PROMOTING BLOOD DONATION IN SUB-SAHARAN AFRICA: ROLE OF CULTURE AND INTERVENTIONS

A Dissertation

by

BERNARD APPIAH

Submitted to the Office of Graduate and Professional Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PUBLIC HEALTH

Chair of Committee,	James Burdine
Co-Chair of Committee,	Marcia Ory
Committee Members,	Barbara Gastel
	Yan Hong
Head of Department,	Kenneth McLeroy

December 2013

Major Subject: Health Promotion and Community Health Sciences

ABSTRACT

Inadequate blood donation is a major public health problem in Sub-Saharan Africa. This study examines the influence of culture and communication on blood donation in Sub-Saharan Africa, with particular focus on Ghana.

The literature was systematically reviewed for aspects of culture and communication that influence blood donation in Sub-Saharan Africa. Also, key informant interviews and focus group discussions with physicians, media professionals, and voluntary blood donors in Ghana were used, both to identify barriers to blood donation and to obtain some recommendations for designing interventions to boost blood donation.

Literature searching yielded 3020 publications, including conference abstracts. Of them, 41 publications—representing 36 studies—met inclusion criteria and were critically appraised. Aspects of culture that were identified as influencing blood donation in Sub-Saharan Africa included blood donation-related misconceptions, religious beliefs, and influence of relatives. Communication channels that were identified for increasing blood donation included mass media, mobile phones, and face-to-face contacts.

In Ghana, beliefs and attitudes of the public that were identified as barriers to blood donations included misconceptions about blood donation, such as the erroneous belief that hospital authorities were using donated blood for rituals. Some respondents perceived that health professionals have not educated the public and journalists enough

about blood donation. Another perceived barrier to blood donation was negative media reporting, such as indicating the percentage of blood donors found to be HIV-positive. The lack of mutual trust between health professionals and journalists also served as a barrier to using the mass media to promote blood donation.

To promote blood donation, respondents in Ghana suggested several strategies, including broadcasting radio or television dramas about blood donation in English and local languages to engage both literate and illiterate populations; providing media recognition of donors who achieve blood donation-related milestones; having blood donors serve as ambassadors of blood donor drives; using social media to engage prospective younger blood donors; and using mobile telephone caller tunes or ringback tones to publicize blood donation.

Thus, many culture- and communication-related factors influence blood donation in Sub-Saharan Africa. Those designing interventions to increase blood donation in this region should consider these factors, including misconceptions, religious beliefs, family influences, and language.

DEDICATION

This dissertation is dedicated to (1) all voluntary blood donors in Sub-Saharan Africa for donating blood to save lives and (2) two main persons who have made huge impressions in my life but are no more around to celebrate with me my happiness. First, my late father—Kwaku Appiah—who used to beat an African gong in a village in Ghana to attract the attention of the public and to give them important messages from the chief. I used to accompany him around the village while he was delivering such messages but did not envisage that years later I would be beating the gong on public health for the global community. Second, my late mother—Maame Yaabah—who sacrificed her limited resources to ensure that I get a better education.

.

ACKNOWLEDGEMENTS

I would like to thank my dissertation committee chair, Dr. James Burdine, who is also the interim dean of the School of Rural Public Health (SRPH), my co-chair Dr. Marcia Ory, and my committee members, Dr. Barbara Gastel and Dr. Yan Hong, for their guidance and support throughout the course of this research. I have learned a lot from their contributions through their excellent feedback, which has helped shape this dissertation. Dr. Burdine, in particular, has been proving a fatherly care throughout my studies, and for this I am very grateful.

Thanks also go to the faculty and the administrative staff of the Department of Health Promotion and Community Health Sciences, especially Dr. Kenneth McLeroy who has inculcated in me a desire to look beyond individual causes of events to a systems perspective, which requires that environmental factors are considered as well. Kim Manry, executive assistant to the Dean, is also appreciated for her administrative support in the latter parts of my studies.

I also thank Dr. Imelda Bates, a professor of tropical hematology at the Liverpool School of Tropical Medicine (LSTM), United Kingdom, who helped shape my career to focus on blood donation as a priority global health issue in Sub-Saharan Africa. Dr. Bates also facilitated the release of the qualitative data for secondary analyses. I am also grateful to Dr. Shirley Owusu-Ofori, the head of transfusion medicine unit at the Komfo Anokye Teaching Hospital, Kumasi, Ghana, and Dr. Justina Ansah, the director of National Blood Service, Ghana, for facilitating data collection in Ghana. Drs. Bates and

Owusu-Ofori also provided useful feedback for this research. I appreciate the support of the administrative staff of LSTM, especially Tanith Palmer and Tracy Seddon, who facilitated the research in Ghana.

My sincere thanks also go to Margaret Foster, an assistant professor at Texas A&M University (TAMU) Medical Sciences Library, who facilitated the search, retrieval and qualitative analysis of the articles selected for systematic review. I am also grateful to Divya Talwar, a friend and a doctoral student at the Department of Health and Kinesiology, TAMU, who helped with the coding of the articles for the systematic review. Divya also proofread the final manuscript. In addition, I thank Dr. Tunka Sambou, a friend from Senegal, who translated the French papers into English.

I also thank all my friends and colleagues who in many ways helped make this research possible, including Manisha Salinas, Soila Villareal, doctoral students at the Department of Health Promotion and Community Health Sciences, and Tom Jondiko, a doctoral candidate at TAMU.

I am also grateful to all my Christian colleagues who supported me with prayers, including Benjamin Tagoe, Diana Dietrich, and Michael Bekoe.

Finally but not the least, I am grateful to my wife, Patience Borteley Appiah, and children, the Anum family, and the rest of my family in Ghana for all the help throughout the course of my studies. Patience had all the patience for me to be away from the family during certain key moments in the course of my studies, and for this I will forever remain indebted to her.

TABLE OF CONTENTS

Page

LIST OF FIGURES

LIST OF TABLES

CHAPTER I

INTRODUCTION

Blood donation is a public health concern for healthcare systems throughout the world. However, in Sub-Saharan Africa, the concern is even greater than elsewhere. Therefore, this dissertation focuses on promoting blood donation in Sub-Saharan Africa.

Scope of the problem: Inadequate blood donation in Sub-Saharan Africa

Inadequate blood donation in Sub-Saharan Africa is a major public health problem. According to the World Health Organization [WHO] (2011), 43 countries in the African region reported the number of blood units they collected in 2008. Despite these countries making up 12% of the global population, they collected only 4 million units of blood or 4.3% of global blood donations.

Such a shortage in blood has serious consequences given that blood transfusion is an essential component of modern healthcare. In Africa, many preventable deaths occur because there are insufficient blood donations to meet patient needs (WHO, 2011). For example, 26% of inpatient deaths from maternal hemorrhage in Africa are associated with non-availability of blood (Bates *et al*., 2008).

Given the impact of lack of blood in hospitals in Africa, many interventions have been introduced. These interventions include promulgation of national blood policies and construction of national blood centers in a number of countries (Centers for Disease Control and Prevention [CDC], 2011). However, social and behavioral interventions are

largely lacking. Such interventions are needed to help promote behaviors and socio-cultural conditions that favor blood donation.

The area of blood transfusion has strong cultural and ethical dimensions, including dealing with cultural beliefs and public perception of the safety and risk of blood donation. Cultural beliefs associated with blood donation and transfusion have been discussed in transfusion medicine in Western countries but less so in Africa (Sacchini *et al*., 2013). Many Africans have strong cultural beliefs about blood and rely mostly on the mass media for health information. However, little is known about how culture and communication influence blood donation in Sub-Saharan Africa. Therefore, it is necessary to identify what is known about influence of culture and communication on blood donation in Sub-Saharan Africa.

Genesis of the research

My research interests are global health, community health development, and science communication. As a science journalist, I have also been writing stories about global health problems and solutions that especially relate to Sub-Saharan Africa. Through writing my story "Africa's road to blood ruin," which was published in the *Canadian Medical Association Journal* (Appiah, 2012), I learned that lack of blood donation is a major public health concern in Sub-Saharan Africa.

One of the experts I interviewed for the story was Imelda Bates, a professor of tropical hematology at Liverpool School of Tropical Medicine in the United Kingdom. She and I subsequently obtained a small grant from the Wellcome Trust, United

Kingdom. The purpose of the grant (WT099678MF) was to explore communication and cultural aspects of blood donation in Ghana and Zimbabwe. In the course of undertaking this research, this dissertation was born.

Approaching blood donation in Sub-Saharan Africa: Some literature

To approach blood donation as a problem in Sub-Saharan Africa, I used the PRECEDE-PROCEED model as an organizing tool (Figure 1).

The acronym "PRECEDE" stands for **P**redisposing, **R**einforcing and **E**nabling **C**onstructs in **E**ducational **D**iagnosis and **E**valuation. "PROCEED" stands for **P**olicy, **R**egulatory, and **O**rganizational **C**onstructs in **E**ducational and **E**nvironmental **D**evelopment. The PRECEDE-PROCEED model can be used as a planning tool for health promotion programs (Green & Kreuter, 2005). The elements of the PRECEDE model are social assessment (phase 1); epidemiological assessment, behavioral and environmental assessment (phase 2); educational and ecological assessment (phase 3); and administrative and policy assessment and intervention alignment or phase 4 (Gielen *et al*., 2011). The PROCEED component has the next four phases. In this dissertation, only phase 3 of the model is discussed to help provide a better understanding of the factors that could influence blood donation in Sub-Saharan Africa.

The model shows that phase 3 or educational and ecological assessment has three components. These are the predisposing, reinforcing, and enabling factors which interact with each other and influence the behavioral and environmental determinants (Figure 1).

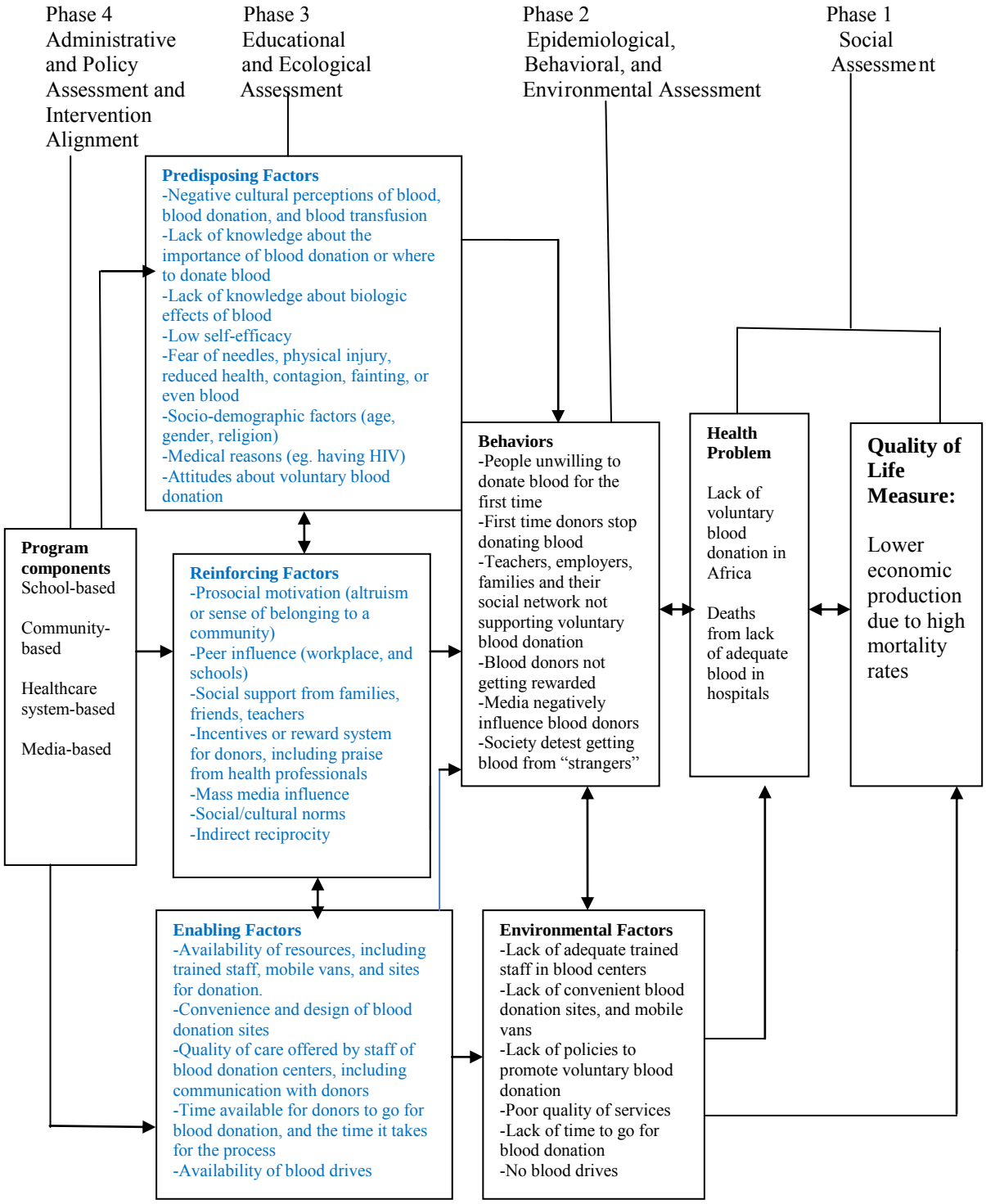

Fig. 1. PRECEDE-PROCEED Model for voluntary blood donation in Sub-Saharan Africa.
The PROCEED component is intentionally not included. The convention follows that of the original model: Horizontal arrows point from left to right, but the phases are read from right to left. This dissertation discusses phase 3 of the model.

