44.8	147 103	52.7 45.6	132 123	47.3 54.4	0.112
… by the awards/prizes given on blood donor day	Disagree Agree	228 277	45.1 54.9	122 128	53.5 46.2	106 149	46.5 53.8	0.103
… because it is a way to make a difference	Disagree Agree	104 400	20.6 79.4	58 191	55.8 47.7	46 209	44.2 52.3	0.145
… because many of my friends/family are blood donors	Disagree Agree	244 261	48.3 51.7	139 111	57.0 42.5	105 150	43.0 57.5	0.001
… if my friends, relatives or co-workers asked me to donate blood	Disagree Agree	154 351	30.5 69.5	90 160	58.4 45.6	64 191	41.6 54.4	0.008

Of the 30 items used to assess motivators for blood donation, 10 items were significantly associated with the type of donors. Significantly higher number of VNRBDs compared to FRDs did not consider the following as motivators: “if I will get a free medical check-up” (p=0.005), “if I will get cash gifts” (p=0.004), “if I will get incentives such as milk, milo, T-shirts, blood tonic etc.” (p<0.001), “because many of my family/friends are blood donors” (p=0.001), and “if my friends, relatives or co-workers asked me to donate blood” (p=0.008).

Similarly, significantly higher number of FRDs as compared to VNRBDs did not consider the following items as motivators: “if it is easy to get to the donation site” (p=0.039), “to help my community” (p=0.008), “to help the blood bank” (p=0.009), “if Ghana needs blood” (p=0.015), and “motivation by a blood drive at my school or workplace” (p=0.001).

5.10. Comparison of deterrents to blood donation between first time VNRBDs and first time FRDs

Table 5.13 shows the association between deterrents to blood donation with the type of donor (VNRBDs and FRDs).

Table 5.13: Deterrents to Blood Donation and Association with Type of Donor

Deterrent		Frequency (n = 505)	Percentage	Type of Donor				P-value
				Voluntary		Replacement		
		n	%	n	%	n	%	
… that, I do not have time to donate blood	Disagree	318	63.0	176	55.3	142	44.7	0.001
	Agree	187	37.0	74	39.6	113	60.4	
… that, I think do not have enough blood	Disagree	322	63.8	153	47.5	169	52.5	0.236
	Agree	183	36.2	97	53.0	86	47.0	
… that, I think blood donation is for other people	Disagree	451	89.3	229	50.8	222	49.2	0.099
	Agree	54	10.7	21	38.9	33	61.1	
… that, the blood collection times are not convenient to me	Disagree	337	66.7	183	54.3	154	45.7	0.002
	Agree	168	33.3	67	39.9	101	60.1	
… that, I do not like to complete the blood donor questionnaire	Disagree	439	86.9	218	49.7	221	50.3	0.859
	Agree	66	13.1	32	48.5	34	51.5	
… if, the queues are too long	Disagree	337	66.7	184	54.6	153	45.4	0.001
	Agree	168	33.3	66	39.3	102	60.7	
… if I am not called or asked to give	Disagree	321	63.6	181	56.4	140	43.6	0.000
	Agree	184	36.4	69	37.5	115	62.5	

Deterrent		Frequency (n = 505)	Percentage	Type of Donor				P-value
				Voluntary		Replacement		
		n	%	n	%	n	%	
… because, the TV/Radio advertisements do not convince me to donate blood	Disagree	378	74.9	197	52.1	181	47.9	0.043
	Agree	127	25.1	53	41.7	74	58.3	
… because, the motivational items that are given to blood donors are not good enough	Disagree	441	87.3	220	49.9	221	50.1	0.652
	Agree	64	12.7	30	46.9	34	53.1	
… because I do not receive money for donating blood	Disagree	466	92.3	233	50.0	233	50.0	0.442
	Agree	39	7.7	17	43.6	22	56.4	
… if I do not know there is a need for blood	Disagree	334	66.1	187	56.0	147	44.0	0.000
	Agree	171	33.9	63	36.8	108	63.2	
… if I do not know where the nearest blood donation site is	Disagree	254	50.3	127	50.0	127	50.0	0.823
	Agree	251	49.7	123	49.0	128	51.0	
… that, I do not know what happens to the blood after donation	Disagree	343	67.9	176	51.3	167	48.7	0.237
	Agree	162	32.1	74	45.7	88	54.3	
… if I am not treated well by the Blood Bank staff	Disagree	250	49.5	136	54.4	114	45.6	0.029
	Agree	255	50.5	114	44.7	141	55.3	
… if, the blood donation clinic setting is poor	Disagree	235	46.5	121	51.5	114	48.5	0.405
	Agree	270	53.5	129	47.8	141	52.2	
… that, I am scared of the needle or pain/discomfort	Disagree	373	73.9	190	50.9	183	49.1	0.279
	Agree	132	26.1	60	45.5	72	54.5	
… that, I am afraid of bruising/having a sore arm	Disagree	422	83.6	215	50.9	207	49.1	0.144
	Agree	83	16.4	35	42.2	48	57.8	
… that, it can make me sick	Disagree	411	81.4	205	49.9	206	50.1	0.726
	Agree	94	18.6	45	47.9	49	52.1	
… that, it can make me weak spiritually	Disagree	458	90.7	228	49.8	230	50.2	0.698
	Agree	47	9.3	22	46.8	25	53.2	
… that, it can make me impotent *(where applicable*)	Disagree	342	92.7	137	40.1	205	59.9	0.410
	Agree	27	7.3	13	48.1	14	51.9	
… that, it can affect ability to menstruate *(where applicable*)	Disagree	133	91.1	97	72.9	36	27.1	0.360
	Agree	13	8.9	11	84.6	2	15.4	
… that, it can affect ability to get pregnant (where applicable)	Disagree	138	93.2	100	72.5	38	27.5	0.604
	Agree	10	6.8	8	80.0	2	20.0	
… that, I am afraid of catching HIV if I donate blood	Disagree	444	87.9	214	48.2	230	51.8	0.113
	Agree	61	12.1	36	59.0	25	41.0	
… because I had a bad reaction or fainted when I gave blood	Disagree	437	86.5	209	47.8	228	52.2	0.056
	Agree	68	13.5	41	60.3	27	39.7	
… because I heard that others had a bad reaction or fainted after donating	Disagree	413	81.8	215	52.1	198	47.9	0.015
	Agree	92	18.2	35	38.0	57	62.0	
… that, I am afraid of the sight of blood	Disagree	438	87.1	221	50.5	217	49.5	0.180
	Agree	65	13.0	27	41.5	38	58.5	
… that, I am afraid of finding out about my HIV status	Disagree	430	85.1	216	50.2	214	49.8	0.434
	Agree	75	14.9	34	45.3	41	54.7	
… that, I think the blood bank sells the blood that is donated for free	Disagree	397	78.6	200	50.4	197	49.6	0.452
	Agree	108	21.4	50	46.3	58	53.7	
… that, I think blood mostly goes to people who are rich	Disagree	422	83.7	205	48.6	217	51.4	0.400
	Agree	82	16.3	44	53.7	38	46.3	
… that, I am afraid the blood bank gives away donated blood to occultists/“sakawa” practitioners	Disagree	420	83.3	197	46.9	223	53.1	0.012
	Agree	84	16.7	52	61.9	32	38.1	

Deterrent		Frequency (n = 505)	Percentage	Type of Donor				P-value
				Voluntary		Replacement		
		n	%	n	%	n	%	
… that, it is against my personal beliefs	Disagree	435	86.3	214	49.2	221	50.8	0.813
	Agree	69	13.7	35	50.7	34	49.3	
that, it is against my culture	Disagree	462	91.7	229	49.6	233	50.4	0.809
	Agree	42	8.3	20	47.6	22	52.4	
that, it is against my religion	Disagree	455	90.3	223	49.0	232	51.0	0.590
	Agree	49	9.7	26	53.1	23	46.9	

Of the 33 items compared by type of donor, nine were significantly associated with the type of donors. Significantly higher proportion of VNRBDs as compared to FRDs did not consider the following items to be deterrents to donating blood: “that I do not have time to donate blood” (p=0.001), “that the blood collection times are not convenient to me” (p=0.002), “if the queues are too long” (p=0.001), “if I am not called or asked to give” (p<0.001), “because, the TV/Radio advertisements do not convince me to donate blood” (p=0.043), “if I do not know there is a need for blood” (p<0.001), “if I am not treated well by the Blood Bank staff” (p<0.029), and “because I heard that others had a bad reaction or fainted after donating” (p=0.015). However, more VNRBDs were likely to consider the fear that the blood bank gives away donated blood to occultists/"sakawa" practitioners as a deterrent to blood donation as compared to FRDs (p=0.012).

5.11. Comparison of attitude, norms, behavioural control, and altruism among first time VNRBDs and FRDs

Table 5.14 shows the association between attitude, norms, trust, and altruism among respondents with the type of donors (VNRBDs and FRDs).

Table 5.14: Attitude, Subjective Norms, Behavioural Control, Altruism, Return Rates and their Association with Type of Donor

Characteristic	Categories	Total	Percentage	Type of Donor				P-value
				Voluntary		Replacement		
		n	%	n	%	n	%	
ATTITUDE								
I find giving blood	Positive	459	91.3	234	51.0	225	49.0	0.015
	Negative	44	8.7	14	31.8	30	68.2	
	(n = 503)							

Characteristic	Categories	Total	Percentage	Type of Donor				P-value
				Voluntary		Replacement		
		n	%	n	%	n	%	
	Good	472	93.8	234	49.6	238	50.4	0.634
	Bad	31	6.2	14	45.2	17	54.8	
	(n = 503)							
	Meaningless	63	12.5	28	44.4	35	55.6	0.400
	Worthwhile	441	87.5	221	50.1	220	49.9	
	(n = 504)							
	Pleasant	413	82.1	198	47.9	215	52.1	0.190
	Unpleasant	90	17.9	50	55.6	40	44.4	
	(n = 503)							
	Annoying	97	19.3	43	44.3	54	55.7	0.275
	Enjoyable	406	80.7	205	50.5	201	49.5	
	(n = 503)							
	Unappealing	108	21.5	46	42.6	62	57.4	0.115
	Appealing	395	78.5	202	51.1	193	48.9	
	(n = 503)							
SUBJECTIVE NORMS								
My family/friends think I should continue giving blood as long as my health allows it (n = 504)	Disagree	162	32.1	74	45.7	88	54.3	0.250
	Agree	342	67.9	175	51.2	167	48.8	
I normally do what my family and friends want me to do (n = 504)	Disagree	366	72.6	187	51.1	179	48.9	0.217
	Agree	138	27.4	62	44.9	76	55.1	
BEHAVIOURAL CONTROL								
If I wanted to, I would be able to continue giving blood as long as my health allows it (n = 504)	Disagree	53	10.5	15	25.3	38	71.7	0.001
	Agree	451	89.5	234	51.8	217	48.1	
I find it hard to give blood time after time (n = 504)	Disagree	353	70.0	185	52.4	168	47.6	0.039
	Agree	151	30.0	64	42.4	87	57.6	
ALTRUISM								
Active as a volunteer (n = 504)	Yes	227	45.0	133	58.6	94	41.4	0.001
	No	277	55.0	116	41.9	161	58.1	
Helping others (n = 502)	Prefer working toward my own well-being	27	5.4	11	40.7	16	59.3	0.474
	Try to work towards the well-being of society	64	12.7	35	54.7	29	45.3	
	Not very interested in helping others	8	1.6	4	50.0	4	50.0	
	Important to me that I help others	178	35.5	94	52.8	84	47.2	
	Important to help the poor and the needy	225	44.8	103	45.8	122	54.2	
INTENTION								
I plan to return to donate blood in 4 months when I will be due for donation (n = 504)	Disagree	158	31.3	61	38.6	97	61.4	0.001
	Agree	346	68.7	188	54.3	158	45.7	
I plan to continue giving blood as long as my health allows it (n = 504)	Disagree	62	12.3	18	29.0	44	71.0	<0.001
	Agree	442	87.7	231	52.3	211	47.7	
SIX MONTH DONOR RETURN								

Characteristic	Categories	Total	Percentage	Type of Donor				P-value
				Voluntary		Replacement		
		n	%	n	%	n	%	
Return to donate blood after first donation	Yes	13	3.1	5	38.5	8	61.8	0.379
	No	409	96.9	208	50.9	201	49.1	

Of six items used to measure attitude, only one was significantly associated with the type of donor. Significantly higher proportions of FRDs considered one item used to measure attitude: "I find blood donation as negative" as compared to VNRBD (p=0.015). Of two items used to measure subjective norm, none was significantly associated with the type of donor. Both of the two items used to measure behavioural control were significantly associated with the type of donor. Significantly higher proportions of VNRBDs, compared to FRDs, considered that if they wanted to, they would be able to continue to donate blood for as long as their health allowed (p=0.001). Similarly, significantly higher proportions of FRDs agreed that they find it hard to give blood time after time (p=0.039). Significantly higher proportions of VNRBDs were active as volunteers in any organisation or group (p=0.001), as compared to FRDs. The two items used to measure intention to return to donate blood after current donation, were significantly associated with the type of donor. Significantly higher proportions of VNRBDs, planned to return to donate blood in 4 months when I will be due for donation (p=0.001), and to continue giving blood for as long as their health allowed (p<0.001), compared to FRDs.

Predictors of first time VNRBDs and FRDs' intention to return to donate blood.

The study explored the association between socio-demographic and household characteristics, blood donation related characteristics, motivators for and deterrents to blood donation, attitude, norms, trust, and altruism on one hand and intention to return to donate blood as the outcome variable, using binary logistic regression. Intention to return to donate blood was measured with one item, "I plan to return to donate blood

in 4 months when I will be due for donation". The second item, "I plan to continue giving blood as long as my health allows" was not used as a measure for intention because it was a conditional statement.

5.12. Association between characteristics of respondents and their intention to return to donate blood after first donation in Ghana

The associations between the socio-demographic and household characteristics, blood donation related characteristics, motivators for and deterrents to blood donation, attitude, norms, trust, and altruism on one hand and intention to return to donate blood as the outcome variable, have been outlined below.

5.12.1. Association between demographic characteristics of respondents and their intention to return to donate

Socio-demographic predictors of intention to return are shown in Table 5.15.

Table 5.15: Association between Demographic Characteristics and Intention to Return to Donate

Predictor Variable	Categories	P-value	OR	95% C.I. for OR	
				Lower	Upper
Age (years) (Ref - 18 – 24)	25-34	0.769	1.083	0.637	1.841
	35-44	0.297	0.647	0.286	1.467
	45-60	0.214	0.432	0.115	1.623
Sex (Ref – Male)	Female	0.293	1.277	0.810	2.016
Marital status (Ref - Single)	Married	**0.032**	1.953	1.059	3.600
	Other	0.059	4.819	.941	24.688
Education (Ref - Tertiary education)	No formal education	0.409	1.868	0.424	8.231
	Basic education	**0.001**	2.341	1.401	3.912
	Secondary education	**0.002**	2.194	1.332	3.613
Ethnic background (Ref - Akan)	Ewe	0.964	0.988	0.580	1.683
	Ga/Dangbe	**0.023**	0.565	0.346	0.924
	Hausa/Dagbani	0.090	0.476	00.202	1.123
	Other	0.217	0.573	.237	1.388
Employment (Ref - Student)	Unemployed/Homemaker/Pensioner	0.515	0.767	0.346	1.703
	Employed part-time/formal/self	0.432	0.809	0.477	1.373
	Other	0.483	2.250	0.233	21.717

Ref, reference category

Three of the six items used to assess the demographic predictors of intention to return to donate blood were significant. The overall association of marital status with intention to return was significant (p=0.036), and those who were married were two times as likely to have the intention to return to donate blood as compared to those who were single (OR=1.953, 95% CI 1.059 - 3.600; p=0.032). Similarly, Education was identified as a significant predictor of intention to return. Those with basic education (OR=2.341, 95% CI 1.401– 3.912; p=0.001) and secondary education (OR=2.194, 95% CI 1.332– 3.613; p=0.002) were twice as likely to have the intention to return as compared to those with tertiary education. Ethnic background was also significantly associated with intention, with the Ga/Dangbe ethnicity being about half as likely to have the intention to return as compared to the Akan ethnicity (OR=0.565, 95% CI 0.346 - 0.924; p=0.023).

5.12.2. Association between household characteristics of respondents and their intention to return to donate

The association between household characteristics and intention to return to donate are presented in Table 5.16.

Table 5.16: Association between Household Characteristics and Intention to Return to Donate

Predictor Variable	Categories	P-value	OR	95% C.I. for OR	
				Lower	Upper
Children (Ref - No)	Yes	0.572	1.200	0.638	2.256
Home situation (Ref - Live alone)	Single parent/with partner/with partner and children	0.159	1.673	0.818	3.423
	With parents/family	0.363	1.281	0.752	2.182
Transport (Ref - Private)	Public	0.947	1.018	0.594	1.745
Income level (Ref - No income)	1-500 GHC	0.704	1.118	0.629	1.986
	501-1000 GHC	0.147	0.588	0.286	1.206
	1001-2000 GHC	0.204	0.602	0.275	1.317
	>2000 GHC	0.097	0.365	0.111	1.201

	Prefer not to say/ Not sure	0.084	0.610	0.348	1.069

Ref, reference category

Of the four items used to predict intention to return to donate blood, none was a significant predictor of intention.

5.12.3. Association between factors related to the respondents' decision to donate blood and respondents' intention to return to donate blood

Factors related to the respondents' decision to donate blood as predictors of intention are presented in Table 5.17.

Table 5.17: Association between Factors Related to the Respondents' Decision to Donate Blood and Intention to Return to Donate

Predictor Variable	Categories	P-value	OR	95% C.I. for OR	
				Lower	Upper
Type of donor (Ref – Voluntary)	Replacement	0.066	0.420	0.166	1.060
Who the donor donated for (Ref - Friend/acquaintance/colleague)	Relative	0.056	2.061	0.982	4.324
	Blood bank/Blood service	0.943	1.030	0.459	2.311
	Community	0.218	2.399	0.596	9.664
Whether a donor considers self as voluntary donor (Ref - Yes)	No	**0.002**	0.295	0.134	0.649
	Don't know	**0.021**	0.356	0.148	0.853
Whether donor received incentive/refreshment for donating (Ref – No)	Yes	**0.033**	1.710	1.043	2.804
Factor that mostly influence donor's perceptions of blood (Ref - Culture)	Education	0.184	0.542	0.219	1.338
	Religion	0.188	0.511	0.188	1.389
	Other	0.727	0.745	0.143	3.883
Ever seen/heard advertisement from NBSG/Blood Bank (Ref – Radio)	Television	0.606	1.141	0.692	1.880
	Newspaper/Other	0.335	0.250	0.015	4.193

Ref, reference category

Of the five items used to predict intention to return to donate blood, two were significantly associated with intention. Whether or not the respondent considered himself/herself as a voluntary donor was associated with intention to return to donate blood. Those who did not consider themselves as voluntary donors were less likely to intend to return to donate as compared to those who considered themselves as

voluntary donors (OR=0.295, 95% CI 0.134 - 0.649; p=0.002). Similarly, those who did not know whether they considered themselves as voluntary donors were, comparatively, less likely to have the intention to return (OR=0.356, 95% CI 0.148 - 0.853; p=0.021).

5.13. Association between motivation for blood donation and intention to return to donate blood in Ghana

The association between motivating factors for blood donation and intention to return to donate blood have been presented in Table 5.18.

Table 5.18: Association between Motivation for Blood Donation and Intention to Return to Donate

Motivators (Ref – Disagree)	P-value	OR	95% C.I. for OR	
			Lower	Upper
… if it is easy to get to the blood donation site	**0.006**	2.306	1.277	4.163
… to help save lives	0.358	2.370	0.376	14.923
… if my friends or relatives needed blood	0.267	0.386	0.072	2.071
… to help my community	0.547	0.729	0.261	2.037
… if it meant that there will be blood available in future when my family or friends need it	0.819	0.867	0.257	2.931
… if it meant that there will be blood available in future when I need it	0.506	1.398	0.520	3.760
… because my religion encourages me to donate blood	0.851	0.947	0.540	1.663
… to help the Blood Bank	0.732	0.837	0.303	2.313
… if Ghana needs blood	**0.010**	3.572	1.349	9.459
… for blood credits for me and my family	**0.013**	0.440	0.231	0.839
… because it would make me feel good about myself	**0.002**	2.639	1.431	4.867
… to know how it feels like	0.052	0.560	.0312	1.006
… if I am notified through SMS/email reminders	**0.004**	2.354	1.310	4.229
… by educational talks on blood	0.214	1.610	0.760	3.412
… if I was asked by my peers who are blood donors	0.554	1.192	0.666	2.136
… by radio, TV or newspaper advertisement on blood donation	**0.006**	2.467	1.296	4.694
… by a blood drive at my school or workplace	0.904	1.046	0.506	2.162
… if I will get to know my blood group	0.146	1.779	0.818	3.870
… if I will get to know my other (TTI) test results	**0.023**	0.389	0.173	0.877
… if I will get a free medical check-up	0.641	0.837	0.396	1.767
… if I will get cash payment	0.735	0.884	0.433	1.804
… if I will get cash gifts	0.662	1.169	0.580	2.356
… because it is good for my health	0.736	1.111	0.601	2.056
… if I will get incentives such as milk, milo, T-shirts, blood tonic etc.	0.424	0.738	0.350	1.555
… to get the motivational items given to donors such as pens, exercise books etc.	0.490	1.300	0.617	2.741
… by the awards/prizes given on blood donor day	0.165	0.641	0.342	1.201

… because it is a way to make a difference	0.965	1.015	0.534	1.926
… because many of my friends/family are blood donors	0.245	1.400	0.794	2.468
… by an appeal for blood donation on radio or TV	0.052	1.968	0.995	3.891
… if my friends, relatives or co-workers asked me to donate blood)	0.574	0.838	0.453	1.551

Ref, reference category

Thirty items were entered into the model to determine motivators for blood donation that predict intention to return to donate blood. Of these, seven were significantly associated with intention to return. Five factors were positively associated with intention to return: "if it is easy to get to the blood donation site" (OR=2.306, 95% CI 1.277- 4.163; p=0.006), "if Ghana needs blood" (OR=3.572, 95% CI 1.349 - 9.459; p=0.010), "because it would make me feel good about myself" (OR=2.639, 95% CI 1.431- 4.867; p=0.002), "if I am notified through SMS/email reminders" (OR=2.354, 95% CI 1.310- 4.229; p=0.004), and "… by radio, TV or newspaper advertisement on blood donation" (OR=2.467, 95% CI 1.296- 4.694; p=0.006). Conversely, the two other significant motivating factors were negatively associated with intention to return. Those who agreed with the items "for blood credits for me and my family" (OR=0.440, 95% CI 0.231 – 0.839; p=0.013), and "if I will get to know my other (TTI) test results" (OR=0.389, 95% CI 0.173– 0.877; p=0.023) were less likely to have the intention to return as compared to those who disagreed.

5.14. Association between deterrents to blood donation and intention to return to donate blood in Ghana

Table 5.19 shows the association between deterrents to blood donation and intention to return to donate blood.

Table 5.19: Association between Deterrents to Blood Donation and Intention to Return

Deterrents (Ref – Disagree)	P-value	OR	95% C.I. for OR	
			Lower	Upper
… that, I do not have time to donate blood	0.491	0.846	0.526	1.361

Deterrents (Ref – Disagree)	P-value	OR	95% C.I. for OR	
			Lower	Upper
… that, I think do not have enough blood	0.799	1.065	0.658	1.723
… that, I think blood donation is for other people	0.381	1.410	0.653	3.044
… that, the blood collection times are not convenient to me	0.096	0.663	0.408	1.076
… that, I do not like to complete the blood donor questionnaire	0.916	1.038	0.519	2.074
… if, the queues are too long	0.079	0.649	0.400	1.052
… if I am not called or asked to give	0.083	0.646	0.394	1.059
… because, the TV/Radio advertisements do not convince me to donate blood	0.256	0.735	0.433	1.249
… because, the motivational items that are given to blood donors are not good enough	**0.002**	3.505	1.558	7.885
… because I do not receive money for donating blood	0.175	0.529	0.211	1.327
… if I do not know there is a need for blood	0.141	0.695	0.428	1.128
… if I do not know where the nearest blood donation site is	**0.019**	1.798	1.101	2.937
… that, I do not know what happens to the blood after donation	**0.023**	0.541	0.318	0.918
… if I am not treated well by the Blood Bank staff	0.628	0.883	0.534	1.460
… if, the blood donation clinic setting is poor	0.955	0.986	0.603	1.614
… that, I am scared of the needle or pain/discomfort	0.947	1.020	0.563	1.850
… that, I am afraid of bruising/having a sore arm	0.527	1.278	0.597	2.736
… that, it can make me sick	0.092	0.561	0.286	1.099
… that, it can make me weak spiritually	0.563	1.290	0.545	3.052
… that, I am afraid of catching HIV if I donate blood	0.450	0.741	0.340	1.615
… because I had a bad reaction or fainted when I gave blood	0.671	1.188	0.536	2.632
… because I heard that others had a bad reaction or fainted after donating	0.121	0.599	0.314	1.144
… that, I am afraid of the sight of blood	0.088	2.129	0.895	5.064
… that, I am afraid of finding out about my HIV status	0.791	1.102	0.539	2.253
… that, I think the blood bank sells the blood that is donated for free	0.087	0.585	0.316	1.082
… that, I think blood mostly goes to people who are rich	0.008	2.709	1.301	5.640
… that, I am afraid the blood bank gives away donated blood to occultists/“sakawa” practitioners	0.927	0.968	0.478	1.957
… that, it is against my personal beliefs	0.390	0.676	0.277	1.652
… that, it is against my culture	0.040	3.515	1.059	11.664
… that, it is against my religion	0.478	0.689	0.246	1.928

Ref, reference category

Thirty deterring factors were included in the model to determine deterrents to blood donation that are associated with intention to return to donate blood. Of these, three items were significantly associated with intention to return. Two deterrents were positively associated with intention to return. Those who agreed to the statement that they will be deterred from donating blood “because, the motivational items that are given to blood donors are not good enough” (OR=3.505, 95% CI 1.558 - 7.885; p=0.002), and “if they do not know where the nearest blood donation site is” (OR=1.798, 95% CI 1.101 - 2.937; p=0.019), are four and two times, respectively,

more likely to have the intention to return to donate blood as compared to those who disagreed. Conversely, those who agreed to the statement that they will be discouraged from donating blood "if they do not know what happens to the blood after donation" (OR=0.541, 95% CI 0.318- 0.918; p=0.023) were half as likely to have the intention to return to donate blood as compared to those who disagreed.

5.15. Association between the constructs of TPB and intention to return to donate blood in Ghana

Association between the constructs of the TPB (attitude, subjective norm, and behavioural control) and altruism on one hand, and intention to return to donate on the other hand has been presented in Table 5.20. Composite variables were derived from the items used to measure attitude (six-items), subjective norms (two items), and behavioural control (two items). Intention was measured using one item. These composite variables were entered into the logistic regression model to examine the TPB constructs that predict intention to return.

Table 5.20: Association between Attitude, Subjective Norm, Behavioural Control, Altruism and Intention to Return to Donate

Construct	P-value	OR	95% C.I. for OR	
			Lower	Upper
Attitude	0.091	2.093	0.889	4.929
Subjective norms	**0.003**	1.909	1.249	2.919
Behavioural control	**0.002**	1.905	1.267	2.865
Altruism	**0.023**	2.309	1.125	4.740

Ref, reference category

Of the four items that were used to determine the association between the constructs of the TPB (attitude, subjective norm, and behavioural control), and altruism on one hand, and intention to return to donate on the other hand, three were significantly associated with intention to return. Only attitude was not significantly associated with

intention to return (OR=2.093, 95% CI 0.889- 4.929; p=0.091). Behavioural control score (mean=3.8, SD=0.81); altruism score (mean=4.3, SD=0.64); and subjective norm score (mean=3.1, SD=1.02).

The Nagelkerke R-square value for the logistic regression model was 0.088.

5.16. Determinants of intention to return to donate blood among first time VNRBDs and FRD in Ghana

Variables that were identified as significant predictors of intention from all the group analyses were entered into a logistic model to determine predictors of intention to return to donate, when all the other factors have been entered into the equation.

Table 5.21: Determinants of Intention to Return

Predictor Variable	Categories	P-value	OR	95% C.I. for OR	
				Lower	Upper
Demographic characteristics					
Marital status (Ref - Single)	Married	0.547	0.839	0.475	1.484
	Other	0.122	4.631	0.664	32.302
Education (Ref - No formal education)	Basic education	0.501	0.476	0.055	4.131
	Secondary education	0.710	0.661	0.075	5.851
	Tertiary education	0.340	0.347	0.039	3.049
Ethnic background (Ref - Akan)	Ewe	0.801	0.923	0.497	1.717
	Ga/Dangbe	0.137	0.637	0.352	1.154
	Hausa/Dagbani	0.225	0.529	0.189	1.479
	Other	0.325	0.588	0.205	1.691
Factors related to the respondents' decision to donate blood					
Whether a donor considers self as voluntary donor (Ref - Yes)	No	0.205	0.607	0.281	1.312
	Don't know	0.902	1.061	0.410	2.747
Whether donor received incentive/refreshment for donating (Ref - No)	Yes	0.055	1.635	0.990	2.699
Motivators					
… if it is easy to get to the blood donation site (Ref - Disagree)	Agree	**0.001**	2.630	1.485	4.657

Predictor Variable	Categories	P-value	OR	95% C.I. for OR	
				Lower	Upper
… if Ghana needs blood (Ref - Disagree)	Agree	**0.033**	2.545	1.077	6.014
… for blood credits for me and my family (Ref - Disagree)	Agree	**0.013**	0.443	0.233	0.844
… because it would make me feel good about myself (Ref - Disagree)	Agree	**0.040**	1.830	1.028	3.257
… if I am notified through SMS/email reminders (Ref - Disagree)	Agree	**0.001**	2.724	1.544	4.807
… by radio, TV or newspaper advertisement on blood donation (Ref - Disagree)	Agree	**<0.001**	2.893	1.626	5.150
… if I will get to know my other (TTI) test results (Ref - Disagree)	Agree	**0.018**	0.433	0.217	0.865
Deterrents					
… because, the motivational items that are given to blood donors are not good enough (Ref - Disagree)	Agree	**0.010**	2.906	1.291	6.540
… if I do not know where the nearest blood donation site is (Ref - Disagree)	Agree	0.883	1.040	0.620	1.743
… that, I do not know what happens to the blood after donation (Ref - Disagree)	Agree	**0.028**	0.535	0.306	0.934
TPB constructs and altruism					
Subjective Norms (Ref - Negative)	Positive	0.061	1.626	0.977	2.705
Behavioural control (Ref - Negative)	Positive	0.190	1.409	0.844	2.352
Altruism (Ref - Negative)	Positive	0.280	1.653	0.664	4.114

Ref, reference category

Nine of the 18 items were identified as significant predictors of intention to return to donate blood. Ease of access to the blood donation site, donating to help Ghana, feeling good about self, SMS/email reminders and notification, TV, radio or newspaper advertisement on blood donation were positively associated with intention to return to donate, while donating for blood credits, and getting to know TTI test results were negatively associated with intention to return to donate. In addition, considering that motivational items that are given to blood donors are not good enough was positively

associated with intention to return, while considering not knowing what happens to the blood after donating, as a deterrent was negatively associated with intention to return.

The Nagelkerke R-square value for the final logistic regression model was 0.395.

5.17. Discussion

This chapter has presented the findings of the quantitative component of the study, obtained from the survey of 505 respondents, comprising of 250 first time VNRBD and 255 first time FRD. The issues identified include socio-demographic and household characteristics, factors related to the respondents' decision to donate blood; perceptions about blood and blood donation; motivators for blood donation; deterrents to blood donation; and predictors of intention to return to donate among first time voluntary blood donors (VNRBDs) and family replacement blood donors (FRDs) in Ghana.

5.17.1. Socio-demographic and household characteristics of first time VNRBDs and first time FRDs

The age range of respondents was identified as 18-58 years, with 25 years as the median age. A vast majority of respondents were below 35 years (87.4%), of male gender (72.5%) and single, had at least a basic education, of Akan ethnicity (39.4%) and Christian. Most respondents were employed, (58.8%) lived with parents or family members (54.13), used public transport and had some form of income. These findings are largely supported by other studies conducted in SSA with focus on socio-demographic characteristics, although there are discrepancies in selected characteristics (Duboz et al., 2010; Kimani et al., 2011; Njuguna, 2014; Pule et al., 2014).

Age

Overall, the age of respondents in the current study was skewed towards younger donors and followed a similar pattern to the age distribution of blood donors who donate at the SABC in Ghana. Data on age distribution of 30140 blood donors at the SABC of NBSG from March 2017 to February 2018 (NBS Ghana, 2018) showed that 74.4% of donors were below 35 years. However, contrary to the findings of the current study where the largest category (47.3%) of respondents were in the age bracket of 18 - 24 years, the SABC data had the largest category (37.9%) as 26 - 35 years as compared to 36.5% for ages 18 - 25 years. This difference in age prevalence may be attributed to either the age categorisation used by the two sources, and by the difference in age between the two populations: the current study examined only first time blood donors while the NBSG data examined both first time and repeat donors. Repeat donors are likely to be older than first time donors (Shaz et al., 2011). A number of studies have examined the age distribution among blood donors in SSA. A study by Duboz et al. (2010) in Senegal showed that 57% of the 155 respondents in the study were under 40 years of age. Similar findings are 76% under 40 years in Botswana (Pule et al., 2014); in Kenya, 84.8% under 38 years (Njuguna, 2014), and 81.3% under 40 years (Basavaraju et al., 2010); and, 84% under 40 years in Ghana, among FRDs (Asenso-Mensah et al., 2014). These findings resonate with findings of the literature review (Asamoah-Akuoko et al., 2017b) which is presented in chapter two of this thesis. Furthermore, secondary and tertiary school students, together, contribute about 30.5% of the blood at the Southern Area Blood Centre (SABC). The inability of the NBSG to retain blood donors and increase proportions of repeat donors is also a contributory factor to this finding.