Predisposing factors

Predisposing factors, which exist at the cognitive level, are likely to contribute to lack of voluntary blood donation by members in a community. In other words, predisposing factors are antecedents to particular behavior that can serve as motivation for individuals to undertake an action (Howat *et al.*, 1997). Such factors include cultural values, knowledge, attitudes, beliefs, and perceptions within a population (Crosby & Noar, 2011; Rubinson & Baillie, 1981; Windsor, 1986). Predisposing factors may either increase or hinder a person's motivation and can be altered through direct communication (McKenzie *et al*., 2009). In the case of blood donation, predisposing factors may also include perceived need for blood donation, such as the perception that blood donation is important to help people; an awareness of the need for blood following a disaster (Glynn *et al*., 2006); perceptions about ability to donate blood and replenish it within the body; perceptions of blood, fear of injection, physical injury, reduced health, contagion, or fainting (Bednall & Bove, 2011); and the cultural belief that blood donation may transmit certain traits such as witchcraft (Koster &Hassall, 2011). Other predisposing factors include low self-efficacy, for example when donors have so many other commitments that they think they cannot donate blood or when donors believe that the amount of circulating blood in their bodies is too small for blood donation (Duboz *et al*., 2010). Predisposing factors also include the lack of knowledge about the need for blood or the lack of knowledge as to where to donate blood (Duboz *et al*., 2010).

Reinforcing factors

Reinforcing factors are the types of feedback and rewards that those who engage in in a behavior may get from self, peers, families, teachers, the mass media, employers, and others who tend to control rewards (McKenzie *et al*., 2009). With regard to self, re-enforcing factors may include indirect reciprocity or engaging in blood donation as a result of an anticipation of an act in kind by a third party. For example, one might want to donate blood because one has received a blood product in the past or perhaps a relative died from lack of blood. Moreover, it could be because if one donates blood, getting blood in the future may be easier. People may also donate blood as a result of intrinsic motivation, which could be due to self-esteem or desire to enhance attitudes of self-acceptance, self-approval, or self-respect (Bednall & Bove, 2011).

Furthermore, people may donate blood voluntarily because of non-monetary rewards or incentives such as having free health screening or a medical check-up; a belief that blood donation may make one healthy because of its positive health benefits; the chance to learn one's blood type; receipt of gifts such as certificates or T-shirts for donating blood; formal acknowledgement from the agency organizing the blood donation; or time off school or work for donating blood. Also, people may donate blood because of pro-social motivation such as altruism and collectivism or the desire to help others, especially strangers, without expectation of any reward (Bednall & Bove, 2011). Cultural and social norms may also reinforce blood donation. For instance, if a donor has many friends donating blood, the person is likely to donate blood, especially in the presence of those friends (Bednall & Bove, 2011).

The media can also play a major role in reinforcing blood donation. Promotion of blood donation through newspapers, radio, television, or online media in the form of advertisements or news stories, may spur people to donate blood. Also, some blood donors may be motivated to continue donating blood if their names are mentioned in the mass media (Lacetera & Macis, 2008).

Enabling factors

Enabling factors are items that facilitate an action once the problems associated with predisposing conditions have been addressed. In the case of blood donation, these include availability of blood donation activities, such as yearly blood donation initiatives (blood drives); availability of, and accessibility to, mobile vans for enhancing blood donation; convenience of the blood collection center or opening hours of the center enhancing or impeding blood donation; dissatisfaction or satisfaction of the design of the center and the atmosphere of the blood donation site; and positive or negative experience with employees of the blood collection agency (Bednall & Bove, 2011). Other enabling factors include availability of enough trained staff for blood donation activities, and laws or policies in place to enhance blood donation. Both the availability of time and the means to get to blood collection sites are enabling factors, as are referrals to relevant donation centers (Bednall & Bove, 2011).

The phase 3 of the PRECEDE-PROCEED model can help researchers to apply individual level, interpersonal level, or community level theories to design appropriate interventions. In the case of blood donation, such interventions could be healthcare

system-based, community-based, media-based, or school-based.

Research questions

Given the gaps identified in the literature, especially pertaining to the lack of studies on how culture and communication could influence blood donation in Sub-Saharan Africa, this dissertation answered the following three main questions:

1) How do culture and communication influence voluntary blood donation in Sub-Saharan Africa?

2) What are the barriers to voluntary blood donation in Sub-Saharan Africa?

3) What are some recommendations for designing interventions to promote voluntary blood donation in Sub-Saharan Africa?

Overview of research methods

Two main research methods were used for this dissertation: a systematic literature review on the influence of culture and communication on blood donation in Sub-Saharan Africa and secondary analyses of key informant interviews and focus group discussions conducted in Ghana. Transcripts of the interviews and focus group discussions were obtained from Liverpool School of Tropical Medicine, United Kingdom.

The systematic literature review focused on both qualitative and quantitative studies. The review was done for four main reasons. First, previous reviews on blood donation globally have identified very few papers from Sub-Saharan Africa (Godin *et al*., 2012). Second, reviews on blood donation have largely ignored the role of culture

and communication in promoting blood donation in Sub-Saharan Africa. Third, many reviews have focused mainly on quantitative studies with descriptive statistics, thereby missing perspectives identified through qualitative studies. Given that culture is often difficult to quantify, inclusion of qualitative studies in systematic reviews that involve aspects of culture is essential, hence the inclusion of both quantitative and qualitative studies in the current review. Finally, review of the influence of communication and/or culture that focus specifically on Sub-Saharan Africa are needed to help identify and integrate potential barriers to, and motivators of, blood donation. Such knowledge could be useful for designing interventions to boost blood donation in the region.

The study based on interviews and focus group discussions about factors that influence blood donation in Ghana was done for three main reasons. First, a focus of this dissertation was identifying cultural aspects of blood donation in Sub-Saharan Africa. Thus, using a qualitative dataset that reflected people's experiences, beliefs, and attitudes to blood donation in Ghana was appropriate. Second, because communication is an important element of this dissertation, using a qualitative dataset that explored aspects of blood donation through media professionals made the study more meaningful. Finally, because the role of culture and communication in blood donation has not been explored much in Ghana, the use of qualitative studies is suitable.

Order of carrying out the research

This dissertation used the key informant interviews and focus group discussions that had been conducted in Fall 2012. The systematic review was performed from June to August

2013. Although the qualitative data were collected before the systematic review, the transcripts were analyzed after this review. Doing so ensured that key themes in literature were considered in the analysis.

Scope of the rest of the dissertation

This dissertation contains papers. Each paper addresses a specific research question (Table 1).

Chapter two describes the first paper: "Cultural context and role of communication in promoting adequate blood donation in Sub-Saharan Africa: A systematic literature review." In this paper, as the title shows, the research methodology used was systematic literature review.

Chapter three is the second paper: "Barriers to blood donation in Ghana: Perspectives of health professionals, journalists, and voluntary blood donors." This paper resulted from secondary analysis of transcripts of interviews and focus group discussions conducted in Ghana.

Chapter four is the third paper: "Recommendations for designing culturally appropriate communication interventions for promoting voluntary blood donation in Africa: A case study of Ghana." This paper has the same methodology as that of the second paper except that the themes of analysis were different.

Chapter five, the final chapter, briefly recaps the significance of this dissertation, summarizes the methods and key findings, and briefly discusses the key findings. It

indicates the strengths and limitations of the study, and makes recommendations for practice, policy and future research.

Table 1. Research questions and their corresponding titles of papers presented in this dissertation

Research question	**Title of paper**
How do culture and communication influence voluntary blood donation in Sub-Saharan Africa?	Cultural context and role of communication in promoting adequate blood donation in Sub-Saharan Africa: A systematic literature review
What are the barriers to voluntary blood donation in Sub-Saharan Africa?	Barriers to blood donation in Ghana: Perspectives of health professionals, journalists, and voluntary blood donors
What are some recommendations for designing interventions to promote voluntary blood donation in Sub-Saharan Africa?	Recommendations for designing culturally appropriate communication interventions for promoting voluntary blood donation in Africa: A case study of Ghana

CHAPTER II

CULTURAL CONTEXT AND ROLE OF COMMUNICATION IN PROMOTING ADEQUATE BLOOD DONATION IN SUB-SAHARAN AFRICA: A SYSTEMATIC LITERATURE REVIEW

Overview

We systematically reviewed the influences of culture and communication on blood donation in Sub-Saharan Africa.

We performed database searches in MEDLINE/PubMed, PsycINFO, CINAHL, EMBASE, Web of Science, Proquest Dissertations and Theses, Africa Journals Online (AJOL), Africa Index Medicus (AIM), and Global Health. Scopus was used to search references of selected papers. Also, we used Scopus and Google Scholar to identify papers citing the selected studies.

Literature searching yielded 3020 publications, including conference abstracts. Of them, 41 publications—representing 36 studies—met inclusion criteria and were critically appraised. Aspects of culture that were identified as influencing blood donation in Sub-Saharan Africa included blood donation-related misconceptions, religious beliefs, and influence of relatives. Communication channels that were identified for increasing blood donation included mass media, mobile phones, and face-to-face contacts.

In conclusion, many culture- and communication-related factors influence blood donation in Sub-Saharan Africa. Those designing interventions to increase blood

donation in this region should consider these factors, including misconceptions, and religious beliefs.

Background

Hospitals in Africa often lack adequate blood. Thus, there have been calls to increase blood donation, and to ensure that new donors are recruited and old donors are retained (World Health Organization [WHO], 2010). Africa's lack of adequate blood in hospitals is often compounded by negative influences of culture. Blood is a symbol often portrayed in African culture as unique to families, and thus to donate one's blood to an unfamiliar person is often frowned upon by strong adherents to African culture (Titmuss, 1971).

Culture is often influenced by communication. In Africa, word-of-mouth spreads rapidly. Thus, negative perceptions of blood and blood donation are often passed on from generation to generation. Misinformation and negative perceptions about blood donation have been discovered in some studies conducted in Africa (Lownik *et al*., 2012). Such studies often call for educating more people about blood and blood donation.

Globally, there have been several reviews of aspects of blood donation, including deterrents and motivators of blood donation (Bednall & Bove; Piliavin, 1990) and efficacy of interventions to promote blood donation (Godin *et al*., 2012). Bednall and Love's review provides a useful framework for understanding the factors that affect blood donation, including marketing communication and aspects of culture such as

religiosity, social norms, beliefs, and attitudes about blood donation. Unfortunately, Bednall and Bove identified only one sample from Africa out of a total of 92 samples from their 49 studies they used for their review. Second, although the mass media have been recognized as important for promoting voluntary blood donation (Wakefield *et al*., 2010), a recent meta-analysis to assess the efficacy of interventions to promote blood donation did not identify any articles on mass media interventions (Godin *et al*., 2012).

Despite the usefulness of such reviews, they have some limitations. First, a review of blood donation and culture globally did not discuss a single case study from Africa, although other regions such as Asia and Latin America were considered in the review (Copeman, 2009). Thus, there appears to be little data on how culture influences blood donations in Africa. Second, a recent review of beliefs, attitudes, and knowledge of blood donation in developing countries identified 18 articles in 17 countries with an article each coming from six Sub-Saharan African countries: Burkina Faso, Nigeria, South Africa, Tanzania, Togo, and Uganda (Lownik *et al*., 2012). The review identified aspects of culture, including beliefs and myths associated with blood donation, but the few studies from Africa may provide a limited view of the influence of culture on blood donation in the region.

Third, although quantitative meta-analysis helps determine the effectiveness of interventions, such a methodology is often not suitable for understanding effectiveness of interventions that lack descriptive statistics that could be used for generating effect sizes. Thus, many qualitative studies on this subject could be missed if scholars intentionally select only quantitative studies for analysis. Finally, in many reviews about

blood donation globally, the role of culture and communication has often not been adequately integrated. The lack of integration of culture and communication in such reviews could hamper the design of culturally sensitive communication interventions to boost blood donation.

To our knowledge, the present systematic literature review of both quantitative and qualitative studies to determine the roles of culture and communication in influencing blood donation is the first to be conducted in Sub-Saharan Africa. The objective of the present study was to identify aspects of culture and communication that can help boost blood donation in Sub-Saharan Africa.

For the purpose of this systematic literature review, culture and communication are defined as follows: Culture is generally difficult to define but it is considered as a learned and shared behaviors, attitude, or practices of an individual or groups of people, and is characterized by such variables as traditional beliefs, cultural values, individual or social norms, ethics, or religion (Kreuter & McClure, 2004). Communication is the use of mass media (radio, television, print, online mass media); telephone, including mobile phones; social media; brochures, leaflets, video; face-to-face interactions; and other channels of interactions between two or more people.

Materials and methods

Inclusion and exclusion criteria

Given the focus of this review, we established the following inclusion criteria:

(a) The scholarly paper discussed promotion of blood donation in Sub-Saharan Africa;

(b) The study focused on blood donation resulting from other members of the public rather than autologous blood donation, or cord blood donation;

(c) The study mentioned or discussed cultural issues and/or communication interventions associated with blood donation in Sub-Saharan Africa;

(d) If the publication was a case study, it had information about an outcome of blood donation, including the number of people who attended blood donation exercise; and

(e) If the study used a quantitative method or qualitative method, it obtained information directly from the general public or blood donors, and had information about an outcome of blood donation; and

(f) The study was published in either English or French but in the case of French, it has an English abstract.

All studies had to meet the inclusion criteria.

Publications were excluded if they had the following criteria:

(a) The study, including conference abstracts and presentations, on promoting blood donation did not focus on any country in Sub-Saharan Africa;

(b) The study did not focus on blood donation from other members of the public, including families, friends but rather focused on others such as autologous blood donation or cord blood donation;

(c) The scholarly publication did not mention or discuss influence of culture and/or communication on blood donation in Sub-Saharan Africa;

(d) If the publication was a case study, it did not have information on outcomes of blood

donation activities, including number of people who donated blood or became aware of blood donation; and

(e) The scholarly paper, if published in French, did not have at least the abstract translated into English.

Search and selection methods

Electronic databases used in a recent meta-analysis on efficacy of interventions for promoting blood donation (Godin, *et al*., 2012) were searched: MEDLINE/PubMed, PsycINFO, CINAHL, EMBASE, and Proquest Dissertations and Theses. In addition, we searched the following databases: Africa Index Medicus (AIM), African Journals Online (AJOL), and Global Health. The searches took place from June 8, 2013, to July 23, 2013. We systematically searched MEDLINE/PubMed without any limitation to the year of publication. We limited studies to English and French, the two main languages of scientific publication in Africa. We used the keywords, blood donor(s), blood donation(s) and all countries in Sub-Saharan Africa (Appendix A). This search was replicated for the other databases.

Abstracts of papers were then screened in three stages to identify studies that met inclusion criteria. First, all abstracts that discussed blood donation in at least one country in Sub-Saharan Africa were selected. Second, from the initial list, abstracts that addressed aspects of culture or communication were selected. Third, full texts of conference abstracts and full papers that met the first two criteria were screened, and those that met the other inclusion criteria were selected. In the last stage of the search,

we used Scopus and Google Scholar to identify articles citing the selected studies. Those articles were also screened to determine whether they met the inclusion criteria. A French speaker translated the three French journal articles that met the inclusion criteria.

Coding and analysis

A coding form (Appendix B) was created using Qualtrics, a type of software (Qualtrics, Provo, UT, 2013, version 49090). Both qualitative and quantitative studies on the subject were coded and analyzed together. All included studies were analyzed in two ways. First, two coders identified the following: the type of published work (for example, experimental study or qualitative study), the Sub-Saharan country or countries of focus, the type of blood donor (for example whether voluntary or family replacement donor), the communication channel(s) of interest, and the year of publication. Second, we qualitatively assessed every article in order to identify content on cultural issues, role of communication, or both.

Results

Study selection

In total we identified 41 publications: 24 journal articles and 17 peer-reviewed conference abstracts. The reporting flowchart (Figure 2) followed that of Moher *et al.* (2009).

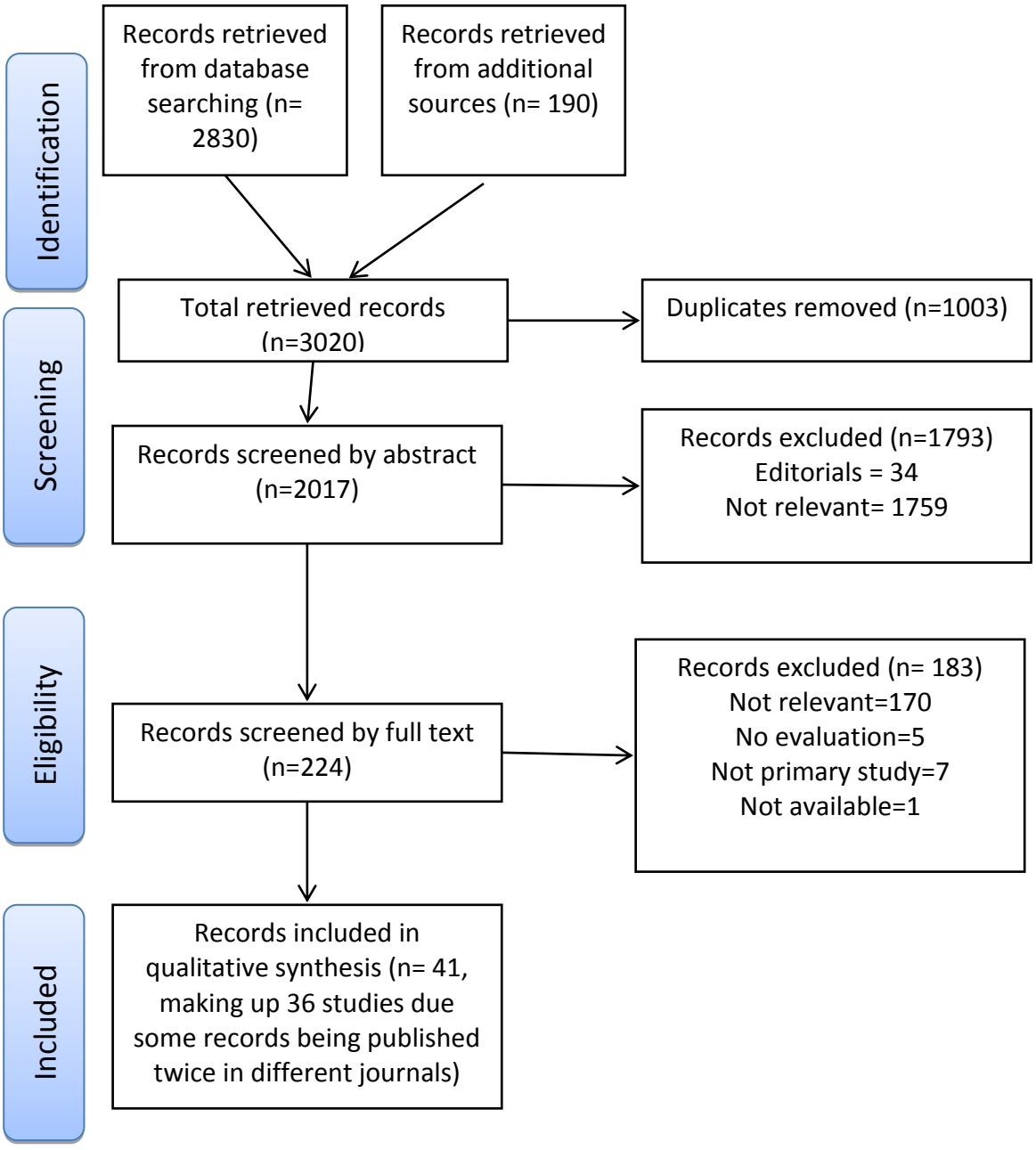

Fig. 2. Literature search and screening process

Of the journal articles, three were published in French (Agbovi *et al.*, 2006; Diakhate *et al.*, 1984; & Nebie *et al.*, 2007). Not all 41 publications represented unique separate studies. One journal article was published in two different journals, so we considered it as one study. Also, four studies were presented at two conferences apiece and thus the associated abstracts were published in two different journals. Thus, 36 studies were identified (Table 2). None of the conference abstracts was later published as a journal article.

Study locations

Of the 49 countries in Sub-Saharan Africa, the 36 studies focused on 15 countries: Burkina Faso, Cameroon, Cote d'Ivoire, Ethiopia, Ghana, Kenya, Nigeria, Malawi, Senegal, Sierra Leone, South Africa, Sudan, Tanzania, Togo, and Uganda (Table 2). Eleven of the 36 studies were from Nigeria (Ahmed *et al.*, 2006; Awodu *et al.*, 2011; Obi, 2007; Okpara, 1989; Olaiya *et al.*, 2004; Onuh *et al.*, 2012; Ottong *et al.*, 1997; Oyarebu, 1982; Salaudeen *et al.*, 2011; Salaudeen & Odeh, 2011; Umeora *et al.*, 2005), six were from Kenya (Basavaraju *et al.*, 2010; Mbui *et al*., 2010); Odongo *et al.*, 2010a; Odongo *et al.*, 2010b; Odongo *et al.*, 2009; Odongo *et al.*, 2011; Wangendo, 2012; Wangendo *et al.*, 2011), four were from Ghana (Allain *et al.*, 2008; Appiah *et al.*, 2013; Asenso-Mensah *et al.*, 2013; Owusu-Ofori *et al.*, 2010), two each were from Burkina Faso (Dahourou *et al.*, 2010; Nebie *et al.*, 2007), Senegal (Diakhate *et al.*, 1984; Duboz *et al.*, 2010) and South Africa (Bloch *et al.*, 2012a; Reddy *et al.*, 2013; Mwaba *et al.*, 1995), and one each from Cameroon (Koster & Hassall, 2011), Cote d'Ivoire

Table 2. Characteristics of the studies identified in the review

Author/Year	Country	Type of study	Type of Population	Sample size	Aspects of Culture measured	Aspects of Communication measured
Dahourou *et al*., 2010	Burkina Faso	Case study	Blood donors	Unspecified	Perceived barriers	Awareness of blood transfusion service
Nebie *et al*., 2007	Burkina Faso	Quantitative/ survey	Blood donors	500	Motivations for blood donation	Motivations for blood donation
Koster & Hassall, 2011	Cameroon	Qualitative/ Focus group discussion, Interviews, Participant/ direct observation, Simulation	General population clinical professionals, relatives, community members, high school students	Unspecified	Motivations and barriers	None
Sekongo *et al*., 2011	Côte d'Ivoire	Quantitative/ Survey	Blood donors	901	None	Attitudes to SMS; talking about blood donation
Wondimagegnehu, 2009	Ethiopia	In-depth interviews, , Focus group discussion Quantitative/ survey	High school students	450	Willingness to donate blood	None
Allain *et al*., 2008	Ghana	Case study	General population	Unspecified	Influence of a church	Influence of radio station on blood donation
Appiah *et al*., 2013	Ghana	Qualitative/ Focus group discussion interviews	Blood donors, journalists, clinicians	20	Ethics for blood donation	Designing communication interventions
Asenso-Mensah *et al*., 2013	Ghana	Quantitative/ Survey	Family replacement donors	513	Donor motivation	Donor motivation
Owusu-Ofori *et al*., 2010	Ghana	Case study	General population	Unspecified	Influence of religion	Influence of radio
Basavaraju *et al*., 2010	Kenya	Quantitative/ Survey	Blood donors	445	None	Influence of the mass media on repeat donation
Mbui *et al*., 2010 Odongo *et al*., 2010a	Kenya	Quantitative/ Survey/In-depth interviews/ Focus group discussion	Secondary school students, parents, teachers	Students (n=593); Parents n=208); School heads (n=19)	None	Influence of mobile phones and face-to-face communication on receiving test results
Odongo *et al*., 2011	Kenya	Case Study	Youth in colleges	Unspecified	None	Influence of radio and SMS
Odongo *et al*., 2009	Kenya	Quantitative/ Survey	Students, heads of schools, general population	189	None	Acceptability of logos and slogans on blood donation
Odongo *et al*., 2010b	Kenya	Case Study	General Population	Unspecified	Influence of religious/tribal groups on blood	Influence of media and partnerships on blood donation
Wangendo, 2012; Wangendo *et al*., 2011	Kenya	Quantitative/ Survey	General population and blood donors	552	None	Acceptability of SMS in blood donation
Ahmed *et al*., 2006	Nigeria	Quantitative/ Survey	Blood donors	83	Perceptions of blood donation	None

Table 2 continued.

Author/Year	Country	Type of study	Type of Population	Sample size	Aspects of Culture measured	Aspects of Communication measured
Awodu *et al*., 2011	Nigeria	Quantitative/ Survey	Undergraduate students	396	Motivations for blood donation	None
Obi, 2007	Nigeria	Quantitative/ Survey	Spouses of pregnant women	640	Barriers to donation	None
Olaiya *et al*., 2004	Nigeria	Quantitative/ Survey	Blood donors	542	Barriers to blood donation	Incentive for donation
Okpara,.1989	Nigeria	Quantitative/ Survey	General population	246	Barriers to blood donation	None
Onuh *et al*., 2012	Nigeria	Quantitative/ Survey	Pregnant women attending antenatal clinic	535	Attitudes and behaviors	None
Ottong *et al*., 1997	Nigeria	Case study / Focus group discussion	General population: Women and husbands	Unspecified	Myths about blood donation	Partnerships with key people
Oyarebu *et al*., 1982	Nigeria	Quantitative/ Survey	General population	210	Reasons for not donating	None
Salaudeen *et al*., 2011	Nigeria	Quantitative/ Survey	General population	936	Benefits/ knowledge of blood donation	None
Salaudeen & Odeh, 2011	Nigeria	Quantitative/ Survey	University students	400	Barriers to blood donation	Motivations for donation
Umeora *et al*., 2005	Nigeria	Quantitative/ Survey	Patients relations and friends who declined blood donation	143	Barriers to donation	None
Gombachika & Monawe, 2011	Malawi	Quantitative/ Survey	Blood donors	114	None	Attitudes to SMS technology
Diakhate *et al*., 1984	Senegal	Quantitative/ Survey	General population	1710	Motivators and barriers	Knowledge of blood donation channels
Duboz *et al*., 2010	Senegal	Quantitative/ Survey	General population	574	Motivators and barriers	Knowledge of blood donation channels
Sengeh *et al*., 1997	Sierra Leone	Case Study, Focus group discussion	General population	Unspecified	Influence of community groups	Face-to-face communication effects
Reddy *et al*., 2013 Bloch *et al*., 2012a	South Africa	Qualitative/ Focus group discussion	General population (Donors/non-donors)	97	Motivators and barriers	None
Mwaba & Keikelame 1995	South Africa	Quantitative/ Survey	High school students	40	Motivators and barriers	Motivators of, and barriers to blood donations
von Zahran & von Ali, 2013	Sudan	Quantitative/ Survey	University students	400	Motivators	Channels of awareness
Jacobs & Berege,1995	Tanzania	Quantitative/ Survey	General population	1141	Reasons for non-donation	None
Agbovi *et al*., 2006	Togo	Quantitative/ Survey	General population	300	Barriers	Channels of awareness
Los *et al*., 2009a Los *et al*., 2009b	Uganda	Not specified	School teachers	570	None	Means of promoting blood donation

(Sekongo *et al.*, 2011), Ethiopia (Wondimagegnehu, 2009), Malawi (Gombachika & Monawe, 2011), Sudan (von Zahran & von Ali, 2013), Tanzania (Jacobs & Berege,1995), Togo (Agbovi *et al.*, 2006), and Uganda (Los *et al.*, 2009a; Los *et al.*, 2009b) (Table 2). None of the studies involved more than one country.