Comparison of the age distribution by type of donor showed that VNRBDs are relatively younger than FRDs, with 59.8% of VNRBDs in the 18-24 year category as compared to FRDs, and 56.6% of FRDs in the 25-34 category as compared to VNRBDs. This is supported by findings by Kimani (2011) and Basavaraju (2010) where 59% of VNRBDs interviewed were aged 15-24 years as compared to 17.5% of FRDs. This is explained by the high proportion of student donors among the VNRBD at the SABC as indicated above, and therefore, the inclusion of a high number of mobile blood collection sessions of student blood donors in educational institutions in the study. Unfortunately, most students, after completion, do not continue to donate due to factors such as difficult access and inconvenience of time, identified by the qualitative components of the study and the literature review that has been presented in chapter two. (Asamoah-Akuoko et al., 2017b).

Sex

Gender representation of respondents was 72.5% males and 27.5% females. This is consistent with data from SABC of the NBSG (NBS Ghana, 2018), where 76.8% of the 30,140 blood donors included in the analysis were males with only 23.2% being females. This trend is consistent with findings by Duboz et al. (2010) with 33.5% females, Basavaraju (2010) with 31.5% females, Asenso-Mensah et al (2014) with 24.6% females. In Ghana, approximately 40% of women have some level of anaemia (Ghana Statistical Service (GSS) et al., 2015). Analysis of SABC data showed that 34.6% of all females who presented to donate were deferred, and of these, 34.6% were deferred due to low haemoglobin values (NBS Ghana, 2018), measured with HemoCue on capillary blood with cut-off values of 12.5g/dl for women and 13.5g/dl for men. . Blood donation has known adverse effects. These include localized

symptoms such as haematoma, arterial puncture, nerve injury and phlebitis; mild to severe vaso-vagal reactions ranging from general feeling of discomfort and weakness with anxiety, dizziness and nausea, which may progress to loss of consciousness; and serious adverse reactions of donation such as death (Goldman et al., 2016). Iron deficiency has been identified as a significant problem among regular blood donors, especially among menstruating women (Rigas et al., 2016). However, there is no testing for body iron stores for blood donors in Ghana. In addition, in Ghana and in SSA as a whole, the female gender is perceived as the weaker gender. Therefore, myths and misperceptions concerning women and blood donation may also interfere with recruitment of female donors. These included the general perceptions that because of menstrual blood loss and childbirth, as well as the perceived loss of ability to conceive, associated with donating blood, women should be cautious with donating blood.

Similar findings, with lower population of women donating blood have been identified by studies in India (Shenga et al., 2010) and Italy (Bani and Giussani, 2010). A review by Bani and Guissani (2010) identified greater expectation of trauma after donation, stronger influence of family and friends, lesser effect of remuneration/compensation strategies, and higher deferral rates due to anaemia among women as possible explanation for lower representation of women in blood donation. Although (Bani et al., 2014), in a study on gender differences and frequency of whole blood donation in Italy, identified pregnancy and breast-feeding as a major barriers to blood donation among women, they were of the opinion that this was not an adequate explanation for the observed gap as compared to other European countries

This finding is however, contrary to findings from studies in the USA, with focus on socio-demographic characteristics of donors. Shaz et al. (2011) in a study on demographic pattern of blood donors and donation in a multi-racial study population

in the USA, identified proportions of females as 54% for first time blood donors and 48% for all blood donors. Similarly, Lattimore et al. (2015) identified 55.8% females among 264,095 new blood donors in a study on demography and patterns of blood donation in England and North Wales. This supports the argument that more donors, especially females, could be encouraged and recruited to donate blood with targeted interventions, including education on blood donation, nutrition and ferritin guided iron supplementation (Magnussen et al., 2015).

Marital Status

In line with the younger age of majority of respondents is the high prevalence of those who are single as compared to married. The proportion of respondents that were single was 73.3%. This is supported by findings of studies in SSA (Nébié et al., 2007; Pule et al., 2014). Considering that a large proportion of respondents are young, this finding is not surprising. Comparing between VNRBDs and FRDs, not surprisingly, the proportion of single donors who were VNRBD were significantly higher than those who were FRDs. This is also supported by the study by Kimani et al. (2011) who found, in a study comparing VNRBDs to FRDs in Kenya, that of 286 VNRBD, 62.5% were single and 33.8% were married, as compared to 22.7% and 69.2% of FRDs being single and married respectively.

Level of Education

The educational category with the highest proportion of respondents was secondary school (36.6%). According to findings by Asenso-Mensah et al. (2014), of 511 FRDs in the study, students formed 45.8%. This supports the finding that the difference between VNRBD and FRDs by education is not significant. Overall, 2% of respondents had no education. Nationally, 19.1% of women and 9.4% of men have no

education (Ghana Statistical Service (GSS) et al., 2015). Education is closely associated with certain health behaviours (Ghana Statistical Service (GSS) et al., 2015). The higher overall proportion of donors with any level of education, as compared to the general population, could be explained by the influence of education on blood donation behaviour. This could also explain the contribution of secondary and tertiary school students to the blood supply. The convenience of targeting and recruiting students from educational institutions, as an organised group, cannot be excluded as the reason for this finding. Surprisingly, between VNRBDs and FRDs, the difference in the level of education was not statistically significant. Considering that a large proportion of VNRBDs are recruited from educational institutions among others, one would expect that VNRBDs would have an average significantly higher level of education. However, the effect of education on blood donation behaviour could be stronger and therefore account for this finding.

Ethnicity and religion

The study considered the major ethnic groups in Ghana; these were Akan, Ewe, Ga/Dangbe, Hausa, Dagbani, and other minority ethnic groups that were put together as "others". In Ghana, Akans form about 50% of the whole population, Ewes 13.4%, Ga/Dangbe 7.9% and Dagbanis' about 14.7%. The study identified that the Akan ethnic group was the largest category amongst those that were studied, and formed 39.4% followed by Ga/Dangbe and then Ewe. The high proportion of the Akan ethnicity in general, in Ghana, can explain the high proportion of the Akan group. Majority of the study respondents were selected from the Greater Accra region and therefore, it is not surprising that although the Ga/Dangbes are less than the Mole Dagbanis and Ewes, they were more in this study than the two. Comparing ethnicity

between the VNRBDs and FRDs the study identified that Akans, Ga/Dangbes and Hausas were more likely to be FRDs as compared to Ewes that were more likely to be VNRBD. There is no evidence to support differences in altruism amongst different ethnicities in Ghana and this could be purely due to selection bias. It will however be interesting to look at what motivates various tribes in Ghana or to look at the relationship between ethnicity and VNRBD in Ghana as a separate study.

A vast majority of respondents were Christians (93.7%) as compared to Muslims. This finding is supported by other studies conducted in SSA countries (Njuguna, 2014; Pule et al., 2014). In Ghana, 76.7% of the population are Christians and about 16.4% are Muslims. At the SABC, Christians contribute 97.7% while Muslims contribute only 2.3% of the total blood collection from the faith-based organisations. A study conducted at the Central Area Blood Centre of the NBSG by Asenso-Mensah et al. (2014), identified 77.6% Christians as compared to 22.4% Muslims. While this can be explained by distribution of the Muslim population in Ghana, which is denser in Central and Northern Ghana as compared to Southern Ghana, the difference in recruitment efforts between the two centres cannot be ruled out. It would also be interesting to examine the reasons for the discrepancy.

Employment

Of the four employment categories that we examined by the study, the one with the highest proportions of respondents was those with some form of employment (58.8%), and this included all forms of employment whether full-time, part-time, or self-employed. The next highest, not surprisingly, was the student category. As discussed above, students recruited from schools contribute 30.5% of the blood supply in the SABC. Also in line with findings regarding the age of respondents, students were more

likely to be VNRBD (73.9%) as compared to FRDs, while those employed were more likely to be FRDs.

Children and Home Situation

A large proportion of respondents did not have children. This is in agreement with the large proportion of respondents that were younger, students and single and is also in agreement with findings that FRDs were averagely older than VNRBDs, of those with children, a higher proportion were FRDs. The study also identified that the category with the highest number of respondents were those living with parents/family, and of these 59.5% were VNRBD. This is also related to age and employment status of respondents.

Income and Means of Transport

The category with the single highest proportion of respondents under income was the "no income category". This should be surprising considering that the "employment" category was the one with the highest proportion. However, the "employment" category was a merged category from various sub-categories. Similarly, combining all the income categories gives the highest proportion as "all respondents with some income" (49.7%). Of those with income (56.6%) are in the lowest category (below 16.6 GH¢ per day). The minimum daily wage in Ghana is 9.68 GH¢ per day. Those without income were more likely to be VNRBD while those with income were more likely to be FRD. In addition, as expected, a large proportion of respondents used public transport regularly and majority of these are VNRBD.

Overall, the findings from the demographic and household characteristic are mostly linked to age and employment characteristics. The selection of respondents

specifically from educational institutions, the propensity for young persons, youth groups to donate in faith-based organisations, and in communities, and selection of only first time donors for the study could contribute to these findings.

5.17.2. Factors related to the respondents' decision to donate blood of first time VNRBD and first time FRD

The 505 respondents comprised of approximately equal proportions of VNRBD and FRD, by definition and by selection, and in agreement with this 50.5% had donated blood specifically for relatives or friends. Contrary to the above, 82.6% of respondents perceived themselves as voluntary donors. Majority of respondents (65.3%) had received some form of incentive/gift item in the form of branded items from the Blood Centre, as well as beverage, milk, drinks, and t-shirts from blood donation sponsors, which were given to the donor to take away; or refreshment that was served to the donor for donating blood. The factor that mostly influenced respondents' perception of blood was cited as education (59.0%), most respondents had heard or seen adverts on blood donation (79.0%) mostly by radio or television, and respondents mostly preferred to receive reminders by phone or SMS.

Who the respondents donated blood for as a criterion for classifying a donor as VNRBD or FRD

As per classification of donors by motive for donating, FRDs donate specifically for relatives, friends or acquaintances as opposed to VNRBDs. In agreement with this classification, 50.5% of respondents donate for family or friends while 49.5% donate for community, blood bank or no one in particular. The distribution between FRDs and VNRBDs followed the same pattern.

However, concerning whether respondents perceived themselves as VNRBDs of FRDs, a surprising 82.6% of respondents agreed to perceiving themselves as voluntary donors. This contradicts the classification assigned to the respondents according to WHO criteria. Compared by type of donor, 92.8% of all VNRBDs perceived themselves as voluntary donors. This study does not have data to examine why a surprising 7.2% of VNRBDs did not consider themselves as voluntary donors. This could be explained by their circumstances of donating, as for example being required to donate as part of a group. It is worthy of note that the one respondent who received money and two out of three who received favours, are VNRBDs (Table 5.10). An insight into the reasons for this will provide evidence to guide the debate on definition of VNRBDs in the Ghanaian context. Again, surprisingly 72.5% of all FRDs perceived themselves as voluntary donors. Findings from the qualitative components indicated that a vast majority of FRDS believed that they were not coerced into donating blood, and that they were free to decide otherwise.

This major factor will need to be considered to avoid stereotyping donors who have willingly offered to donate blood. In Ghana as an example, the donor clinic in not friendly to the FRD. FRDs have to queue while the VNRBDs are given priority attention. They are also more likely to experience poor staff attitude, due in part, to the efforts to stop hidden commercial donors. Asenso-Mensah et al. (2014), concluded in their study on the possibility of FRDs becoming regular donors that "beyond the circumstances for donating blood, the motivation for blood donation between FRDs and VNRBDs are similar". Respondents further indicated in the study by Asenso-Mensah et al. (2014) that the key reason for donating blood was "being asked to donate (65.4%).

Incentives

Those who agreed to having received motivational items/refreshment constituted 65.3% of all donors. Only 2.6% of donors agreed to having received other forms of incentives. This included money (0.2%), "favour" (0.6%), and other, not specified (1.8%). Although one would expect that a larger proportion of FRDs would receive incentives, the findings indicate otherwise as 72.4% of all VNRBD received incentives as compared to 63.5% of all FRDs. The difference is not statistically significant between the two groups. It is important to note that only 0.8% of all incentives was given by patient's/blood recipients, and that 9.5% received from other sources could be churches, cooperate organisations, media houses etc., that sponsor blood donation. Incentives are not standardised and therefore it is difficult to examine the influence of incentives to donor motivation.

Factors that mostly influence donors' perception of blood

Perceptions about blood were mostly influenced by education, (59%), and then religion (25.5%). This supports the almost similar levels of education between VNRBDs and FRDs, and the findings of the qualitative component that education and awareness creation are major motivation for blood donation. Education as an intervention has been suggested or described by a number of studies conducted in SSA countries (Adewuyi, and Olawumi, 2006; Ahmed et al., 2006; Alinon et al., 2014; Appiah et al., 2013; Chandrasekar et al., 2015; Haoses-Gorases and Katjire, 2013; Harrington, 2012; Jacobs and Berege, 1995; Kabinda et al., 2014; Los et al., 2009; Muthivhi et al., 2015; Mwaba and Keikelame, 1995; Nébié et al., 2007; Nwogoh et al., 2013; Ogboghodo et al., 2015; Okpara, 1989; Olaiya et al., 2004; Ottong et al., 1997; Owusu-Ofori et al., 2010; Pule et al., 2014; Salaudeen et al., 2011; Umeora et al., 2005;

von Zahran and von Ali, 2013). Faith-based organisations contribute 45.5% of the blood supply at the SABC. The effect of religion on perception about blood could be a contributing factor, in addition to the fact that faith-based organisations are convenient organised targets for donor recruitment. Comparing by type of donor, the two prevalent factors (education and religion) are more likely to influence VNRBD than FRDs; FRDs are more likely to be influenced by culture (68.4%) as compared to VNRBD. This could be explained by the fact that FRDs are recruited mostly from communities while VNRBD are mostly recruited from schools and faith-based organisations.

Advertisements

While majority of respondents had heard or seen adverts of the Blood Service, VNRBD were more significantly more likely to have heard of such advertisements. This supports the important role of the source of information on type of donor. Radio and television advertisements were found to have reached majority of the respondents. Between VNRBDs and FRDs, the radio advertisements are more likely to reach FRDs, while the television advertisement is likely to reach the VNRBDs. VNRBD are younger and more likely to prefer television advertisements.

Reminders

Preferred means of receiving reminders was by telephone calls or SMS. Of these, majority were FRD. Those who preferred email composed 11.5% of respondents and were more likely to be VNRBD. The younger VNRBD preferred emails. Possibly, because they are younger and may not own telephones or be allowed to use them in school; they were less likely than FRDs to prefer these as a means of receiving reminders. Only 15% of respondents did not want any form of reminders at all, and

majority (73.3%) were FRDs. The fact that those who do not want reminders are more likely to be FRDs could also be explained by lack of access to equal level of education and information on blood donation by the FRDs as compared to the VNRBD.

5.17.3. Perception about blood and blood donation among first time VNRBD and first time FRD

The quantitative component of the study also examined perceptions of first time blood donors on blood and blood donation. All the items that were used to examine the perceptions of blood and blood donation, had been identified by the qualitative component of the study, and have been described in detail in the previous chapter.

In this component of the study, however, only eight of the 17 items were considered by most respondents (50.7% to 97.2%) as their perceptions of blood. These include the perceptions that blood is life, sacred, has a spiritual significance, used medically to save lives, used for covenants with other persons, used for rituals and sacrifices, determines inherited traits and is a symbol of pain and injury. The perceptions that blood is life, and is used medically to save lives are potentially encouraging for blood donation, and therefore not surprising that this was highly considered most respondents who are all blood donors. Although the other six perceptions may be potentially discouraging for blood donation, these perceptions are closely linked with the cultural beliefs and traditional practices in Ghana. These perceptions had been previously identified by studies in the SSA (Asamoah-Akuoko et al., 2017b). Of the 17 items, nine items were not considered by the majority of respondents as perceptions of blood. These were the perceptions that blood is used to link with the supernatural, harm one spiritually, for religious cleansing, spiritually to save lives; determines a person's character, is unique for kin, can transfer behaviour, should not be given out,

and should not be mixed between tribes. These perceptions are potentially discouraging to blood donation, and thus it was not surprising that in a sample of only blood donors most respondents did not agree to these perceptions. Therefore, this finding could be attributed to the fact that this population consists of only blood donors whereas the population in the qualitative study included non-donors. Perceptions could translate into motivators or deterrents to blood donation. Persons who have done a successful blood donation must have overcome some barriers to blood donation and therefore may not associate with one perception or the other. Secondly, the qualitative component examined factors that had been cited, and did not seek to quantify these factors among the study population.

Comparing by types of donors, the difference between the two groups was statistically significant for 14 items, including encouraging perceptions such as blood being the essence of life, and blood being used medically to save lives; and discouraging perception such as being able to harm one spiritually through blood, and not giving out blood because it is unique to the owner.

FRDs were less likely to have seen advertisement by the NBSG. Because FRDs are recruited by families or friends, from the communities, there is less opportunity for access to educational materials and information from the NBSG. Therefore, it is not surprising for them to be more likely to be associated with mis-perceptions about blood.

Similarly, although all items, used to measure perceptions of blood donation were identified in the qualitative study, only three items were considered by majority of respondents (72.4% - 98.4%) as their perceptions. These were the perceptions that blood donation is beneficial to the donor's health, important for saving lives, and can

help to find out if I have a disease. These perceptions were all potentially encouraging for blood donation and therefore, not surprisingly considered by blood donors. In addition, while these had been cited in the qualitative, these finding may reflect the prevalence of these among the population. Again, most respondents (69.1% to 95.4%) disagreed with perceptions that potentially discourage blood donation. Comparison between VNRBD and FRDs showed that nine perceptions had statistically significant association with type of donor, and were all potentially discouraging to blood donation. VNRBD were significantly more likely to disagree with these perceptions, possibly because of the possibility of having has access to information on blood donation during the recruitment process.

5.17.4. Motivators for blood donation among first time VNRBD and first time FRD

Motivators for blood donation were examined by this quantitative component of the study using 30 questionnaire items. The 30 items used to measure motivators for blood donation had also been identified by the qualitative component of the study and were supported by findings of the literature review (Asamoah-Akuoko et al., 2017b). The most cited motivators, identified by the literature review and the qualitative component of this study, were considered by 81.9% to 97.2% of respondents as motivators. These were items on prosocial motivation (Muthivhi et al., 2015; Nébié et al., 2007; Rolseth et al., 2014); education (Chandrasekar et al., 2015; Muthivhi et al., 2015; Nébié et al., 2007); access (Asenso-Mensah et al., 2014; Chandrasekar et al., 2015; Muthivhi et al., 2015); and, some non-monetary incentives (Duboz et al., 2010; Gobatto, 1996; Haoses-Gorases and Katjire, 2013; Koster and Hassall, 2011; Nébié et al., 2007). More than 50% of respondents did not consider monetary incentives, and some non-monetary incentives such as milk, milo, T-shirts, blood tonic, pens and exercise books,

as motivators. This is in agreement with the findings of the qualitative component of this study, where, although monetary incentive was cited, it was not a strong motivator. However, contrary to these findings, the qualitative component identified non-monetary incentives as strong motivators. Comparing motivators between VNRBDs and FRDs, 10 of the items measured under motivators were significantly associated with the variable type of donor. VNRBDs were less likely than FRDs to consider free medical check-up, cash gifts, non-monetary incentives and influence of family and friends as motivators. Although these findings are not surprising because by definition, VNRBDs donate without remuneration, and only for the benefit of others, other findings may provide additional explanations to this. The findings show that there is no statistically significant difference between VNRBDs and FRDs with regards to agreeing to donating to save lives, for blood to be available for family and friends in future, for blood credits for family, to feel good about ones' self, reminders, getting to know blood group and TTI results, and cash payments, as motivation for blood donation. Therefore, as discussed above, under perceptions, the VNRBDs' access to NBSG information and educational materials could contribute to this finding.

Also statistically significantly higher numbers of FRDs were less likely to consider access to donation site, helping community/country/blood bank, blood drives as motivators. This finding is also not surprising considering the definition of FRD. However, this could also be explained partially by the altruistic nature of VNRBD, as well as increased access to information and education by VNRBD. In addition, the FRDs were less likely to consider access to a donation site as a motivator. This could be explained by the increased motivation to donate for a person known to the donor, and the lack of information on alternative donation sites.

5.17.5. Deterrents to blood donation among first time VNRBD and first time FRD

The 33 questionnaire items that were used to examine deterrents to blood donation among first time blood donors were identified by the qualitative component and the literature review. Of the 33 items, the majority of respondents considered only two items: poor clinic setting (53.5%), and poor staff attitude (50.5%), as deterrents to blood donation. This is strongly supported by the findings of the qualitative component, and the study by Muthivhi et al. (2015) in South Africa. Majority of respondent did not consider 31 items as deterrents to blood donation, and among these, a vast majority (more than 80%) did not consider 17 items as deterrents. These 17 items included the fear of the use of blood for occultism, donor reactions, discovering illness, sight of blood, contaminants, becoming impotent or infertile; discouraging religion, culture and personal beliefs; and considering that motivational items that are given to blood donors are not good enough. The discrepancy in findings between the two components of the study may be due to the characteristics of the study population, and the methods used. It is important to note that although these items identified by the qualitative component were not considered by majority of respondents, some respondents considered them as deterrents.

Comparing the items by type of donor, only nine of the items were statistically significantly associated with type of donor. VNRBDs were less likely as compared to FRDs to consider busy schedule, inconvenience, long waiting time, not being asked, advertisements are not good enough, lack of awareness of need, poor staff attitude, and fear of fainting as deterrents. However, VNRBDs were more likely to consider the fear that donated blood can be made available to occultists for “sakawa” as a deterrent to blood donation, as compared to FRDs. “Sakawa” is a popular term among the youth.

Therefore as a deterrent, it may be more popular among the younger group – the VNRBDs.

Key deterrents identified among first time donors were both related to service experience. A successful first time donation was identified as a motivator by the qualitative component. This could have mitigated the effect of other key deterrents identified by the qualitative component, such as fear. Targeted interventions to increase return blood donation among first time blood donors should focus on addressing service related factors such as staff attitude and the overall donation experience. Interventions that are targeted at the youth should address the use of blood for "sakawa" which is a terminology for a new type of crime that combines occultism and internet based fraud.

5.17.6. Attitude, subjective norms, behavioural control, and altruism among first time VNRBDs and FRDs

The study explored altruism and three of the constructs of the TPB. These are attitude, subjective norms, and behavioural control.

Attitude

Overall, most respondents had a good attitude to blood donation (78.5% - 93.8%) on all six items used to examine attitude. This is supported by the findings of the qualitative phase, which identified that majority of IDI and FGD respondents saw blood donation as good and important, and by Natukunda et al. (2015) among peri-urban and rural communities in Uganda, and Melku et al. (2016) in an adult population in Ethiopia. According to the TPB, attitude predicts intention, and intention in return influences actual behaviour (Ajzen, 2006a). Between the two types of donors, FRDs were found to be statistically significantly more likely than VNRBD to perceive blood

donation as negative rather than positive. By definition of FRDs, this result may be expected. Also significantly higher proportions of FRDs considered the items as deterrents therefore, this finding is not surprising. However, as discussed earlier, first time FRDs who have been recruited by family or friends, are less likely than VNRBD to have been exposed to education on blood donation. Therefore, the lack of knowledge about blood donation could also contribute to this finding.

Subjective norms

The finding that 67.9% of respondents agreed that their family and friends think that they should continue donating blood gives a positive dimension to developing interventions in this predominantly young group of donors. Subjective norm is an antecedent to intention, which in turn is a predictor of actual behaviour (Ajzen, 2006a). Most donors disagreed that they do what their families ask them to do. However, for a predominantly young group who are students or employees earning minimal wages, and who live with parents and family, the influence of family and friends cannot be ignored. The goodwill of family members and friend enhances the possibility of implementing successful interventions with ownership by the whole community, and that seek to expand donor bases in the communities. This is also an important indicator for obtaining consent for donors below the age of consent in Ghana, for example, where the lower donation age is 17 years.

Behavioural control

Behavioural control was measured with two items. Behavioural control is an indication of how much control the donor has over the action. Behavioural control is a predictor of intention among both old and new donors (Ajzen, 2006a; Godin et al., 2007). Most respondents (89.5%) agreed that they could continue to donate blood if health allows,

while 70.0% disagreed that they find it hard to continue donating. The higher proportions of first time donors admitting to having control over blood donation behaviour indicates the need for interventions that encourage repeated actions to strengthen their control. First time donors who donate frequently at the early stages of their donor career are likely to be retained as regular donors (Schlumpf et al., 2008).

Altruism

Two items were used to measure altruism. Most respondents reported not being involved in volunteer activities other than blood donation (55.0%), but 93.0% either preferred working towards the good of others or found it important to help others, compared to 7.0% who were not interested in helping others. This is in line with the findings of the qualitative component and the literature review (Asamoah-Akuoko et al., 2017b) that donating blood for the good of others is the single most cited motivator for donating blood in Ghana and in SSA. Altruism has been identified as a significant motivator in different types of study populations including populations of FRDs. Altruistic motives have also been found to be linked with being a blood donor, as well as differentiate non-donors from donors (Evans and Ferguson, 2014). Different types of altruism have been described in relation to blood donation (Fergusson at al., 2008). These include pure altruism, driven by an ultimate desire to help others or reduce their suffering without any personal benefit; warm glow which is a sense of positive emotional gain from helping; impure altruism or donating to attain warm glow while caring about the recipient; reluctant altruism or donating because the donor does not trust others to do it; benevolence where both the donor and recipient benefit; and kinship where the focus on the idea that relatives will benefit from the donation. This study identified that FRDs were significantly less likely to volunteer in other activities as compared to VNRBD. A study using a detailed questionnaire to measure the

different motives of altruism among the various types of donors and non-donors can help establish if VNRBDs are more altruistic than FRDs, and guide on developing targeted interventions.

Intention to return to donate after first donation

Most respondents agreed to planning to return to donate when they are due in four months (68.7%), and planning to continue donating for as long as health allows (87.7%). Intention is a direct predictor of behaviour (Ajzen, 2006a). However, despite the expression of intention by majority of respondents to donate, 61.8% of the blood supply at the SABC were collected from first time donors in 2016 (SABC/NBS Ghana, 2017).

Actual six-month return

Only 14 (3.1%) of the 422 donors who were reached by phone, during the follow up data collection on six-month return rate, had returned to donate blood. This proportion was very low indicating poor return. The intention to return was therefore used as the only outcome variable. Intention is the direct antecedent of return behaviour (Ajzen, 2006a).

5.17.7. Predictors of first time VNRBDs and first time FRDs intention to return to donate blood in Ghana

The study used the intention to donate, as the dependent variable, which was categorised into willingness to return to donate (or not) within six months. Various demographic characteristics and motivators for, and deterrents to, blood donation were used as the explanatory variables in the binary logistic regression analysis. The odds ratios of each of the explanatory variables were reported with their p-values. This was done for the demographic characteristics, motivators for blood donation, deterrents to

blood donation, and the constructs of the TPB. Significant variables were then run in a second step logistic regression analysis to account for confounders to the effect on the intentions to return for blood donations.

Demographic factors that influence intentions to return to donate

Three of the six items used to assess the demographic predictors of intention to return to donate blood were significant. Marital status was significantly associated with intention to return with the married people being twice as likely to return as the singles. Similarly, education was a significant predictor of intention to return with those having basic education being twice as likely to return as those with higher levels of education (Table 5.15). Among the ethnic groups, the Ga/Dangbes were half as likely to return for blood donation as compared to the Akans (Table 5.15).

In the logistic regression model of demographic characteristics, marital status was a significant determinant of intention to donate blood, although, married people were less likely to be VNRBD. The findings of a study in Saudi Arabia (Alfouzan, 2014) showed that married individuals had higher blood donation knowledge level compared to singles (mean rank was 182.3 versus 158.9), and higher blood donation attitude score compared to singles (mean rank was 184.6 versus 153.8). However, contrary to the findings of the study by Alfouzan (2014), which showed that married individuals had higher rate of blood donation compared to singles (53.3% versus 29.4%), this study of first time donors showed lower blood donation rates among married people as compared to singles. In addition, the findings of this study showed that FRDs are less likely to return, although not statistically significantly different from VNRBD. Therefore, not surprisingly, when marital status was added in the logistic regression model of all the significant variables from the various groups of variables, it was not

identified as a significant predictor of intention. This suggests that marital status may not play a role in predicting intention to return to donate. Similarly, secondary education was identified as a significant predictor of intention at the level of socio-demographic variables and in the final logistic regression model with all the significant variables. Blood collection from students at the SABC is usually conducted during blood donation sessions in the schools. This increases the convenience of access to donation site and eliminates barriers relating to time, lack of opportunity, and difficult access. Although not identified as a significant predictor of intention in this population, control over behaviour increases motivation to engage in the behaviour (Armitage and Conner, 2001). Secondary schools are a convenient organised group to target and educate on blood donation. Access to education and information on blood donation may account for the contribution to predicting intention to return. Although ethnic background was a significant predictor of intention, in the final logistic model it was not significant, and therefore possibly does not contribute significantly to the prediction of intention.

Factors related to the respondents' decision to donate blood that predict intention to return to donate

Two of the five items used to assess blood donation related factors that predict intention to return to donate blood were significantly associated with intention. Respondents who considered themselves as voluntary donors were more likely to return compared to those who did not consider themselves as voluntary donors, and those who received refreshment/incentives were twice as likely to return as compared to those who did not receive refreshment/incentives (Table 5.17).

A donor's perception of self as a voluntary donor was identified as a significant predictor of intention to return to donate blood. Self-identity is the extent to which an individual perceives himself as in a role, and was found to be strongly and positively correlated with behavioural intention in a study by Armitage and Conner (2001).

Motivating factors that predict the intention to return to donate

In the group analysis of the 30 variables estimating motivating factors that predict intention to return, only seven were significant. Five factors were positively associated with intention to return: ease of access, donating for country, to feel good, reminders and advertisement. Conversely, blood credits and TTI test results were negatively associated with intention to return (Table 5.18).

When the significant variables were entered into the final regression model (Table 5.21), ease of access to donation site, blood donation reminders and radio/TV advertisements were significant positive predictors of intention, while getting blood credits for self/family and getting to know TTI test results were significant negative predictors of intention to return. Having a convenient place to donate has been identified as a motivator for frequent repeat donations (Schlumpf et al., 2008). Ease of access to donation site increases control over behaviour. These factors should be in the focus for developing intervention to increase repeat donations among first time donors in Ghana. While ease of access, reminders and adverts may be expected to be motivators, the negative association of blood credits and TTIs results with intention is an interesting finding. Blood credits have been used as an incentive in Ghana over the years and are in the process of being phased out. However, due to regular shortages of blood and blood components, when donors are given the credit on paper, may not be able to access blood for transfusion when needed, The inability of the blood

centres/banks to honour blood credits could explain why "getting blood credits for donating blood" as a motivating factor negatively predicted intention. The contribution of altruism as a motivator could also explain this observation. The qualitative component of the study identified that for young donors, the fear of knowing HIV results was a very strong deterrent. This may explain why getting to know the results of TTI test as a motivating factor negatively predicted intention to return. The study population comprised of predominantly young donors.

Deterrents that predict the intention to return to donate

Three of 30 items used to assess deterring factors that predict intention to return were significantly associated with intention to return. Considering that one would be deterred from donating blood because, the motivational items that are given to blood donors are not good enough; and if one lacks of awareness of blood donation site were positively associated with intention to return to donate blood, while not knowing what happens to the blood after donation was negatively associated with the intention to return to donate.

In the final logistic regression model, agreeing that one would be deterred from donating blood if the motivational items given to donors are not enough were found to be a significant positive predictor of intention. This may suggest that for altruistic donors the incentives could be a deterrent, and lack of therefore, a motivator, Incentives to donors may be more effective if they are offered to those who have no objection to them. Not knowing what happens to the blood after donation remained negatively associated with the intention to return to donate. A number of rumours and misconceptions that are related to blood and blood donation, identified by the literature review and the qualitative components, could potentially make donors worry about

what happens to the blood. These may include the misperception that blood has spiritual significance, is used for rituals, and covenants, which were considered as perceptions by about 73%, 70% and 74% of respondents in the survey respectfully; and that donated blood is sold (Agasa and Likwela, 2014; Agbovi et al., 2006; Alinon et al., 2014; Kabinda et al., 2014).

Measures of the constructs of TPB that predict intention to return to donate

Three of four items that were entered into the logistic regression model to determine the attitude, subjective norm, and behavioural control, and altruism on one hand, and intention to return to donate on the other hand, were significantly associated with intention to return.

Perceived behavioural control significantly predicted intention to return (OR=1.905, 95% CI 1.267 - 2.865; p=0.002), among first time donors. This may be explained by the fact that increased control over a behaviour increases one's confidence to undertake the behaviour and reduces fear or anxiety that may be associated with the behaviour. Interventions that are targeted at increasing blood donations should consider encouraging new donors to repeat blood donation at regular intervals after the first donation. This will increase their control and promote long-term regular blood donation.