Research methods of the studies

Among the 36 studies, 24 used questionnaire surveys or quantitative methods, three used qualitative methods such as focus group discussions and interviews, three used both quantitative and qualitative methods, and six used case studies (Table 2). Some of the case studies used qualitative methods for evaluation. None of the studies used rigorous designs such as randomized control trials or quasi-experimental trials. Also, none of the quantitative studies indicated that the reliability and validity of questionnaires used were measured.

Type of population and sample size

A total of 12 studies focused on only the general population; six studies focused on only students; five studies focused on only blood donors; and one study each focused on only school teachers, pregnant women, spouses of pregnant women, or those who declined to give blood when asked to do so to help their relative or friend who needed blood. The rest of the studies focused on combinations of populations, including both blood donors and non-blood donors; general population and health professionals; and students, teachers, and parents. Only one study included journalists as respondents (Appiah *et al.*,

2013).

Of the 36 studies, seven, including all the six case studies, did not specify the sample size. One qualitative study also did not specify the sample size of the respondents. Of the 29 studies that specified the sample size, the quantitative study with that largest sample size had 1710 respondents whereas the smallest quantitative study had 40 respondents.

Culture-related factors

We identified myths and influences of families, religion, and incentives on blood donation in Sub-Saharan Africa. We identified eight key myths associated with blood donations in Sub-Saharan Africa from 19 studies conducted in eight countries: Cameroon, Ghana, Nigeria, Senegal, South Africa, Sudan, Tanzania and Togo (Table 3). Most of studies that discussed myths were conducted in Nigeria. A common myth that deterred people from donating blood was "not enough blood in the body to donate or a person is not strong enough". We identified this myth in nine studies (Dhiakete *et al.*, 1984; Duboz *et al.*, 2010; Koster & Hassall, 2011; Mwaba *et al.*, 1995; Obi, 2007; Okpara, 1989; Onuh *et al.*, 2012; Oyarebu, 1982; and Umeora *et al.*, 2005). The second most common myth was that a blood donor may get infectious disease (especially HIV) from donation. We found this myth in nine studies (Agbovi *et al.*, 2006; Bloch *et al.*, 2012a; Jacobs & Berege, 1995; Mwaba & Keikelame, 1995; Obi, 2007; Olaiya *et al.*, 2004; Reddy *et al.*, 2013; Salaudeen *et al.*, 2011; Umeora *et al.*, 2005; von Zahran & von Ali, 2013).

Table 3. Misconceptions or myths and blood donation in Sub-Saharan Africa

Myth	**References (Country)**
Not enough blood in the body to donate /A person is not strong enough	Koster & Hassall, 2011(Cameroon) Obi, 2007 (Nigeria) Okpara, 1989 (Nigeria) Onuh *et al*., 2012 (Nigeria) Oyarebu, 1982 (Nigeria) Umeora *et al*., 2005 (Nigeria) Dhiakete *et al*., 1984 (Senegal) Duboz *et al*., 2010 (Senegal) Mwaba & Keikelame, 1995 (South Africa)
Blood donation causes decreased libido (men)	Olaiya *et al*., 2004 (Nigeria) Ottong *et al*., 1997 (Nigeria) Oyarebu, 1982 (Nigeria) Salaudeen & Odeh, 2011(Nigeria) Umeora *et al*., 2005 (Nigeria) Dhiakete *et al*., 1984 (Nigeria)
May affect reproductive cycle (women)	Oyarebu, 1982 (Nigeria) Salaudeen *et al*., 2011(Nigeria) Dhiakete *et al*., 1984 (Senegal) Zahran & Ali, 2013 (Sudan)
Donated blood may be used for witchcraft/rituals	Koster & Hassall, 2011 (Cameroon) Onuh *et al*., 2012 (Senegal) Umeora *et al*., 2005 (Nigeria)
Blood donation is not good for one's health	Asenso-Mensah *et al*., 2013(Ghana) Obi, 2007 (Nigeria) Umeora *et al*., 2005 (Nigeria) Mwaba & Keikelame, 1995 (South Africa) Jacobs & Berege,1995 (Tanzania) Agbovi *et al*., 2006 (Togo)
A blood donor may get infectious disease (e.g., HIV) after donation	Obi, 2007 (Nigeria) Olaiya *et al*., 2004 (Nigeria) Salaudeen *et al*., 2011(Nigeria) Umeora *et al*., 2005 (Nigeria) Reddy *et al*., 2013; Bloch *et al*., 2012a (South Africa) Mwaba & Keikelame, 1995 (South Africa) von Zahran & von Ali, 2013 (Sudan) Jacobs & Berege, 1995 (Tanzania) Agbovi *et al*., 2006 (Togo)
Blood donation may cause excessive weight loss	Olaiya *et al*., 2004 (Nigeria) Salaudeen & Odeh, 2011(Nigeria)
Blood donation may cause fever, fainting, or sudden death	Olaiya *et al*., 2004 (Nigeria) Okpara, 1989 (Nigeria) Onuh *et al*., 2012 (Nigeria) Salaudeen & Odeh, 2011(Nigeria) Salaudeen *et al*., 2011(Nigeria) Umeora *et al*., 2005 (Nigeria) Reddy *et al*., 2013; Bloch *et al*., 2012a (South Africa)

Seven studies identified the myth or fear that blood donation may cause fever, fainting, or sudden death (Bloch *et al.*, 2012a; Olaiya *et al.*, 2004; Okpara, 1989; Onuh *et al.*, 2012; Salaudeen & Odeh, 2011; Reddy *et al.*, 2013; Salaudeen *et al.*, 2011; Umeora *et al.*, 2005). Six studies conducted in a total of five countries identified the myth that blood donation is not good for one's health (Agbovi *et al.*, 2006; Asenso-Mensah *et al.*, 2013; Jacobs & Berege, 1995; Obi, 2007; Mwaba & Keikelame., 1995; Umeora *et al.*, 2005). The myth that blood donation causes decreased sexual desire, especially in males, was found in five studies in Nigeria (Olaiya *et al.*, 2004; Ottong *et al.*, 1997; Oyarebu, 1982; Salaudeen & Odeh, 2011; Umeora *et al.*, 2005) and a study in Senegal (Dhiakete *et al.*, 1984).

The fear that blood donation may alter the female reproductive cycle was identified in four studies, two of which were conducted in Nigeria (Oyarebu,1982; Salaudeen *et al*., 2011) and one each was conducted in Senegal (Dhiakete *et al*., 1984) and Sudan (von Zahran & von Ali, 2013). That blood resulting from blood donation may be used for ritual purposes or witchcraft was a myth that was found in a total of three studies: one in Cameroon (Koster & Hassall, 2011) and two in Nigeria (Onuh *et al*., 2012; Umeora *et al*., 2005). Two studies from Nigeria identified the myth that blood donation may cause excessive weight loss as a barrier to blood donation (Olaiya *et al*., 2004; Salaudeen & Odeh, 2011).

We identified religion (Table 4) as a motivator of blood donation in six studies (Allain *et al*., 2008; Asenso-Mensah *et al*., 2013; Owusu-Ofori *et al*., 2010; Odongo *et al*., 2009; Onuh *et al*., 2012; von Zahran & von Ali, 2013) and as a deterrent in eight

Table 4. Other culture-related factors and blood donation in Sub-Saharan Africa

Factor	**References/Country**
Religion as motivator	Allain *et al.*,2008 (Ghana) Asenso-Mensah *et al.*, 2013 (Ghana) Owusu-Ofori et al., 2010 (Ghana) Odongo et al.,2009 (Kenya) Onuh et al., 2012 (Nigeria) von Zahran & von Ali, 2013 (Sudan)
Religion/tradition as Deterrent	Koster, & Hassall., 2011 (Cameroon) Obi, 2007 (Nigeria) Olaiya *et al.*, 2004 (Nigeria) Okpara, 1989 (Nigeria) Oyarebu *et al.*, 1982 (Nigeria) Umeora *et al*., 2005 (Nigeria) Mwaba & Keikelame, 1995 (South Africa) Agbovi et al., 2006 (South Africa)
Relatives and Friends as Motivators	Nebie *et al*., 2007 (Burkina Faso) Koster, & Hassall., 2011 (Cameroon) Olaiya *et al*., 2004 (Nigeria) Diakhete *et al*.,1984 (Senegal) Duboz *et al*., 2010 (Senegal) Sengeh *et al*., 1997 (Sierra Leone) Jacobs & Berege, 1995 (Tanzania)
Altruism as motivator	Nebie *et al*., 2007 (Burkina Faso) Wondimagegnehu, 2009 (Ethiopia) Asenso-Mensah *et al*., 2013 (Ghana) Olaiya *et al*., 2004 (Nigeria) Okpara, 1989 (Nigeria) Oyarebu, 1982 (Nigeria) Salaudeen & Odeh, 2011 (Nigeria) Reddy *et al*. 2013; Bloch *et al*, 2012a (South Africa) Jacobs & Berege,1995 (Tanzania) Agbovi *et al*., 2006 (Togo)
Cash incentive as motivator	Nebie *et al*., 2007 (Burkina Faso) Koster & Hassall,2011 (Cameroon) Awodu *et al*., 2011 (Nigeria) Olaiya *et al*., 2004 (Nigeria) Oyarebu,1982 (Nigeria) Salaudeen & Odeh, 2011 (Nigeria) Umeora *et al*., 2005 (Nigeria) Diakhete *et al*.. 1984 (Senegal) Agbovi *et al*., 2006 (Togo)
Non-cash incentive as motivator	Koster & Hassall, 2011 (Cameroon) Asenso-Mensah *et al*., 2013 (Ghana) Olaiya *et al*., 2004 (Nigeria) Okpara, 1989 (Nigeria) Ottong *et al*., 1997 (Nigeria) Salaudeen & Odeh, 2011 (Nigeria) Reddy *et al*., 2013; Bloch *et al*., 2012a (South Africa) Jacobs & Berege, 1995 (Tanzania)

studies (Agbovi *et al*., 2006; Koster & Hassall, 2011; Mwaba *et al*., 1995; Obi, 2007; Okpara, 1989; Olaiya *et al*., 2004; Oyarebu, 1982; Umeora *et al*., 2005).

The role of relatives or friends as motivators of blood donation was also mentioned in seven studies (Diakhete *et al*., 1984; Duboz *et al*., 2010; Jacobs & Berege,1995; Koster & Hassall,.2011;Nebie *et al*., 2007; Olaiya *et al*., 2004; Sengeh *et al*., 1997). Aspects of culture that relate to ethics such as whether blood donation should be altruistic was examined in nine studies (Agbovi *et al*., 2006; Asenso-Mensah *et al*., 2013; Bloch *et al*., 2012; Jacobs & Berege,1995; Nebie *et al*., 2007; Okpara, 2011; Olaiya *et al*., 2004; Oyarebu, 1982; Reddy *et al*., 2013; Salaudeen & Odeh, 2011; Wondimagegnehu, 2009). Additionally, nine studies identified cash incentives as motivations for blood donation (Agbovi *et al*., 2006; Awodu *et al*., 2011; Diakhete *et al*., 1984; Koster & Hassall, 2011; Nebie *et al*., 2007; Olaiya *et al*., 2004; Oyarebu *et al*., 1982; Salaudeen & Odeh, 2011; Umeora *et al*., 2005). Finally, eight studies indicated non-cash incentives as motivators of blood donation (Asenso-Mensah *et al*., 2013; Bloch *et al*., 2012a; Jacobs & Berege, 1995; Koster & Hassall, 2011; Okpara, 1989; Olaiya *et al*., 2004; Ottong *et al*., 1997; Salaudeen & Odeh, 2011; Reddy *et al*., 2013). These non-cash incentives included having national award or recognition, or being given certificates.