Subjective norm was also a significant positive predictor of intention to return (OR=1.909, 95% CI 1.249 - 2.919; p=0.003). Those whose family/friends thought they should continue giving blood, and those who agreed that if they wanted to, they would be able to continue giving blood as long as their health allows it, were more as likely to have the intention to return to donate and agreeing.

Altruism was a significant positive predictor of intention to return. Those who tried to work towards the well-being of society and those who thought it was important to them that they help others, were more likely to have the intention to return to donate blood. Messages based on altruism could be effective in increasing intention to return to donate blood.

The Nagelkerke R-square value for the logistic regression model that included only the constructs of the TPB was 0.088. This means that all the four constructs of the TPB, examined in this logistic regression model contributed 8.8% of the variance in predicting intention to return to donate blood.

Determinants of intention to return to donate blood among first time VNRBDs and FRDs in Ghana

In the final logistic regression model, which included all the variables that were identified as significant in the group analyses, the following variables or constructs were identified as positively predicting intention to donate blood. These include: ease of access to the blood donation site (OR=2.630, 95% CI 1.485 – 4.657; p=0.001); donating blood because Ghana needs blood (OR=2.545, 95% CI 1.077 – 6.014; p=0.033); donating because it makes one feel good about himself (OR=1.830, 95% CI 1.028 - 3.257; p=0.040); SMS and email reminders (OR=2,724, 95% CI 1.544 – 4.807; p=0.001); TV, radio or newspaper advertisement on blood donation (OR=2.893, 95% CI 1.626 – 5.150; p<0.001), and considering that motivational items that are given to blood donors are not good enough (OR=2.906, 95% CI 1.291 – 6.540; p=0.010). On the other hand, donating for blood credits for family and for self (OR=0.443, 95% CI 0.233 – 0.844; p=0.013); getting to know one's TTI test results (OR=0.433, 95% CI 0.217 – 0.865; p=0.018); and not knowing what happens to the blood after donating

(OR=0.535, 95% CI 0.306 – 0.934; p=0.028), were negatively associated with intention to return to donate blood.

The Nagelkerke R-square value for the final logistic regression model was 0.395. This means that all the 22 factors examined in the model contributed 39.5% of the variance in predicting intention to return to donate blood.

When the significant socio-demographic characteristics, blood donation related, motivating, and deterring factors were entered into the model with the TPB constructs, the TPB constructs became insignificant. This implies that the basic TPB model that was used, does not predict intention to return to donate blood among first time donors in Ghana

5.18. Recommendations

The aim of the following recommendations is to address factors that were identified by the scoping reviews, IDIs and FGDs; which were further examined, and identified as significant factors through the survey. These should be the focus for priority activities to increase first-time donor return rates in Ghana.

The study identified that the respondents were predominantly young, below 35 years (87.4%), with a median age of 25 years; and the proportion of students among the respondents was 32.7%. The responsiveness of young people to blood donation as an activity creates an opportunity for development and implementation of youth based interventions. These include strengthening pledge/clubs 25 youth groups in schools and communities, where they exist, and establishing new clubs (de Coning, 2004; Muthivhi et al., 2015; Reddy, 2012). Other youth based activities include inter-schools blood donation competition (Asamoah-Akuoko et al., 2017a; Los et al., 2009), blood

donation campaigns involving youth clubs in faith-based organisations (Olaiya et al., 2004).

The qualitative component identified that completing school or moving from area of residence where blood donation sessions are usually organised, is a reason why some donors stop donating. It is important to develop an up to date donor database and an effective donor recall system, send reminders (Kabinda et al., 2014; Owusu-Ofori et al., 2010), maintain long distance relationship with blood donors (Kabinda et al., 2014) who complete school or move from their places of residence, expand mobile outreaches establish more fixed blood collection sites (Dahourou et al., 2010; Haoses-Gorases and Katjire, 2013; Mekonnen and Melesse, 2016; Muthivhi et al., 2015; Owusu-Ofori et al., 2010; Pule et al., 2014; Salaudeen et al., 2011) and strengthen blood donor associations (Appiah et al., 2013; Kabinda et al., 2014) to address this.

Another significant finding with regards to developing targeted interventions was identified as the under-representation of women in the blood donor population. Blood donation rates among women has been established to be critically low in countries across SSA (Asenso-Mensah et al., 2014; Basavaraju et al., 2010; Duboz et al., 2010). This is a very important issue that needs to be addressed, especially in Ghana, as the about 51% of Ghana's estimated 28.3 million population are females (Ghana Statistical Service, 2016). Interventions to encourage women to donate should be a priority in promoting blood donation. These should include intervention aimed at educating women on the risks associated with blood donation, preventing iron deficiency anaemia in women, as well as those that address, and seek to demystify myths and misperceptions regarding, and the loss of ability to menstruate and conceive. Interventions to prevent iron deficiency anaemia include ferritin guided iron supplementation and increasing periods between donations in blood donors (Cançado

and Langhi, 2012; Javadzadeh Shahshahani, 2007; Magnussen et al., 2015). This study also identified that education significantly influenced perceptions of donors. Inclusion of educational materials in educational curricula of schools should be considered (Agbovi et al., 2006; de Coning, 2004; Los et al., 2009; Muthivhi et al., 2015).

The close association between education and health behaviours (Ghana Statistical Service (GSS) et al., 2015) in general presents the need for a focus on building a network of blood donors who have completed school, and who support blood donation. Integration of school donation clubs into the existing National Association of Blood Donors in Ghana, to facilitate continuity of blood donation career among school graduates would be an effective strategy to improve blood donation. Community mobilisation can also be an effective strategy to target community groups and individuals as blood donors. Educational programmes that are aimed at increasing first time donor return should also be designed and implemented. Education on national blood requirements and collections, daily requirement and collections, collections by region etc. will send the message closer to the populace. Donating blood because Ghana needs blood was identified as a positive predictor of first time donor return. Education and information should be delivered as television radio or newspaper advertisements, which were also significantly associated with first time donor return among the respondents in the current study. Face-to-face education, identified by the qualitative study, and previous studies (Muthivhi et al., 2015) as a major motivator for donation should also be explored. Information on the blood donation process should also be disseminated as part of the general education, and as pre-donation education. Another focus for educational programmes should be what one personally achieves for donating blood to save lives; for example, being important and special. This should also be a focus of blood donor services in the NBSG. Staff should be trained to see and

treat blood donors as such. Blood donors want to know what happens to their blood after donation. Education should include information on the processing, distribution and issuing of blood to patients.

Open days and organised tours to the blood centres and hospitals for blood donors could be useful in address the need to be informed about what happens to the blood.

The study also identified critical under-representation (6.3%) of Muslim donors in southern Ghana, in contrast to the 22.4% in the central Ghana. This could be explained partly by the difference in the population of Muslims in the southern and central parts of Ghana. For example, Muslims form 11.8% of the four million population in Greater Accra Region in the south, as compared to 15.2% of the 4.8 million population in Kumasi in central Ghana. However, it would also be interesting to examine in-depth, perceptions of Muslims about blood donation in Southern Ghana to identify the reasons for their underrepresentation, using a qualitative approach. The potential for increasing Muslin donors in southern Ghana has been demonstrated by the success in Kumasi, in central Ghana (Asenso-Mensah et al., 2014; Owusu-Ofori et al., 2010).

Incentives should receive priority attention, as incentives could potentially motivate or demotivate blood donors. The study identified that VNRBDs were more likely to receive incentives than FRDs. It also identified that some forms of incentives positively predicted first time blood donor return, while others negatively predicted intention to return. These incentives, from the description of the respondents, ranged from refreshment served after donation to motivational items such as branded pens and t-shirts. An important step for the Blood Service is to have discussions with donors to define which incentives are acceptable for non-remunerated donations, and which constitute remuneration for donations; and develop a policy document and donor

education materials based on the outcome of such discussions. It is also important to dialogue with all stakeholders and standardise incentives. This will facilitate a controlled implementation and evaluation of the effect of incentives on repeat blood donations, thus providing evidence on how to effectively apply incentives without compromising the autonomy of the donor and the safety of the blood supply.

A key finding is that the blood donors, who have been classified as FRDs by the NBSG in accordance with WHO definition, consider themselves as voluntary blood donors. The Blood Services should proactively pursue reaching out and educating the populace and ensure that the FRDs who are "asked" by family and friends to donate are equally educated to understand the importance of blood donation and the blood donation process as the VNRBDs who are recruited by the Blood Service. This will reduce the focus and effort that is wasted on trying to dismantle the replacement donation system, and redirect efforts towards building up the voluntary repeat donation system. FRDs are potential repeat blood donors who can be recruited with less resource requirement than sending outreach teams into the communities. Stereotyping and alienating FRDs can only be counterproductive to the recruitment and retention efforts of Blood Services. It is important to invest effort and resources in encouraging FRDs to continue to donate as repeat donors. This can be achieved through a dedicated retention programme that includes education, registration of the FRDs as a blood donor, ensuring good donation experience, an up-to-date database and follow up, and networking programmes for donors. Since FRDs have the tendency to want to donate for family and friends, the option of community blood banks that allow the donor to contribute to a community of her/his choice could be a more feasible alternative to donating only when needed by a relative or friend. The modalities for implementing such a system, with clearly defined responsibilities should be documented to prevent

the creation of parallel systems. It is also important to examine the concept of voluntary blood donation from the point of view of the Ghanaian/SSA donor. The community blood bank concept could also be used to address blood crediting as an incentive, which was found by this study to negatively predict first time donors' intention to repeat donation.

Most (85%) respondents would be happy to receive a reminder to donate blood. Reminders, invitations, and being asked to donate have been identified as important motivators for donating blood (Asenso-Mensah et al., 2014; Jacobs and Berege, 1995; Muthivhi et al., 2015). Good systems for reminders, which take into consideration preferences by various target groups, would be an effective intervention for increasing first time donor return. In the same way, the preference of the younger VNRBD for television adverts as compared to the older FRDs who prefer radio advertisement should be applied in designing targeted intervention for publicity.

The predictors of intention to donate blood have been identified by this study. Factors that positively influence blood donor return are convenient access to blood donation session, if the donor knows that Ghana needs blood, and if it makes one feel good about himself, SMS and email reminders, TV, and radio or newspaper advertisements on blood donation. Factors that negatively influence blood donation include, donating to get blood credits for family and for self, getting to know one's TTI test, and not knowing what happens to the blood after donating. Considering that motivational items that are given to blood donors are not good enough, surprisingly, positively influenced intention to return. In Ghana, incentives are not clearly defined, and could vary between donation centres. Therefore, the first approach to incentives should be to find out what is currently offered as incentive and try to rationalise it, then develop

guidelines and a policy document, followed by implementation and evaluation. The predictors of intention to return have been determined quantitatively. These should be the focus of priority action towards increasing first time donor return in Ghana.

5.19. Conclusion

This chapter presents the findings from the quantitative examination of the factors that influence blood donation, which were identified through the literature review and the qualitative study, and have been presented in chapters two and three respectively, among first time VNRBDs and FRDs. It has also examined the predictors of first time blood donor return in southern Ghana.

A significant finding is that first time blood donors were mostly young (18 – 30 years), with a median age 25 years. In addition, first time VNRBD were significantly younger than first time FRDs. This make it important to focus on youth based activities that are aimed at increasing motivation when considering intervention to increase repeat donations. Another finding was the under-representation of women in the blood donor population, which can be attributed to both medical factors and misperception, interventions that are targeted specifically at females of various age groups. The relevance of interventions targeted at the youth and females have been discussed in detail.

A very interesting finding is the FRDs' perception of self as voluntary donors, rather that the "tag" which is assigned to the automatically due to the circumstances of their donation. The reasons given by FRDs who consider themselves as voluntary donors has shown that in assigning the classification and definition to these donors, due diligence may not have been done in considering their motivation for donating blood; offering them resources in terms of access to education and information motivation

and opportunity to decide to become repeat donors. It has also brought into sharp focus the fact that a donor's status should be determined by himself/herself, rather than by for whom he or she is donating. The fact that FRDs could be the "low hanging fruits" in donor recruitment, and the need for Blood Services to invest in encouraging them to donate, rather than stereotyping and discouraging them has been discussed in detail, and recommendations for encouraging such donors to continue donating have been outlined.

Another interesting finding is the role of education in shaping the first time donors' perceptions about blood and blood donation, offering the opportunity to enforce positive perceptions about blood and blood donation while discouraging negatives perceptions. The importance of education as an incentive was underscored by the findings of the literature reviews, presented in chapter two, as motivators for blood donation, and as an intervention for promoting blood donation.

Another finding of interest is the fact that FRDs were significantly less likely to have seen or heard advertisements of the Blood Service as compared to VNRBD, which is a factor of the exposure given to these donors before or during recruitment to donate. This highlight the point that while Blood Service recruiters educate VNRBDs during mobilisation and recruitment, FRDs who are recruited by family or friends may not have access to the same level of information. Therefore, some differences between FRDs and VNRBDs could be explained by this inequality in access to blood donation education and information, rather than motivation. While efforts by the Blood Service to reach more potential donors through education would help address these, it is also import that strategies are put in place to educate donors who are recruited by relatives and friends from the community. This will encourage them to return to donate.

Key motivators from the quantitative component were identified as prosocial motivation, education, access to donation site, non-monetary incentives such as TTI and blood group testing, and health check. These findings on motivators for blood donation supports some of the findings of the qualitative study and the literature review. While VNRBDs seem more likely to be motivated by altruistic reasons, FRDs seem more likely to be motivated by incentives. However, for a number of items that measure altruism and incentives, there was no statistically significant difference between what VNRBDs and FRDs consider as motivators. This could be explained the difference in knowledge about blood donation between the VNRBDs as and FRDs as out lined above.

Intention is a significant predictor of actual donor return (Schlumpf et al., 2008). The findings of this study have demonstrated that first time donors' intention to return to donate blood is associated with motivating factors (convenient access to blood donation session; if the donor knows that Ghana needs blood; if it makes one feel good about himself; SMS and email reminders; TV, and radio or newspaper advertisement on blood donation; donating to get blood credits for family and for self; getting to know one's TTI test result as a benefit of donating blood); and deterrents to blood donation (considering not knowing what happens to the blood after donating, and considering that motivational items that are given to blood donors are not good enough). In line with these findings, recommendation for interventions to address these finding, in order to increase blood donor return have been presented in detail, under recommendation in this chapter.

The recommended interventions that have been outlined in this chapter, are focused on increasing first time donor return in Ghana, based on the findings of the survey of 505 first time blood donors, with focus on their socio-demographic characteristics,

perceptions of blood and blood donation; motivators for blood donation; deterrents to blood donation; and predictors of intention to return to donate blood. A previous review (Asamoah-Akuoko et al., 2017a) identified that one of the challenges with success of interventions for motivating blood donors in Ghana, is the approach to implementation. A holistic approach, with ownership by the Blood Service, Ministry of Health and the community should be in implementing these recommendations. It is important that these interventions are planned, documented, and implemented in a controlled manner and monitored to generate evidence on the effectiveness or otherwise of such intervention.

CHAPTER 6

SUMMARY AND CONCLUSIONS

6.1. Introduction

Low- and middle-income countries (LMIC) have about 81% of the world's population, but contribute only about 50% of the 112.5 million donations of blood collected annually worldwide (WHO, 2016). In Ghana, under 65% of the annual blood requirement of 250,000 units of blood is donated, and only 34% of the units donated are from voluntary non-remunerated blood donors (VNRBDs) (SABC/NBS Ghana, 2017). At the Southern Area Blood Centre (SABC) of the National Blood Service, Ghana (NBSG), first time donations constituted 61.8% of the 17,375 units of blood, donated by VNRBDs in 2016 (SABC/NBS Ghana, 2017).

This study used two scoping reviews; 24 in-depth individual interviews (IDI); five focus group discussions (FGD), with a total of 39 participants; and a cross-sectional survey of 250 first time VNRBDs and 255 first-time FRDs; to identify perceptions of blood and blood donation, motivators for blood donation, deterrents to blood donation, and first-time blood donors' intention to return to donate blood.

6.2. Objectives of the study, summary of key findings and conclusions

The summary of findings and conclusions, have been presented in relation to the objectives of this study.

6.2.1. Objective 1: To assess the perceptions of blood donors and non-donors about blood, blood donation and the blood donation process

The perceptions about blood and blood donation were examined through a scoping literature review on blood donors' perceptions, motivators and deterrents in sub-Saharan Africa, IDIs, FGDs, and a cross sectional survey.

The key perception of blood that was identified by the scoping literature review, IDIs and FGDs was the perception that blood is essential for the sustenance of life, expressed as “blood is life”, “blood is the source of life”, “blood is the fuel of life”. This perception was cited by studies conducted in Ghana among blood donors and in other SSA countries (Agbovi et al., 2006; Asamoah-Akuoko et al., 2016; Kabinda et al., 2014; Rolseth et al., 2014). This perception was considered by over 97% of the survey respondents as their perception of blood, and supported by a socio-cultural study (Agyepong et al., 1997), and a study on community perceptions about blood draw for clinical research in Ghana (Boahen et al., 2013). Blood was also considered as a determinant of physical strength and health (Agyepong et al., 1997; Gobatto, 1996). Other perceptions identified include seeing blood as a physical or biological substance (Charbonneau and Tran, 2013; Koster and Hassall, 2011; Rolseth et al., 2014), spiritual (Gobatto, 1996; Koster and Hassall, 2011; Ottong et al., 1997; Salaudeen et al., 2011), or cultural (Koster and Hassall, 2011; Rolseth et al., 2014) entity.

Consistent with the perception that blood is the essence of life, was the key perception of blood donation as a good, lifesaving or life giving act, identified by the FGDs, IDIs, and the survey. This finding was supported by findings of the scoping review (Agbovi et al., 2006; Haoses-Gorases and Katjire, 2013; Harrington, 2012; Jacobs and Berege, 1995; Koster and Hassall, 2011; Melku et al., 2016; Salaudeen et al., 2011; Salaudeen and Odeh, 2011; Sekoni et al., 2014). Blood donation was also perceived to have health benefits. This is supported by other studies in SSA, Jacobs and Berege (1995); Muthivhi et al., (2015), and in Canada, in a population that included African migrants (Charbonneau and Tran, 2013).

The act of giving life through blood donation was perceived to have negative implications, according to the findings of the study. These included the perceptions that losing blood may result in the loss of health, energy and vitality (Gobatto, 1996; Harrington, 2012; Jacobs and Berege, 1995; Mwaba and Keikelame, 1995; Obi, 2007; Sekoni et al., 2014; von Zahran and von Ali, 2013), spiritual consequences of donating (Asamoah-Akuoko et al., 2016; Gobatto, 1996; Koster and Hassall, 2011; Salaudeen et al., 2011). To this extent, receiving "weak" blood was also believed to make the recipient weak (Gobatto, 1996).

The identified perceptions from the literature review, IDIs and FGDs were included in a questionnaire to examine perceptions quantitatively among first time donors. A vast majority of the respondents considered the perceptions that blood is life, sacred, has a spiritual significance, used medically to save lives, used for covenants with other persons, used for rituals and sacrifices, determines inherited traits and is a symbol of pain and injury; and that blood donation is beneficial to the donor's health, important for saving lives, and can help to find out if one has a disease. These were in line with the FGD, IDI and literature review findings.

However, the survey included only blood donors, while the IDIs, FGDs, and studies included in the literature review had a mixture of blood donors and non-donors. Most respondents to the survey disagreed with perceptions that potentially discourage blood donation, such as, a person's blood being unique to him/her, to family/ tribe, should not be given out; that blood donation is harmful to the donor's health, can transmit infection, is a waste of time, and implied giving away part of one's life. The differences between the samples of respondents in the survey who are all donors on one hand, and the IDIs, FGDs, and studies included in the literature review that includes non-donors

could explain the finding that a number of items were not considered as perceptions by the survey respondents.

Significantly higher proportions of VNRBDs, as compared to FRDs disagreed to most of the items used to assess perceptions about blood and perceptions about blood donation such as, blood donation being harmful, a waste of time, reducing the donor's physical strength, implying losing part of one's life, and negative health consequences. This can be explained by the level of education given by Blood Service recruiters who recruit VNRBDs as compared to that given to FRDs by family and friends who recruit them.

6.2.2. Objective 2: To identify motivators for blood donation among blood donors and non-donors

This study examined motivating factors for blood donation through a scoping literature review on blood donors' perceptions, motivators and deterrents in sub-Saharan Africa, IDI, FGD, and a cross sectional survey.

Prosocial motivation was the most cited motivator for donating blood, identified by the IDIs and FGDs. This included altruism, donating blood for family and friends (collectivism) and reciprocity, a belief that helping presents a greater chance of receiving help in the future if needed (Bednall and Bove, 2011), and were often clustered. Altruism statements such as donating blood to "save lives", or "help a person in need", were also identified as major motivators for blood donation in SSA (Adewuyi, and Olawumi, 2006; Asamoah-Akuoko et al., 2016; Asenso-Mensah et al., 2014; Chandrasekar et al., 2015; Duboz et al., 2010; Haoses-Gorases and Katjire, 2013; Jacobs and Berege, 1995; Kabinda et al., 2014; Koster and Hassall, 2011; Muthivhi et al., 2015; Natukunda et al., 2015; Nébié et al., 2007; Okpara, 1989; Olaiya

et al., 2004; Owusu-Ofori et al., 2010; Salaudeen et al., 2011; Salaudeen and Odeh, 2011; Sekoni et al., 2014). Collectivism (Adegoke, 2016; Adewuyi, and Olawumi, 2006; Asamoah-Akuoko et al., 2016; Duboz et al., 2010; Gobatto, 1996; Jacobs and Berege, 1995; Kabinda et al., 2014; Muthivhi et al., 2015; Nébié et al., 2007; Rolseth et al., 2014; Salaudeen et al., 2011; Salaudeen and Odeh, 2011; Sekoni et al., 2014); and reciprocity (Asamoah-Akuoko et al., 2016; Gobatto, 1996; Muthivhi et al., 2015; Nébié et al., 2007; Obi, 2007) were also strong motivators, cited by SSA. Prosocial motivation was also identified by the survey as a major motivator for blood donation, cited by over 90% or respondents in the survey.

Other major motivators, identified by the literature review and the IDIs, FGDs and the survey, were education (Chandrasekar et al., 2015; Muthivhi et al., 2015; Nébié et al., 2007); convenience of access to donation site (Asenso-Mensah et al., 2014; Chandrasekar et al., 2015; Muthivhi et al., 2015); and, some non-monetary incentives such as free TTI and blood group test results, free medical check, blood credits for donor and his family, perceived health benefits, and awards/prizes given on blood donor day (Duboz et al., 2010; Gobatto, 1996; Haoses-Gorases and Katjire, 2013; Koster and Hassall, 2011; Nébié et al., 2007).

Other non-monetary incentives such as milk, milo, T-shirts, blood tonic, pens and exercise books, although identified by the IDIs and FGDs as motivators, and supported by SSA studies (Adewuyi, and Olawumi, 2006; Asamoah-Akuoko et al., 2016; Gobatto, 1996; Koster and Hassall, 2011; Muthivhi et al., 2015; Olaiya et al., 2004; Salaudeen and Odeh, 2011) were not considered as incentives by majority of survey respondents. This discrepancy could also be explained by differences between the IDI and FGD sample on one hand, and the survey sample on the other hand cited under

perceptions. It could also be explained by the fact that the IDIs and FGDs did not quantify the factors. Therefore, the less than 50% of respondents may represent those who cited these factors in the IDIs and FGDs.

Monetary incentives as a motivator were identified by the scoping review (Adewuyi, and Olawumi, 2006; Agasa and Likwela, 2014; Asamoah-Akuoko et al., 2016; Durosinmi et al., 2003; Kabinda et al., 2014; Koster and Hassall, 2011; Muthivhi et al., 2015; Olaiya et al., 2004; Salaudeen and Odeh, 2011; Sekoni et al., 2014; Umeora et al., 2005). They were also identified as a motivator by the FGDs and IDIs, although frequently cited as other people's experiences or as perceived motivators. Majority of survey respondents did not consider monetary incentives as motivators, although this had been identified by the IDIs and FGDs, probably because the IDI and FGD participants were a mixture of first time and repeat blood donors and non-donors, while the survey respondents were only first time donors. Blood donation motivation differ for different stages of the donation career, as well as between donor and non-donors (Ferguson et al., 2012). In addition, FGD and IDI findings often cited this as a perceived, and not a self-reported motivator.

When the motivators were compared between VNRBDs and FRDs, there were significant associations between 10 motivators that were measured and the type of donor. For example, VNRBDs were significantly less likely than FRDs to consider free medical check-up, cash gifts, non-monetary incentives and influence of family and friends as motivators. However, there was no significant difference between VNRBDs and FRDs with regards to agreeing to motivators such as donating blood to save lives, for family and friends in future, for blood credits for family, to feel good about oneself, getting to know blood group and TTI results, and cash payments.

FRDs were less likely than VNRBDs to consider access to donation site, helping community/country/blood bank, and blood drives as motivators. While this resonates with the WHO definition of FRD, the unequal access to information and education by the two types of donors could contribute to these differences between the two groups.

6.2.3. Objective 3: To identify the deterrents to blood donation among donors and non-donors

Deterrents to blood donation were examined through a scoping literature review on blood donors' perceptions, motivators and deterrents in sub-Saharan Africa, IDI, FGD, and a cross sectional survey.

The most cited deterrent, identified by the FGDs and IDIs was fear. This included fear of adverse donor reactions (Muthivhi et al., 2015; Mwaba and Keikelame, 1995; Olaiya et al., 2004; Rolseth et al., 2014; Salaudeen and Odeh, 2011; Umeora et al., 2005), catching infections (Agasa and Likwela, 2014; Agbovi et al., 2006; Gobatto, 1996; Haoses-Gorases and Katjire, 2013; Jacobs and Berege, 1995; Muthivhi et al., 2015; Olaiya et al., 2004; Salaudeen and Odeh, 2011; Sekoni et al., 2014; Umeora et al., 2005), finding out about illness (Agbovi et al., 2006; Ahmed et al., 2006; Gobatto, 1996; Haoses-Gorases and Katjire, 2013; Kabinda et al., 2014; Muthivhi et al., 2015; Mwaba and Keikelame, 1995; Obi, 2007; Umeora et al., 2005), needles (Agasa and Likwela, 2014; Alinon et al., 2014; Haoses-Gorases and Katjire, 2013; Melku et al., 2016; Muthivhi et al., 2015; Natukunda et al., 2015), falling sick after donating, losing blood, not being able to recover from health effects of donation (Adewuyi, and Olawumi, 2006; Agasa and Likwela, 2014; Agbovi et al., 2006; Alinon et al., 2014; Duboz et al., 2010; Jacobs and Berege, 1995; Kabinda et al., 2014; Melku et al., 2016; Muthivhi et al., 2015; Natukunda et al., 2015; Rolseth et al., 2014; Umeora et al., 2005), becoming impotent/infertile (Nébié et al., 2007; Olaiya et al., 2004; Umeora et

al., 2005), the sight of blood, and possible use of blood for rituals (Alinon et al., 2014; Gobatto, 1996; Umeora et al., 2005); and is supported by findings of the scoping literature review.

Other major deterrents identified by the IDIs and FGDs, and supported by findings of the scoping review included negative service experience and perceived lack of confidentiality (Kabinda et al., 2014; Muthivhi et al., 2015; Ottong et al., 1997), low self-efficacy (Haoses-Gorases and Katjire, 2013; Muthivhi et al., 2015), lack of knowledge (Adewuyi, and Olawumi, 2006; Haoses-Gorases and Katjire, 2013; Muthivhi et al., 2015; Pule et al., 2014), perceived poor health/illness (Agbovi et al., 2006; Melku et al., 2016; Muthivhi et al., 2015; Obi, 2007; Rolseth et al., 2014; Sekoni et al., 2014; Umeora et al., 2005)**,** influence of others (Melku et al., 2016), religious factors (Adegoke, 2016; Agasa and Likwela, 2014; Agbovi et al., 2006; Alinon et al., 2014; Haoses-Gorases and Katjire, 2013; Kabinda et al., 2014; Koster and Hassall, 2011; Melku et al., 2016; Muthivhi et al., 2015; Obi, 2007; Sekoni et al., 2014; Umeora et al., 2005)**,** inconvenient location and long waiting time (Agbovi et al., 2006; Ahmed et al., 2006; Chandrasekar et al., 2015; Duboz et al., 2010; Haoses-Gorases and Katjire, 2013; Melku et al., 2016; Muthivhi et al., 2015; Mwaba and Keikelame, 1995; Natukunda et al., 2015; Pule et al., 2014; Rolseth et al., 2014; Salaudeen and Odeh, 2011), cultural factors (Adegoke, 2016; Alinon et al., 2014; Haoses-Gorases and Katjire, 2013; Umeora et al., 2005), lack of incentives (Alinon et al., 2014; Kabinda et al., 2014; Muthivhi et al., 2015; Umeora et al., 2005), and perceived sale of blood (Agasa and Likwela, 2014; Agbovi et al., 2006; Alinon et al., 2014; Kabinda et al., 2014).

Majority of the survey respondents did not consider fear of the use of blood for occultism, donor reactions, discovering illness, sight of blood, contaminants, and becoming impotent/infertile; discouraging religious, cultural and personal beliefs; and considering that motivational items that are given to blood donors are not good enough, although these had been identified by the IDIs and FGDs. The differences in findings between the IDIs and FGDs on one hand and the survey on the other hand, may be explained by the characteristics of the study population, and the methods used; as outlined under "Objective 2".

Nine of the items that were used to measure deterrents to blood donation were significantly associated with type of donor. For example, VNRBDs were less likely as compared to FRDs to consider busy schedule, inconvenience, long waiting time, not being asked, ineffective advertisements, lack of awareness of need, poor staff attitude, and fear of fainting as deterrents. This can be explained by the differences in knowledge about blood donation between the two types of donors. However, VNRBDs were more likely to consider the fear that donated blood can be made available to occultists as a deterrent to blood donation, as compared to FRDs. "Sakawa" a popular term used among the youth, that describes the use of blood for occultism in combination with computer fraud, may explain in part the awareness of, and why the fear of use of blood for occultism is more likely to be a deterrent among VNRBDs, who were identified to be younger than the FRDs.

6.2.4. Objective 4: To examine the socio-demographic characteristics of first time VNRBDs and FRDs

Socio-demographic characteristics of first time VNRBDs and FRDs were examined through a cross sectional survey.

The age range of respondents was identified as 18-58 years, with 25 years as the median age. A vast majority of respondents were below 35 years (87.4%), of male gender (72.5%) and single, had at least a basic education, of Akan ethnicity (39.4%) and Christian (93.7%). Most respondents were employed, (58.8%) lived with parents or family members (54.1%), used public transport and had some form of income. These findings are largely supported by other studies conducted in SSA with focus on socio-demographic characteristics, (Duboz et al., 2010; Kimani et al., 2011; Njuguna, 2014; Pule et al., 2014), data from the SABC of NBSG (NBS Ghana, 2018), and studies conducted in India (Shenga et al., 2010), and Italy (Bani et al., 2014; Bani and Giussani, 2010). However, there are discrepancies in selected characteristics, as detailed under section 5.17.1, such as for example, from the SABC data where the largest age group (37.9%) was 26 - 35 years as compared to the largest group being 18 - 25 years (36.5%) for the current study. This discrepancy and others described under 5.17.1 are due to the differences between the sample populations. A sample of only first time donors is expected to be younger (Shaz et al., 2011).

Examination of the age distribution by type of donor showed that VNRBDs are younger than FRDs, with the 18-24 year range being the one with the largest proportion (about 60%) of respondents for VNRBDs, as compared to the 25-34 range (about 57%) for FRDs. This is supported by findings by Kimani (2011) and Basavaraju (2010) where 59% of VNRBDs interviewed were aged 15-24 years as compared to 17.5% of FRDs and can be attributed to the high proportion of student donors among the VNRBDs. The young age of respondents and younger age of VNRBDs compared to FRDs may explain other findings in relation to, for example, marital status, having children, income, and home situation .

Females were under-represented among donors in the study with 72.5% males and 27.5% females, in agreement with findings by Duboz et al. (2010) with 33.5% females, Basavaraju (2010) with 31.5% females, Asenso-Mensah et al (2014) with 24.6% females. Mis-perceptions about the female gender as the weaker gender, perceived loss of ability to menstruate/conceive after donating blood; and reasons of menstrual blood loss, childbirth and breastfeeding, as well as higher prevalence of anaemia are the reasons identified as contributing to the under-representation of females (Bani and Giussani, 2010; Shenga et al., 2010).

With 16.4% of the Ghanaian population being Muslims, the study identified that Muslims were also critically under-represented among donors (6.3%) as compared to Christians (93.7%). This resonates with other SSA studies (Njuguna, 2014; Pule et al., 2014) and the Muslim representation among blood donors at the SABC (2.3%). However, at the Central Area Blood Centre of the NBSG the proportion of Muslims and Christians are 22.4% and 77.6% respectively (Asenso-Mensah et al., 2014). This is due in part to, but not completely explained by the denser Muslim population in Central and Northern Ghana as compared to Southern Ghana. It would also be interesting to examine the reasons for the discrepancy.

Although the survey respondents comprised approximately of equal proportions VNRBD and FRD, a surprising 82.6% of respondents perceived themselves as voluntary donors. Among these, 92.8% of all VNRBDs perceived themselves as voluntary donors, while 72.5% of all FRDs perceived themselves as voluntary donors. FRDs believed that they were not coerced into donating blood, and that they were free to decide whether to donate or not. While this study does not have data to examine why 7.2% of VNRBDs did not consider themselves as voluntary donors, this could be explained by their circumstances of donating, as for example being required to donate

as part of a group. It would be interesting to study the perceptions of VNRBDs and FRDs about the voluntariness of their donation in-depth to generate more evidence to guide the debate on definition of VNRBDs in the Ghanaian and SSA context.

The factor that mostly influenced respondents' perceptions about blood was education (59.0%), followed by religion and culture. Most respondents had heard or seen adverts on blood donation (78.8%) mostly by radio or television, and respondents mostly preferred to receive reminders by phone or SMS.

6.2.5. Objective 5: To identify the potential predictive power of the identified motivators, deterrents and socio-demographic characteristics on first-time blood donors' intention to return, and on actual donor return to donate blood, using the TPB model

The association between socio-demographic and household characteristics of first time VNRBDs and FRDs; motivators for, and deterrents to blood donation; and the constructs of the TPB on one hand; and respondents' intention to return to donate, were examined through a cross sectional survey.

The study aimed to predict intention to return, and return rates of first time donors. However, the six-month return rate that was observed from the six-month follow up data was very low (3.1%) as compared to the rate that was observed in a pilot study (15.2%) which was used in calculating the sample size. Instead, the study examined the intention of donors to return to donate. Intention has been shown to be a predictor of donor return (Ajzen, 2006a).

Most respondents, both VNRBDs and FRDs, planned to return to donate when they are due in four months (68.5%).

Using the theory of planned behaviour, subjective norms (p=**0.003**), perceived behavioural control (p=**0.002**) and altruism (p=**0.023**) significantly predicted intention to return to donate blood, but attitude did not. However, when these four factors were entered into the final regression model, with the socio-demographic characteristics, motivating, and deterring factors that significantly predicted intention in their group analysis, the TPB constructs did not contribute significantly to the prediction of intention.

Motivating factors that positively predicted intention to return were: convenient access to blood donation session (OR=2.630, 95% CI 1.485 – 4.657; p=0.001), if the donor knows that Ghana needs blood (OR=2.545, 95% CI 1.077 – 6.014; p=0.033), if it makes the donor feel good about herself/himself (OR=1.830, 95% CI 1.028 - 3.257; p=0.040), receiving SMS and email reminders (OR=2,724, 95% CI 1.544 – 4.807; p=0.001), TV, and radio or newspaper advertisement on blood donation (OR=2.893, 95% CI 1.626 – 5.150; p<0.001). Two motivators, that surprisingly, negatively predicted intention to return to donate blood were getting blood credits for family and for self (OR=0.443, 95% CI 0.233 – 0.844; p=0.013); and getting to know one's TTI test results (OR=0.433, 95% CI 0.217 – 0.865; p=0.018). This could be explained by the fact that due to blood shortages, the blood crediting system has not been effective as credits on paper cannot be honoured. Also, young adults were found by the IDIs and FGDs to be afraid of discovering illness through blood donation, therefore free TTI test results could deter them from donating.

One deterrent negatively predicted intention to return to donate blood. This was not knowing what happens to the blood after donating (OR=0.535, 95% CI 0.306 – 0.934; p=0.028). Surprisingly, donors who considered that motivational items that are given to blood donors are not good enough, (OR=2.906, 95% CI 1.291 – 6.540; p=0.010)

were three times as likely to return as those who did not. This study does not have enough data to explain why those who consider a factor as a deterrent could be motivated by the same factor, as in the case of considering that motivational items that are given to blood donors are not good enough. An in-depth study into how the various types of incentives and disincentives work in practice could help explain and give more insight into these findings.

6.3. Recommendations

The following recommendations for interventions are based on findings from the two scoping literature reviews, IDIs, FGDs, and the questionnaire survey. These should be the focus promoting blood donation among blood donor and non-donors in Ghana, and in SSA.

6.3.1. Interventions for promoting blood donation in Ghana and in SSA

These were examined through the second scoping literature review on interventions promoting blood donation in SSA, and through the suggestions for change, identified by the IDIs and FGDs.

Based on previous classifications of interventions (Ferguson et al., 2007; Godin et al., 2012) four main intervention types were identified: motivational interventions aimed at increasing motivation toward blood donation, reminders about when to donate blood, use of incentives to encourage blood donation, and other interventions (Table 2.8).

Motivational interventions aimed at increasing motivation toward blood donation included interventions that target barriers or deterrents; awareness and blood donation campaigns; recruitment and retention programmes; using role models such as community or religious leaders; donor associations, youth and educational clubs;

blood drives, improving access to donation sites; partnerships and community mobilisation; donor management programmes; donor satisfaction; and social programmes for donors. Motivators also included free HIV and blood group testing results, blood crediting, and donor awards and recognition. Non-monetary incentives included free medical care, certificates, beverage, gift items such as t-shirts and wristbands, and haematinics; while monetary incentives included reimbursement of transport cost and remuneration. These interventions have been presented in detail in a table to provide options for implementation on country-to-country basis, based on specific needs.

Based on perceptions about blood and blood donation, motivators for, and deterrents to blood donation by IDI and FGD participants, the study also explored participants' opinion on practical changes that could be implemented to promote blood donation in Ghana. Suggestions from participants included improvements in information and communication, publicity and advertisement, staff attitude and skill, refreshments served to blood donors, waiting time at blood donation sessions, education of donors and the general public, convenience of access to donation sessions, incentives and motivational items given to donors, the suitability of the venues where blood donation sessions are conducted, customer care and customer relations, pre- and post- donation counselling and care, partnership and associations, recognition and awards, fees/charges and perceived sale of blood, reminders and donor recall, research in donor recruitment and retention, and relationship with donor groups. These are all in agreement with the findings of the literature review on interventions promoting blood donation in SSA, which have been presented in chapter two. Based on these findings and the IDI and FGD findings on perceptions, motivators and deterrents to blood

donation in Ghana, a detailed recommendation of priority actions for improving overall blood donation in Ghana has been presented below as Table 6.1.

Table 6.1: Recommendations to Increase Blood Donation in Ghana

Intervention	Objectives	Activity	Responsible Person(s)	Expected Outcome
A. DISSEMINATION				
Dissemination of findings of the study				
	To disseminate evidence, recommendations, action plan convert to a policy document for implementation, and solicit stakeholder support and commitment	1. Facilitate to disseminate findings of this study to staff of NBSG and other within country stakeholders	CEO, NBSG	1. Findings widely disseminated **2.** Action plan **3.** A policy document
		2. Facilitate to disseminate findings to external stakeholders such as the African Society of Blood Transfusion, ISBT, WHO, AABB among others	CEO, NBSG	
		3. Synthesise findings into publishable papers and publish in peer reviewed journals	Researcher	
		4. Publish recommendations on NBSG website	Head, R&D	
		5. Develop an action plan based on the recommendations with resource requirements, timelines and with responsible persons	CEO, NBSG/ Responsible persons	
		6. Share action plan with the Honourable Miniter of Health to be accepted as a policy document of the NBSG	CEO, NBSG	
B. INTERVENTIONS				
Motivational Interventions aimed at increasing motivation toward blood donation				
Cognition-based: interventions targeting psychosocial factors related to motivation, such as social norms, attitudes, and barriers				
Targeting barriers or deterrents				
	1. To address cultural, spiritual, and religious beliefs about blood and blood donation, dispel fears and fears, myths, misperceptions about dangers of blood donation 2. To address negative service experience 3. To address trust issues	Priority activities: 1. Education and information • Assign a focal person or group. • Develop terms of reference and action plan for activities • Prioitise activities based on evidence from the study and available resources	CEO, NBSG Focal person/group √	Action plan on educational interventions, stakeholder analysis, and familiarisation tours to blood centres to address perceptions and barriers

Intervention	Objectives	Activity	Responsible Person(s)	Expected Outcome
	4. To address expectations of incentives 5. To address influence and others	• Develop plans for education of blood donors and non-donors in the five key areas listed under "interventions targeting psychosocial factors related to motivation, such as social norms, attitudes, and barriers"	√	
		• Develop standardised educational information that are specific to the key beliefs and and deterrents that have been idenfited.	√	
		• Posters, leaflets, information on NBSG website under "blood donors", jingles, advertisments, information for educational talk shows	√	
		• Develop messages for phone text messages, mobile phone caller tunes, and social media	√	
		• Targetted information for churches, mosques, workplaces and youth groups	√	
		• Implement educational programmes	√	
		2. Partnerships		
		• Assign a focal person or group	CEO, NBSG	
		• Develop a stakehulder list for implementation and establish collaborations	Focal person/group	
		• Update knowledge of stakeolders through information sharing	√	
		• Implement action plans	√	
		3. Other activities		
		• Open days in blood centres and for donors to observe blood transfusions if possible. Video rooms showing blood transfusions and messages from the blood recipient during the open days is an alternative	√	
		• Train blood service staff on knowledge based subjects and on customer service and care	√	
Awareness and blood donation campaigns				
	1. To create awareness of need for blood, and on where to donate, how to mobilise a group and who to contact	• Assign a focal person or group	CEO, NBSG	A developed or revised blood donation program document for implementation
		• Billboards, scroll on television screens with visual presentation of blood requirements and collections	Focal person/group	
		• Announcements, publicity and advertisements on blood donation	√	

Intervention	Objectives	Activity	Responsible Person(s)	Expected Outcome
	2. To establish a system for communication between blood donors and persons interested in blood donation	• Collate blood donation schedules nationally and publish on NBSG website	√	
		• Disseminate local blood donation schedules by text message, social media	√	
	3. Use of media to promote blood donation, create awareness	• Donor awards and recognition, donor day celebration	√	
		• Special blood donation campaigns for religious festivals such as Christmas, Easter, Eid Ul-Fitr, Eid Al Adha	√	
		• Special blood donations for personal occasions such as birthdays, anniversaries	√	
		• Special commitment campaigns such as the 'four time commitment campaign', Pledge club 25	√	
		• Faith-based organisation led campaigns	√	
		• Inter-school competitions (donation, drama etc.)	√	
		• Blood drives at regular times of the year, regular school visits	√	
	Recruitment programmes To recruit non-donors and blood donors, and first time and FRD as repeat voluntary blood donors	• Assign a focal person or group to develop a comprehensive work plan to cover the following:	CEO, NBSG	
		• Active tele-recruiting programmes	Focal person/group	
		• Active mobile/SMS recruiting programmes, social media	√	
		• Face-to-face education of prospective blood donors followed by active recruitment and follow up	√	
		• Active recruitment of family blood donors who visit hospital blood banks/blood centres to donate blood through face-to-face, one-on-one education	√	
	Education, information and communication 1. To provide a standardised, consistent, subject specific, targeted educational materials and education to: • Strengthen knowledge and awareness • Demystify myths about blood and blood donation	1. Education • Assign a focal person or group to develop a workplan	CEO, NBSG	1. Action plan on development of educational materials and training 2. Records of training 3. Proposal on establishment of donor call centre 4. Establishment of donor call centre
		• Develop educational materials (Refer to "Education and communication" under "Targeting barriers and deterrents")	Focal person/group	
		• Train trainers, Blood Donor Service staff, volunteers	√	
		• Conduct regular update training	√	

Intervention	Objectives	Activity	Responsible Person(s)	Expected Outcome
	• Address beliefs and fears that negatively impact on blood donation	• Train stakeholders who support in education – journalists, teachers in schools, religious leaders, community leaders, other resource persons for radio and television programmes	√	
	2. Provide resources for communication and information on blood donation	• Collaborate with training institutions to include education on blood donation to training curricula	√	
		• Develop a standard document on charges for Public Relations to disseminate	√	
		2. Information and communication		
		• Establish a well equipped donor contact center to handle queries, complaints and provide information	√	
Modelling: Interventions showing another person promoting blood donation or giving blood to motivate				
Models (community or traditional leaders, religious leaders, opinion leaders, celebrities, blood donors, managers at workplaces, youth leaders)				
	1. Establish partnerships with various role models	1. Refer to "partnerships" under "targeting barriers or deterrents"		
		• Assign roles to role models and blood donation ambassadors and implement systems for collaboration, facilitate activities of role models	CEO. NBSG	
Peer promoter, donor associations, youth and educational clubs				
	To work with peer promoters to recruit and retain blood donors	• Assign a focal person or group to establish systems for collaborations with:	CEO, NBSG	TORs for peer groups completed
		• National Blood Donor Association to motivate, recruit and support blood donors	Focal person/group	Evidence of recruitment by peer promoter groups
		• Peer promoter programme in schools and communities (Pledge/Club 25)	√	
Motivational intervention targeted at inconvenience				
	To improve access to donation clinics Mobile clinics	• Assign a focal person or group to put in place the following:	CEO, NBSG	Revised mobile teams, mobile sessions, and targets
		• Review staff strength, and develop capacity	Focal person/group	Evidence of increased numbers of mobile sessions
		• Review mobile teams and establish new ones	√	
		• Expand areas for mobile clinics	√	A system for follow up on student donors
		• Review targets for recuiters	√	

Intervention	Objectives	Activity	Responsible Person(s)	Expected Outcome
		• Increase number of mobile sessions	√	Mobile sessions published on website and disseminated via social media
		• Establish a follow-up system for student donors, to follow them up after completing school	√	
		• Widely publicise planned mobile session	√	
Partnerships or community mobilisation (with National Blood Donor Association, Red Cross Society, religious, opinion, cultural leaders, parent/teacher and teacher associations, government officials, Ministries, Departments and Agencies)				
	To establish partnerships to support community mobilisation for blood donation Partnerships	• Assign a focal person or group	CEO, NBSG	
		• Refer to "partnerships" under "targeting barriers or deterrents	Focal person/group	
		• Train partners on their roles	√	
		• Document activities of partners and outcomes	√	
Retention programmes/Reminders				
	To establish easily accessible donor information and donor recall	• Assign a focal person or group	CEO, NBSG	
		• Review/develop National Blood Donor Program with regards to retention programs	Focal person/group	
		• Donor awards and recognition, donor day celebration	√	
		• Electronic donor records	√	
		• System for donor recall and reminders	√	
Donor management programmes				
	To establish, review systems for donor counselling, follow up, and return to the donor pool	• Assign a focal person or group	CEO, NBSG	
		• Develop a donor "linkage system" for defered donor management and return to the donor pool	Focal person/group	
		• Iron supplemntation to reduce deferrals due to nutritional anaemias	√	
Donor satisfaction				
	To develop and implement a system for monitoring and improving donation experience of blood donors Customer service programme for staff	• Assign a focal person or group	CEO, NBSG	
		• Develop a system for donor comments and queries	Focal person/group	
		• Develop a system for collating information from donor comments and donor contact centre, analysing and implementing corrective and preventive actions and feedback	√	

Intervention	Objectives	Activity	Responsible Person(s)	Expected Outcome
	Address problems with staff skills and attitude.	• Implement systems for staff motivation	√	
		• Train staff	√	
Creating enabling donation environment				
	Create festive environment for drives, provide equipment for fun	Collaborate with media houses, celebrities, religious organisations, fitness clubs, telecommunication companies, event organisers to organise social programmes alongside blood donation campaigns Challenge celebrities and politicians to adopt blood donation campaigns	√	
Incentives: Interventions using incentives for donating blood such as a T-shirt, money, prizes, tickets, and other				
Non-monetary				
	To establish an effective system of incentives for blood donors	• Assign a focal person or group	CEO, NBSG	
		• Define acceptable value for refreshment/snacks and types	Focal person/group	
		• Define acceptable value for gift items, paraphernalia for milestone wards, and types	√	
		• Define acceptable alternatives to blood credits	√	
		• Obtain consensus from donors and other stakeholders	√	
		• Document and pass through approval process	√	
		• Implement	√	
	Communicate benefits of blood donation to donors	• Assign a focal person or group	CEO, NBSG	
		• Develop targeted documents for communication to different categories of donors	Focal person/group	
	Revise section on donor awards and recognition in the National Blood Donor Programme	• Assign a focal person or group	CEO, NBSG	
		• Revise document for implementation	Focal person/group	
Monetary				
	Reimbursement of direct expenses			
	Transport reimbursement	• Assign a focal person or group	CEO, NBSG	
		• Develop guidelines, study feasibility of implementation and procedures for preventing abuse	Focal person/group	
	Remuneration			
	To educate donor and prospective donors on alternatives for incentive and the negative aspects of paying for blood	• Assign a focal person or group	CEO, NBSG	
		• Develop a communication strategy	Focal person/group	
		• Train resource persons	√	

C. IMPLEMENTATION

Intervention	Objectives	Activity	Responsible Person(s)	Expected Outcome
Other interventions				
	To effectively implement interventions	• Planned – all interventions should be planned, with timelines and estimate cost	Focal person/group	
		• Risks – should be identified and planned for	√	
		• Communication and training – all stakeholders should be well informed of plans and trained	√	
		• Involvement - all stakeholders should be encouraged to actively participate in implementation	√	
		• Commitment – responsibilities should be clearly define and full commitment of organisation and stakeholders sought	√	
		• Systems for monitoring and evaluation, reviews	√	
		• Research and development – interventions should be implemented empirically, data collected and used to improve outcomes	√	
		• NBS and MOH should be committed to providing resources and support	√	

6.3.2. Recommendations for policy

i. There is the need to develop a policy on incentives for blood donors that clearly defines what constitutes incentives for promoting blood donation in Ghana, and in other SSA countries.

ii. Blood services in SSA should actively collaborate with ministries, departments and agencies to review or formulate policies on blood donor motivation.

iii. Develop a policy on classification of donors based on the donor's motivation and intentions for future blood donation, and that clearly defines who is a VNRBD in the SSA setting.

iv. Develop a policy on community ownership of blood banks, which clearly defines responsibilities, where stocks will be held and the role of the blood service in order to avoid parallel structures. This will provide the choice of who to donate for without waiting for immediate need by someone.

v. Develop a detailed policy document on stakeholders for donor mobilisation and recruitment that outlines specific roles of partners in donor recruitment.

vi. Develop an annual national blood collection programme with details on all programmes and interventions for donor recruitment, motivation and blood collection for the year (de Coning, 2004). This comprehensive document should be developed annually.

6.3.3. Recommendations for practice

i. Develop standardised educational materials for specific topics to ensure that blood donors and the general populace are not being misinformed.

ii. Develop and implement specific programmes for converting FRDs to repeat VNRBDs through education and follow up, for example, a programme aimed at FRDs who are donating for antenatal women, or FRDs who donate in a particular facility.

iii. Develop and implement culturally sensitive approaches to enhance altruism by linking blood donations to families and friends. This strategy could also explore the concept of community owned blood banks.

iv. Interventions such as donor recall, maintaining regular contacts with donors, expanding mobile outreaches, educating donors to appreciate their role in saving lives, and strengthening blood donor associations are urgently needed in SSA.

v. Implement the annual national blood collection programme listed under "recommendations for policy".

vi. Develop a system for audit of implemented recommendations that integrates the interventions into a continuous quality improvement cycle, for example donor satisfaction surveys, including performance indicators for the implemented interventions in the key performance indicators of the Blood Service, and thereby integrating reviews of the interventions into regular performance reviews of the organisation.

vii. Address fear of discovering illness and promote blood donation through targeted education in combination with enhancing staff professionalism in ensuring privacy and confidentiality in handling donor information.

6.3.4. Recommendations for research

The current study has used robust qualitative and quantitative methodologies to undertake in-depth exploration of perceptions, motivators and deterrents relevant for

blood donation in SSA. There is however the need to conduct in-depth studies into specific areas in donor motivation research. This includes:

i. Evaluation of the effectiveness of various types of incentives (defined under "recommendations for policy") on donor motivation in Ghana and in SSA
ii. Comparison of knowledge on blood donation between VNRBDs and FRDs, and the effect on blood donation behaviour
iii. Identifying barriers to blood donation among Muslims
iv. Identifying barriers to blood donation among women
v. Evaluation of the measures used in this study for measuring perceptions, motivators and deterrents
vi. Donor satisfaction studies
vii. Staff motivation and satisfaction studies

In addition, there is the need for evaluation of interventions that will be implemented under the "recommendations" sections in chapters two, four and five; and under the "recommendations for practice' section in this chapter to generate evidence in support of the effectiveness or otherwise, of such recommendations.

These recommendations are based on findings from the current study and other studies in Ghana, and in SSA. They may therefore be transferable to other SSA countries. However, other SSA countries that may seek to implement recommendations from this study could refine the tools for data collection used in this study and replicate it to generate evidence to adapt these interventions to the local setting and guide implementation. This will ensure that current issues are captured and adequately addressed.

Researchers will need to work closely with blood donor recruitment agencies, National Blood Services and their collaborators to provide scholarly support to improve policy and practice.

There is a need to assess blood donation intention among not just first-time blood donors, but repeat blood donors as well. Findings from such studies could be used to sustain blood donation from voluntary, unpaid repeat blood donors.

6.4. Strengths and limitations

The scoping reviews addressed very important areas for achieving adequacy of blood for transfusion in SSA. They employed a systematic approach and rigorous, transparent methods, which were developed by the researcher, and reviewed by all supervisors, thus adhering to the core systematic review principles of rigour, transparency and replicability (Arksey and O'Malley, 2005; Mallett et al., 2012). The scoping reviews included only published literature, and therefore may have missed out possible important information in grey literature. However, as scoping reviews have the strength of including the potentially large and diverse body of literature in the research area, with a greater range of study designs and methodologies than systematic reviews (Arksey and O'Malley, 2005). The searches were limited to only studies published in English and French, which could also have resulted in missing out possible relevant studies (Pham et al., 2014). While a systematic review would have offered the possibility of classifying the quality and characteristics of the studies against standardised criteria and enable the possibility of producing cross-study comparisons and meta-analyses (Mallett et al., 2012), the scoping reviews did not appraise the quality of individual studies and could therefore not be used to make inferences about the quality of their conclusions. The findings from the reviews were

therefore mainly used to identify the gaps in available literature (Arksey and O'Malley, 2005), and develop robust qualitative and quantitative methods for identifying the factors that influence blood donation. They were also used as guide for recommendations based on the findings of the qualitative and quantitative components of the study. Synthesis of findings was qualitative and not quantitative, and therefore the reviews were useful in identifying information but not quantifying it.

In addition to the scoping reviews, the current study also used robust qualitative and quantitative methods, and triangulated the methods to ensure validity of the findings. Qualitative research is helpful in gaining insights into human experience, thought and behaviour, and is useful for exploring human or social problems from the perspective of participants (Arnold and Lane, 2011). In this study, it was appropriate for identifying factors that influence the complex phenomenon of the decision to donate or not to donate blood from the individual's point of view. However, it was difficult to make quantitative predictions. Generally, and due to the limited number of participants, the findings of quantitative studies are not generalisable to other settings. However, the findings of the current study were mostly supported by findings from other parts of Ghana, and SSA. The data collection, transcribing, analysis and presentation of findings were very time consuming (Johnson and Onwuegbuzie, 2004), compared to the quantitative component. To assure quality of data, adequate time was allocated to the extended qualitative fieldwork, there was peer debriefing in both local and international scientific conferences; and meetings of the NBSG, National Voluntary Blood Donors Association of Ghana, Blood Donor Association of Denmark, and The Universities of Ghana, Liverpool and Copenhagen; and external reviews by PhD supervisors. A quantitative survey of a larger sample (505) was used to test and validate findings from the reviews and IDIs and FGDs, and make

quantitative predictions of intention to return to donate blood, while accounting for confounding factors. This result is more generalisable due to the larger sample size, and the sample selection that is representative of the study population.

The mixed methods approach combined and integrated the qualitative and quantitative methods to draw on the strength of each method. Data and method triangulation, and the sequential exploratory strategy facilitated the triangulation of the literature review, IDI, FGD and survey methods, the use of the quantitative data and results to assist in the measurement and interpretation of qualitative findings; and to explore the phenomenon of blood donor intention to repeat blood donation.

Although the qualitative study focused on a broad array of blood donors and non-blood donors, the quantitative study focused only on first-time blood donors and thus the quantitative findings may not apply to repeat blood donors or other blood donor populations. To address this, recommendations for all categories of donors have been presented at the end of chapter four, while specific recommendations for first time donors have been presented at the end of chapter five.

The current study did not assess the determinants of actual return to donate blood, but used intention to return as a predictor of donor return. Although intention is a predictor of actual behaviour, intention to return to donate blood may not necessarily translate into actual blood donation behaviour.

The items used to measure the various factors and constructs of TPB were not evaluated for internal cohesion. This has been captured in the recommendations to ensure that the tool is improved for future studies.

6.5. Positionality

Having worked as the head of the Southern Area Blood Centre of the NBSG, where my research was based, I started my research as someone who understood how the blood service work. I had also focused on promoting VNRBD in accordance with WHO recommendations of obtaining blood from 100% VNRBD for most part of my work and understood why persons who qualify to donate blood should donate voluntarily. My understanding was that the FRD system introduced a higher risk to recipients about transfusion transmissible infections. However, working at a blood centre that was collecting most of blood donations from FRDs, I had no understanding of why people who qualified to donate do not donate, or if they do, mainly FRD. This influenced my decision to research into blood donor motivation, and interventions that would be effective in promoting blood donation. Being an insider researcher enhanced entry into the research groups, although my previous public engagements in campaigns that promoted blood donation by VNRBD and my position as head of blood centre could potentially introduce a bias in the study. I addressed this by resigning my position as head of blood centre, and by engaging experienced interviewers and focus group moderators to lead the interviews. I developed a comprehensive study protocol, which was disseminated in academic, scientific, and policy fora and meetings of blood donor associations in Ghana, SSA and internationally, and received feedback.

6.6. Conclusion

The review identified key factors that influence blood donation in SSA. These included the beliefs that blood is life, and blood donation is lifesaving; altruism, monetary and non-monetary incentives as motivators; and fear, discouraging religious, spiritual and

cultural beliefs as deterrents to donating blood. The interplay between the motivating and deterring factors identified may explain why an "altruistic" donor may donate only as FRDs or for an incentive or compensation. This brings into sharp focus the need to redefine donor motivation in the context of the local environment.

Published literature identified some general issues that influenced blood donation, which included: young people as a window of opportunity for promoting blood donation in SSA, issues relating to incentives as an intervention for promoting blood donation, and the importance of family and community as recognised units for intervention. Interventions to promote blood donation were identified from the literature, though examples of systematic implementation and/or formal evaluations of the interventions, were scarce. Examples of these interventions were motivational interventions aimed at increasing motivation toward blood donation, reminders about when to donate blood, and use of incentives to encourage blood donation, and other interventions. The anecdotal nature of these interventions and the lack of systematic evaluation means that there is an urgent need for high quality research to inform policy decisions about effectiveness of interventions to promote blood donation in different contexts.

The qualitative component identified key factors that influence blood donation in Ghana. Key perceptions of blood and blood donation have been identified as the perceptions that blood is the source of life, and blood donation is lifesaving. A key deterrent to blood donation was identified as fear due to rumours, myths and misconceptions, and lack of information about blood and blood donation. The findings were in agreement with the findings of the literature review.

It is also important to note that, although not the most cited motivator, awareness and knowledge creation activities in addition to education, cuts across efforts to address most of the deterring factors. Blood agencies, in implementing the recommended interventions, should seek to strengthen communication with clients and target populations, and adequately disseminate plans and feedback. The importance of knowing the outcome of interventions require that these should be planned and implemented empirically to generate evidence. Collaboration with academic institutions are key in ensuring that valid data are generated for evaluation purposes. Key areas of interest for evaluation through interventional studies should include the effectiveness of incentives and education in motivating blood donors in SSA.

The quantitative survey examined factors that influence blood donation, and the predictors of first time blood donor's' intention to return in southern Ghana. Significant findings were that first time blood donors were mostly young (18 – 30 years), with a median age 25 years, and women and Muslims were critically under-represented in the blood donor population, making it critical to target these groups in donor mobilisation. A very interesting finding is the FRDs' perception of self as voluntary donors, and that due diligence may not have been done in considering their motivation for donating blood; offering them resources in terms of access to education and information, motivation and opportunity to decide to become repeat donors. The lack of equal access to information and education was emphasised. The findings of this component confirmed the IDI and FGD findings on the role of education in shaping the first time donors' perceptions about blood and blood donation, offering the opportunity to enforce positive perceptions about blood and blood donation while discouraging negatives perceptions.

Key perceptions, motivators and deterrents identified supported key findings of the reviews and IDIs, although there were some discrepancies due to the differences between the donation status of the study populations. The averages on these factors that were calculated for the survey participants did not support perceptions that discouraged blood donation and deterrents to blood donation. Monetary and some non-monetary incentives were also not considered as motivators. Predictors of first time donors' intention to return to donate were identified as convenient access to blood donation session; if the donor knows that Ghana needs blood; if it makes one feel good about himself; SMS and email reminders; TV, and radio or newspaper advertisement on blood donation; donating to get blood credits for family and for self; getting to know one's TTI test result as a benefit of donating blood, considering not knowing what happens to the blood after donating, and considering that motivational items that are given to blood donors are not good enough.

Recommendations for intervention strategies have been presented at the end of each chapter, and summarised in this chapter. Approaches to implementing these recommendations should address the gaps in implementation identified by the scoping literature reviews.

This study has identified key factors that influence blood donation behaviour in SSA. These findings should translate into policy to improve blood donation in Ghana and in SSA. Although the recommendations are supported by evidence generated in Ghana and in other SSA countries, blood agencies seeking to implement recommended interventions should prioritise the interventions based on needs. Collaboration with researchers and academia is vital for generating evidence to guide implementation of interventions.

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APPENDICES

APPENDIX I: COUNTRIES OF SUB-SAHARAN AFRICA

(Angola or Benin or Botswana or Burkina Faso or Burundi or Cameroon or Cape Verde or Central African Republic or Chad or Comoros or Congo or Cote d'Ivoire or Djibouti or Equatorial Guinea or Eritrea or Ethiopia or Gabon or Gambia or Ghana or Guinea or Guinea-Bissau or Kenya or Lesotho or Liberia or Madagascar or Malawi or Mali or Mauritania or Mauritius or Mozambique or Namibia or Niger or Nigeria or Rwanda or Sao Tome or Senegal or Seychelles or Sierra Leone or Somalia or South Africa or South Sudan or Sudan or Swaziland or Tanzania or Togo or Uganda or Zambia or Zimbabwe)

APPENDIX 2: PROTOCOLS FOR IN-DEPTH INTERVIEWS

INTERVIEW GUIDE FOR VOLUNTARY BLOOD DONORS

Total interview time required: 90 minutes

TOPIC: **MOTIVATORS AND DETERRENTS TO BLOOD DONATION**

I. Introduction

Good afternoon and thank you for taking the time to talk with me. My name is (interviewer) and I am part of the team conducting a study on motivators and deterrents to blood donation **in Southern Ghana**. We are interested in knowing your views on this issue. I would appreciate it if you could spend some time with me to discuss it.

You were chosen for this interview because you are a voluntary blood donor and your opinion on the topic that is being discussed is important.

Because I don't want to miss any of your comments I will be tape recording the discussion. If it is alright with you, I will put on the tape recorder and then we can start.

II. Interview

Questions:

Blood donation

1. For how long have you been a blood donor?
2. What made you decide to donate blood in the first place?
3. How many times have you donated blood
4. When was the last time you donated blood

5. What can you tell me about blood?
6. What can you tell me about blood donation?
7. What are your thoughts about the blood donation process? For example, about:
    a. Publicity
    b. Locations, accessibility and convenience
    c. Adequacy of space
    d. Cleanliness
    e. Waiting time
    f. Customer care
    g. Staff attitude
    h. Staff skill
    i. Donor reactions
    j. Refreshment
    k. Post donation care

Motivators

1. What can you tell me about your reasons for regularly donating blood?
2. Why do you think other voluntary donors continue to donate blood?
3. Do you plan to continue donating?
4. Can you tell me about your best experience with blood donation?

Deterrents

1. What will make you stop donating blood?
2. What in your opinion makes other voluntary donors stop donating blood?
3. Have you ever considered stopping blood donation, and why?
4. Can you tell me about your worst experience with blood donation?

Others

1. What in your opinion, can the blood bank do to encourage other people who are voluntary blood donors to continue donating blood?
2. What do you think the blood bank can do to encourage people who have not donated blood before to start donating?

III. Closing

Thank you very much for taking time to talk with me. I look forward to meeting you to give you a feedback on the outcome of this study.

INTERVIEW GUIDE FOR FAMILY REPLACEMENT BLOOD DONORS
Total interview time required: 90 minutes

TOPIC: **MOTIVATORS AND DETERRENTS TO BLOOD DONATION**

I. Introduction
Good afternoon and thank you for taking the time to talk with me. My name is (interviewer) and I am part of the team conducting a study on motivators and deterrents to blood donation **in Southern Ghana**. We are interested in knowing your views on this issue. I would appreciate it if you could spend some time with me to discuss it.

You were chosen for this interview because you donated blood for a family member/friend who needed blood transfusion and your opinion on the topic that is being discussed is important.

Because I don't want to miss any of your comments I will be tape recording the discussion. If it is alright with you, I will put on the tape recorder and then we can start.

II. Interview
Questions:

Blood donation

1. For how long have you been a blood donor
2. How many times have you donated blood
3. When was the last time you donated blood
4. What comes to your mind when you think of blood donation

Motivators

1. What made you decide to donate blood
2. Why do you continue to donate blood (if applicable)
3. Do you plan to continue donating?
4. What do you think will make you donate blood regularly as a voluntary donor?
5. Can you recount your best experience with blood donation?

Deterrents

1. What will make/made you stop donating blood?
2. Have you ever considered stopping blood donation, and why?
3. Can you tell me about your worst experience with blood donation?

Others

1. Why do you think other family replacement donors continue to donate blood?
2. What in your opinion make other family replacement donors stop donating blood?

3. What in your opinion, can the blood bank do to encourage other people who are family replacement donors to become regular donors and continue donating blood?
4. What do you think the blood bank can do to encourage people who have not donated blood before to start donating?