Communication-related influences

We found several studies that explored communication strategies that could influence blood donation in Sub-Saharan Africa (Table 5). Eight studies showed the potential of

Table 5. Communication and blood donation in Sub-Saharan Africa

Communication Function	**References/Country**
The mass media) as a *channel* for dissemination of knowledge about blood donation	Allain *et al*., 2008 (Ghana) Appiah *et al*., 2013 (Ghana) Owusu-Ofori *et al*., 2010 (Ghana) Odongo *et al*., 2011(Kenya) Diakate *et al*., 2010 (Senegal) Duboz *et al*., 2010 (Senegal) Zahran & Ali, 2013 (Sudan) Agbovi *et al*., 2006 (Togo)
The mass media as a venue or motivator for blood donation	Nebie *et al*., 2007 (Burkina Faso) Allain *et al*., 2008 (Ghana) Appiah *et al*., 2013 (Ghana) Asenso-Mensah *et al*., 2013 (Ghana) Basavaraju *et al*., 2010 (Kenya) Odongo *et al*., 2011 (Kenya)
The mass media as a medium for encouraging repeat blood donations	Allain *et al*., 2008 (Ghana) Asenso-Mensah *et al*., 2013 (Ghana) Owusu-Ofori *et al*., 2010 (Ghana) Basavaraju *et al*., 2010 (Kenya) Odongo *et al*., 2010 (Kenya)
The mass media as a non-cash incentive	Appiah *et al*., 2013 (Ghana) Olaiya *et al*., 2004 (Nigeria) Salaudeen & Odeh, 2011 (Nigeria)
Mobile phones as an aid to blood donation	Sekongo *et al*., 2011 (Côte d'Ivoire) Appiah *et al*., 2013 (Ghana) Mbui *et al*., 2010; Odongo *et al*., 2010a (Kenya) Odongo *et al*.,.2011 (Kenya) Wangendo, 2012; Wangendo *et al*., 2011 (Kenya) Gombachika & Monawe, 2011 (Malawi)
Face-to-face and other communication as a culturally-appropriate strategy	Dahourou *et al*., 2010 (Burkina Faso) Sekongo *et al*., 2011 (Côte d'Ivoire) Appiah *et al*., 2013 (Ghana) Owusu-Ofori *et al*., 2010 (Ghana) Mbui *et al*., 2010; Odongo *et al*., 2010 (Kenya) Odongo *et al*., 2009 (Kenya) Ottong *et al*., 1997 (Nigeria) Diakate *et al*., 2010 (Senegal) Duboz *et al*., 2010 (Senegal) Sengeh *et al*., 1997 (Sierra Leone) Agbovi *et al*., 2006 (Togo) Los *et al*., 2009a; Los *et al*., 2009b (Uganda)

the mass media to serve as a channel for disseminating knowledge about blood donation (Agbovi *et al*., 2006; Allain *et al*., 2008; Appiah *et al*., 2013; Owusu-Ofori *et al*., 2010; Odongo *et al*., 2011; Diakhate *et al*., 2010; Duboz *et al*., 2010; von Zahran & von Ali, 2013). For example, a partnership between a blood bank and a radio station led to people becoming aware of blood donation in Ghana (Allain *et al*., 2008).

Two studies in Senegal (Diakhate *et al*.2010; Duboz *et al*.2010) and a study in Togo (Agbovi *et al*., 2006) indicated that blood donors became aware of the need to donate blood through the mass media. A study in Ghana demonstrated the value of using the mass media to educate the public (Owusu-Ofori *et al*., 2010), and a study in Sudan showed most university students prefer to be educated more on blood donation through television (von Zahran & von Ali, 2013).

Two studies in Ghana showed how the mass media could serve as a venue for donating blood (Allain *et al*., 2008; Asenso-Mensah *et al*., 2013). These studies showed that blood donation drives organized at a radio station in partnership with a blood bank resulted in increased donation among a section of the public that usually do not donate blood.

A third study in Ghana showed that people will be motivated to donate blood if the mass media educated them about blood donation (Appiah *et al*., 2013). A study in Kenya also showed how a partnership with a radio station resulted in blood donation, which was partly attributed to a journalist on the program inviting listeners to join him to donate blood (Odongo *et al*., 2011). In Burkina Faso, 8.8% of blood donors cited the media as having made them aware of the need to donate blood (Nebie *et al*., 2007).

We found the mass media as important for encouraging repeat blood donations. A study conducted in Kenya showed that repeat blood donors were more likely to have been exposed to the mass media, such as radio, newspaper, and television (Basavaraju *et al*., 2010). Two studies in Ghana discussed how a radio station helped make people become repeat blood donors (Allain *et al*., 2008; Owusu-Ofori *et al*., 2010). When a third study in Ghana asked respondents where they would next donate blood, most people indicated a radio station (Asenso-Mensah *et al*., 2013). The mass media also served as a partner in a social marketing strategy that helped Kenya increase voluntary repeat blood donation (Odongo *et al*., 2011).

Three studies identified the mass media as providing a non-cash incentive. In Ghana, interviews and focus group discussions led to the suggestion that the mass media mention names of blood donors who achieve certain milestones with regard to amount of blood donated. In Nigeria, two studies showed that publishing names of blood donors in the newspaper and announcing blood donor's names on the radio could motivate them to donate blood (Olaiya *et al*., 2004; Salaudeen & Odeh, 2011).

Six studies have identified the acceptability and potential impact of mobile phone communication as an aid to blood donation in Sub-Saharan Africa. These studies identified aspects of mobile phones such as text messages and caller tunes or ringback tones. In Malawi, it was found that blood donors have positive attitudes to mobile phone short message service (SMS) technology (Gombachika & Monawe, 2011). In Côte d'Ivoire, more than 90% of 901 respondents favored the use of text messaging as a reminder of when to donate blood (Sekongo *et al*., 2011). A study in Kenya revealed

that no student would prefer to receive blood tests results through the cell phone (Mbui *et al*., 2010; Odongo *et al*., 2010a). However, another study in Kenya showed that 97% of respondents will like to receive their blood tests results through cellphone text messages (Wangendo, 2012; Wangendo *et al*., 2011). A third study in Kenya showed the potential of combined use of radio and SMS messages to help recruit blood donors (Odongo *et al*., 2011). In Ghana, use of cellphone caller tunes as a potential for promoting blood donations was mentioned in a qualitative study (Appiah *et al*., 2013).

A total of 12 studies have identified face-to-face communication approaches that could influence blood donations. The approaches included community associations, workshops, village meetings, community members talking about blood donation, having acceptable logos and slogans for the national blood transfusion service, and making blood donors serve as ambassadors of blood donation (Agbovi *et al*., 2006; Appiah *et al*., 2013; Dahourou *et al*., 2010; Duboz *et al*., 2010; Mbui *et al*., *et al*., 2010; Odongo *et al*., 2010; Odongo *et al*., 2009; Ottong *et al*., 1997; Owusu-Ofori *et al*., 2010; Sekongo *et al*., 2011; Sengeh *et al*., 1997; Los *et al*., 2009a; Los *et al*., 2009b).

Discussion

The current review on influence of culture and communication on blood donations in Sub-Saharan Africa revealed several factors that can serve as deterrents to, or motivators of, blood donation. First, we have identified many myths or misconceptions that could potentially deter people from donating blood. These misconceptions include the belief that a person is not strong enough to donate blood; blood donation causes decreased

libido in men, a blood donor may get infectious disease (e.g., HIV) from donation, and a donated blood may be used for witchcraft/rituals still abound in the region. It was interesting to note that most of the myths were prevalent both in the 20st century (Oyarebu, 1982; Dhiakete *et al*., 1984; Mwaba & Keikelame, 1995) and in the 21st century (Olaiya *et al*., 2004; Salaudeen & Odeh, 2011; Koster & Hassall, 2011), in keeping with the fact that culture is passed on from generation to generation. Such myths may prevent able-bodied men and women from donating blood. Such misconceptions may result from a general lack of knowledge about blood and blood donation. Thus, those wanting to boost voluntary blood donation must consider demystifying such myths through culturally appropriate communication interventions.

Second, the finding that religion can serve as both a motivator of blood donation and a deterrent demonstrates the need to understand aspects of religion that can be included for blood donation. It was revealing to find that some churches and mosques—when their leaderships have been involved in blood donation drives—led to increased voluntary blood donations (Allain *et al*., 2008; Asenso-Mensah *et al*., 2013; Owusu-Ofori *et al*., 2010).

Third, family members and friends were identified as having the potential to contribute to blood donations. This review indicated that people are willing to donate blood if the blood will be given to their relatives. While such a behavior is not considered as altruistic, it is interesting to find that in Cameroon, even relatives donating blood for their significant others considered it voluntary (Koster & Hassall, 2011). Sub-Saharan African culture often values the important role of families. It may be necessary

to persuade relatives or friends who donate blood to become repeat blood donors.

Fourth, this review showed that altruism, cash, and non-cash incentives can help promote blood donations in Sub-Saharan Africa. The payment of the blood donor is a difficult issue. The World Health Organization does not endorse such a practice given that studies have shown that blood donated by people who demand money are generally not safe (WHO, 2010). Another argument against paying blood donors may be that it may not be sustainable. However, non-cash incentives such as mentioning names of people—who achieve certain milestones in regards to blood donations—in the mass media may be attractive. Where partnerships exist between blood banks and media organizations, such an incentive may not be costly to the blood banks. Other non-cash incentives may have to be explored in Sub-Saharan Africa. For example, in Nigeria, a study revealed that 18% of respondents would be motivated to donate blood if they received national recognition. Blood transfusion services could therefore team up with national bodies that give awards to identify deserving blood donors. However, in giving such incentives, transfusion service providers should recognize that some people may not want publicity. Providing them with such incentives might backfire.

Fifth, our review showed that many communication interventions could be used to promote blood donations, including partnerships with radio stations, and face-to-face meetings with opinion leaders and religious groups in communities. The potential for using mobile phones to increase blood donation have also been assessed in four Sub-Saharan African countries: Côte d'Ivoire, Ghana, Kenya, and Malawi. The use of mobile phones as an aid to blood donation may be particularly useful for reminding blood

donors when to donate blood. However, using text messages for presenting results of blood tests would not be culturally sensitive in Sub-Saharan Africa. We were therefore not surprised to find that in Kenya, among high school students who donate blood, none preferred to receive their blood results through telephone (Mbui *et al*., 2010; Odongo *et al*., 2010a). In Sub-Saharan Africa, people may share mobile phones and thus receiving HIV-positive results on such a channel testing positive for HIV, for example, may expose such private information to another person. In addition, illiteracy could limit the use of cellphone text messages among blood donors who may not be able to read and write official languages such as English and French.

Overall, we were surprised that despite the involvement of media partners in promoting blood donation in some case studies, only one study actually had media practitioners as respondents (Appiah *et al*., 2013). To understand the role of the mass media in promoting blood donation or even deterring others from donating blood, researchers should engage journalists in data collection and in designing communication interventions. Additionally, other than one study that explored the public acceptability of slogan and logos of a blood transfusion service (Odongo *et al*., 2009), we did not find studies that tested use of brochures and leaflets to promote blood donation. Like the findings of a previous study (Godin *et al*., 2012), this review did not identify the use of social media (such as Facebook and Twitter) to promote blood donation. However, social media is gradually penetrating Africa. For example, according to Bullas (2013), GlobalWebIndex found that in the second quarter of 2013, South Africa had the highest proportion of active Facebook users worldwide (68%). Thus, there appears to be high

potential for use of social media to promote blood donation in Sub-Saharan Africa in the future.

This review also identified some limitations. First, there appears to be a general lack of studies from many countries in Sub-Saharan Africa that address cultural and communication aspects of blood donation. This may be due to inadequate number of social scientists in Sub-Saharan Africa with interest in blood donation. Another reason could be that perhaps such publications, if available, were not indexed in the electronic databases used for the review.

Second, it was surprising that no single study involved more than one country in Sub-Saharan Africa. It may be important to study motivators of, and deterrents to, blood donation in multi-country studies. Such studies could help identify common problems of blood donation and solutions for addressing them. For example, a recent study used a survey to evaluate blood donor selection process in 15 Francophone African countries (Tagny *et al*., 2009). Although this study did not meet the current review's inclusion criteria because it did not address aspects of culture and communication, its focus on multiple countries should be adopted in studies that focus on socio-cultural determinants of blood donation.

Third, the research designs used were not rigorous enough and communication intervention studies were lacking. For example, none of the communication-related studies used randomized control trials or quasi-experimental designs—considered as rigorous methodologies. It is therefore not surprising that a recent systematic review of the efficacy of interventions to promote blood donation did not identify a single study

conducted in Africa (Godin *et al*., 2012). That review focused on only randomized control trials. In the current review, none of the studies that used questionnaire surveys described the reliability and validity of the measured variables. It would be helpful to have well tested questionnaires to facilitate measurement of cultural factors, such as misconceptions about blood in multiple countries. Moreover, researchers with interest in promoting blood donation in Sub-Saharan Africa should design rigorous studies that test efficacy of communication interventions, such as use of mobile phones, social media, mass media and face-to-face communications to boost blood donation.