III. Closing
Thank you very much for taking time to talk with me. I look forward to meeting you to give you a feedback on the outcome of this study.

INTERVIEW GUIDE FOR LAPSED BLOOD DONORS
Total interview time required: 90 minutes

TOPIC: **MOTIVATORS AND DETERRENTS TO BLOOD DONATION**

I. Introduction
Good afternoon and thank you for taking the time to talk with me. My name is (interviewer) and I am part of the team conducting a study on motivators and deterrents to blood donation **in Southern Ghana**. We are interested in knowing your views on this issue. I would appreciate it if you could spend some time with me to discuss it.

You were chosen for this interview because you have donated blood before and your opinion on the topic that is being discussed is important.

Because I don't want to miss any of your comments I will be tape recording the discussion. If it is alright with you, I will put on the tape recorder and then we can start.

II. Interview
Questions:

Blood donation

1. What made you decide to donate blood?
2. How many times did you donate blood?
3. When was the last time you donated blood?
4. What comes to your mind when you think of blood donation?

Motivators

1. Do you plan to go back to donate?
2. What will make you go back to donate blood as a regular donor?
3. Can you tell me about your best experience with blood donation?

Deterrents

1. What made you stop donating blood?
2. What in your opinion make other voluntary donors stop blood donation?
3. Can you tell me about your worst experience with blood donation?

Others

1. What do you think make other people continue donating blood?
2. What in your opinion, can the blood bank do to encourage other people who are voluntary blood donors to continue donating blood?
3. What do you think the blood bank can do to encourage people who have not donated blood before to start donating?

III. Closing
Thank you very much for taking time to talk with me. I look forward to meeting you to give you a feedback on the outcome of this study.

INTERVIEW GUIDE FOR BLOOD DONOR RECRUITERS/VOLUNTEERS
Total interview time required: 90 minutes

TOPIC: **MOTIVATORS AND DETERRENTS TO BLOOD DONATION**

I. Introduction
Good afternoon and thank you for taking the time to talk with me. My name is (interviewer) and I am part of the team conducting a study on motivators and deterrents to blood donation **in Southern Ghana**. We are interested in knowing your views on this issue. I would appreciate it if you could spend some time with me to discuss it.

You were chosen for this interview because you are a blood donor recruitment officer/voluntary blood donor organizer and your opinion on the topic that is being discussed is important.

Because I don't want to miss any of your comments I will be tape recording the discussion. If it is alright with you, I will put on the tape recorder and then we can start.

II. Interview
Questions:

Blood donation

1. For how long have you been a blood donor recruitment officer/ a voluntary blood donor organizer?
2. What made you decide to work with donors?
3. What come to your mind when you think of blood donation?
4. In the period that you have been working with blood donors, you may have learnt about blood donors' perceptions on blood and blood donation. Can you share these with me?
5. What are some of the reasons why voluntary blood donors decide to donate blood for the first time?
6. What are some of the reasons why family replacement blood donors decide to donate blood for the first time?

7. What are some of the thoughts that have been shared with you about the blood donation process? For example, about:
    a. Publicity
    b. Locations, accessibility and convenience
    c. Adequacy of space
    d. Cleanliness
    e. Waiting time
    f. Customer care
    g. Staff attitude
    h. Staff skill
    i. Donor reactions
    j. Refreshment
    k. Post donation care

Motivators

1. Why do you think regular blood donors continue to donate blood?
2. What have been some of the best experiences with blood donation that blood donor have spoken to you about?
3. What would you do to encourage blood donors to continue donating blood?

Deterrents

1. What in your opinion make blood donors stop donating blood?
2. Have any donors ever told you about why they stopped donating blood and what have been some of the reasons?
3. What are some of the worst experiences of blood donors that you know about?

Others

1. What in your opinion, can the blood bank do to encourage voluntary blood donors to continue donating blood?
2. What in your opinion, can the blood bank do to encourage lapsed blood donors to return to donate blood?
3. What do you think the blood bank can do to encourage people who have not donated blood before to start donating?

III. Closing

Thank you very much for taking time to talk with me. I look forward to meeting you to give you a feedback on the outcome of this study.

APPENDIX 3: PROTOCOL FOR FOCUS GROUP DISCUSSIONS

DISCUSSION GUIDE: FOCUS GROUP

Total Participant time required:	1 hour 20 minutes – 1 hour 50 minutes
Total focus group time:	1 hour 20 minutes – 1 hour 50 minutes
Break:	0 minutes

OVERALL QUESTION TO ANSWER IN FOCUS GROUP DISCUSSIONS**: WHAT ARE THE MOTIVATORS AND DETERRENTS TO BLOOD DONATION?**

I. Introduction (10 min)

Good afternoon and welcome to our session. Thank you for taking the time to talk with us. My name is (moderator) and assisting me are (note takers). They will be taking notes and be here to assist me if I need any help.

You were chosen because you have either donated blood before or you work with blood donors and your opinion on the topic that is being discussed is valuable.

I will ask questions and expect you to respond. We would like the discussion to be informal, so there's no need to wait for us to call on you to respond. In fact, we encourage you to respond directly to the comments other people make. It is important however that one person speaks at a time so that we can all hear you. If you don't understand a question, please let us know. We are here to ask questions, to listen, and to make sure everyone has a chance to share their opinion.

If we seem to be stuck on a topic, we may interrupt you and if you aren't saying much, we may call on you directly. If we do this, please don't feel bad about it; it's just our way of making sure we obtain everyone's perspective and opinion. There is no right or wrong answer to any question – just ideas, experiences and opinions which are very valuable. It is also important to hear all sides of the issue – both negative and positive.

We do ask that we all keep each other's identities, participation and remarks private. Your opinion is very important to us so please feel free to speak openly and honestly.

We will be tape recording the discussion, because we don't want to miss any of your comments. No one outside of this room will have access to these tapes and they will be destroyed after our report is written.

Please introduce yourselves and then we will start.

II. Discussion (60 min)

Please remember that only one person should speak at a time.

Whatever is said in this room stays in this room.

Questions:

1. What do you think about blood donation?
2. What is the most important thing that comes to your mind when you think about blood donation?
3. What made you decide to donate blood? (**This question will vary for the donor recruitment and volunteer group**)
4. What do you think will make you decide to continue donating blood?
5. What will make you decide to stop donating blood?
6. In your opinion, why do other people continue donating blood?
7. What do you think make other people stop donating blood?
8. How do you think the blood bank can encourage people to donate blood?

III. Closing (10 min)

Thank you very much for taking time to come and help us find out what are the factors that encourage or discourage people from donating blood.

APPENDIX 4: CONSENT FORMS

CONSENT TO PARTICIPATE IN IN-DEPTH INTERVIEWS

Informed Consent Form for Blood Donors who have been invited to participate in In-depth Interviews in a research on blood donors titled "Evolving Strategies to Encourage Repeat Donations among First Time Voluntary and Replacement Blood Donors in Southern Ghana"

Name of Principle Investigator: Lucy Asamoah-Akuoko

Name of Organization: Liverpool School of Tropical Medicine

This Informed Consent Form has two parts:

- **Information Sheet (to share information about the study with you)**
- **Certificate of Consent (for signatures if you choose to participate)**

You will be given a copy of the full Informed Consent Form

Part I: Information Sheet

Introduction

My name is Lucy Asamoah-Akuoko, a student of the Liverpool School of Tropical Medicine, United Kingdom. I am doing a research on blood donation and looking at factors that affect a person's decision to donate blood in Ghana. I am going to give you information and invite you to be part of this research. You do not have to decide today whether or not you will participate in the research. Before you decide, you can talk to anyone you feel comfortable with about the research.

This consent form may contain words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain. If you have questions later, you can ask me.

Purpose of the research

Blood donation is very important in ensuring that sick people who need blood are able to get blood for treatment. But in Ghana, the blood banks are always short of blood. We want to find ways to encourage more people to continue donating blood. We believe that you can help us by telling us what you know about blood donation and the issues that can make a blood donor decide to continue to donate blood or not.

Type of Research Intervention

This research will involve your participation in an interview that will take about half an hour.

Participant Selection

You are being invited to take part in this research because we feel that your experience as a blood donor can contribute much to our understanding and knowledge of what make a person donate or not donate blood.

Voluntary Participation

Your participation in this research is entirely voluntary. It is your choice to participate or not. If you choose not to participate all the services you receive at this Centre will continue and nothing will change. You may change your mind later and stop participating at any point.

Procedures

We are asking you to help us learn more about blood donation. We are inviting you to take part in this research project. If you accept, you will be asked to participate in an interview with me.

During the interview, I or another interviewer will sit down with you in a comfortable place at the Centre. If it is better for you, the interview can take place in your home or a friend's home. If you do not wish to answer any of the questions during the interview, you may say so and the interviewer will move on to the next question. No one else but the interviewer will be present unless you would like someone else to be there. The

information recorded is confidential. The entire interview will be tape-recorded, but no-one will be identified by name on the tape. The tape will be kept locked up in a safe in the researcher's office. The information recorded is confidential, and no one else except researcher will have access to the tapes. The tapes will be destroyed after 5 years.

Duration

The research takes place over 3 years in total. During that time, we will sit with you once for an interview which will last for about 90 minutes.

Risks

There is a risk that you may share some personal or confidential information by chance, or that you may feel uncomfortable talking about some of the topics. However, we do not wish for this to happen. You do not have to answer any question or take part in the discussion/interview/survey if you feel the question(s) are too personal or if talking about them makes you uncomfortable. You do not have to give us any reason for not responding to any question or for refusing to take part in the interview.

Benefits

There will be no direct benefit to you, but your participation is likely to help us find out more about how to encourage donors to continue donating blood in Ghana.

Reimbursements

You will not be provided any incentive to take part in the research. However, we will give you GHC20.00 for your travel expense at the beginning of the interview (if applicable).

Confidentiality

We will not be sharing information about you to anyone outside of the research team. The information that we collect from this research project will be kept private. Any information about you will have a number on it instead of your name. Only the researchers will know what your number is and we will lock that information up with a lock and key. It will not be shared with or given to anyone.

Sharing the Results

Nothing that you tell us during the interview will be attributed to you by name. If any part of the information has to be quoted in the reports, it will be done anonymously and not be linked to your name. The knowledge that we get from this research will be shared with you and other blood donors before it is made widely available to the public. Each participant will receive a summary of the results. Following this, we will publish the results so that other interested people may learn from the research.

Right to Refuse or Withdraw

You do not have to take part in this research if you do not wish to do so. You may stop participating in the interview at any time that you wish without your job being affected. I will give you an opportunity at the end of the interview to review your remarks, and you can ask to modify or remove portions of those, if you do not agree with my notes or if I did not understand you correctly.

Who to Contact

If you have any questions, you can ask them now or later. If you wish to ask questions later, you may contact any of the following:

Lucy Asamoah-Akuoko
P. O. Box KB 78
Korle-bu
0206301006
lucyasamoah@gmail.com

This proposal has been reviewed and approved by the Ghana Health Service Ethical Review Committee, which is a committee whose task it is to make sure that research participants are protected from harm. If you wish to find out more about the IRB, contact:

Nana Abena Kwaa Addai-Donkoh
Ghana Health Service Ethical Review Committee
Research and Development Unit
Adabraka Polyclinic
Opposite Accra Psychiatric Hospital
Tel: 0244712919
0302681109

0302679323
nanatuesdaykad@yahoo.com

Part II: Certificate of Consent

I have read and understood the information sheet provided about this study, **and/or** the interviewer explained to me the purpose of the research.

I understand that my participation in this interview is voluntary.

I have the right to not answer any question I don't like or to stop the interview and withdraw my answers, at any stage of the interview, without having to explain why.

I understand that what I say will be kept confidential by the researchers and will only be used for research purposes. My name will not be used in any research reports and nothing will be published that might identify me.

I understand that if I have any further questions I can contact the researcher.

I agree to the interview being audio recorded YES / NO

I agree to some of my comments or statements being quoted in the report, provided that I cannot be identified YES / NO

I would like to receive an edited copy of my interview transcript YES / NO

I would like to receive a summary of the key findings from this study YES / NO.

Print Name of Participant _____

Signature of Participant _____

Date _____

Day/Month/Year

If illiterate [1]

I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Print name of witness _____ **Thumb print of participant**

Signature of witness _____

Date _____

Day/Month/Year

Statement by the researcher/person taking consent

I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant has understood.

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

A copy of this ICF has been provided to the participant.

Print Name of Researcher/person taking the consent

_____

Signature of Researcher /person taking the consent

_____

Date _____

Day/Month/Year

[1] A literate witness must sign (if possible, this person should be selected by the participant and should have no connection to the research team). Participants who are illiterate should include their thumb print as well.

CONSENT TO PARTICIPATE IN FOCUS GROUP STUDY

Informed Consent Form for Blood Donors who have been invited to participate in Focus Group Discussion in a research on blood donors titled "Evolving Strategies to Encourage Repeat Donations among First Time Voluntary and Replacement Blood Donors in Southern Ghana"

Name of Principle Investigator: Lucy Asamoah-Akuoko

Name of Organization: Liverpool School of Tropical Medicine

This Informed Consent Form has two parts:

• Information Sheet (to share information about the study with you)

• Certificate of Consent (one member of the group will sign on behalf of the whole group)

You will be given a copy of the full Informed Consent Form

Part I: Information Sheet

Introduction

My name is Lucy Asamoah-Akuoko, a student of the Liverpool School of Tropical Medicine, United Kingdom. I am doing a research on blood donation and looking at factors that affect a person's decision to donate blood in Ghana. I am going to give you information and invite you to be part of this research. You do not have to decide today whether or not you will participate in the research. Before you decide, you can talk to anyone you feel comfortable with about the research.

This consent form may contain words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain. If you have questions later, you can ask me.

Purpose of the research

Blood donation is very important in ensuring that sick people who need blood are able to get blood for treatment. But in Ghana, the blood banks are always short of blood. We want to find ways to encourage more people to continue donating blood. We believe that you can help us by telling us what you know about blood donation and the issues/factors that can make a blood donor decide to continue to donate blood or not.

Type of Research Intervention

This research will involve your participation in a group discussion that will take about one and a half hour, and a one hour interview.

Participant Selection

You are being invited to take part in this research because we feel that your experience as a blood donor can contribute much to our understanding and knowledge of what make a person donate or not donate blood.

Voluntary Participation

Your participation in this research is entirely voluntary. It is your choice whether to participate or not. If you choose not to participate all the services you receive at this Centre will continue and nothing will change. You may change your mind later and stop participating at any point.

Procedures

We are asking you to help us learn more about blood donation. We are inviting you to take part in this research project. If you accept, you will be asked to take part in a discussion with 7-9 other persons with similar experiences. This discussion will be guided by a moderator or me. The group discussion will start with me, or the focus group, making sure that you are comfortable. We can also answer questions about the research that you might have. Then we will ask you questions about blood donation and give you time to share your knowledge. The questions will be about general views on blood donation and what encourages people to donate and what discourages people from donating. **We will not ask you to share personal beliefs, practices or stories and you do not have to share any knowledge that you are not comfortable sharing.** The discussion will take place in [location of the FGD], and no one else but the people who take part in the discussion and moderator or myself will be present during this discussion. The entire discussion will be tape-recorded, but no-one will be identified by name on the tape. The tape will be kept locked up in a safe in the researcher's office. The information recorded is confidential, and no one else except researcher will have access to the tapes. The tapes will be destroyed after 5 years.

Duration

The research takes place over 3 years in total. The group discussion will be held once and will take about one and a half hours.

Risks

There is a risk that you may share some personal or confidential information by chance, or that you may feel uncomfortable talking about some of the topics. However, we do not wish for this to happen. You do not have to answer any question or take part in the discussion if you feel the question(s) are too personal or if talking about them makes you uncomfortable. You do not have to give us any reason for not responding to any question or for refusing to take part in the discussion.

Benefits

There will be no direct benefit to you, but your participation is likely to help us find out more about how to encourage donors to continue donating blood in Ghana.

Reimbursements

You will not be provided any incentive to take part in the research. However, we will give you GHC20.00 for your travel expense at the beginning of the discussion (if applicable). You will also be served refreshment.

Confidentiality

We will not be sharing information about you to anyone outside of the research team. The information that we collect from this research project will be kept private. Any information about you will have a number on it instead of your name. Only the researchers will know what your number is and we will lock that information up with a lock and key. It will not be shared with or given to anyone. We will ask you and others in the group not to talk to people outside the group about what was said in the group. We will, in other words, ask each of you to keep what was said in the group confidential. You should know, however, that we cannot stop or prevent participants who were in the group from sharing things that should be confidential.

Sharing the Results

Nothing that you tell us during the interview will be attributed to you by name. If any part of the information has to be quoted in the reports, it will be done anonymously and not be linked to your name. The knowledge that we get from this research will be

shared with you and other blood donors before it is made widely available to the public. Each participant will receive a summary of the results. Following this, we will publish the results so that other interested people may learn from the research.

Right to Refuse or Withdraw

You do not have to take part in this research if you do not wish to do so. You may stop participating in the discussion at any time that you wish.

Who to Contact

If you have any questions, you can ask them now or later. If you wish to ask questions later, you may contact any of the following:

Lucy Asamoah-Akuoko
P. O. Box KB 78
Korle-bu
0206301006
lucyasamoah@gmail.com

This proposal has been reviewed and approved by [name of the local IRB], which is a committee whose task it is to make sure that research participants are protected from harm. If you wish to find out more about the IRB, contact:

Nana Abena Kwaa Addai-Donkoh
Ghana Health Service Ethical Review Committee
Research and Development Unit
Adabraka Polyclinic
Opposite Accra Psychiatric Hospital
Tel: 0244712919
0302681109
0302679323
nanatuesdaykad@yahoo.com

Part II: Certificate of Consent

The purpose of the group discussion and the nature of the questions have been explained to me.

I consent to take part in a focus group discussion on motivators and deterrent to blood donation. I also consent to be tape-recorded during this focus group discussion.

My participation is voluntary. I understand that I am free to leave the group at any time. If I decide not to participate at any time during the discussion, my decision will not affect me in any way.

None of my experiences or thoughts will be shared with anyone outside of this study, unless all identifying information is removed first. The information that I provide during the focus group will be grouped with answers from other people so that I cannot be identified.

I will not receive payment for participation. I will be given an amount of GHC20.00 to cover the cost of transportation to the discussion venue if I have to travel.

Print Name of Participant _____

Signature of Participant _____

Date _____

Day/Month/Year

If illiterate [2]

I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Print name of witness _____ Thumb print of participant

Signature of witness _____

Date _____

Day/Month/Year

Statement by the researcher/person taking consent

I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant has understood.

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

A copy of this ICF has been provided to the participant.

Print Name of Researcher/person taking the consent

_____

Signature of Researcher /person taking the consent

_____

Date _____

Day/Month/Year

[2] A literate witness must sign (if possible, this person should be selected by the participant and should have no connection to the research team). Participants who are illiterate should include their thumb print as well.

CONSENT TO PARTICIPATE IN SURVEY

Informed Consent Form for Blood Donors who have been invited to participate in a Survey in a research on blood donors titled "Evolving Strategies to Encourage Repeat Donations among First Time Voluntary and Replacement Blood Donors in Southern Ghana"

Name of Principle Investigator: Lucy Asamoah-Akuoko

Name of Organization: Liverpool School of Tropical Medicine

This Informed Consent Form has two parts:

- **Information Sheet (to share information about the study with you)**
- **Certificate of Consent (for signatures if you choose to participate)**

You will be given a copy of the full Informed Consent Form

Part I: Information Sheet

Introduction

My name is Lucy Asamoah-Akuoko, a student of the Liverpool School of Tropical Medicine, United Kingdom. I am doing a research on blood donation and looking at factors that affect a person's decision to donate blood in Ghana. I am going to give you information and invite you to be part of this research. You do not have to decide today whether or not you will participate in the research. Before you decide, you can talk to anyone you feel comfortable with about the research.

This consent form may contain words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain. If you have questions later, you can ask me.

Purpose of the research

Blood donation is very important in ensuring that sick people who need blood are able to get blood for treatment. But in Ghana, the blood banks are always short of blood. We want to find ways to encourage more people to continue donating blood. We believe that you can help us by telling us what you know about blood donation and the issues that can make a blood donor decide to continue to donate blood or not.

Type of Research Intervention

This research will involve your participation in survey that will take about half an hour.

Participant Selection

You are being invited to take part in this research because we feel that your experience as a blood donor can contribute much to our understanding and knowledge of what make a person donate or not donate blood.

Voluntary Participation

Your participation in this research is entirely voluntary. It is your choice to participate or not. If you choose not to participate all the services you receive at this Centre will continue and nothing will change. You may change your mind later and stop participating at any point.

Procedures

We are asking you to help us learn more about blood donation. We are inviting you to take part in this research project. If you accept, you will be asked to fill out a survey which will be provided by a member of the team and collected by the same person. You may answer the questionnaire yourself, or it can be read to you and you can say out loud the answer you want the distributer to write down. If you do not wish to answer any of the questions included in the survey, you may skip them and move on to the next question. The information recorded is confidential, your name is not being included on the forms, only a number will identify you, and no one else except the researcher will have access to your survey.

Duration

The research takes place over 3 years in total. We need you to fill the questionnaire once. This should take about 30 minutes. As part of the research, we will need to know whether or not you return to donate blood. We will therefore do a follow up by consulting the records of the Blood Centre or contacting you by phone if you give us permission now. As I explained earlier you can decide at any time not to be contacted by phone in six months and we will respect your decision.

Risks

There is a risk that you may feel uncomfortable talking about some of the topics. However, we do not wish for this to happen. You do not have to answer any question or take part in the survey if you feel the question(s) are too personal or if talking about them makes you uncomfortable. You do not have to give us any reason for not responding to any question or for refusing to take part in the survey.

Benefits

There will be no direct benefit to you, but your participation is likely to help us find out more about how to encourage donors to continue donating blood in Ghana.

Reimbursements

You will not be provided any incentive to take part in the research.

Confidentiality

We will not be sharing information about you to anyone outside of the research team. The information that we collect from this research project will be kept private. Any information about you will have a number on it instead of your name. Only the researchers will know what your number is and we will lock that information up with a lock and key. It will not be shared with or given to anyone.

Sharing the Results

The information that you provide during the survey will not be attributed to you by name. The knowledge that we get from this research will be shared with you and other blood donors before it is made widely available to the public. Each participant will receive a summary of the results. Following this, we will publish the results so that other interested people may learn from the research..

Right to Refuse or Withdraw

You do not have to take part in this research if you do not wish to do so. You may stop participating in the survey at any time that you.

Who to Contact

If you have any questions, you can ask them now or later. If you wish to ask questions later, you may contact any of the following:

Lucy Asamoah-Akuoko
P. O. Box KB 78
Korle-bu
0206301006
lucyasamoah@gmail.com

This proposal has been reviewed and approved by [name of the local IRB], which is a committee whose task it is to make sure that research participants are protected from harm. If you wish to find out more about the IRB, contact:

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Nana Abena Kwaa Addai-Donkoh
Ghana Health Service Ethical Review Committee
Research and Development Unit
Adabraka Polyclinic
Opposite Accra Psychiatric Hospital
Tel: 0244712919
0302681109
0302679323
nanatuesdaykad@yahoo.com

Part II: Certificate of Consent

I have been invited to participate in a survey on factors that affect the decision to donate blood or not.

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study

Print Name of Participant _____

Signature of Participant _____

Date _____

Day/Month/Year

If illiterate [3]

_____

[3] A literate witness must sign (if possible, this person should be selected by the participant and should have no connection to the research team). Participants who are illiterate should include their thumb print as well.

I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Print name of witness **_____** **Thumb print of participant**

Signature of witness **_____**

Date _____

Day/Month/Year

Statement by the researcher/person taking consent:

I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant has understood.

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

A copy of this ICF has been provided to the participant.

Print Name of Researcher/person taking the consent

_____

Signature of Researcher /person taking the consent

_____

Date _____

Day/Month/Year

APPENDIX 5: SAMPLE SIZE CALCULATION

SAMPLE SIZE FOR FREQUENCY IN A POPULATION

Population size(for finite population correction factor or fpc)(*N*):	1000000
Hypothesized % frequency of outcome factor in the population (*p*):	15.2%+/-5
Confidence limits as % of 100(absolute +/- %)(*d*):	5%
Design effect (for cluster surveys-*DEFF*):	2

Sample Size(*n*) for Various Confidence Levels

ConfidenceLevel(%)	Sample Size
95%	397
80%	170
90%	279
97%	486
99%	684
99.9%	1116
99.99%	1561

Equation

Sample size $n = [DEFF*Np(1-p)]/ [(d^2/Z^2_{1-\alpha/2}*(N-1)+p*(1-p)]$

RESULTS FROM OPENEPI, VERSION 2, OPEN SOURCE CALCULATOR--SSPROPOR

http://www.openepi.com/OE2.3/SampleSize/SSPropor.htm

Source file last modified on 09/21/2010 02:10:35

Estimation of sample size based on an assumed first time donor return rate of will require a total number of 397 responders; at 95% confidence level and 5% margin of error and multiplied by a design effect of 2 for a complex sample. Allowing for a 10% non-response rate, this will be about 440

To account for loss to follow with telephone interviews, the calculated sample size is adjusted by increasing the calculated sample size by 10%. That is, 440 + 44 = 484. The sample size is therefore approximated to 500.

APPENDIX 6: SURVEY QUESTIONNAIRE

PART I: BASELINE SURVEY

1.0 PERSONAL INFORMATION AS PER DONOR RECORDS

RESPONDENT'S FULL NAME:			
AGE:		**PHONE/CELL NUMBER:**	
FIRST DONATION DATE:		**INTERVIEW DATE:**	
TOTAL NUMBER OF DONATIONS: ***(Do not proceed if more than one)***		**RESPONDENT ID:** ***(As per database)*:**	
START TIME:		**END TIME:**	

INTRODUCTION

Good day and thank you for accepting to participate in this study. My name is_____. I am working with Lucy Asamoah-Akuoko.

I am going to assist you to answer some questions that will take about 30 - 45 minutes to complete. The questions will be on reasons why some people donate blood, fears and other reasons why some people do not donate blood and some general information about you: age, gender, education and economic status. There are no wrong or right answers, as long as it is your honest opinion.

Your responses to the questions will be kept confidential. The study has been approved by the Ghana Health Service Research Ethics Committee. Participation in this research is completely voluntary and you can decline to participate at any point without effect on your ability to donate blood.

Kindly confirm if you agree to participate. May I go ahead and ask you the questions now?

Yes	1	**CONTINUE**	
No	2	**NO**	**THANK AND POLITELY TERMINATE INTERVIEW**

Confirmation of Personal Data

RESPONDENT'S FULL NAME:

AGE: ***(Close interview if less than 18 years)***	**PHONE/CELL NUMBER:**	
FIRST DONATION DATE:	**TOTAL NUMBER OF DONATIONS*(Close interview if more than one)*:**	

2.0 BACKGROUND INFORMATION

The questions below are about your personal situation. For each question, choose the option that most applies to you, or write the answer in the space provided.

1. What is today's date?

d	*d*	*m*	*m*	*y*	*y*	*y*	*y*

2. What is your date of birth?

d	*d*	*m*	*m*	*y*	*y*	*y*	*y*

3. What is your age (in complete years)? ☐ years

4. Are you male or female?

- ☐ Male
- ☐ Female

5. What is your marital status?

- ☐ Single (never married)
- ☐ Married
- ☐ Co-Habiting
- ☐ Divorced
- ☐ Separated
- ☐ Widow/Widower

6. Do you have children?

- [ ] Yes
- [ ] No

7. If Yes, state number of children

[ ]

8. What is your home situation?

- [ ] I live alone
- [ ] I am a single parent with child/children
- [ ] I live with only my husband/wife/partner
- [ ] I live with my husband/wife/partner and children
- [ ] I live with my parents/relatives/friends
- [ ] Other; Please state: _____

9. Do you use private or public transport as a main method of travel?

- [ ] Private
- [ ] Public
- [ ] Other; Please state: _____

10. What is the highest education level that you have completed?

- [ ] None
- [ ] Primary school
- [ ] Junior high school
- [ ] Senior high school
- [ ] Diploma
- [ ] Degree
- [ ] Postgraduate level
- [ ] Other; Please state: _____

11. What is your occupation

[ ]

Please specify:

12. In which of the following employment categories do you fall?

	Student
	Out of school, and/or Unemployed
	Homemaker/Housewife
	Informal/Part-time employment
	Self employed
	Formal employment
	Pensioner
	Other; Please state:

13. What is your net monthly income?

	Less than GH¢ 150.00
	GH¢ 151.00 - GH¢ 250.00
	GH¢ 251.00 - GH¢ 500.00
	GH¢ 501.00 - GH¢ 1,000.00
	GH¢ 1,001.00 - GH¢ 2,000.00
	GH¢ 2,001.00 - GH¢ 5,000.00
	More than GH¢ 5,000.00
	Not sure
	Prefer not to say

14. What is your ethnic background?

- [ ] Akan
- [ ] Ewe
- [ ] Dagbani
- [ ] Ga/Dangbe
- [ ] Hausa
- [ ] Other; Please state: _____

15. Do you belong to a religious faith?

- [ ] Yes, Christian
- [ ] Yes, Moslem
- [ ] Yes, Traditionalist
- [ ] Yes, Buddhist
- [ ] Yes, Other; Please state: _____
- [ ] No

3.0 BLOOD DONATION

16. Please state who you donated the blood for.

- [ ] A friend/acquaintance/colleague
- [ ] A relative
- [ ] The blood bank/blood service
- [ ] The community
- [ ] Other; Please state: _____
- [ ] No one in particular

17. Would you describe yourself as a voluntary donor?

- [ ] Yes
- [ ] No
- [ ] I don't know

18. What did you receive for donating blood?

	Incentive/gift; Please specify:
	Money; Please specify value:
	Favour; Please specify:
	Other; Please state:
	I did not receive anything (Skip to question 20)

19. Who did you receive the item in Q18 from?

	The blood bank
	Blood recipient/patient
	Other; Please specify:

20. Where did you donate blood the first time?

21. Could you state what exactly made you decide to go and donate blood for the first time?

22. I will now read out some statements that have been found to be some people's perceptions of blood. Could you kindly tell me how much you agree with each of these statements on a scale of one to five, where:

1=completely disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=completely agree.

Perceptions of Blood	Completely disagree	Disagree	Neither agree nor disagree	Agree	Completely agree
	1	2	3	4	5
"Blood is life"					
Blood is sacred					

Perceptions of Blood	Completely disagree	Disagree	Neither agree nor disagree	Agree	Completely agree
	1	2	3	4	5
Blood has a spiritual significance					
Blood determines a person's character					
Blood determines a person's inherited physical traits					
Blood can transfer a donor's behaviour to the one who receives it, if transfused					
Blood is used for religious cleansing in the religious					
Blood is used for rituals and sacrifice to deities					
Blood is used medically to save lives					
Blood is used spiritually to save lives					
Blood is used for covenants with other persons					
Blood is used to link with the supernatural					
A person who has access to another person's blood can harm him/her spiritually					
The presence of blood means pain or physical injury					
A person's blood is unique to him/her and should not give it out					
Blood is unique for each tribe/kin					
Blood should not be mixed between tribes by donation or marriage					

23. Which **ONE** of these has mostly influenced your perceptions of blood?

☐ Culture
☐ Education

	Religion
	Other: Please state

24. I will now read out some statements that have been found to be other people's perceptions of blood donation. Could you kindly tell me how much you agree with each of these statements on a scale of one to five, where:

1=completely disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=completely agree.

Perceptions of Blood Donation	Completely disagree	Disagree	Neither agree nor disagree	Agree	Completely agree
	1	2	3	4	5
Blood donation is beneficial to the donor's health					
Blood donation is harmful to the donor's health					
A person can catch an infection through blood donation					
Blood donation is important for saving lives					
Donating blood is a waste of time					
Blood donation reduces the donor's physical strength					
Blood donation makes a women unable to menstruate					
Blood donation can cause impotence					
When I donate blood, I give away part of my life					
Donating my blood to someone will create a bond or a covenant with the person					
Giving blood can cause the donor to die					
Blood donation reminds me of pain					
Giving blood can help to find out if I have a disease					

25. I will now read out some statements that have been found to motivate some people to donate blood. Could you kindly tell me how much you agree with each of these statements on a scale of one to five, where:

1=completely disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=completely agree.

Motivators I am/would be motivated to donate blood…	Completely disagree	Disagree	Neither agree nor disagree	Agree	Completely agree
	1	2	3	4	5
… if it is easy to get to the blood donation site					
… to help save lives					
… if my friends or relatives needed blood					
… to help my community					
… if it meant that there will be blood available in future when my family or friends need it					
… if it meant that there will be blood available in future when I need it					
… because my religion encourages me to donate blood					
… to help the Blood Bank					
… if Ghana needs blood					
… for blood credits for me and my family					
… because it would make me feel good about myself					
… to know how it feels like					
… if I am notified through SMS/email reminders					

Motivators I am/would be motivated to donate blood…	Completely disagree 1	Disagree 2	Neither agree nor disagree 3	Agree 4	Completely agree 5
… by educational talks on blood					
… if I was asked by my peers who are blood donors					
… by radio, TV or newspaper advertisement on blood donation					
… by an appeal for blood donation on radio or TV					
… by a blood drive at my school or workplace					
… if I will get to know my blood group					
… if I will get to know my other (TTI) test results					
… if I will get a free medical check-up					
… if I will get cash payment					
… if I will get cash gifts					
… because it is good for my health					
… if I will get incentives such as milk, milo, T-shirts, blood tonic etc.					
… to get the motivational items given to donors such as pens, exercise books etc.					
… by the awards/prizes given on blood donor day					
… because it is a way to make a difference					
… because many of my friends/family are blood donors					
… if my friends, relatives or co-workers asked me to donate blood					

26. I am also going to read out some statements that have been found to be the reasons why some people do not donate blood. Could you kindly tell me how much you agree with each statement on a scale of one to five, where:

1=completely disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=completely agree

Deterrents One of the reasons that would deter me from donating blood is…	Completely disagree	Disagree	Neither agree nor disagree	Agree	Completely agree
	1	2	3	4	5
… that, I do not have time to donate blood					
… that, I think do not have enough blood					
… that, I think blood donation is for other people					
… that, the blood collection times are not convenient to me					
… that, I do not like to complete the blood donor questionnaire					
… if, the queues are too long					
… if I am not called or asked to give					
… because, the TV/Radio advertisements do not convince me to donate blood					
… because, the motivational items that are given to blood donors are not good enough					
… because I do not receive money for donating blood					
… if I do not know there is a need for blood					
… if I do not know where the nearest blood donation site is					
… that, I do not know what happens to the blood after donation					
… if I am not treated well by the Blood Bank staff					

Deterrents One of the reasons that would deter me from donating blood is…	Completely disagree 1	Disagree 2	Neither agree nor disagree 3	Agree 4	Completely agree 5
… if, the blood donation clinic setting is poor					
… that, I am scared of the needle or pain/discomfort					
… that, I am afraid of bruising/having a sore arm					
… that, it can make me sick					
… that, it can make me weak spiritually					
… that, it can make me impotent *(where applicable*)					
… that, it can affect ability to menstruate *(where applicable*)					
… that, it can affect ability to get pregnant (where applicable)					
… that, I am afraid of catching HIV if I donate blood					
… because I had a bad reaction or fainted when I gave blood					
… because I heard that others had a bad reaction or fainted after donating					
… that, I am afraid of the sight of blood					
… that, I am afraid of finding out about my HIV status					
… that, I think the blood bank sells the blood that is donated for free					
… that, I think blood mostly goes to people who are rich					
… that, I am afraid the blood bank gives away donated blood to occultists/“sakawa” practitioners					
… that, it is against my personal beliefs					

Deterrents One of the reasons that would deter me from donating blood is…	Completely disagree	Disagree	Neither agree nor disagree	Agree	Completely agree
	1	2	3	4	5
… that, it is against my culture					
… that, it is against my religion					

4.0 Others

27. Are you active as a volunteer in any organization/group?
(Volunteer work means work for which you do not receive a salary or wage)

☐ Yes
☐ No

28. Please indicate how much you agree with the following statements. Tick (√) one of the five squares in each row

I find giving blood:

a.	negative	☐☐☐☐☐	positive
b.	good	☐☐☐☐☐	bad
c.	meaningless	☐☐☐☐☐	worthwhile
d.	pleasant	☐☐☐☐☐	unpleasant
e.	annoying	☐☐☐☐☐	enjoyable
f.	unappealing	☐☐☐☐☐	appealing

29. Please indicate how much the following statements apply to you.

1=completely disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=completely agree

	Completely disagree	Disagree	Neither agree nor disagree	Agree	Completely agree
	1	2	3	4	5
My family and friends think I should continue giving blood as long as my health allows it					
I normally do what my family and friends want me to do					
If I wanted to, I would be able to continue giving blood as long as my health allows it.					
I find it hard to give blood time after time					
I feel a personal responsibility to donate blood					
I have a social obligation to give blood					
If I did not donate blood, I would feel guilty					
I plan to return to donate blood in 4 months when I will be due for donation					
I plan to continue giving blood as long as my health allows it					
In general most people can be trusted					
You cannot be careful enough when you are dealing with other people					

30. Please indicate which of the following statements most apply to you. *(select only one)*

- ☐ I prefer working toward my own well-being than toward the well-being of others
- ☐ I try to work towards the well-being of society
- ☐ I am not very interested in helping others
- ☐ It is important to me that I help others
- ☐ I think it is important to help the poor and the needy

31. Have you ever seen or heard any advertisement from the National Blood Service/Accra Area Blood Centre/Blood Bank?	☐ Yes ☐ No

If No, skip to Question 33

32. Where did you see or hear the advertisement in **Q.31**? *(Tick all that apply)*	☐ Radio ☐ Television ☐ Newspaper ☐ At a cinema ☐ Other; Please state:

33. How would you prefer Blood Service to send you reminders to donate blood? Do you prefer to receive it by…….?	☐ Telephone ☐ SMS ☐ Post ☐ E-mail ☐ I don't want a reminder (DO NOT READ)

THE END: THANK AND CLOSE

PART II: RETURN DATA (After six months)

RESPONDENT ID: ***(As per database)*:**		**RESPONDENT'S FULL NAME:**
INTERVIEW DATE:		**BASELINE INTERVIEW DATE:**
START TIME:		**END TIME:**

1. Have you donated blood again after your first donation?

- ☐ Yes
- ☐ No

2. How many times have you donated blood since your first donation?

- ☐ 1
- ☐ 2
- ☐ More; Please state: _____

3. Please state the dates and places of donation.

3a. 2nd donation

Date ☐☐ ☐☐ ☐☐☐☐
d d m m y y y y

Place _____

Please state who you donated the blood for

- ☐ A friend/acquaintance
- ☐ A relative
- ☐ A colleague
- ☐ The blood bank
- ☐ The community

☐	Other: Please state _____

3b. 3rd donation

Date ☐☐ ☐☐ ☐☐☐☐
d d m m y y y y

Place _____

Please state who you donated the blood for

☐	A friend/acquaintance
☐	A relative
☐	A colleague
☐	The blood bank
☐	The community
☐	Other: Please state _____

4. Do you plan to return to donate blood again?

☐	Not at all
☐	Maybe
☐	Definitely
☐	Regularly
☐	Occasionally

THE END: THANK AND CLOSE

Name of Interviewer: _____

Signature: _____

APPENDIX 7: ETHICS APPROVALS

APPROVAL FROM GHANA HEALTH SERVICE ETHICAL REVIEW COMMITTEE

GHANA HEALTH SERVICE ETHICAL REVIEW COMMITTEE

In case of reply the number and date of this Letter should be quoted.

My Ref. :GHS-ERC: 3
Your Ref. No.

Research & Development Division
Ghana Health Service
P. O. Box MB 190
Accra
Tel: +233-302-681109
Fax + 233-302-685424
Email: nanatuesdaykad@yahoo.com

29th October, 2013

Lucy Asamoah-Akuoko,
Liverpool School of Tropical Medicine
Pembroke Place
Liverpool

ETHICAL APPROVAL - ID NO: GHS-ERC: 10/09/13

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol titled:

"Evolving strategies to encourage repeat donations among first time voluntary and replacement donors in Southern Ghana"

This approval requires that you inform the Ethical Review Committee (ERC) when the study begins and provide Mid-term reports of the study to the Ethical Review Committee (ERC) for continuous review. The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Please note that any modification without ERC approval is rendered invalid.

You are also required to report all serious adverse events related to this study to the ERC within seven days verbally and fourteen days in writing.

You are requested to submit a final report on the study to assure the ERC that the project was implemented as per approved protocol. You are also to inform the ERC and your sponsor before any publication of the research findings.

Please always quote the protocol identification number in all future correspondence in relation to this approved protocol

SIGNED.....
DR. CYNTHIA BANNERMAN
(GHS-ERC VICE-CHAIRPERSON)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra

APPROVAL FROM LSTM RESEARCH ETHICS COMMITTEE

LSTM
LIVERPOOL SCHOOL OF TROPICAL MEDICINE

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Lucy Asamoah-Akuoko
Liverpool School of Tropical Medicine
Pembroke Place
Liverpool
L3 5QA

Monday, 18 November 2013

Dear Dr Asamoah-Akuoko,

Re. Research Protocol (13.27) Evolving Strategies to Increase Repeat Blood Donations Among First Time Voluntary and Replacement Blood Donors in Ghana

Thank you for your correspondence of the 11th November 2013 providing the necessary in-country ethical approval documents required for this study. The protocol now has formal ethical approval from the Chair of LSTM Research Ethics Committee.

The approval is for a fixed period of three years and will therefore expire on **10th November 2016**. The committee may suspend or withdraw ethical approval at any time if appropriate.

Approval is conditional upon:

- Continued adherence to all in-country ethical requirements.
- Notification of all amendments to the protocol for approval before implementation.
- Notification of when the project actually starts.
- Provision of an annual update to the Committee. Failure to do so could result in suspension of the study without further notice.
- Reporting of new information relevant to patient safety to the Committee
- Provision of Data Monitoring Committee reports (if applicable) to the Committee

Failure to comply with these requirements is a breach of the LSTM Research Code of Conduct and will result in withdrawal of approval and may lead to disciplinary action. The Committee would also like to receive copies of the final report once the study is completed.

Yours sincerely

Dr Angela Obasi,
Chair,
LSTM Research Ethics Committee

APPENDIX 8: ABSTRACT AND PUBLICATIONS

1. Abstract accepted at the 6th Africa Society for Blood Transfusion Congress in Mauritius: 4-8 June 2012

EVOLVING EVIDENCE-BASED STRATEGIES TO ENCOURAGE REPEAT BLOOD DONATIONS IN FIRST TIME VOLUNTARY AND REPLACEMENT BLOOD DONORS IN GHANA

Lucy Asamoah-Akuoko*, Ib C. Bygbjerg, Oliver Hassall, Imelda Bates, Richard Adanu, Justina Ansah, Shirley Owusu-Ofori, J. K. Acquaye, Henrik Ullum.

Introduction

Non-availability of blood for transfusion remains a major challenge to healthcare provision in Africa. The World Health organization (WHO) African Regional Strategy, adopted in 2001, focuses on recruitment of low risk regular voluntary donors. This strategy for blood safety and availability has however been far from successful in the African Region where Family Replacement Blood Donors (FRD) provide about 60-90% of the blood supply. Even though blood from Voluntary Non-Remunerated Blood Donors (VNRBD) is safer than FRD there is compelling evidence that, when stratified by age, blood from first time VNRBD is not safer than FRD, and that only repeat donations provide improved blood safety. In developing models to increase repeat blood donations from existing donors, it is important to understand what will encourage the first time donor, whether VNRBD or FRD, to donate again, and the repeat donor to continue donating.

Aims and Objectives

This research seeks to identify factors which motivate and deter regular repeat voluntary donations in blood donors and to develop appropriate intervention strategies to increase repeat blood donations in Ghana. It also seeks to compare the prevalence of transfusion transmissible infection (TTI) sero-reactivity among first time and repeat donors.

Materials and Methods

The study will look at blood donors who have donated blood voluntarily or as replacement donors at static and mobile blood donation sessions of the Accra Area Blood Centre (AABC). It is a 3-phase mixed method study, which will use method triangulation to achieve contextualization and validation of findings.

Phase 1 is a qualitative phase with two research components: in-depth interviews and focus group discussions to elicit motivators and deterrents to repeat blood donations in this population.

Phase 2 is a structured questionnaire survey on the identified motivators and deterrents among first time voluntary and replacement donors and repeat voluntary donors. This phase will be concluded with the development of intervention strategies that enhance the motivating factors and reduce deterrents.

In Phase 3, the interventions will be tested by implementing in static and mobile blood donation sites of the AABC and conducting a post-intervention survey using the questionnaire used in Phase 2 to determine donor return rate, donor satisfaction and predictors of donor return.

Expected Outcomes and Conclusion

This research is expected to elicit motivators and deterrents to blood donation that are specific to the social beliefs, culture and economic status of the study population. Since a donor's willingness to donate blood is determined by the net influence of motivating and deterring factors, it is expected that by implementing the interventions, the ratio of first time donors that return to donate blood will be increased. This research is also expected to show a strong correlation between repeat blood donations and lower prevalence of TTI sero-positivity.

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2. Abstract accepted at the 23rd Regional Congress of the International Society of Blood Transfusion, Amsterdam, Netherlands, June 2 - 5, 2013

made in this direction resulted in more than 300% Voluntary Blood Donation in the region.

Summary/conclusions: If the efforts are made in reaching the loving hearts of women & children then the results can be amazing & overwhelming to achieve 100% voluntary blood donation.

P-069

ATTITUDES TOWARDS BLOOD DONATION AND MOTIVATION TO DONATE BLOOD AMONG YOUTH IN A VOCATIONAL TRAINING INSTITUTE IN SRI LANKA

Gunathillaka KDK[1] and Tennekoon HD[2]

[1]NIMH Angoda, Dehiwala, Sri Lanka [2]Faculty of Medicine, Colombo, Sri Lanka

Background: Attitudes towards blood donation and motivating factors have shown to vary depending on country and ethnic/religious composition. Sri Lanka is a multiethnic and multi-religious country with four ethnic groups and four major religions. Ascertaining attitudes towards blood donation and motivating factors behind donation within our population will help guide donor management strategies. As local studies focused in this area are limited, a preliminary study to identify areas in need of further research was carried-out.

Aims: To assess the attitudes of the study population towards blood donation and to identify the common motivating factors and de-motivating factors with regard to blood donation.

Methods: Two randomly selected batches of students in a vocational training institute were selected and data collected using a self-administered questionnaire. Informed verbal consent was taken. Attitudes were measured using a Likert scale.

Results: There were 261 respondents with a male preponderance of 257. Age ranged from 18 to 29 with the mode and median being 23. Majority (93.5%) of respondents were Sinhalese while 3.8% were Tamils and 2.7% were Muslim. Of 86.9% were Buddhist, 6.9% were Christian, 3.5% were Hindu and 2.7% were Islam. About 90.4% of the respondents strongly agreed that donation was a meritorious act. Of 91.2% strongly agreed that donation was an avenue of helping another person. Of 90% strongly agreed that donation was a social service. While 57.6% strongly agreed/agreed that blood donation may be of some benefit to the donor in future, 31.9% neither agreed nor disagreed. Of 170 (65%) students had already donated blood and 91 (34.9%) had not donated blood previously. Donation had been within 6 months in 17.6% of the donors and 65.1% had donated thrice or more. About 99% of the donations had been at mobile blood donation drives at their institution. Among the motivational factors, wanting to help someone was most frequent (37%). 'Donation makes me feel good' was stated in 21%. Possibility of needing blood in future was stated as a motivation 16% of the time. Donation being considered a religious meritorious act was stated 15% of the time with all these respondents being Buddhists. Solidarity (1%), physical well being (5%), medical examination (3%), social capital (3%) and finding one's blood group (1%) were less important motivating factors. Of those who had not donated blood 39% were due to temporary deferrals while 39% had not got an opportunity to donate. Reasons of religion/culture, distrust and fear were less important. All those who had donated blood as well as most that hadn't (95%), were willing to donate in future.

Summary/Conclusions: The majority of the population studied had positive altruistic attitudes towards blood donation while a proportion of them had attitudes of reciprocity. Altruism was the main motive behind donation. Although religious belief was an important motivating factor among Buddhists, differences across ethnicity and religion cannot be commented upon due to non-representative number of respondents. Lack of opportunity and temporary deferral being reasons for not donating indicate the importance of outreach mobile drives and follow-up of deferrals.

P-070

EVOLVING STRATEGIES TO ENCOURAGE REPEAT BLOOD DONATIONS IN FIRST TIME VOLUNTARY AND REPLACEMENT BLOOD DONORS IN GHANA

Asamoah-Akuoko L[1], Bygbjerg IC[2], Hassall O[3], Bates I[3], Adanu RM[4], Ansah J[1], Owusu-Ofori S[5], Acquaye JK[4], Adongo PB[4] and Ullum H[2]

[1]National Blood Service, Ghana, Accra, Ghana [2]University of Copenhagen, Copenhagen, Denmark [3]Liverpool School of Tropical Medicine, Liverpool, United Kingdom [4]University of Ghana, Accra, Ghana [5]Komfo Anokye Teaching Hospital, Kumasi, Ghana

Background: Blood mobilization and collection agencies worldwide are challenged with blood donor recruitment and retention. When the demand for blood exceeds collection, there is inadequacy of supply and safety of the blood is also compromised. This challenge varies in severity between developed and developing countries. The median blood donation rates per 1000 population are 36.4 in high-income countries, 11.6 in middle-income countries and 2.8 in low-income countries. The World Health organization (WHO) African Regional Strategy, adopted in 2001, focuses on recruitment of low risk regular voluntary donors. But, even though blood from Voluntary Non-Remunerated Blood Donors (VNRBD) is safer than Family Replacement Donors (FRD), there is evidence that blood from first time VNRBD is not safer than FRD, and that only repeat donations provide improved blood safety. Therefore in developing models to increase repeat blood donations from existing donors, it is important to understand what will encourage the first time donor, whether VNRBD or FRD, to donate again, and the repeat donor to continue donating.

Aims: This research seeks to identify factors which motivate and deter regular repeat voluntary donations in blood donors and to develop intervention strategies to increase repeat blood donations in Ghana.

Methods: The study will look at blood donors who have donated blood voluntarily or as replacement donors at static and mobile blood donation sessions of the Accra Area Blood Centre. It is a 2-phase mixed method study, which will use method triangulation to achieve contextualization and validation of findings. Phase 1 will be a qualitative phase with two research components: in-depth interviews and focus group discussions to elicit motivators and deterrents to repeat blood donations in this population. Phase 2 is will be a structured questionnaire survey to determine the significant motivators and deterrents to blood donation in the study population as well as assess donor satisfaction and predictors of donor return under the Theory of Planned Behavior. This phase will be concluded with the development of intervention strategies that enhance the motivating factors and reduce deterrents.

Summary/Conclusion: This research is expected to elicit perceptions on blood donation, motivators and deterrents to blood donation that are specific to the beliefs, culture and economic status of the study population, thus providing variables to be included in the Theory of Planned Behavior model to determine the predictors of intention and donor return. Since a donor's willingness to donate blood is determined by the net influence of motivating and deterring factors, it is expected that by developing the interventions strategies, the ratio of first time donors that return to donate blood will be increased.

P-071

THE ATTITUDE OF BLOOD DONORS REGARDING INCENTIVES

Kasraian L and Alireza T

Iran blood transfusion research center, Shiraz, Iran

Introduction: Understanding the factors that motivate donors to donate will facilitate improvement in recruitment programs. Donation incentives are often used to improve the effect of recruitment programs. This study was designed to understand the donor attitudes toward incentives.Cross-section study was conducted at Shiraz blood transfusion center.

Methods: A questionnaire was given to the volunteer donors at the time of registration for blood donation. The questionnaire contained questions regarding demographic characteristics, donation status (First-time donor, regular donor), their motivation for donation, their attitude toward incentives and which would be the best type of incentives. Multiple logistic regression was used for data analysis by Statistical Package for the Social Sciences (SPSS) soft ware.

Results: The majority of donors (85.6%) donated blood for altruistic reasons.25.3% of the donors believed that incentives should be offered to them to encourage them to donate. About 84.5% of donors believed that the most effective incentive is offering particular blood tests. Donors who had donated for non-altruistic reasons, were more interested in receiving incentives. The desire to receive Incentives was more among married, low-educated and regular donors. The desire for receiving incentives was less with increased age.

Conclusion: Most of the donors (74.7%) did not have any desire to receive incentives and was even more apparent among donors who donated for altruistic reasons. Offering incentives may attract high-risk donors and subsequently endanger blood safety.

P-072

DONOR RETURN RATES AFTER A POSITIVE FEEDBACK: HOW ALTRUISTIC ARE WE?

Makroo RN, Bhatia A and Singh S

Indraprastha Apollo Hospitals, New Delhi, India

Background: The most important strategy to ensure a safe and adequate supply of blood and blood products is motivation, recruitment, selection and retention of voluntary non-remunerated blood donors. With the increasing demand for blood and blood products, attention is shifting increasingly towards the need to understand blood donors and the factors that motivate them to continue donating.

3. Abstract accepted at the 7th Biennial Congress of Africa Society for Blood Transfusion, Victoria Falls, Zimbabwe, July 30th-August 2nd, 2014

BLOOD DONATION IN SOUTHERN GHANA: PERCEPTIONS, MOTIVATORS AND DETERRENTS

Lucy Asamoah-Akuoko[1,2*], Oliver Hassall[1], Philip B. Adongo[3], Imelda Bates[1], Shirley Owusu-Ofori[4], Bernard Appiah[5], Justina K. Ansah[2], Joseph K. Acquaye[3], Ib C. Bygbjerg[6], Henrik Ullum[6,7]

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[2]National Blood Service, Ghana
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[5]Texas A&M School of Public Health, Texas, USA
[6]University of Copenhagen, Denmark
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KEYWORDS: blood donation, southern Ghana, perceptions, motivators, deterrents, shortage

INTRODUCTION
Annually about 125,000 units of blood are donated in Ghana.[1] This is only 50% of the estimated national blood requirement and there are year-round shortages of blood. *Family/replacement donors* who donate blood for sick relations and friends provide about 67%[1] of the total annual blood supply. *Repeat donors* are the key to safety and adequacy of blood supply, however only about 15%[2] of *first-time donors* return to donate blood.

AIM
To assess perceptions of blood and blood donation in southern Ghana and to determine the factors that motivate or deter blood donation.

METHODS
Twenty-four individual in-depth interviews and three focus group discussions with a total of 23 participants were conducted from December 2013 to May 2014. Participants were a convenience sample of blood donors, non-donors, Blood Donor Services staff and volunteers from the Accra Area Blood Centre. Blood donors were stratified by type of donor and number of donations. Pre-tested interview guides with open-ended questions and focus group discussion guides, developed in English, were translated into two local Ghanaian languages: Twi and Ga. Interviews were recorded and transcribed. A preliminary analysis of transcripts, audio tapes and field notes was conducted using a coding scheme based on the taxonomy of blood donor motivators by Bednal and Bove[3] but modified to capture the perceptions of blood and blood donation found in Ghanaian blood donors.

RESULTS
The positive perception of blood as the essence of health and life was expressed by all categories but especially among *repeat voluntary donors*. Negative perceptions, including seeing blood as "spiritual" and "power"; and the use of blood for rituals, evil covenants, sacrifice to deities and occultism were expressed by participants, but predominantly by non-donors and *first-time donors*. These perceptions of blood translated to perceptions of blood donation, and fear and the misperception that blood is used for rituals were strong deterrents for these groups. Fear of knowing one's HIV status was perceived as a major deterrent among young people. Other major deterrents to blood donation included: poor staff attitude and skill; inconvenience; lack of information, access and trust; inadequate incentives and perceived lack of confidentiality. Conversely, major motivators for blood donation were: to save lives; for relations or friends; and as an assurance of blood for the donor when in need. Reminders, convenience, educational talks, direct marketing and access to information on blood donation were also cited as motivators.

DISCUSSION AND CONCLUSION
The initial motivation for donating blood is similar for some *repeat voluntary donors* and family/replacement donors, thus strategies to encourage blood donation should include encouraging *family/replacement donors* to become *repeat donors*. Although the negative perceptions of blood are influenced primarily by cultural environment and personal experiences, these perceptions may also be influenced positively by religion and education. For example participants' view of "power" in the Christian context implies power to save lives. Interventions addressing these perceptions should therefore be targeted. The significance of the identified factors will be further explored in focus group discussions and a separate survey from which interventions will be developed.

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REFERENCES

1. National Blood Service, Ghana. National Blood Service, Ghana – 2013 Annual Blood Collection Data. National Blood Service, Ghana; 2014 Apr.

2. Asamoah-Akuoko L. Return Rates of First Time Donors at the Accra Area Blood Centre - A Pilot Study. AABC, National Blood Service, Ghana; 2011 Dec.

3. Bednall TC, Bove LL. Donating Blood: A Meta-Analytic Review of Self-Reported Motivators and Deterrents. Transfusion Medicine Reviews. 2011 Oct;25(4):317–34.

4. Abstract accepted at the 1st European Conference on Donor Health & Management, The Hague, the Netherlands, September 3 - 5, 2014

BLOOD DONATION IN SOUTHERN GHANA: PERCEPTIONS, MOTIVATORS AND DETERRENTS

Lucy Asamoah-Akuoko[1,2*], Oliver Hassall[1], Philip B. Adongo[3], Imelda Bates[1], Justina K. Ansah[2], Ib C. Bygbjerg[4], Henrik Ullum[4]

[1]Liverpool School of Tropical Medicine, United Kingdom
[2]National Blood Service, Ghana
[3]University of Ghana, Legon
[6]University of Copenhagen, Denmark

Introduction
Annually about 125,000 units of blood are donated in Ghana. This is only 50% of the estimated national blood requirement and there are year-round shortages of blood. Voluntary Donors are uncommon in Ghana; rather about 69% of the total blood supply is from Family/Replacement Donors and only 15% of first time donors return to donate. In developing strategies to increase blood donations, it is important to understand what will encourage blood donors to donate again.

Methods
Twenty-four individual in-depth interviews and three focus group discussions with a total of 23 participants were conducted. A preliminary analysis of transcripts, audio tapes and field notes was conducted using a coding scheme based on the classification by Bednal and Bove,(2011) but modified to capture the perceptions of blood and blood donation found in Ghanaian blood donors.

Results
Negative perceptions included seeing blood as “spiritual” and “power”; and the use of blood for rituals, evil covenants, sacrifices to deities and occultism. These perceptions of blood translated to perceptions of blood donation, and fear and the misperception that blood is used for rituals were strong. Fear of knowing one’s HIV status was perceived as a major deterrent among young people. Other major deterrents to blood donation included: poor staff attitude and skill; inconvenience; lack of knowledge, access and trust; inadequate incentives and perceived lack of confidentiality. Conversely, major motivators for blood donation were: to save lives; for relations or friends; and as an assurance of blood for the donor when in need. Reminders, convenience, educational talks, direct marketing and access to information on blood donation were also cited as motivators

Conclusions
The significance of the identified factors will be further explored in focus group discussions and a separate survey from which interventions will be developed.

5. Abstract accepted at the 8th AfSBT International Congress, Kigali, Rwanda, 31 May to 3 June 2016

SOCIO-DEMOGRAPHIC AND ATTITUDINAL CHARACTERISTICS OF FIRST-TIME VOLUNTARY AND FAMILY REPLACEMENT BLOOD DONORS IN SOUTHERN GHANA

(1) Asamoah-Akuoko L, (2) Hassall O, (3) Adongo P B, (4) Bates I, (5) Bygbjerg I C, (6) Ullum H

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(5) University of Copenhagen, Denmark
(6) Department of Clinical Immunology, Copenhagen University Hospital

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Background
Repeat Voluntary Blood Donors are the key to adequate, sustainable blood supply. In Southern Ghana, 15.2 % of first time donors return to donate. Understanding the socio-demographic and attitudinal factors that influence blood donation provides a basis for developing targeted strategies for increasing proportion of repeat blood donors.

Aim
To identify socio-demographic and attitudinal factors that influence blood donation in first time voluntary and replacement donors in Southern Ghana.

Methods
This is the second phase of a 2-phase study. A total of 250 first-time Family Replacement Donors and 255 first-time Voluntary Blood Donors in Southern Ghana were surveyed using a structured questionnaire in Census and Survey Processing System (CSPro) software. Data was analyzed with SPSS version 22.

Results
There was significant association between gender, marital status, having children, means of transport, employment category, level of income, religion; and type of blood donor. There was no significant association between education and type of blood donation, although the factors that mostly influenced perceptions of blood and blood donation were education (59%), religion (25.5%) and cultural environment (11.3%). Attitudinal factors in two groups, Voluntary Blood Donors and Family Replacement Donors, were compared using the Mann–Whitney two-sample rank-sum test. The scores for perceptions of blood and blood donation that encourage blood donation were statistically significantly higher for the Voluntary Blood Donors group than the Family Replacement Donors group. Conversely, the scores for perceptions that discourage blood donation are higher in the Family Replacement Donors than Voluntary Blood Donors.

Conclusion
The findings of this phase of the study support the findings of the first qualitative phase. Findings from this study will be used for developing targeted interventions to increase repeat blood donation.

6. ISBT 2016

Asamoah-Akuoko, L., Hassall, O.W., Bates, I., Adongo, P.B., Bygbjerg, I.C., Ullum, H., 2016. Socio-Demographic Characteristics and Attitudinal Factors in First time Voluntary and Family Replacement Blood Donors in Southern Ghana. Vox Sang 111, 120.

Summary/Conclusions: Having analyzed the data regarding the fluctuations in the population and in the number of registered donations in satellite branches we can draw the conclusions that population growth does correlate to the increase in the number of registered donations. Similarly, the decrease in the population does not correlate to the decrease in the number of donations. According to my opinion, the increase/decrease in the population does not have a significant impact on the number of donations. That is why it is essential to keep educational activities already on the level of high school to raise the awareness of the importance of donating blood.

P-097

SOCIO-DEMOGRAPHIC CHARACTERISTICS AND ATTITUDINAL FACTORS IN FIRST-TIME VOLUNTARY AND FAMILY REPLACEMENT BLOOD DONORS IN SOUTHERN GHANA

L Asamoah-Akuoko[1], OW Hassall[2], I Bates[2], PB Adongo[3], IC Bygbjerg[4] and H Ullum[5]

[1]National Blood Service, Accra, Ghana [2]Liverpool School of Tropical Medicine, Liverpool, United Kingdom [3]University of Ghana, Accra, Ghana [4]University of Copenhagen, Copenhagen, Denmark [5]Copenhagen University Hospital, Copenhagen, Denmark

Background: Repeating Voluntary Blood Donors are the key to an adequate, sustainable blood supply. In Southern Ghana, only 15.2% of first time donors return to donate. Understanding the socio-demographic and attitudinal factors that influence blood donation behaviour provides a basis for developing targeted intervention strategies for increasing the proportion of repeat blood donors.
Aim: To identify socio-demographic characteristics and attitudinal factors that influence blood donation in first time voluntary and replacement donors in Southern Ghana.
Methods: This is the second phase of a two-phased mixed method study. A total of 250 first-time Family Replacement Donors and 255 first-time Voluntary Blood Donors in Southern Ghana were surveyed using a structured questionnaire in Census and Survey Processing System (CSPro) software. Attitudinal factors in both groups were measured with five point Likert-type questions, compared, and differences tested for statistical significance using the Mann-Whitney two-sample rank-sum test. Data was analyzed with SPSS version 22. A coding scheme based on the taxonomy of blood donor motivators by Bednal and Bove, but modified to capture the perceptions of blood and blood donation found in Ghanaian blood donors was used for reporting the results.
Results: There were statistically significant associations between type of blood donor and age, gender, marital status, having children, means of transport, employment category, level of income, and religion. Although the factors that had mostly influenced participants' perceptions of blood and blood donation were education (59%), religion (25.5%) and cultural environment (11.3%), there was no significant association between education and type of blood donation. Of the Family Replacement Donors that were surveyed, 72.5% perceived themselves as Voluntary Blood Donors. Tables 1 and 2 show scores for attitudinal factors, with a higher score positive for the factor and a lower score negative. For the Voluntary Blood Donor group, the scores for perceptions that encourage blood donation behaviour (Table 1); altruistic motivators; collectivism and downstream, indirect reciprocity (Table 2) were statistically significantly higher than the Family Replacement Donor group. Conversely, for the Family Replacement Donor group, the scores for perceptions that discourage blood donation (Table 1); cash and non-cash incentives (Table 2) were higher than the Voluntary Blood Donor group. There were no significant differences between the scores in the two groups for the perceptions that 'Blood is life', 'Blood is Sacred' and 'Blood is used for rituals and sacrifice to deities' (Table 1). However, 97.2%, 84.9%, and 70.3% of respondents either agreed or completely agreed with these respectively.
Conclusion: The findings of this phase of the study support the findings of the first qualitative phase. They confirm that a high proportion of donors perceive that blood is related to spiritual power; donated blood can be used for rituals; and that both altruism and incentives were potential strong motivators for donation. Family Replacement Donors seeing themselves as volunteer donors supports the idea that these donors may also be willing to donate again for others. Findings from this study will be used to develop culturally-sensitive targeted interventions to increase repeat blood donation.