Fourth, the populations that were the target of the studies were very broad: general population; blood donors, non-blood donors; students, teachers, and parents; health professionals; pregnant women; and spouses of pregnant women. It was surprising that although six studies had focused on students, only two focused on teachers. In Sub-Saharan Africa, teachers are key opinion leaders, and thus involving them in blood donation may not only help students to donate blood but may facilitate dissemination of knowledge about blood donation. We also identified only one study that included journalists as respondents although some studies indicated the benefits of partnering with the mass media to promote blood donation. Future studies should therefore pay attention to populations that have received little scholarly attention, including journalists, teachers, the clergy, staff of non-profit organizations, and policymakers.

Our study has some limitations in terms of the methods used in collecting the articles and types of studies we qualitatively analyzed. First, due to the paucity of studies

on this subject, we had to include conference abstracts. However, although conference abstracts are often peer-reviewed and are relatively longer that abstracts of published papers, they cannot offer enough information when compared with journal articles. Second, for the initial selection of articles, we relied on papers published in both English and French. However, French articles that did not have their abstracts translated into English were excluded from further screening, and thus we might have missed studies published in French with no English abstracts. Finally, we considered only publications available in electronic databases, and thus we may have missed unpublished papers or those that have been published in journals not covered in the indexes used.

In conclusion, this study systematically reviewed the influence of culture and communication on blood donation in Sub-Saharan Africa. The 36 studies identified provide some evidence in a number of ways. First, some misconceptions such as the belief that a donated blood may be used for witchcraft or that blood donation may cause decreased libido among men could hinder blood donation in Africa. Thus, to promote blood donation in this region, stakeholders need to understand common misconceptions and the influences of religion, families, and communication. Second, communication channels such as the mass media and face-to-communication could be used to motivate people to donate blood. The idea that mentioning names of blood donors on radio or in the newspapers might increase blood donation is particularly interesting. Thus, studies that test the efficacy of such non-cash interventions or the influence of communication interventions on blood donation are needed. This review did not perform meta-analysis of the influence of culture and communication on blood donations because of the

heterogeneity of the studies, which had different populations and outcomes. Given the few studies comparing factors that influence blood donations, drawing coherent conclusions from this review is a challenge. However, this review provides some evidence that some interventions such as blood banks in partnership with media organizations, and blood banks actively engaging community and religious leaders are likely to be effective in promoting blood donation. More studies with rigorous designs and valid measurement scales are needed in understanding the role of culture and communication in blood donation in Sub-Saharan Africa. Despite the limitations of our study, when designing interventions to promote blood donations in Sub-Saharan Africa, stakeholders should consider addressing such cultural- and communication-related factors.

CHAPTER III

BARRIERS TO BLOOD DONATION IN GHANA: PERSPECTIVES OF HEALTH PROFESSIONALS, JOURNALISTS, AND VOLUNTARY BLOOD DONORS

Overview

Lack of blood in hospitals of Sub-Saharan Africa is a major public health concern. It is important to determine and understand barriers to blood donations in Ghana from the perspectives of health professionals, media professionals, and the general public. These views could help design communication interventions to increase voluntary blood donation in Ghana.

Ten key informant interviews (four journalists, three physicians, and three media professionals) were conducted in Accra, Ghana. Also, two focus group discussions each having two media professionals, two physicians, and a blood donor, were conducted. We analyzed barriers to blood donation under the following themes: beliefs and attitudes of the public, attitudes and behavior of health professionals, and attitudes of and towards media professionals.

Beliefs and attitudes of the public that were identified as barriers to blood donations included myths or misconceptions about blood donation, such as fear of hospital authorities using donated blood for rituals. It was perceived that health professionals have not educated the public and journalists enough about blood donation. Negative reporting about blood donation, such as indicating the percentage of blood

donors found to be HIV-positive, was perceived as a barrier to blood donation. The lack of mutual trust between health professionals and journalists also served as a barrier to using the mass media to promote blood donation.

In conclusion, when designing communication interventions to encourage blood donation in Ghana, it appears addressing the perceptions of the public, and educating the public and journalists about blood donation may be important in Ghana.

Background

Health systems throughout the world need adequate supply of blood for their proper functioning. In Sub-Saharan Africa, where anemia resulting from malaria is common, blood is needed even more. However, inadequate blood donation in Sub-Saharan Africa is a major public health problem. According to the World Health Organization [WHO](2011), the most recent available data on global supply of blood showed that in 2008 forty-three countries in the African region, home to about 12% of the global population, reported collecting only 4 million units of blood or 4.3% of global blood donations. Many organizational, social and behavioral factors may account for the low blood donation rates in Africa (Bloch *et al*., 2012b; Holmberg *et al*., 2011).

Organizational factors such as the lack of mobile vans for carrying out blood drives, the attitudes of blood center staff to potential blood donors, and the lack of facilities in hospitals to undertake blood donations, may serve as barriers to blood donations. In addition, social and behavioral factors such as beliefs of, and attitudes to,

blood and blood donation may serve as barriers. Such barriers might often be exacerbated by the mass media and culture.

Although promotion of blood donation through newspapers, radio, television, or online media in the form of adverts or news stories may spur people to donate blood, irresponsible media reporting can negatively affect blood donation. For example, a Ghanaian news story titled "Girl 15 dies, as lab technician 'denies' her blood at Effia Nkwanta hospital" was published on January 25, 2012 (Dadzie, 2012). The main source of the story was a relative of the patient who claimed his inability to pay for the blood on time resulted in the death of the patient. The story generated 46 comments—the highest number of comments for a health story in the online newspaper's Website—from readers. One reader commented (*sic*):

> We donate blood to blood banks across to hospitals knowing that this bloods will go a long way to save a life but what is happening now clearly show that officials at this hospitals make money out of this our blood. As for me I will never donate again in my life knowing that it only makes this wicked people that called their selves lab technicians rich.

Another reader noted (*sic*): "I think I would be the LAST to DONATE BLOOD in Ghana!... "

Public perceptions of blood and blood donation may have serious consequences for lack of blood and its attendant problems. For example, in Africa, many unnecessary deaths occur because of insufficient blood donation to meet patient needs. Also, 26% of

in-patient deaths from maternal hemorrhage in Africa are associated with non-availability of blood (Bates *et al*., 2008).

The negative impact of lack of blood in African hospitals calls for studies into barriers to blood donations. But such studies appear to be rare in Africa. For examples, some literature reviews of barriers to blood donation have identified very few papers from Africa (Bednall & Bove, 2011; Gillespie & Hillyer, 2002). Second, the few papers have often identified barriers through the perspectives of Africans living outside the continent (Polonsky *et al*., 2011), blood donors, and non-blood donors (Reddy *et al*., 2013) but have rarely included the perspectives of key stakeholders such as health professionals and media professionals.

The aim of our research was to use qualitative research methodology to examine barriers to blood donation in Ghana through the perspectives of blood donors, media professionals, and health professionals. The outcome of this study is useful for designing social and behavioral interventions to boost blood donation in Ghana.

Research questions

1. What are the barriers to voluntary blood donation from the perspectives of voluntary blood donors and health professionals?
2. What are the barriers to reporting about voluntary blood donation?
3. What are the barriers to health professionals and journalists teaming up to promote media reporting about blood donation?

Materials and methods

We used qualitative research methods—key informant interviews and focus group discussions—to identify barriers to blood donations from the perspectives of health professionals, media professionals, and voluntary blood donors in Ghana. We used these methods for three main reasons. First, given that there is a dearth of papers that have described the views of these three actors on barriers to blood donation, qualitative methods are well-suited in this case to help elucidate the barriers to blood donation. Second, Ghanaians love telling stories, and thus using these methods was culturally more appealing to the participants (Kwansah-Aidoo, 2001). Indeed, in part for the aforementioned reason we used phenomenology as a paradigm during the key informant interviews and the focus group discussions. According to Groenewald (2004) for a phenomenological study, researchers are typically interested in the experiences of participants in regard to the phenomenon under focus (for example, voluntary blood donation). Focus group discussions are particularly illuminating because they bring different voices of the phenomenon under study, and enhance interactions among the groups (Palmer *et al*., 2010).The phenomenological approach has largely been used in in-depth interviews, but it has been less used in focus group discussions. Phenomenology can also be used in focus group discussions, although it has some challenges (Palmer *et al*., 2010):

> The presence of multiple voices, the complexity of their individual and shared contexts, and the interactional complexity of the discussion itself do make it more difficult to infer and develop personal, *phenomenological* accounts. This is

> because in focus group settings any experiential claims, narratives, or reflections are likely to be nested within a fairly complex set of social and contextual relationships. (p. 100)

Sometimes focus group discussions may result in more experiential reflections than what in-depth interviews may offer. We therefore used a phenomenological approach through both key informant interviews and focus group discussions to identify barriers to blood donations.

Participants

This study took place at the Korle Bu Teaching Hospital (KBTH), Accra, Ghana. The study involved 10 key informant interviews (four journalists, three voluntary blood donors, three clinicians) and two focus group discussions, each with five participants (two journalists, two physicians, and a voluntary blood donor). Eligible physicians were those whose work involved donor recruitment or blood transfusion, including staff of the National Blood Service, Ghana. The journalists belonged to a pool of media professionals who have in the past year undergone training in health reporting as part of a Wellcome Trust-funded project to build bridges between health professionals and journalists in Accra. The voluntary blood donors were repeat voluntary blood donors at the KBTH. One of the blood donors had not donated blood within the past year. Of the five blood donors, one was a woman.

Boyd (2001) considers two to 10 participants as sufficient to reach saturation in a phenomenological study. Thus, a sample size of four journalists, three blood donors, and

three physicians for the unstructured key informant interviews and two focus group discussions (FGDs) each having five participants (representing the three actors) were adequate.

All the participants were informed that participation was voluntary and that they could opt out any time without any problems. Upon completion of the key informant interviews and focus group discussions, each participant received GHC 30 (about $15) to compensate them for their time and transportation cost to the venue. The focus group discussions lasted 60-75 minutes. The research received ethical approval from the Liverpool School of Tropical Medicine.

All the key informant interviews and focus group discussions were conducted in Fall 2012. Texas A&M University approved an institutional review board application to use the transcripts of the interviews and focus group discussions for secondary analysis (Appendix C).

Recruitment

We used a list of journalists who had attended a workshop on health reporting in Accra in the past year as our sampling frame. We purposively selected some of them. The journalists were contacted through telephone calls.

The sampling frame for the blood donors and physicians was different. A donor recruitment officer at the National Blood Service, Ghana—an organization located on the premises of the KBTH—contacted the hospital's voluntary blood donors through telephone calls. Similarly, the donor recruitment officer identified physicians whose

work involved use of blood. She informed the clinicians of the research through face-to-face contacts and telephone calls.

Key informant procedures

Key informant interviewees were asked to select the time within the day that would work well for them. Each interviewee read and signed a consent form. The interviewer, who is both a pharmacist and a science journalist, is a Ghanaian and is familiar with the Ghanaian culture of telling stories. Thus, he asked the respondents open-ended questions to motivate them to tell stories that related to their experience of being blood donors, reporting about blood donation, and engaging with blood donors and the media professionals. Because English is the official language of Ghana and all the participants were fluent in it, the interviews were conducted in English. The interviews were audio-recorded.

Focus group discussions

The two focus group discussions were held in the conference room of the National AIDS Control Programme, which is located at the Korle Bu Teaching Hospital. The focus group discussions were held in the late morning and afternoon to help ensure that we accommodated participants' time demands, in particular media professionals and physicians. The template for the focus group discussions was similar to that of the key informant interviews. The moderator conducted the focus group discussions.

Data Analysis

The audio-recorded transcripts were transcribed verbatim and analyzed for key themes through constant comparison approach by one of the authors. The key themes that emerged were then discussed with another author until a consensus was reached. We also incorporated the transcripts into qualitative analysis software (Nvivo ver. 10, QSR International, Doncaster, Victoria, Australia) for more structured coding. While analyzing the dataset, two authors used two techniques to ensure their reliability and rigor. First, we presented the findings in context and compared them with other published sources. Second, we triangulated the findings by comparing what was discussed in each interview transcript and those of the focus group discussions until saturation was reached.

Results

We identified themes in three realms—beliefs and attitudes of the public, attitudes and behavior of health professionals, and attitudes of and towards the media professionals. Each group of theme is described below. Reflective quotes from respondents are included.

Beliefs and attitudes of the public

The three main actors—physicians, blood donors, and media professionals—described some beliefs and attitudes of the public that can serve as barriers to voluntary blood donation.

Blood was linked to the soul and spirit, and therefore donating blood was seen as giving one' soul or spirit to another person. A voluntary blood donor reflected:

> At times too I believe that some of our beliefs hinder people not to donate. Excuse me to say like my fellow brothers, Jehovah Witness. They said that there is a soul in the blood. Due to that, you cannot transfer your soul to someone else. But to me I don't believe that.

A key informant who had donated blood 32 times recounted how a woman who got to know of him as a blood donor called him aside to advise him not to donate blood again:

> It's not good, stop. You are taking your spirit out of your body. Ethically, you are putting your blood into somebody's system. The person can take your character, the person can take some of your traits, you are weakening your soul. Then I said, 'Oh madam, is it true?' I had to be very calm to allow her to say everything. I don't have to intervene. And she told me that blood means a lot, that is why when you look at the Old Testament, in the Bible, they use blood as a sacrifice, so the moment blood pours down, it means a lot. She would spiritualize everything.

A journalist working for a wire service recounted her experience of meeting two families whose religion deters followers from donating or receiving blood:

> I have come into contact with about two families who have allowed their children to die. Their religion says that do not donate. You shouldn't really receive blood, and because of what their belief is, the children had to die.