Motivators	Mean Rank		Difference between Scores	P-Value
	Replacement Donors	Voluntary Donors		
Ease of access to donation site	237	270	33	0.006
Save lives	234	272	38	0.001
Help community	237	269	33	0.005
Available when needed for family / friends	240	266	25	0.028
Available when needed for self	239	267	28	0.016
Help Blood Bank	236	270	34	0.004
Help Ghana	233	273	40	0.001
Blood drive at my school or workplace	236	270	35	0.004
Cash gifts	267	238	-29	0.022
Incentives such as milk, milo, T-shirts	273	233	-40	0.002
Friends/family are blood donors	270	236	-33	0.008
If asked by friends, family or co-workers	268	238	-29	0.017
Deterrents				
Not enough time donate blood	277	229	-48	<0.001
Blood collection times are not convenient	273	232	-41	0.001
Long queues	270	236	-35	0.006
Not called or asked to give	279	226	-53	<0.001
Motivational items are not good enough	265	241	-24	0.043
Not aware of need for blood	277	228	-49	<0.001
Not treated well by Blood Bank staff	265	240	-25	0.048

Table 1. Motivators and Deterrents to Blood Donation

Perceptions of Blood	Mean Rank		Difference between Scores	P-Value
	Replacement Donors	Voluntary Donors		
Blood is life	254	251	-3	0.778
Blood is Sacred	261	245	-17	0.157
Spiritual significance	266	240	-26	0.033
Can transfer behaviour to recipient	269	237	-32	0.009
Used for rituals and sacrifice to deities	260	246	-14	0.250
Used medically to save lives	240	266	26	0.012
Used for covenants with other persons	266	240	-27	0.031
Used to link with the supernatural	285	220	-65	<0.001
Can be used to cause spiritual harm	281	225	-56	<0.001
Means pain or physical injury	279	226	-53	<0.001
Unique should not be given it out	267	239	-28	0.019
Unique for each tribe/kin	267	239	-27	0.028
Perceptions of Blood Donation				
Harmful to the donor's health	282	223	-59	<0.001
Important for saving lives	242	265	23	0.033
A waste of time	289	216	-73	<0.001
Reduces the donor's physical strength	273	233	-41	0.001
Makes a women unable to menstruate	285	220	-65	<0.001
Can cause impotence	272	233	-39	0.001
Give away part of donor's life	277	229	-48	<0.001
Creates a bond/covenant with recipient	278	228	-51	<0.001
Can cause the donor to die	279	226	-53	<0.001
Reminds me of pain	280	226	-54	<0.001
Harmful to the donor's health	282	223	-59	<0.001

Table 2. Perceptions of Blood and Blood Donation

P-098

ATTITUDE TO BLOOD DONATION AMONG A TERTIARY HOSPITAL WORKERS IN NIGERIA

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Background: Adequacy of donor blood to meet demand is no more a problem in the developed countries of the World, which have established organized means of collection and distribution. The story is however different in most of sub-Saharan Africa where illiteracy, poverty and negative cultural beliefs remain obstacles to donation.
The inadequate donor blood supply in response to recent terrorist attacks in Nigeria has further highlighted the problem. Members of staff of hospitals who are close to blood transfusion centres and are expected to be better informed has been targeted in this study to assess willingness to donate blood as well as factors affecting their willingness or otherwise.
Aims: To assess willingness of health workers to blood donation as well as factors affecting their willingness or otherwise.
Method: Questionnaires were administered to consenting hospital staff from various departments of a tertiary health care centre with a blood transfusion unit, Respondents included staff of departments (Account and Finance, Administration, Catering, Health Information, Laundry, Medical, Nursing, Laboratory). Descriptive statistics (SPSS Version 17) were used to analyse data collected.
Result: Responses were received from two hundred and forty six (246) health workers, 76 male and 170 females, aged 20–60 years.
In Table 1, Columns A and B showed that the percentage of health workers who were willing to donate blood is uniformly higher than those who have been

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7. ISBT 2017

Asamoah-Akuoko, L., Ansah, J., O Hassall, Bates, I., Ullum, H., 2017. Motivating Blood Donors in Ghana. Vox Sanguinis 112, 5–295.

Methods: To determine the preliminary analytical sensitivity, dilutions of *in vitro* synthesized RNA transcripts for the four clinically relevant Babesia species were evaluated and results were subjected to probit analysis (SAS Enterprise Guide 6.1). Fresh Babesia-infected hamster whole blood with a known number of parasites was used to determine the limit of detection (LOD) of parasites/ml. To determine clinical sensitivity and specificity, 27,076 un-linked whole blood donations collected by the American Red Cross from August 25th 2016 to February 24th 2017, mainly in Connecticut, New Jersey, Pennsylvania, Maine, New Hampshire, and Vermont were screened using the Procleix Babesia assay under a research protocol (Research Use Only study). Initially reactive donations were confirmed by repeat testing, PCR, and serology testing. Reactive individual donor lysates were also tested in pools of 16.
Results: The Procleix Babesia assay detected all four Babesia species with a 95% LOD ranging from 7.10–13.51 copies/ml and fresh Babesia-infected hamster blood with a 95% LOD ranging from 1.31–3.61 parasites/ml. Of the 27,076 donations screened, 17 initial reactive and 14 confirmed reactive donations were identified, for a specificity of 99.989% (95% CI: 99.967–99.996%). All confirmed reactive samples were also reactive in pools of 16. From the 14 confirmed reactive specimens, 13 were reactive by IFA and none by PCR. One was detected apparently during the window period prior to seroconversion. Donors of reactive donations resided in Connecticut (11), New Jersey (1), New Hampshire (1) and Maine (1) for an overall incidence of 1:1,934, and an incidence in Connecticut of 1:1,187.
Summary/Conclusions: The Procleix Babesia assay on the Procleix Panther system demonstrated high clinical specificity and sensitivity and detected all four *Babesia* species. All confirmed reactive donations were also detected in pools of 16 thus demonstrating the potential effectiveness of pooled lysate screening.

Resource Limited Countries: Improving Blood Transfusion in the Developing World

5A-S34-01

PRACTICAL EXPERIENCES FROM THE FIELD: REFLECTIONS OF BLOOD SAFETY IN AFRICA

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None, None, None, South Africa

Background and Objectives: SAFE BLOOD is the foundation stone of Health Systems Strengthening throughout low-resource countries. Failing HSS initiatives can be traced back to inadequate supplies and poor access to tested and crossmatched blood. Most medical procedures assume blood is available. Often national disasters become tragedies without safe blood. The developed world has National Blood Services that supply blood from well-managed donor panels. These are largely non-existent in Africa. The purpose of this paper is to reflect on observations during Technical Assistance activities over seven years.
Materials and Methods: The reflections here are based on observations during Technical Assistance activities developing Blood safety in several African countries. These are supported by reviewing recent literature and commentary on new technologies and global changes potentially impacting Blood Safety and HSS in Africa.
Results: Africa is the reciprocal of the developed world where c. >75% of blood, donated by Voluntary Non-Remunerated Donors, is used for planned surgeries, oncology and trauma (car accidents mostly). Sadly the developing world uses over 70% of its inadequate blood supply (< 50% of needs) to treat obstetric haemorrhage and acute anaemia in children under five suffering from advanced malaria. Those familiar with blood safety practices will assume blood collected is made into the components of red cells, platelets and plasma. The global multi-billion dollar plasma industry pays for their plasma. WHO still advocate voluntary donors are the safest, but some advocate that this 'industry' should be dropped into Africa providing incentives to 'donors', solving the supply problem.
Conclusion: The assumptions of available and assessable safe blood for any clinical practices are mostly failed! There are many possible solutions but cost recovery models must become the norm. As there are few clinical indications for plasma in Africa so those few countries making components discard an estimated $30 Million worth! While whole blood is the norm, given the declining funding for blood safety, a way needs to be found to secure this resource, channelling all profits into improved Blood Safety based on voluntary donation. New technologies could help.

5A-S34-02

THE ORGANISATION OF BLOOD CENTRES IN NAMIBIA

I Chipare

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In Namibia, blood transfusion activities are centrally coordinated through the National Blood Policy which defines the roles and responsibilities of all stakeholders in the National Blood Program, namely; the Blood Transfusion Service, Government of Namibia (through the National Blood Authority) and transfusing hospitals through their Hospital Transfusion Committees (HTC) and Blood Banks. The Blood Transfusion Service of Namibia (NAMBTS) was incorporated in 1963 as a non-profit organisation and is the only institution licensed by the Government of Namibia to collect, test, and distribute blood and blood products to hospitals in the country. NAMBTS is governed by a Board whose members are blood donors elected to serve by the donors themselves.
NAMBTS collects 35 000 donations from voluntary non-remunerated blood donors annually of which 97% are whole blood and 3% apheresis platelets. Whole blood donation rate is 13.1 per 1000 population and about 70% of all donations made are from repeat donors with a donation frequency of 2.1. All whole blood donations are processed into components and even though all red cell concentrates are transfused, with an out- dating rate of 2%, only 30% of recovered plasma is transfused. Surplus plasma is exported to South Africa for fractionation and the Plasma Derived Medicinal Products are imported back into Namibia and distributed to hospitals.
Blood is tested for Transfusion Transmissible Infections (TTI); Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV), Hepatitis C Virus (HCV) and Syphilis using Individual Nucleic Acid Amplification Test (ID-NAT) and serology. Namibia is the second country in sub-Saharan Africa after South Africa to implement ID-NAT for HIV, HBV and HCV on all donated blood thereby interdicting serological window period especially in our setting where the prevalence of HIV and HBV in the general population is high. The total prevalence of TTI markers among donations is 1.7% (HIV-0.2, HBV-0.7, HCV- 0.4 and Syphilis- 0.4).
Blood is supplied to patients through 50 hospitals and 85% of blood is used in government run (state) hospitals. Each hospital has a HTC that oversee adequacy and appropriate clinical use of blood and blood products. Namibia has a national haemovigilance system that covers all aspects of the transfusion chain; from blood collection to the follow up of the recipients, gathering and analysing all adverse effects of blood transfusion in order to correct their cause and prevent recurrence.
NAMBTS operates on a cost recovery basis by billing the recipients of blood whereby the government pays for state patients and health insurance pays for private patients. NAMBTS received PEPFER funding between 2004–2014 which contributed about 14–61% to operating income with the remainder coming from cost recovery but currently the Service is not receiving any donor funding.

5A-S34-03

MOTIVATING BLOOD DONORS IN GHANA

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Introduction: In Ghana, and across sub-Saharan Africa (SSA), blood shortages are common and there is heavy reliance on family/replacement donors (FRD). Although there have been improvements in the last few years, in Ghana in 2015 and 2016 only 62–64% of the annual requirement of 250,000 units were collected and FRD constituted around 65% of donors. Over half of these were first time donors despite recognition that repeat donors are safer. To meet its targets for blood collection and voluntary blood donors (VBD), the Ghana blood service (NBSG) needed locally-relevant evidence about how to better motivate blood donors and promote blood donations.
Aims: To describe the available evidence about factors that influence blood donor motivation and activities that have been undertaken to promote blood donation, and make recommendations about how to improve blood donation in Ghana.
Methods: We reviewed four published papers and three conference abstracts identified from searching PubMed, African Journals Online (AJOL) and ISBT conference abstracts from August 2016 to January 2017, and five unpublished student study reports on blood donor motivation in Ghana. We also reviewed activities undertaken by the NBSG, since its inception in 1973, to promote blood donor motivation.
Results: The evidence indicated that 71–94% of donors had a positive attitude towards blood donation and 95–99% were willing to donate again. Saving lives (78–94%) and reminders (60–90%) were strong motivators for both VBD and FRD. Donating for a family member, being asked to donate, experiencing need for blood, ease of access to donation site, being in good health, gifts and incentives, being thanked and being given information about blood donation were also motivators. Factors that discouraged donation were dislike of needles, ill health, misperceptions about the spirituality of blood and the use of blood for rituals/occultism/evil sacrifice, fear of losing strength/health, and lack of knowledge or information. Activities

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undertaken to promote and motivate donation included incentives and blood crediting/group assurance schemes, and pre-depositing blood by families of antenatal women and patients undergoing elective surgery. There were also examples of collaborations with corporate organizations, media, civil societies, social groups, faith based organizations, health facilities, non-governmental organizations and governmental agencies for improving donations. These focused on education, sensitization, recruitment campaigns, blood donation campaigns and drives, community mobilization, peer recruitment, social media engagement, modern communication systems, donor information management and research.
Conclusions: The NBSG has made progress towards improving blood donation rates but analysis of the available evidence has highlighted several measures that could be taken to increase recruitment and retention of altruistic repeat blood donors. It is important that this evidence is now used to influence policies and activities regarding donor recruitment and retention and to make a case for strategically strengthening national blood services.

Plenary Session: Blood donor studies and Big data

PL3-01

THE INTERVAL STUDY: AN RCT OF 50,000 DONORS TO OPTIMISE DONOR HEALTH AND THE BLOOD SUPPLY

DJ Roberts[1,2] and T Interval Study Group[3,4,5]

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Introduction: One approach to T Interval Study Group manage the blood supply is to understand the relationship between the frequency of blood collection and donor symptoms and safety. Currently, NHS Blood and Transplant recommend donation every 12 weeks (men) and 16 weeks (women) although standards elsewhere in Europe can be as frequent as every 8 weeks. The primary aim of INTERVAL is to determine if donation intervals can be reduced whilst maintaining the health of the donor.
Design and methods: 50,000 male and female donors have been recruited at donation centres in England between June 2012 and May 2014. Donors were randomised to one of three gender-specific donation frequencies for 2 years. The primary outcome was the number of donations per year and the main secondary outcome is quality of life (using Short Form Health Survey SF36v2). Further secondary outcomes are number of low haemoglobin deferrals of donors, iron status, cognitive function and physical activity. Data have been collected via online questionnaires.
We have studied how far the trial participants were representative of the general donor population. All donors recruited into the study met NHSBT haemoglobin (Hb) screening criteria by our gravimetric (copper sulphate) method (males: >135 g/l, females: >125 g/l). As part of the study protocol, full blood counts (FBCs) were performed using a Sysmex XN2000 analyser within 24 h of collection and the genetic traits associated with blood cell phenotypes have been determined.
The characteristics of donors eligible and consenting to participate in INTERVAL have been compared with the general donor population, using the national blood supply database for the period of recruitment. The characteristics of participants recruited from different sources are also compared, as well as those who were randomised vs those not randomised.
Results: The study achieved: integration of research protocols in routine donation practice; good questionnaire response (~80%) and good adherence by participants to allocated donation frequencies. The study was completed in June 2016 and is being analysed. The majority of donors with low Hb, high Hct or low Plt count had normal values upon retesting. However 66% of donors with initially high platelet counts (0.1% of enrolled donors) had repeatedly high counts and were referred to their GP for further investigation. From a total of 542,605 invitations, 48,725 donors were eligible and consented to participate in INTERVAL. The characteristics of participants were similar to the general population of 1.3 million donors in terms of ethnicity, blood group distribution, and recent low haemoglobin deferral rates. However, INTERVAL participants included more men (50% vs. 44%), were slightly older (mean age 43.1 vs. 42.3 years), included fewer new donors (3% vs. 22%), and had given more donations over the previous two years (mean 3.3 vs. 2.2).
Conclusions: INTERVAL is generating scientific evidence on which to base future blood collection policies in England, and potentially elsewhere. It will yield, the currently lacking, reliable data on the effect of donation frequency on blood supply and donors' physical and mental well-being. A full list and contributions of the study group members can be found at www.intervalstudy.org.uk.

PL3-02

BIG DATA IN TRANSFUSION MEDICINE: FROM DONOR AND RECIPIENT HEALTH AND BEYOND

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Background: Each year, millions of individuals worldwide volunteer to donate 112.5 million units of blood to meet the transfusion demands of a similar number of critically ill patients. For public health and other reasons it is therefore pertinent to identify and prevent potential adverse health effects of donation and transfusion. While certain risks associated with donation and transfusion are well established, e.g. iron depletion among blood donors and disease transmission to recipients, it has so far been technically challenging to explore possible late effects of donation and transfusion on a larger scale.
Aims: To study the health of blood donors and transfusion recipients and the interaction between the two by the application of large-scale data. We further want to answer relevant general health research questions using data from blood donors and transfusion recipients.
Methods: The Scandinavian Donation and Transfusion database (SCANDAT2) contains linked data of 25.5 million donations and 21.3 million transfusions in Sweden and Denmark in the period 1968-2012. The Danish Blood Donor Study (DBDS) has since March 2010 enrolled more than 110,000 participants with questionnaire data and a biobank of >500,000 plasma samples. DBDS has since 2015 used tablet computer based questionnaires. Both SCANDAT2 and DBDS have extensive linkage to a large number of relevant national health and socio-demographic registers allowing prospective and retrospective tracking of medical and social data.
Results: Reassuring for transfusion safety SCANDAT studies have demonstrated that conditions such as cancer, Parkinson's disease, and dementia are unlikely to be transmitted with blood transfusion, and have moreover rejected hypotheses of clinical effects of red cell storage, donor age, and donor sex.
Concerning donor health, we have demonstrated a strong selection of healthy individuals into the donor populations, the healthy donor effect, manifesting as a lower mortality among high compared to low frequency donors. This is also comforting considering such donors' extreme risk of iron depletion. Surprisingly, iron depleted donors appear neither to be more prone to infections nor to have a poorer self-reported health.
Within SCANDAT, we have explored the general health effects of blood types. In DBDS, we expand these efforts by extending data collection to include lifestyle factors, circulating biomarkers and genechip data.
Summary/conclusions: Large-scale and extensive data resources accompanied by/also including biobanks are effective tools for scientific investigations answering pertinent questions in transfusion medicine. However, the data structures are also useful for health research beyond transfusion medicine. As such they may constitute a natural extension of the typical blood center function by supplying hospitals and universities with a cost-effective health research infrastructure. To maximize the outcome of transfusion research efforts, extensive international collaboration involving the combination of data sources is highly warranted.

PL3-03

USING BIG DATA FOR EXPLORING OUR UNIVERSE

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Almost all fields of science is experiencing an explosion in the amount of data to be analysed. At the extreme end of this spectrum lies particle physics at CERNs LHC accelerator. In order to maximise the potential to do groundbreaking research, particle physicists is using many forms of machine learning to get results our of what must truly be considered a Big Data analysis. This is the story of how Big Data is used to explore the Universe.

8. Asamoah-Akuoko, L., Hassall, O.W., Bates, I., Ullum, H., 2017. Blood donors' perceptions, motivators and deterrents in Sub-Saharan Africa - a scoping review of evidence. Br. J. Haematol. 177, 864–877.

bjh review

Blood donors' perceptions, motivators and deterrents in Sub-Saharan Africa – a scoping review of evidence

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Summary

Achieving an adequate blood supply in Sub-Saharan Africa (SSA) through donor mobilization and retention is crucial. Factors that motivate or deter blood donors vary according to beliefs and social norms. Understanding the factors that influence blood donation behaviour in SSA is vital to developing effective strategies to address blood donor motivation and retention. This review of 35 studies from 16 SSA countries collates available evidence concerning the perceptions, motivators and deterrents that influence blood donors in SSA. The review revealed a common understanding that blood and blood donation save lives. The main deterrent to blood donation was fear due to lack of knowledge and discouraging spiritual, religious and cultural perceptions of blood donation. The main motivators for blood donation were altruism, donating blood for family and incentives. The findings support the need for targeted, culturally sensitive education, recruitment and retention strategies to improve the blood supply in SSA.

Keywords: blood donor, perceptions, motivators, deterrents, Sub-Saharan Africa.

Blood collection agencies worldwide are increasingly faced with the problem of recruitment and retention of adequate numbers of blood donors. In high-income countries (HICs), this has been attributed to difficulty in retaining young donors to replace the ageing donor population (France *et al*, 2013), increasing demand for blood and increasing donor deferrals on medical grounds, among others (Custer *et al*, 2005). Lack of blood donors in Sub-Saharan African (SSA) countries on the other hand, is due to factors, such as lack of well-established structures for provision of blood service; poor infrastructure and logistics for blood donor recruitment and retention; widespread populations, many of whom live in rural areas with poor access to blood centres and poor communication networks; high prevalence of transfusion transmissible infections (TTIs); misperceptions about blood and blood donation due to lack of knowledge and cultural influences; and resource constraints (Salaudeen *et al*, 2011; Reddy, 2012; Tapko *et al*, 2014). Consequently, the median blood donation rate per 1000 population in HIC is 33·1, compared with 11·7 in middle-income countries and 4·6 in low-income countries (WHO, 2016).

This translates into an inadequate supply of safe blood for transfusion, which is a major challenge to healthcare provision in low- and middle-income countries (LMICs). In SSA, blood transfusion is usually an emergency treatment for severe anaemia of varying aetiology, and lack of blood supplies is a major factor in preventable deaths among women and children (Bates *et al*, 2008). SSA has the highest maternal mortality in the world with a maternal mortality ratio (MMR) of about 546 per 100 000 live births. SSA accounts for 201 000 of the 303 000 maternal deaths in the world in 2015; of these 37·6–44% of maternal deaths are attributable to haemorrhage and anaemia (Khan *et al*, 2006; WHO, 2015). Up to 50% of transfusions given to children are for treatment of malaria-associated anaemia (Khan *et al*, 2006). Under-five mortality rates and the prevalence of malaria are high, with considerably high mortality due to severe malaria and anaemia (Marsh *et al*, 1995; Tapko *et al*, 2009). Other conditions, such as road traffic accidents, sickle-cell anaemia, human immunodeficiency virus (HIV) and anaemia induced by anti-retroviral therapy are also frequent reasons for blood transfusion in SSA (Lagarde, 2007).

Blood donation in LMICs compared to HICs

In HICs, about 99·7% of blood donation is by voluntary non-remunerated donors (VNRD) who donate blood by their own free will and without receiving in return any payment in cash or in kind that could be considered a substitute for money (WHO, 2012). Conversely, in the African Region, family and/or replacement donors (FRDs), who donate blood only in response to need by a patient who is known them, are the main source of blood and provide about 60–90% of the total blood supply (WHO, 2008; Allain *et al*, 2010). FRD may include hidden paid donors (PD), who receive

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remuneration, often monetary, from patients' relatives for donating but present as FRD.

The WHO advocates the collection of blood from repeat VNRD, as key to an adequate, safe and sustainable blood supply (WHO, 2009). The WHO African Regional Strategy, adopted in 2001, aimed to assist countries in the African Region to set up effective systems of recruitment of low-risk, voluntary, regular donors and to achieve 80% VNRD in the donor population by 2012 (WHO, 2001). Using a donation rate of 1% of the population, the WHO estimated that the blood requirement for the 46 member states in the African Region in 2010 was about 8·13 million units. However, in that year, only about 3·48 million units were donated in the region, leaving a deficit of about 4·65 million (Tapko *et al*, 2014). Blood from FRD in many SSA countries serves as an alternative for, or to supplement, insufficient numbers of VNRD.

Evidence has demonstrated that blood from VNRD is safer and has lower a incidence of TTI seroreactivity than that from FRD (Clark *et al*, 2005; Sarkodie *et al*, 2016). However, even in this setting, the safest type of donor is one who donates repeatedly (Allain *et al*, 2010).

Achieving an adequate blood supply in SSA through donor mobilization and retention is crucial. Blood donor behaviour studies from HIC (Ferguson *et al*, 2007; Masser *et al*, 2008) and the resultant knowledge of blood donor motivation and psychology, have facilitated the establishment of a reliable blood supply from VNRD in these countries. Similarly, in SSA, blood collection is locally driven and strategies have been put in place by a number of blood collection organizations to address the inadequate blood supply (Allain *et al*, 2008; Basavaraju *et al*, 2010; Dahourou *et al*, 2010; Owusu-Ofori *et al*, 2010; Reddy, 2012). However, as the blood donation deficit described above demonstrates, these strategies have only been successfully implemented in very few countries. The blood donor recruitment models in SSA have largely been based on those designed and used in different, wealthier contexts; and where these have not worked, modifications have been implemented. In addition, the evidence for such strategies and methods of their evaluation may sometimes be inadequately described. To illustrate this, a systematic review of the efficacy of interventions promoting blood donation did not include a single study from SSA (Godin *et al*, 2012). Beliefs, social norms and perceived behavioural control have been found to influence blood donation behaviour (Ajzen, 1991). Given that these constructs vary between HICs and LMICs, factors that motivate or deter blood donation may also vary between HICs and LMICs in accordance with beliefs and social norms. Therefore, understanding the factors that influence blood donation behaviour in SSA is vital to developing local, culturally sensitive strategies to address blood donor motivation and retention.

The purpose of the following literature review on blood donor motivation in SSA is to highlight the available evidence on, and identify, the perceptions, motivators and deterrents that influence blood donation behaviour in SSA, and identify how these factors influence blood donation in SSA.

Methods

Study design

A study protocol was developed based on a scoping review framework (Arksey & O'Malley, 2005) and the Methodology for Joanna Briggs Institute (JBI) Scoping Reviews (The Joanna Briggs Institute, 2015). Identified studies were selected for the review using the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) of health care interventions (Moher *et al*, 2009). Data extraction and a thematic analysis were conducted using "the framework method for analysis of qualitative data" (Gale *et al*, 2013). A coding scheme based on the taxonomy of blood donor motivators (Bednall & Bove, 2011), but modified to capture the perceptions of blood and blood donation found in SSA blood donors was used for reporting the results.

Inclusion criteria

Type of participants. The review considered studies that included persons from SSA who have donated blood before, who have never donated blood or who have experiences about blood donation.

Concept. The review considered quantitative, qualitative, mixed-method and case studies that examined attitudes, perceptions, motivations and deterrents to blood donation.

Context. The review considered studies conducted in countries in SSA (Appendix I) and that reported in either English or French.

Types of sources. The sources of information for this review were reports and published literature.

Search strategy

The search strategy aimed at identifying published literature from the selected databases. There was no limitation on the year of publication. The literature search was conducted in three stages (The Joanna Briggs Institute, 2015). In the first stage, PubMed was searched with the initial keywords. The identified literature was reviewed by abstract and additional keywords were identified. In the second stage, the additional keywords identified at stage one were added and further used to search PubMed and Google Scholar. The references of selected studies, as well as "Similar Articles" to identified studies in PubMed were searched for any other relevant studies in the third stage. Online searches of the International

Society of Blood Transfusion (ISBT) journals and newsletter, Vox Sanguinis, Transfusion Today and ISBT Science Series were further performed for additional relevant reports and conference abstracts. The database searches were conducted by one author and repeated by a second author. The online searches of journals and newsletters were conducted by one author and three assistants.

Initial keywords were "blood, blood donation, blood donor, perceptions, motivators, deterrents, attitudinal factors, Africa, Sub-Saharan Africa, Africa south of Sahara". The keywords were placed in the following format for the initial searches – [(blood OR blood donor OR blood donation) AND (perceptions OR motivators OR deterrents OR attitudinal factors) AND (Sub-Saharan Africa OR Africa OR Africa south of Sahara)]. Additional keywords identified were "barriers, misperceptions, attitudes, beliefs, obstacles".

Study selection, extraction of data and analysis

The selection of studies for the review followed the PRISMA Flow Diagram (Fig 1). To describe the studies included in the review, a matrix was designed to capture the population, contextual and conceptual categories, such as year, country, aim, type of study, study population, sample size, sampling methods and themes relevant to the objective of the review. The key findings were extracted using a data extraction sheet which was designed based on "the framework method for analysis of qualitative data" (Gale *et al*, 2013) and pilot tested on the first three identified papers. This was reviewed by all four authors. The key findings were reorganized and reported in accordance with the major themes addressing the objectives of the review.

Results

Overview of studies included in the review

We included 35 studies from SSA in the review (Table I). These were 27 peer-reviewed studies, seven peer-reviewed conference abstracts (Adewuyi & Olawumi, 2006; Los *et al*, 2009; von Bukenya, 2012; von Zahran & von Ali, 2013; Chandrasekar *et al*, 2015; Adegoke, 2016; Asamoah-Akuoko

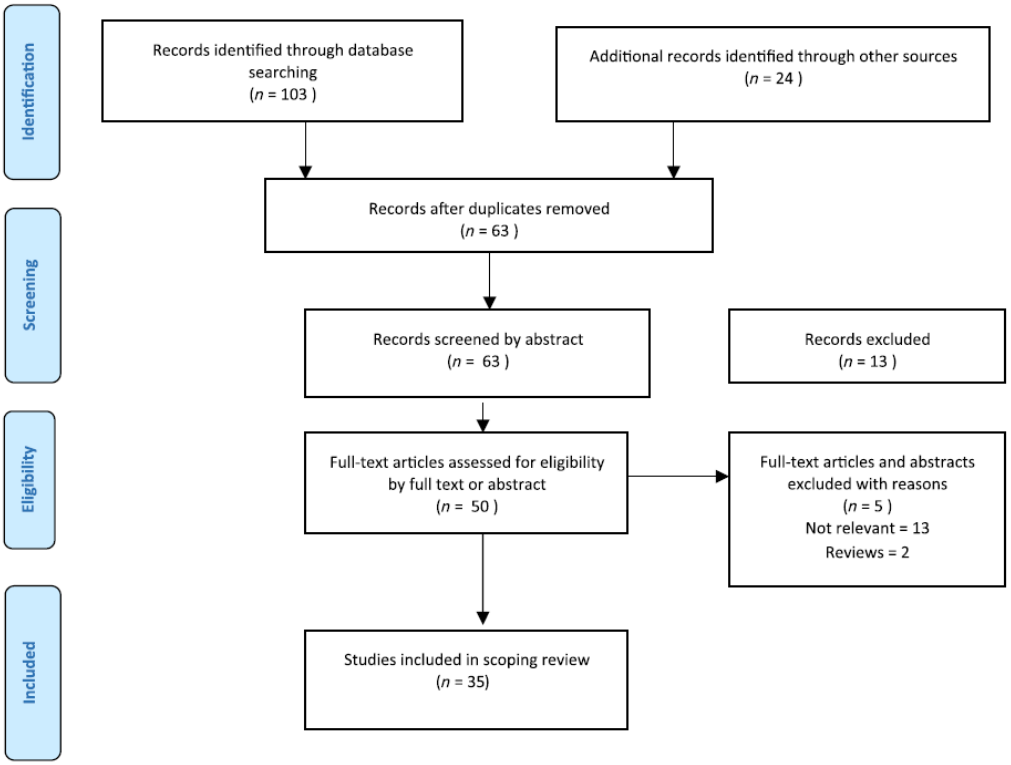

Fig 1. PRISMA flow diagram for the scoping review process (Moher *et al*, 2009).

Table I. Overview of the studies included in the review.

No.	Study	Country	Type of study	Study population	Sample size	Method	Relevant themes
1	Pule *et al* (2014)	Botswana	Quantitative	Blood donors	384	CSS	D
2	Nébié *et al* (2007)*	Burkina Faso	Quantitative	Blood donors	544	CSS	M
3	Koster and Hassall (2011)	Cameroon	Qualitative	Community members	Not specified	KII, FGD	P M
4	Rolseth *et al* (2014)	Cameroon	Qualitative	Community members	49	KII	P M D
5	Gobatto (1996)	Central African Republic	Qualitative	Donors, non-donors	Not specified	KII	P M D
6	Agasa and Likwela (2014)*	D R Congo	Quantitative	Community, adults	1067	CSS	D
7	Kabinda *et al* (2014)	D R Congo	Quantitative	Community, adults	416	CSS	P M D
8	Melku *et al* (2016)	Ethiopia	Quantitative	adult population	768	CSS	P D
9	Asenso-Mensah *et al* (2014)	Ghana	Quantitative	FRD	513	CSS	M
10	Haoses-Gorases and Katjiire (2013)	Namibia	Mixed methods	Donors, non-donors	434	CSS, FGD	P M D
11	Salaudeen *et al* (2011)	Nigeria	Quantitative	Community members	936	CSS	P M
12	Umeora *et al* (2005)	Nigeria	Quantitative	Non donors	143	CSS	D
13	Sekoni *et al* (2014)	Nigeria	Mixed methods	Adults in community	400 for CSS 3 FGDs of 27	CSS and FGDs	P M D
14	Salaudeen and Odeh (2011)	Nigeria	Quantitative	Students	400	CSS	P M D
15	Obi (2007)	Nigeria	Quantitative	Spouses of pregnant women	700	CSS	P M D
16	Durosinmi *et al* (2003)	Nigeria	Quantitative	Blood donors	Not specified	CSS	M
17	Olaiya *et al* (2004)	Nigeria	Quantitative	Blood donors	542	CSS	M D
18	Ottong *et al* (1997)	Nigeria	Case study	Spouses, patients, hospital staff	Not specified	FGDs, KII	P D
19	Okpara (1989)	Nigeria	Quantitative	Not specified	246	CSS	P M D
20	Ahmed *et al* (2006)	Nigeria	Quantitative	Blood donors	100	CSS	P D
21	Duboz *et al* (2010)*	Senegal	Quantitative	Adults	600	CSS	M D
22	Muthivhi *et al* (2015)	South Africa	Qualitative	Black South Africans	97	FGD	M D
23	Mwaba and Keikelame (1995)	South Africa	Quantitative	Students	40	CSS	P D
24	Jacobs and Berege (1995)	Tanzania	Quantitative	Adult residents	1141	CSS	P M D
25	Alinon *et al* (2014)	Togo	Quantitative	400 adults	400	CSS	D
26	Agbovi *et al* (2006)*	Togo	Quantitative	General population	300	CSS	P D
27	Natukunda *et al* (2015)	Uganda	Mixed methods	Community, adults	QS 250, FGDs 72, KIS 23	CSS, FGD, KII	P M D
28	Asamoah-Akuoko *et al* (2016)	Ghana	Quantitative	First time donors	505	CSS	P M D
29	Chandrasekar *et al* (2015)	Malawi	Qualitative	Students, BTS staff	24	FGD, Interviews	P M D
30	Adegoke (2016)	Nigeria	Quantitative	Hospital staff	246	CSS	M D
31	Adewuyi and Olawumi (2006)	Nigeria	Quantitative	Adults, 16–25 years	3000	CSS	M D
32	von Zahran and von Ali (2013)	Sudan	Quantitative	Students	400	CSS	P M D
33	Los *et al* (2009)	Uganda	Case study	Teachers, students	1600	CSS, workshop	P D
34	von Bukenya (2012)	Uganda	Quantitative	Blood donors	1677	CSS	M
35	Harrington (2012)	Ghana	Quantitative	Church youth group	50	CSS	P

BTS, blood transfusion service; CSS, cross sectional study; D, deterrent; FGD, focus group discussion; KII, key informant interviews; M, motivators; P, perception.
*Studies reported in French.

et al, 2016), and one peer reviewed, published report (Harrington, 2012). Nigeria (12 studies) had the highest number of published studies, followed by Ghana and Uganda (three each), Cameroon, Democratic Republic of Congo, South Africa and Togo (two each) and one each from the remaining countries. Sixty per cent (n = 27) of the included studies were published between 2010 and 2016. Most studies focused on knowledge, attitude and practice of blood donation. Blood donor perceptions, motivators and deterrents were the focus of 22, 24 and 28 studies respectively.