The respondents also described a myth associated with using blood for rituals. A physician who has worked in a rural hospital before recounted his experience:

> We see strong men. They always give the excuse that either they are not well or they are not [strong]….and when you probe deep, there is a whole misconception about blood donation. One is cultural. You know people think that all these bad things that people can do to you can be done through your blood.

The physician added that men also think that when they donate blood, they may become impotent: *"*I mean when somebody is even bled [has hemorrhaged], and we tell them this person needs blood in the next 24 hours, so that the person will not die. They all run away."

The belief that the hospital sells blood to patients who need them was also mentioned as a barrier to voluntary blood donation. A blood donor, said: "They have this in mind that even for your blood, if you go and donate it, they will sell it. Having suffered to go and donate your blood, the hospital will rather sell it."

The fear that a disease will be detected in the donated blood also puts people off from donating. A physician noted: "People think that if I donate, I might get to know of a particular disease. If I don't hear it, I can move about to do normal business. If they tell me, I am going to be disturbed."

Other factors were also mentioned as barriers. These included lack of incentives and lack of volunteerism. A blood donor said: "I've been talking to a lot of people [about blood donation], but from their speech, it's like they want to get something before [they

donate blood]." A physician who has been involved in recruiting and retaining blood donors mentioned the general lack of volunteerism as a bane to blood donation. She said:

> I mean one of the things I have seen is the lack of the spirit of volunteerism in our country now. I remember when we were young, it was really there…. but now when it comes to donation people think about what they can get.

Attitudes and behavior of health care professionals

The respondents mentioned some attitudes of health professionals that are barriers to blood donation. In addition, some said the national blood service was not doing enough to let the public and journalists know more about blood donation and the need for it. A journalist recounted the difficulty of interviewing a health professional at the blood bank for a story: "I wanted to do a story form the doctor's perspective [but the physician asked me]: 'People do not come to donate. What else do you want me to do?'" Another journalist added: "I think that when journalists come around, they [health professionals] should seize the opportunity to educate the public. They need to change their attitudes towards journalists."

Health professionals working with the transfusion service were viewed as not doing enough to make even blood donors understand the need for blood donation. For example, a print journalist working for a private newspaper reflected:

> I have actually reported on blood donation, but I realized it's like the people who were coming to do the donation didn't actually understand why they were doing that. Before you ask somebody to donate blood, you have to educate the person

> for the person to know why he or she is doing that. And secondly, what effect it will get on him or her.

Some journalists expressed the opinion that health professionals expected media professionals to look for them but not vice versa. They indicated that they are pre-occupied with equally pressing issues to report on and that it may help if clinicians used the offices of their public relations to contact them. For example, a print journalist said:

> And I will also bring up this issue to those at the center [blood bank], the clinicians and if we don't report on it [blood donation], maybe it hasn't occurred to us, but you need us. If you don't look for me, a politician will look for me, and I [will] report on the politician.

Two journalists mentioned that health professionals tended to focus on blood donation as an event-oriented problem and that it was usually during World Blood Donor days or annual celebrations of some milestones of institutions that such news made it in the mass media. They indicated that blood donation should not be tied to such events alone, and that health professionals should provide more opportunities for journalists to have information to report about the subject.

That health professionals have not been educating the general public on blood donation also was perceived as a barrier. A journalist working for a public radio station reflected: “Sometimes it's more of culture, it's more of socialization. So, from my infancy, I've not been told the benefits of blood donation. Some of us don't know there are even blood banks.” The respondents suggested that health professionals should use the mass media and face-to-face communication channels to reach out to the public.

Another behavior of health professionals regarded their professionalism. A blood donor mentioned the ordeal she went through at the hands of a health professional at a private hospital:

> When I went, they told me to lie down. … He inserted the thing into my vein, and he took this thing, he was shaking it like this. Blood was oozing. I said, 'Stop it. You are hurting me.' He told me 'lie down'!... And I said 'No. Let me tell you. I am a blood donor. This is not my first time. So know the way you are handling me. You are hurting me'. …Blood spitted all over the bed, and my dress.

Attitudes of and towards the media

There were some barriers to blood donation that were attributed to attitudes of the mass media and attitudes toward the mass media. Some respondents expressed the concern that journalists tended to report on negative aspects of blood donation that could potentially deter people from donating blood. A print journalist stated:

> In our code of ethics, it is not ethical to expose the vulnerable. So if I am reporting on blood donation, after the blood donation, the clinicians screen the blood and everything, then later I go to auntie [a transfusion medicine expert], then I find out how many people did you get? She says 100. Then I go further to find out how many blood were spoilt like HIV-positive, hepatitis and I put all those things in the paper, it will deter other people from coming to donate the next time.

Two physicians narrated some unpleasant experiences with the media. One, a transfusion medicine specialist, said that a journalist filmed her off-camera, without her knowledge and presented the footage as television news. She indicated that this action nearly cost her job. She also noted that the tendency for journalists to misreport health professionals also prevented them from speaking up: "Sometimes what you are asked and the answers you give is not what they represent it, so my staff, they are like no way, if doctor is not there to do the interview, we will not commit ourselves." Another physician said that a journalist engaged with him in a chat, and the next day what he said—which was not favorable to hospital authorities—became a front page headline. He added: "And so we are always very careful. And so whenever you are talking to a journalist, you find it difficult, so you are looking beyond your shoulders. I mean, what should I say? What shouldn't I say?"

Discussion

The lack of adequate supply of blood in Africa is a common public health concern. The current study examined the barriers to voluntary blood donation from the perspectives of physicians, blood donors, and media professions.

We believe our study is the first to explore barriers to blood donations by talking with interdisciplinary teams of physicians, blood donors, and media professionals. By using an open-ended interviews and focus group discussion techniques that elicited stories about their experiences, we determined barriers to blood donation generally and with a special focus on media-health professional interactions.

The findings from this study describe barriers to blood donations in three ways: 1) beliefs and attitudes of the public, 2) attitudes and behaviors of health professionals, and 3) attitudes of and toward media professionals. We found that some misconceptions are barriers to blood donations. The misconception about men fearing that they may become impotent after donation has been described in some studies in Sub-Saharan Africa (Olaiya *et al*., 2004; Ottong *et al*., 1997; Oyarebu, 1982; Salaudeen &, Odeh, 2011; Umeora *et al*., 2005; Diakhate *et al*., 1984). Also, they myth that blood donated blood may be used for witchcraft or rituals has also been identified in some studies in Sub-Saharan Africa (Koster & Hassall, 2011; Onoh *et al*., 2012; Umeora *et al*., 2005). The misconceptions identified may be prevalent in Ghana because of lack of knowledge about blood itself and blood donation.

However, we also found a barrier that has received little attention in the literature: the perception that the hospital may sell donated blood. Because in Ghana sometimes hospitals charge blood recipients or their relatives a fee for processing donated blood, the public may think that the fee is used to buy the blood.

We also identified an attitude that could deter people from donating blood: the lack of payment for the blood donors. This finding mirrors previous studies in Sub-Saharan Africa (Agbovi et al., 2006; Awodu *et al*., 2011; Diakhate *et al*., 1984; Koster & Hassall, 2011; Nebie *et al*., 2007; Olaiya *et al*., 2004; Oyarebu, 1982; Salaudeen & Odeh, 2011; Umeora *et al*., 2005). Moreover, we identified a lack of volunteerism among the youth as a barrier to blood donation. This finding suggests a need to tap into

youth-oriented programs to boost the morale of the youth to be interested in blood donation.

Some respondents criticized health professionals for failing to provide more education to the public and journalists regarding blood donation and why they should donate blood. A major reason people do not donate blood is because they have not been asked to do so (Lownik *et al*., 2012). Health professionals should not wait for World Blood Donor days or annual events to approach journalists to promote blood donation in the mass media.

The most important contribution of the current study is the identification of negative media reporting of blood donation as a deterrent. To our knowledge, this barrier has not been identified yet in the literature. In Ghana, as in many other Sub-Saharan African countries, a stigma is associated with HIV. Journalists who report the prevalence of HIV among blood donors may therefore prevent future blood donation. In addition, a blood donation exercise may be followed by temporary minor incidents—for example, fainting. If a journalist reports about the fainting, that may deter others who already fear blood donation. The decision whether to report the minor incidents is an ethical challenge because journalists are expected to report the truth. Also, blood transfusion professionals cannot determine what a journalist should report. We believe that mutual understanding and trust between journalists and health professionals may help journalists report on blood donation in ways that may not deter people.

A second contribution of the current study to the literature on barriers to blood donations is the perception that media professionals do not adequately report on blood

donations in part because of some attitudes of health professionals. However, in Ghana, active partnership with a radio station has helped boost blood donations for a teaching hospital (Allain *et al*., 2008; Owusu-Ofori *et al*., 2010).

Health care professionals, especially those working in blood transfusion services, should consider opening up more to the mass media. However, journalists must also be professional in their engagement with health professionals. Off-record interviews should not be published and probably should not be given. Mutual respect and trust between health professionals and media professionals could help strengthen partnerships. Such partnerships could help demystify myths on blood donation and encourage more people to donate blood.

We acknowledge that the current study has some limitations. First, we did not involve non-blood donors. Although the blood donors we selected shared what they have been hearing from their colleagues whom they are trying to persuade to become blood donors, perspectives of non-blood donors could have enriched the findings. Also, we did include a blood donor who had not donated blood for the past one year, and thus his perspective might closely resemble those of non-blood donors. Second, we used respondents who reside mainly in Accra, and thus their perspectives may not be generalizable to Ghana.

More interdisciplinary studies involving media professionals should be conducted to explore barriers to, and motivators of, blood donation in Ghana and other countries in Sub-Saharan Africa. Our study adds to the literature on barriers to blood donation by adopting an interdisciplinary approach involving physicians, blood donors,

and media professionals to explore the subject. Such an approach can aid the design of communication interventions to increase blood donation in Ghana.

CHAPTER IV

RECOMMENDATIONS FOR DESIGNING CULTURALLY APPROPRIATE COMMUNICATION INTERVENTIONS FOR PROMOTING VOLUNTARY BLOOD DONATIONS IN AFRICA: A CASE STUDY OF GHANA*

Overview

Africa has a yearly shortfall of 2 million units for blood transfusion. Many Africans have strong cultural and spiritual beliefs about blood and blood donation. Communication interventions may help increase blood donations in Africa. This study was conducted in Accra, Ghana. The study's main objective was to determine recommendations for designing culturally sensitive communication interventions to boost blood donations.

We recruited participants from three groups—clinicians, voluntary blood donors, and journalists—in Accra, Ghana. We recruited clinicians at Korle Bu Teaching Hospital (KBTH) and the National Blood Service through telephone calls and face-to-face contact. We recruited voluntary blood donors from a list available at the KBTH and contacted them by telephone. We recruited journalists by telephone from a group previously trained in health reporting. We did 10 face-to-face interviews and two focus group discussions, each with five participants representing all three groups. We analyzed three key domains from the transcripts: communication channels, approaches, and messages.

---

*The overview of this chapter was adapted with permission from "Culturally relevant communication interventions to promote voluntary blood donations in Ghana: an observational, interview-based study" by B. Appiah *et al*., *The Lancet*, 382, p. 8. Copyright 2013 by Elsevier Ltd.

To promote blood donation, respondents suggested many strategies, including using radio or television drama about blood donations in English and local languages to engage both literate and illiterate populations; media celebration of donors who achieve certain milestones; blood donor as ambassadors of blood donor drives; social media to engage prospective younger blood donors, but not older donors; and using mobile telephone caller tunes.

In conclusion, the current study identifies opportunities for designing and targeting interventions that use a variety of culturally appropriate communication channels, approaches and messages. Such innovative interventions could increase blood donations and help to address blood shortages.

Background

Inadequate blood donation in Sub-Saharan Africa is a major public health problem in the region. The lack of blood in African hospitals has been attributed to many causes. First, there are cultural perceptions and beliefs of blood and blood donations, which serve as barriers to individuals donating blood. For example, some Africans believe that donated blood could be used for rituals, and are thus unwilling to donate (Koster & Hassall, 2011; Onuh *et al*., 2012; Umeora *et al*.,2005).

Second, partly because of culture and negative perceptions of blood of 'strangers', voluntary blood donation is not common in Africa. For example, in Sub-Saharan Africa blood donated from families or those with whom patients have strong social ties, accounts for about 80% of all blood donations (Lara *et al*., 2007). However,

blood donation from only family members or friends is not adequate because sometimes family members may be unwilling to donate their blood. Under pressure to find a donor, some family members may present commercial blood donors as "relatives". According to World Health Organisation [WHO] (2010), those who charge fees for donating blood carry increased risk of infectious diseases, and their blood have a likelihood of being rejected.

The inability of Africa's transfusion services to provide enough safe blood has serious clinical and public health consequences. For example, severe anemia is a major cause of mortality in young children and hemorrhage is associated with one third of maternal deaths in Sub-Saharan Africa (Bates *et al*., 2008).