Perceptions (Table II)

A common perception of blood, identified in the majority of the studies on this topic, was that it is essential for the sustenance of life, expressed as, for example, "blood is life", "blood is the source of life", "blood is the fuel of life" (Agbovi *et al*, 2006; Kabinda *et al*, 2014; Rolseth *et al*, 2014; Asamoah-Akuoko *et al*, 2016). This perception of blood is cited by 88·7% and 97·2 % of respondents in Kabinda *et al* (2014) and Asamoah-Akuoko *et al* (2016) respectively. Blood donation was also commonly perceived as a good and life-saving act (Jacobs & Berege, 1995; Agbovi *et al*, 2006; Koster & Hassall, 2011; Salaudeen & Odeh, 2011; Salaudeen *et al*, 2011; Harrington, 2012; Haoses-Gorases & Katjire, 2013; Sekoni *et al*, 2014; Melku *et al*, 2016). Blood was also considered a determinant of physical strength and health (Gobatto, 1996) and therefore donating blood was considered to have the potential to make a person weak (Harrington, 2012), unhealthy, ill (Jacobs & Berege, 1995; Mwaba & Keikelame, 1995; Gobatto, 1996; Obi, 2007; von Zahran & von Ali, 2013; Sekoni *et al*, 2014), or lead to death (Salaudeen *et al*, 2011; Harrington, 2012; Sekoni *et al*, 2014). To this extent, receiving "weak" blood was also believed to make the recipient weak (Gobatto, 1996).

Despite the recognition that blood donation is important, several studies found that a common perception was that one could catch a disease through donating blood. This was mentioned in eight studies, and cited by 25–53·5% of respondents in some studies (Jacobs & Berege, 1995; Mwaba & Keikelame, 1995; Obi, 2007; Salaudeen *et al*, 2011; Harrington, 2012; von Zahran & von Ali, 2013; Rolseth *et al*, 2014; Sekoni *et al*, 2014). Some perceptions identified in the review reflect spiritual (Gobatto, 1996; Koster & Hassall, 2011; Salaudeen *et al*, 2011; Asamoah-Akuoko *et al*, 2016) and religious (Gobatto, 1996; Agbovi *et al*, 2006; Koster & Hassall, 2011; Harrington, 2012; Kabinda *et al*, 2014; Asamoah-Akuoko *et al*, 2016) connotations of blood donation. In SSA, blood is considered a substance that is common to family, kin or tribe (Koster & Hassall, 2011; Rolseth *et al*, 2014), private, precious (Koster & Hassall, 2011) and not be shared or taken outside the body except under the extreme circumstances of saving a life, especially that of a family member (Gobatto, 1996; Koster & Hassall, 2011). A South African study (Muthivhi *et al*, 2015) identified the perception that there is racial discrimination regarding the acceptability of donated blood for transfusion. This was an isolated finding among the SSA studies, although in Nigeria other beliefs such as "females cannot donate blood" or even males in some cases, and that blood donation is reserved for the military were identified by some studies (Olaiya *et al*, 2004; Ahmed *et al*, 2006; Obi, 2007; Salaudeen *et al*, 2011; Sekoni *et al*, 2014).

Motivators (Table III)

Altruism, cited as for example, "to save lives", or "to help a person in need", was identified as a major motivator for blood donation in SSA. It was mentioned in 20 studies and cited by 43–92% of participants in some studies (Okpara, 1989; Jacobs & Berege, 1995; Olaiya *et al*, 2004; Adewuyi & Olawumi, 2006; Nébié *et al*, 2007; Duboz *et al*, 2010; Koster & Hassall, 2011; Salaudeen & Odeh, 2011; Salaudeen *et al*, 2011; Asenso-Mensah *et al*, 2014; Haoses-Gorases & Katjire, 2013; Kabinda *et al*, 2014; Sekoni *et al*, 2014; Chandrasekar *et al*, 2015; Muthivhi *et al*, 2015; Natukunda *et al*, 2015; Asamoah-Akuoko *et al*, 2016). Altruism was an important motivator for FRD who were willing to donate again (Rolseth *et al*, 2014) and even among groups where some form of compensation was expected for donating blood (Koster & Hassall, 2011; Salaudeen *et al*, 2011). Reciprocity and an identified need for blood by a family or friend was a strong motivator cited by 77·8–95·3% of participants in some studies (Jacobs & Berege, 1995; Gobatto, 1996; Adewuyi & Olawumi, 2006; Nébié *et al*, 2007; Duboz *et al*, 2010; Salaudeen & Odeh, 2011; Salaudeen *et al*, 2011; Kabinda *et al*, 2014; Rolseth *et al*, 2014; Muthivhi *et al*, 2015; Adegoke, 2016; Asamoah-Akuoko *et al*, 2016).

In addition to altruism, a study in Bamenda, Cameroon, identified monetary and non-monetary compensation as key motivators for blood donation (Koster & Hassall, 2011). In this study, some participants expected compensation for donating blood, citing the perceived risks, effort and time expended. Compensation was expected for donations to non-family members and to family members, while still regarding the donation to be "voluntary". However, another study from Cameroon (Rolseth *et al*, 2014) found that compensation for blood donation, although offered, was not expected by 87% of participants.

Monetary compensation as a motivator, cited by 50% of participants in a study by Umeora *et al* (2005), was supported by other studies from Nigeria (Durosinmi *et al*, 2003; Olaiya *et al*, 2004; Adewuyi & Olawumi, 2006; Salaudeen & Odeh, 2011; Sekoni *et al*, 2014), Democratic Republic of Congo (Agasa & Likwela, 2014; Kabinda *et al*, 2014) and Ghana (Asamoah-Akuoko *et al*, 2016). Although cited as a motivator, it was not significant in South Africa (Muthivhi *et al*, 2015). Non-cash incentives reported included health benefits such, as health checks (Gobatto, 1996; von Bukenya, 2012), infectious diseases screening and blood group results

Table II. Perceptions of blood and blood donation.

Perceptions	Reference
Of blood	
Physical or medical	
Essential for life; fuel of the body; source of life	Agbovi *et al* (2006); Kabinda *et al* (2014); Rolseth *et al* (2014); Asamoah-Akuoko *et al* (2016)
Determines health, physical strength; protect from illness; receiving "weak" blood makes one weak	Gobatto (1996)
Volume increases with physical work; cannot have enough to spare	Koster and Hassall (2011);
Physical; fluid in the body	Rolseth *et al* (2014); Koster and Hassall (2011);
Source of contagion; associated with accidents, menstruation or labour, laboratory examinations, transfusion	Rolseth *et al* (2014);
Spiritual	
Spiritual; used for rituals and occultism	Asamoah-Akuoko *et al* (2016)
Blood can transfer character and witchcraft to recipient	Ottong *et al* (1997);
Religious	
Sacred	Agbovi *et al* (2006); Kabinda *et al* (2014); Asamoah-Akuoko *et al* (2016)
Source of salvation for Christians; signifies impurity for Muslims.	Agbovi *et al* (2006)
Gift from God; Created by God	Koster and Hassall (2011); Rolseth *et al* (2014)
Private or common to family and kin	
Common to family and kin	Koster and Hassall (2011); Rolseth *et al* (2014)
Private, precious, not to be taken outside the body; can only be shared in extreme circumstances, for good reasons	Koster and Hassall (2011); Gobatto (1996)
Of blood donation	
Physical or medical	
Can transmit diseases, infection	Mwaba and Keikelame (1995); Salaudeen *et al* (2011); Sekoni *et al* (2014); Obi (2007); Jacobs and Berege (1995); Harrington (2012); von Zahran and von Ali (2013)
Can cause health problems; harmful	Mwaba and Keikelame (1995); Sekoni *et al* (2014); Obi (2007); Gobatto (1996); Jacobs and Berege (1995); von Zahran and von Ali (2013)
Cause weakness	Harrington (2012)
Is painful	Mwaba and Keikelame (1995)
Can shorten life due to psychological effect of knowing HIV status	Koster and Hassall (2011)
Dizziness, fainting attacks; helps know blood group, Hb genotye, HIV and other TTI status	Salaudeen *et al* (2011)
Can result in sudden deaths, death of donor; anaemia	Salaudeen *et al* (2011); Sekoni *et al* (2014); Harrington (2012)
Invokes fear; means something is wrong; help get rid of excess blood	Sekoni *et al* (2014)
Help reduce obesity; weight loss	Salaudeen *et al* (2011); Harrington (2012)
Saves the life of recipients	Salaudeen *et al* (2011); Sekoni *et al* (2014); Salaudeen and Odeh (2011); Harrington (2012); Haoses-Gorases and Katjire (2013)
Help a person in need, distress	Koster and Hassall (2011); Sekoni *et al* (2014)
Spiritual	
Reduce ability to protect oneself spiritually	Gobatto (1996)
Gives spiritual satisfaction	Salaudeen *et al* (2011)
Donated blood can be used for occultism	Koster and Hassall (2011); Asamoah-Akuoko *et al* (2016)
Religious	
Against religious belief	Harrington (2012)
Selective	
Racial discrimination	Muthivhi *et al* (2015)
Females cannot donate blood	Salaudeen *et al* (2011); Sekoni *et al* (2014); Olaiya *et al* (2004); Ahmed *et al* (2006)
Males cannot donate blood	Sekoni *et al* (2014)

Table II. (*Continued*)

Perceptions	Reference
Is reserved for the military	Obi (2007)
Family or kin	
Better to donate for family member than stranger or institution	Koster and Hassall (2011)
Trust issues	
Fear that blood may not be used for what is intended for	Gobatto (1996)
Blood donation is good, important	Agbovi *et al* (2006); Sekoni *et al* (2014); Koster and Hassall (2011); Jacobs and Berege (1995); Melku *et al* (2016)
Should be given for free	Salaudeen and Odeh (2011)
Sacrificial, sacrificing oneself	Gobatto (1996)

HIV, human immunodeficiency virus; TTI, transfusion transmissible infection.

(Gobatto, 1996; Adewuyi & Olawumi, 2006; Nébié *et al*, 2007; Duboz *et al*, 2010; von Bukenya, 2012; Haoses-Gorases & Katjire, 2013); awards, recognition; certificate and blood crediting (Jacobs & Berege, 1995; Gobatto, 1996; Olaiya *et al*, 2004; Chandrasekar *et al*, 2015); gift items (Gobatto, 1996; Salaudeen & Odeh, 2011; Muthivhi *et al*, 2015) and transport reimbursement (Chandrasekar *et al*, 2015).

Other key motivators were: promotional communication, such as advertising, direct marketing, educational approaches and blood drives; awareness campaigns, access to information and knowledge of the need for blood and benefits of blood donation; and social norms and perceived need for blood (Table III).

Deterrents (Table IV)

The review identified fear (Ottong *et al*, 1997; Duboz *et al*, 2010; von Zahran & von Ali, 2013; Pule *et al*, 2014; Adegoke, 2016) as the single most reported deterrent, mentioned in 25 studies and cited by 35–86·7% in these studies. Fears related to pain from the blood donation process (Koster & Hassall, 2011), adverse effects (Mwaba & Keikelame, 1995; Olaiya *et al*, 2004; Umeora *et al*, 2005; Salaudeen & Odeh, 2011; Rolseth *et al*, 2014; Muthivhi *et al*, 2015), the sight of blood (Muthivhi *et al*, 2015), and contagion (Jacobs & Berege, 1995; Gobatto, 1996; Olaiya *et al*, 2004; Umeora *et al*, 2005; Agbovi *et al*, 2006; Salaudeen & Odeh, 2011; Haoses-Gorases & Katjire, 2013; Agasa & Likwela, 2014; Sekoni *et al*, 2014; Muthivhi *et al*, 2015) or perceived side effects of donation, such as fear of falling sick (Jacobs & Berege, 1995; Umeora *et al*, 2005; Agbovi *et al*, 2006; Agasa & Likwela, 2014; Alinon *et al*, 2014; Kabinda *et al*, 2014; Rolseth *et al*, 2014; Sekoni *et al*, 2014; Muthivhi *et al*, 2015; Natukunda *et al*, 2015; Melku *et al*, 2016); and fear of the spirituality of blood (Gobatto, 1996; Umeora *et al*, 2005; Alinon *et al*, 2014). Other deterrents cited were lack of knowledge, information and awareness of need; as well as low self-efficacy (lack control over events that affect a person's life and own functioning), inconvenience of time and donation site, and religiousity (religious affiliation or spiritual commitment).

In South Africa, Muthivhi *et al* (2015) identified cynicism or scepticism due to the belief that blood donated by black people would be discarded, as a key deterrent. Other issues of trust (von Zahran & von Ali, 2013; Chandrasekar *et al*, 2015), including a belief that donated blood would be sold (Agbovi *et al*, 2006; Agasa & Likwela, 2014; Alinon *et al*, 2014; Kabinda *et al*, 2014) and socio-economic difficulties (Gobatto, 1996; Ahmed *et al*, 2006; Duboz *et al*, 2010; Agasa & Likwela, 2014), with perceived lack of capacity to recover from possible or perceived effects of blood donation, or not having been asked to donate (Durosinmi *et al*, 2003; Agasa & Likwela, 2014; Rolseth *et al*, 2014; Sekoni *et al*, 2014) were also deterrents. Although incentives were cited as strong motivators for blood donation, lack of incentives as a deterrent was cited by only three studies (Umeora *et al*, 2005; Alinon *et al*, 2014; Kabinda *et al*, 2014). Previous deferral as a donor was not cited as a deterrent in any study.

Discussion

Many studies have evaluated the motivators and deterrents of blood donation globally, but currently little is known about what factors influence blood donation in SSA. This scoping review identified and analysed 35 studies on the perceptions, and factors that encourage or deter involvement that impact blood donation in SSA. The perceptions of blood and blood donation identified in the review are reflected in the statement: "Blood was once regarded as the fluid of infinite complexity, the very essence of life; the blood of each person seemed to carry in it the secret of individuality" (Mollison *et al*, 1993), because although blood is scientifically defined as a specialized connective tissue that performs vital functions in the body, the perceptions identified encompass the spiritual as well as the physical. The main themes that emerged are altruism and fear; influence of cultural environment and perceptions; and voluntary blood donation, socio-economic difficulties and compensation. Some themes are common to other parts of the world, but this study has shown that SSA has its own unique factors that should be

Table III. Motivators for blood donation.

Motivator	References
Convenience	
Convenience	Chandrasekar *et al* (2015)
Of collection site	Asenso-Mensah *et al* (2014); Muthivhi *et al* (2015)
Prosocial motivation	
Altruism	Nébié *et al* (2007); Koster and Hassall (2011); Rolseth *et al* (2014); Kabinda *et al* (2014); Asenso-Mensah *et al* (2014); Haoses-Gorases and Katjire (2013); Salaudeen *et al* (2011); Sekoni *et al* (2014); Salaudeen and Odeh (2011); Olaiya *et al* (2004); Okpara (1989); Duboz *et al* (2010); Muthivhi *et al* (2015); Jacobs and Berege (1995); Natukunda *et al* (2015); Asamoah-Akuoko *et al* (2016); Chandrasekar *et al* (2015); Adewuyi and Olawumi (2006)
Passion for donating	Asenso-Mensah *et al* (2014)
Collectivism – help community	Rolseth *et al* (2014); Gobatto (1996); Duboz *et al* (2010); Muthivhi *et al* (2015)
Collectivism – donate for or help friends and family	Nébié *et al* (2007); Rolseth *et al* (2014); Gobatto (1996); Kabinda *et al* (2014); Salaudeen *et al* (2011); Sekoni *et al* (2014); Salaudeen and Odeh (2011); Duboz *et al* (2010); Muthivhi *et al* (2015); Jacobs and Berege (1995); Asamoah-Akuoko *et al* (2016); Adegoke (2016); Adewuyi and Olawumi (2006)
Personal values	
Personal moral norms	Muthivhi *et al* (2015)
Religiosity	Sekoni *et al* (2014); Muthivhi *et al* (2015); von Zahran and von Ali (2013)
Reputation of collection agency	
To help or support blood bank	Rolseth *et al* (2014)
Perceived need for blood donation	
Everyday	Muthivhi *et al* (2015)
Emergency	Gobatto (1996); Muthivhi *et al* (2015); Salaudeen and Odeh (2011);
Blood shortage	Duboz *et al* (2010)
Awareness of donation campaigns	Obi (2007)
Indirect reciprocity	
Upstream (friends and family)	Obi (2007); Muthivhi *et al* (2015)
Downstream	Gobatto (1996); Muthivhi *et al* (2015); Asamoah-Akuoko *et al* (2016)
Upstream (self)	Nébié *et al* (2007); Muthivhi *et al* (2015)
Intrinsic motivation	
Intrinsic motivation; self-esteem	Muthivhi *et al* (2015)
Curiosity	Haoses-Gorases and Katjire (2013); Muthivhi *et al* (2015)
Promotional communications	
General advertising	Nébié *et al* (2007); Haoses-Gorases and Katjire (2013); Muthivhi *et al* (2015); von Zahran and von Ali (2013)
Direct marketing, invitation; being asked to donate	Asenso-Mensah *et al* (2014); Muthivhi *et al* (2015); Jacobs and Berege (1995)
Blood drives	Muthivhi *et al* (2015)
Educational approaches	Muthivhi *et al* (2015); Chandrasekar *et al* (2015)
Awareness campaigns	Duboz *et al* (2010)
Incentives	
General	Asenso-Mensah *et al* (2014); Duboz *et al* (2010); Muthivhi *et al* (2015); Jacobs and Berege (1995); von Bukenya (2012)
Health check	Gobatto (1996); von Bukenya (2012)
Money	Koster and Hassall (2011); Agasa and Likwela (2014); Kabinda *et al* (2014); Umeora *et al* (2005); Sekoni *et al* (2014); Salaudeen and Odeh (2011); Durosinmi *et al* (2003); Olaiya *et al* (2004); Muthivhi *et al* (2015); Asamoah-Akuoko *et al* (2016); Adewuyi and Olawumi (2006)
Non-cash compensation	Koster and Hassall (2011); Olaiya *et al* (2004); Asamoah-Akuoko *et al* (2016); Adewuyi and Olawumi (2006)
Perceived health benefits	Jacobs and Berege (1995)
Know blood group	Gobatto (1996); Haoses-Gorases and Katjire (2013); Duboz *et al* (2010); von Bukenya (2012)
Infectious disease screening	Nébié *et al* (2007); Gobatto (1996); Haoses-Gorases and Katjire (2013); Duboz *et al* (2010); Adewuyi and Olawumi (2006); von Bukenya (2012)

Table III. (*Continued*)

Motivator	References
Gift items	Gobatto (1996); Muthivhi *et al* (2015); Salaudeen and Odeh (2011)
Donor certificate	Gobatto (1996); Olaiya *et al* (2004); Jacobs and Berege (1995)
Awards; recognition	Olaiya *et al* (2004); Chandrasekar *et al* (2015)
Blood crediting	Gobatto (1996); Jacobs and Berege (1995)
Reimbursement of transport cost	Chandrasekar *et al* (2015)
Social norms	
Sense of belonging	Gobatto (1996)
Peer pressure or influence	Nébié *et al* (2007); Chandrasekar *et al* (2015)
Knowledge/information	
Information; knowledge on benefits of blood transfusion	Salaudeen and Odeh (2011)
Previous donation	Obi (2007)
If my health allows it	Asenso-Mensah *et al* (2014)

considered when designing interventions for improving blood donation.

Altruism and fear

Similar to blood donors in the rest of the world, blood donors in SSA countries would like to contribute to society by saving lives. Altruism was a common motivator irrespective of donation status and type of donor (Salaudeen *et al*, 2011; Rolseth *et al*, 2014) but this needs exploring further in SSA because, despite the commonly reported altruistic intentions, voluntary blood donation rates are still far below what is required.

The review identified fear as a major deterrent. While fears, such as of the needle, pain, adverse effects of donation, sight of blood and contagion may be common among people of other regions, other aspects of fear, such as fear of blood being used for rituals, and the fear that able-bodied men who donate blood may become impotent, are important to people of SSA. This suggests a need for targeted interventions that address these specific issues. As an example, to address the fear of men becoming impotent after blood donation, older blood donors with children could be used as agents of change. The review found that lack of information was a deterrent because it led to misconceptions and fear associated with blood donation experience. Donor recruitment agencies in SSA therefore need to have a much more in-depth understanding of what information is required by donors so they can improve their interventions to address these fears and misconceptions.

Influence of cultural environment and perceptions

Linked to altruism and fear is the impact of culture on blood donation. In SSA, people believe that blood is sacred and thus should be preserved, and that blood is common to kin (Asamoah-Akuoko *et al*, 2016). Perhaps, this explains why many people prefer to donate blood for a family member rather than to give to someone unknown to them. In SSA where the concepts of kinship and communalism are so deeply rooted, donating blood for families is clearly a strong incentive, which is not reflected in current policies that seek to eliminate the FRD system (WHO, 2010). However, hidden "paid" donors may occasionally abuse the FRD system, therefore the issue of encouraging FRDs remains contentious.

The influence of culture is reflected in spiritual and religious connotations ascribed to blood and blood donation, and impacts on blood donation. For example, individuals who view blood as gift from God and a source of salvation may be more willing to donate than those who view blood as being able to transfer character or witchcraft to a recipient, as important for rituals, or being prohibited by religion.

Voluntary blood donation, socio-economic difficulties and compensation

In Ghana, over 72% of FRD state that they are voluntary donors because, although they donated for family, they were not compelled to donate and had the option of not donating (Asamoah-Akuoko *et al*, 2016). Rolseth *et al* (2014) identified that compensation for blood donation, which could be expected even for persons donating for family, was considered consistent with voluntary blood donation. The concept of 'voluntary blood donation', and campaigns that focus on this concept, may therefore not resonate with populations in SSA and will have to be re-framed around new, yet to be determined, concepts (Koster & Hassall, 2011).

To effectively discuss socio-economic difficulties and compensation in relation to blood donation, it is important to clearly define what constitutes incentives, compensation and payment. This is difficult because it is related to the context and factors associated with the individual socio-economic conditions of each potential blood donor. This review identified different views on what constitutes compensation or incentives for blood donation in SSA. Non-cash incentives, such as using blood donation as a health check (Gobatto,

Table IV. Deterrents to blood donation.

Deterrent	References
Low self-efficacy	
Low self-efficacy; lifestyle barriers	Haoses-Gorases and Katjire (2013); Muthivhi *et al* (2015)
Not enough blood	Rolseth *et al* (2014); Umeora *et al* (2005); Duboz *et al* (2010); Muthivhi *et al* (2015); Alinon *et al* (2014)
Perceived poor health (making one unfit to donate)	Rolseth *et al* (2014); Melku *et al* (2016); Umeora *et al* (2005); Sekoni *et al* (2014); Obi (2007); Muthivhi *et al* (2015); Agbovi *et al* (2006)
Fear of transmitting infection to recipient; being HIV positive	Rolseth *et al* (2014); Gobatto (1996); Umeora *et al* (2005)
Medical reasons	Duboz *et al* (2010)
Low involvement	Pule *et al* (2014); Haoses-Gorases and Katjire (2013); Duboz *et al* (2010); Muthivhi *et al* (2015); Alinon *et al* (2014); Agbovi *et al*, 2006)
Inconvenience	Pule *et al* (2014); Rolseth *et al* (2014); Melku *et al* (2016); Haoses-Gorases and Katjire (2013); Salaudeen and Odeh (2011); Ahmed *et al* (2006); Duboz *et al* (2010); Muthivhi *et al* (2015); Mwaba and Keikelame (1995); Agbovi *et al* (2006); Natukunda *et al* (2015); Chandrasekar *et al* (2015)
Lack of marketing communications	Muthivhi *et al* (2015)
Knowledge/information	
Lack of knowledge	Pule *et al* (2014); Haoses-Gorases and Katjire (2013); Muthivhi *et al* (2015); Adewuyi and Olawumi (2006)
Lack of information	Melku *et al* (2016); Haoses-Gorases and Katjire (2013); Salaudeen and Odeh (2011); Duboz *et al* (2010); Alinon *et al* (2014); Agbovi *et al* (2006); Chandrasekar *et al* (2015); von Zahran and von Ali (2013)
Unaware of need for blood	Muthivhi *et al* (2015)
Unaware of donation site	Muthivhi *et al* (2015); Haoses-Gorases and Katjire (2013)
General	Salaudeen and Odeh (2011); Muthivhi *et al* (2015)
Negative experience of blood service	
Negative service experience	Muthivhi *et al* (2015)
Poor staff attitude	Kabinda *et al* (2014); Muthivhi *et al* (2015)
Servicescape	Muthivhi *et al* (2015)
Payment of processing fee	Ottong *et al* (1997
Fear	
Fear	Pule *et al* (2014); Ottong *et al* (1997; Duboz *et al* (2010); Muthivhi *et al* (2015); Adegoke (2016); von Zahran and von Ali (2013)
Rumours and misconceptions	Ottong *et al* (1997; Muthivhi *et al* (2015)
Needles	Agasa and Likwela (2014); Melku *et al* (2016); Haoses-Gorases and Katjire (2013); Muthivhi *et al* (2015); Alinon *et al* (2014); Natukunda *et al* (2015)
Physical injury	Muthivhi *et al* (2015)
Non-specific	Gobatto (1996); Muthivhi *et al* (2015)
Reduced health after donation; falling sick	Rolseth *et al* (2014); Agasa and Likwela (2014); Kabinda *et al* (2014); Melku *et al* (2016); Umeora *et al* (2005); Duboz *et al* (2010); Muthivhi *et al* (2015); Jacobs and Berege (1995); Alinon *et al* (2014); Agbovi *et al* (2006); Natukunda *et al* (2015); Adewuyi and Olawumi (2006)
Contagion; HIV infection	Gobatto (1996); Agasa and Likwela (2014); Haoses-Gorases and Katjire (2013); Umeora *et al* (2005); Sekoni *et al* (2014); Salaudeen and Odeh (2011); Olaiya *et al* (2004); Muthivhi *et al* (2015); Jacobs and Berege (1995); Agbovi *et al* (2006)
Fainting, dizziness, collapse, convulsion	Rolseth *et al* (2014); Umeora *et al* (2005); Salaudeen and Odeh (2011); Olaiya *et al* (2004); Muthivhi *et al* (2015); Mwaba and Keikelame (1995)
Blood	Muthivhi *et al* (2015)
Testing for HIV, discovering illness, knowing HIV results; stigmatization	Gobatto (1996); Kabinda *et al* (2014); Haoses-Gorases and Katjire (2013); Umeora *et al* (2005); Obi (2007); Ahmed *et al* (2006); Muthivhi *et al* (2015); Mwaba and Keikelame (1995); Agbovi *et al* (2006)

Table IV. (*Continued*)

Deterrent	References
Fear of harm from donation process	Salaudeen and Odeh (2011)
Losing blood frequent/large volume of donation	Rolseth *et al* (2014); Gobatto (1996); Melku *et al* (2016); Mwaba and Keikelame (1995); Alinon *et al* (2014)
Pain	Mwaba and Keikelame (1995)
Fear of medical settings	Alinon *et al* (2014)
Fear that blood will be used for rituals or witchcraft, others	Gobatto (1996); Alinon *et al* (2014); Umeora *et al* (2005)
Lack of courage; general fear	Alinon *et al* (2014)
Not recovering after blood donation	Rolseth *et al* (2014); Gobatto (1996)
Risk of ill health	Gobatto (1996); Sekoni *et al* (2014); Olaiya *et al* (2004)
Loss of manhood/libido/impotence	Umeora *et al* (2005); Olaiya *et al* (2004); Nébié *et al* (2007)
Reduced life span/death	Gobatto (1996); Umeora *et al* (2005)
Sudden death	Olaiya *et al* (2004)
That donation results in weight loss	Melku *et al* (2016); Salaudeen and Odeh (2011); Olaiya *et al* (2004)
Negative attitudes	
Negative attitudes	Muthivhi *et al* (2015)
Negative word of mouth	Melku *et al* (2016)
Scepticism or cynicism; mistrust	Muthivhi *et al* (2015); Chandrasekar *et al* (2015); von Zahran and von Ali (2013)
Outgroup prejudice	Muthivhi *et al* (2015)
Don't like blood donation process, idea of giving blood	Melku *et al* (2016); Sekoni *et al* (2014); Jacobs and Berege (1995)
Personal values	
Personal values	Muthivhi *et al* (2015)
Personal moral norms	Haoses-Gorases and Katjire (2013); Muthivhi *et al* (2015); Alinon *et al* (2014)
Religiosity (Jehovah's Witness, Pentecostals/Revival Church)	Koster and Hassall (2011); Agasa and Likwela (2014); Kabinda *et al* (2014); Melku *et al* (2016); Haoses-Gorases and Katjire (2013); Umeora *et al* (2005); Sekoni *et al* (2014); Obi (2007); Muthivhi *et al* (2015); Alinon *et al* (2014); Agbovi *et al* (2006); Adegoke (2016)
Lack of, or ineffective, incentives	
Monetary	Kabinda *et al* (2014); Umeora *et al* (2005)
Non-monetary; lack of appreciation	Alinon *et al* (2014)
General	Muthivhi *et al* (2015)
Previous deferral	
Not been asked or invited	Agasa and Likwela (2014); Rolseth *et al* (2014); Sekoni *et al* (2014); Adewuyi and Olawumi (2006)
Difficult socio-economic factors	Gobatto (1996); Agasa and Likwela (2014); Ahmed *et al* (2006); Duboz *et al* (2010)
Perceived physical and spiritual weakness after donation	Agasa and Likwela (2014); Sekoni *et al* (2014); Salaudeen and Odeh (2011); Ottong *et al* (1997; Alinon *et al* (2014)
Perceived sale of blood by hospital or staff	Agasa and Likwela (2014); Kabinda *et al* (2014); Alinon *et al* (2014); Agbovi *et al* (2006)
Cultural values; traditional norms	Haoses-Gorases and Katjire (2013); Umeora *et al* (2005); Alinon *et al* (2014); Adegoke (2016)
Others	
Lack of family; spouses permission	Rolseth *et al* (2014); Sekoni *et al* (2014)
Not related to patient; relation not needing blood	Umeora *et al* (2005); Obi (2007)
Blood transfusion not medically helpful	Umeora *et al* (2005)
Don't know my blood group	Sekoni *et al* (2014)
Availability of paid blood donors	Obi (2007)

HIV, human immunodeficiency virus.

1996; von Bukenya, 2012), including knowing one's blood group (Gobatto, 1996; Duboz *et al*, 2010; von Bukenya, 2012; Haoses-Gorases & Katjire, 2013), have implications for blood donor recruitment and retention efforts. A worrying observation in SSA is the expectation of cash incentives, which could make it difficult to sustain blood services and risks commercializing blood donation. Thus, it is worthy to explore more non-cash incentives, such as awards and

recognition (Olaiya *et al*, 2004; Chandrasekar *et al*, 2015), for dedicated blood donors. In addition, better education, targeted at de-bunking some of the myths may make people become less demanding of incentives.

Strengths and limitations

This scoping review employed a standard approach and rigorous, transparent methods, which were developed and reviewed by all authors. The review only included published literature and did not appraise the quality of individual studies.

Conclusion

This scoping review identifies a number of important factors that influence blood donation in SSA. A common factor that was identified was the belief that blood is lifesaving and consequently that blood donation saves lives. Not surprisingly, altruism was a prevalent motivator. Monetary and non-monetary incentives were also strong motivators for blood donation. Fear, due to lack of knowledge and information, and the discouraging religious, spiritual and cultural connotations associated with blood and blood donation were common deterrents to donating blood. The interplay between the motivating and deterring factors identified in this review demonstrates that potential donors in SSA who regard themselves as "altruistic" may donate only to save a family or friend, or may donate in expectation of an incentive or a compensation. They would therefore not be regarded as "voluntary non-remunerated donors" according to the WHO definition (WHO, 2010).

Moving forward, there is a need for the use of robust qualitative and quantitative methodologies to undertake in-depth exploration of motivators and deterrents relevant for blood donors in SSA, to address the gaps in available evidence. This will help to prioritize interventions that are targeted and culturally appropriate in the SSA context. In this regard, culturally sensitive efforts should explore ways to enhance altruism by linking blood transfusion to the benefit of families. This strategy should include efforts to motivate FRD to continue donating as VNRD. Educational and awareness information should describe the medical use of blood and directly tackle various misconceptions, such as the use of blood for rituals and blood donation causing weakness and impotence. Researchers will need to work closely with blood donor recruitment agencies, National Blood Services and their collaborators to provide scholarly support to improve policy and practice.

It is important to note that while some factors, such as the need for information and sensitization may be common to many countries, a number of factors, such as payment for donations, were only identified in a few countries. SSA countries will therefore benefit from a country-by-country approach aimed at addressing the specific needs of countries, measures that have already been put in place and available resources.

Conflicts of Interest

The authors declare no conflict of interest

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Authorship Contribution

Conception or design of the work: HU, IB. LAA, OWH. Data collection: LAA. Data analysis and interpretation: LAA, HU. Drafting the article: LAA. Critical revision of the article: HU, IB, OWH. Final approval of the version to be published: HU, IB, OWH, LAA.

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Appendix 1: Countries of Sub-Saharan Africa

Angola; Benin; Botswana; Burkina Faso; Burundi; Cameroon; Cape Verde; Central African Republic; Chad; Comoros; Congo; Cote d'Ivoire; Djibouti; Equatorial Guinea; Eritrea; Ethiopia; Gabon; Gambia; Ghana; Guinea; Guinea-Bissau; Kenya; Lesotho; Liberia; Madagascar; Malawi; Mali; Mauritania; Mauritius; Mozambique; Namibia; Niger; Nigeria; Rwanda; Sao Tome; Senegal; Seychelles; Sierra Leone; Somalia; South Africa; South Sudan; Sudan; Swaziland; Tanzania; Togo; Uganda; Zambia; Zimbabwe