Interventions are needed to increase voluntary blood donation in Africa. According to the WHO (2010), fostering a culture of voluntary blood donation through partnerships with the media and other stakeholders, and designing effective communication strategies can help sustain voluntary blood donation programs. The media have been recognized as effective for changing health behaviors (Wakefield *et al*., 2010). There has been evidence of success with regard to forming active partnership with the media to promote blood donations. In Ghana, a teaching hospital formed a local partnership with a radio station to help mobilize blood donors (Allain *et al*.,2008). The partnership resulted in 12 consecutive blood drives from 2003 through 2006. They attracted 3801 donors out of whom 92 percent were eligible to donate blood. Similarly, in Kenya, exposure to the media was linked to blood donation (Basavaraju *et al*., 2010).

The WHO (2010) recommends effective communication strategies to help sustain voluntary blood donation programs. However, given the important role culture plays in Sub-Saharan Africa, the success of such communication strategies may depend on whether they are culturally sensitive.

When designing culturally sensitive communication interventions to promote health, five main approaches have been recognized (Kreuter *et al*., 2003; Kreuter & McClure, 2004). These authors have termed the approaches as peripheral, evidential, linguistic, constituent-involving, and sociocultural. Peripheral approaches require that the communication interventions are packaged in ways that are more appealing to the target group. This could be achieved through use of colors, images, or pictures of people familiar to the group. Evidential approaches call for presenting information that will make the target audience appreciate the scale of the health problem and how it can be solved. For example, presenting statistics about people likely to die from lack of blood in a target audience is an evidential approach. Linguistic approaches use languages that the target audience understands. Constituent-involving approaches ensure that people within a group who have experiences in regards to addressing a health problem are included in the design of the interventions. For example, using blood donors to educate non-blood donors is a constituent-involving approach. Finally, socio-cultural approaches consider social and cultural factors that can impact a problem.

The purpose of our study was to develop the recommendations for designing culturally sensitive communication interventions to promote voluntary blood donations in Ghana. We sought the perspectives of physicians involved in blood transfusion, media

professionals, and blood donors. To our knowledge, the current study seems to be the first in Africa to explore this subject through such interdisciplinary perspectives.

Materials and methods

Study site

The study took place at the Korle Bu Teaching Hospital (KBTH), which houses the National Blood Service, Ghana, and the National AIDS Control Programme. The hospital is near many news outlets in Ghana, including the Ghana Broadcasting Corporation, the Ghana News Agency, Graphics Communication Group Limited (publishers of the country's oldest and most circulated newspaper, the *Daily Graphic*), and several radio stations. Korle Bu Teaching Hospital largely depends on family members or friends to donate blood for their relative who require blood transfusion. Because in many cases family members or relatives do not donate blood, the hospital is in dire need of voluntary blood donation to ensure adequacy of blood.

Research tools

Given the lack of data on designing communication interventions for promoting voluntary blood donations in Ghana, we employed qualitative methods in the current study. Qualitative studies can help provide more context than quantitative studies and can contribute to the understanding of various factors that interact. As noted by Lane and Arnold (2011),

> [Q]ualitative research has much to contribute to the field of transfusion medicine and its acceptance in the field is growing. By providing research methodologies that can facilitate the exploration; understanding; and explanation of social, cultural, and personal aspects of health, qualitative research can complement quantitative research in the field of transfusion medicine. (p. 1152)

We used two qualitative methods: key informant interviews and focus group discussions. The key informant interviews were conducted with four journalists, three physicians, and three voluntary blood donors, one of whom could best be described as a lapsed donor. We also selected four journalists, four physicians, and two voluntary blood donors for two focus group discussions, each of which had participants made up of all the three groups of respondents. They were selected purposely because we wanted participants who could provide more information to enrich the current study. The physicians were recruited at the KBTH and the National Blood Service, and the voluntary blood donors were identified by a donor recruitment officer at the KBTH who has contact information of voluntary blood donors. We selected the journalists from a group of media professionals in Accra with interest in health reporting. The templates for both the key informant interviews and the focus group discussions were similar. The study was approved by the Research Ethics Committee of the Liverpool School of Tropical Medicine. Texas A&M University approved an institutional review board application for using the transcripts of the interviews and focus group discussions for secondary analysis (Appendix C).

Procedure

We collected the data during Fall 2012. The key informant interviews and focus group discussions were held in the conference room of the National AIDS Control Programme. Before the interview, the interviewer explained the nature of the research, the purpose, and the need to sign a consent form. The key informant interviews lasted 15-45 minutes, and the focus group discussions lasted 60-75 minutes. Participants for the key informant interviews were different from that of the focus group discussions. To ensure privacy, only the participants and the interviewer were in the conference room during the key informant interviews. The interviewer audio-recorded the interviews with the consent of the participants. Similarly, the focus group discussions were audio-recorded by the moderator. To encourage participation, specific questions were directed at voluntary blood donors, physicians, and journalists. However, participants were encouraged to interject when they thought they could contribute. In addition to the specific questions, there were general questions for everyone. The recorded interviews and focus group discussions were transcribed verbatim immediately afterwards.

Data analysis

We analyzed the data for the following key themes: communication channels, messages, and approaches using a constant comparison approach (Glaser, 1965), and with the aid of a qualitative software, Nvivo 10 (ver. 10, QSR International, Doncaster, Victoria, Australia). One coder independently coded the themes and discussed with an expert. Where differences existed, they were discussed and a consensus was reached.

Results

We identified three main themes: channels of communication, approaches for communication, and messages. We used some reflective quotes to give more context to the themes.

Channels of communication

Respondents expressed a variety of communication channels for promoting blood donation: cartoons, mass media, mobile phones, social media, bill boards, calendars, and face-to-face channels such as telling friends and others about blood donation. Some respondents perceived that the use of cartoons for promoting blood donation will not be appealing to adults. However, most generally indicated cartoons about blood donation could target children, so that by the time they reach the age for blood donation, they would be willing to do so.

Some respondents said that the mass media (radio, television, and newspapers) were important for promoting blood donations. A radio journalist said:

> I also think radio theater is very effective when it comes to such things. Because somehow people [believe] whatever they hear on radio. The other time somebody will be listening to the radio. You ask the person which radio? Oh it was on radio. They take it as the truth. Ghanaians also like theater.

Another radio journalist suggested the need to target the right actors and producers for radio and television dramas. He said:

> The danger is, if you don't target the right producers and the right presenters, it also becomes a different issue. They turn it into entertainment. Well, entertainment is good, but it can also lose focus. I listen to radio and sometimes the messages that the DJs churn out, they tend to play, make mockery of what they're talking about and it loses its focus.

The print media were mentioned as a potential channel for profiling people who have achieved certain milestones in blood donation and for increasing awareness about blood. A journalist working for a government-owned newspaper said:

> Profiling such a person will inspire others... I can't see myself doing that [donating blood] every 4 months. A lot of people also have that perception … maybe once every two years. That was what I was thinking ehe [laughs], but every four months, my blood will get finished, so if I profile such a person in the paper I am sure maybe somebody wants to do it.

The power of television to motivate people to donate was also discussed. Some respondents expressed the opinion that television drama series and news about the need for blood donation could encourage people to donate blood. A physician stated: "If you start having [television] drama series …they start understanding some of the issues, it will change the misconceptions [about blood donation]."

In general, respondents were of the opinion that the mass media should be proactive in letting the public know the need for blood donation. A physician stated: "They [the media] should be more interested in issues concerning blood. They shouldn't

wait for there to be a shortage before they start making noise. … And then the other thing is that, they should publicize blood donation programs. ”

Some respondents expressed the view that mobile phones could be to useful in promoting blood donation. They envisioned using bulk text messages to educate people about blood donation, and remind donors of when to donate blood. Most respondents did not favor using text messages to provide sensitive information such as blood test results because someone else could see a positive test result, given that in Ghana, mobile phones may be shared. A respondent expressed the idea that mobile phone caller tunes or ringback tones could be used to educate people about blood donation.

Social media such as Facebook were identified as a potential platform to use to attract the youth, especially those who may have myths about blood donation. A blood donor said that blood donors could chat with potential donors on Facebook to help dispel such myths.

Some face-to-face communication channels such as talking to friends about blood donation; using a moving van with loud speakers, especially in rural Ghana; speaking about blood donation in churches; and having blood donor clubs or associations, were mentioned as ways to promote blood donation. A radio journalist commented:

> If the Ministry of Health could afford, there should be that synergy between the Information Service Department and then those in charge of blood transfusion. .. Sometimes face-to-face communication should also do. .. Let the Information Service Department interact with the health professionals. Go to the

> communities, the market women, the schools. It's a Herculean task, but I think we must start from somewhere. It can be successful.

Respondents were of the view that advertising blood donation through calendars and billboards could also help the public to become aware of the need to donate blood.

Communication strategies

The themes that we obtained from the interviews and focus group discussions described the five approaches for designing culturally sensitive communication interventions to boost blood donations: peripheral, evidential, linguistic approaches, constituent-involving and socio-cultural.

Peripheral approaches. Respondents suggested peripheral approaches such as promoting blood donation by using images of familiar and popular people. A physician said:

> In Ghana, celebrities ... have a lot of influence. So as I always tell people, we should have a face.... Like Glo [a telecommunication company], when they were coming, they got these [famous] musicians, footballers, yeah. ... I think blood transfusion, we should also have a face.

Evidential approaches. Evidential strategies included providing information about blood donation that showed that people can donate many times. A woman blood donor said: "I once met a man who said he has donated blood for 77 times, so I said Wow, I will challenge you." Another evidential strategy is for potential blood donors to know the impacts of lack of blood donation in the country. A journalist working in a wire service

stated: “Cite some of the situations that happen in our hospitals. More people need blood and for some reasons, people die because there was no blood. ” A radio journalist also suggested that the impact of blood donations must be provided to the public. He stated:

> We could check some statistics. Last year this number of people donated. This year this number of people have donated, the positive effect it is having in the community with health delivery; number of people who are being saved, and that kind of thing. I believe that will also encourage others to come readily to donate.

Linguistic approaches. Many respondents indicated the need to use other languages in addition to English because some people do not read and understand English. A blood donor commented:

> They should try and make it in other languages not only English…. Because when we change the language a little bit, it will go further to really enter into the areas where they have this cultural idea that makes people feel like they don't want to [donate]. But when they realize that it's coming to their doorstep through their own language, it might convince them to I mean understand what is being said.

For mobile phones, a respondent said that instead of using text messages alone, a caller tune or ringback tones in a local language could help a caller get the message about blood donation in their local dialect. He suggested that the National Blood Service persuade telecommunication companies to have blood donation caller tunes on their networks for free download by mobile phone users.

Constituent-involving approaches. Many respondents mentioned that blood donors should be involved in blood donor recruitment drives and activities. The main reason expressed was that if people become aware that other people are donating blood, they may also be motivated to do so. A blood donor remarked:

> I think we the donors, we can be encouraged to motivate our friends. When you go to a gathering or maybe when you meet your friends, colleagues at work, you can encourage them. You can use your experience and be like some unofficial ambassador, you know, and just encourage them to also come on board.

A physician who is also a blood donor called for health professionals and journalists to not only act as advocates but they should become blood donors as well. He explained:

> The motivation will be highest if you happen to have a media person who's also a donor, a transfusion person who is not just in management but is also a donor. They have something in common, they're both donors. …Before I started donating,… it just wasn't part of my priorities. But now it is because I'm a donor.

Members suggested that the blood transfusion service should officially select blood donors as ambassadors of blood donation, who would occasionally interact with the public to help allay fears about blood donation. They suggested that billboards or other communication channels showing veteran blood donors with children can help reduce fears that donating blood could make men impotent.

Socio-cultural approaches: Socio-cultural approaches related to paying attention to social and cultural factors to design blood donation interventions. These factors included

religion and socio-demographic factors such as age and gender. A blood donor narrated her experience of how religion influenced her to become a blood donor:

> One day, I just sat and I was asking myself, what can I do to help humanity? Of course, I'm not rich …, but I'm just willing to do something that will help humanity. .. I'm a Christian. .. Bible tells us Christ came, shed His blood... So I made my mind that if Christ was able to shed His blood for me, and I have enough blood in me, I can be donating every four months. So that is my main motive. Just give to save others.

Members discussed the importance of considering such beliefs in designing blood donation intervention programs.

Respondents also viewed giving people national awards as a social factor that could be used to promote blood donation. A physician commented:

> When there are programs and people are being honored …, they should consider people who have donated blood. .. they gave ..senior citizens award. People have donated blood who are above 60 and 70 years and have done it regularly, [so] they should be considered for some of these awards. … We don't want people to do it for financial gains, but there should be small-small things that will motivate people to do that.

Finally, respondents expressed the view that because social media such as Facebook and Twitter are often used by the youth and not adults, interventions for persuading the youth to donate blood should include social media.

Messages

Respondents discussed messages that could be used to promote blood donations. Most were of the view that the messages should aim at allaying people's fears about blood donation. In addition, they mentioned that such messages should debunk misconceptions about blood donation, including the belief that hospitals may use donated blood for rituals. They also indicated that the messages should be clear, catchy, and concise. There were suggestions for the media to report about blood donation in ways that may persuade people to donate blood. A transfusion medicine specialist said:

> We should groom the media and make them understand that blood donation is a feared or it's a virgin land we're trying to cultivate and we have a lot of obstacles and we have a lot of myths and misunderstandings. So, in our reportage, we should report positively.... There are certain things that I mean, a donor may collapse, a donor may faint. Or, we can collect 1000 units. You could choose as a journalist to say that one donor nearly dies at a blood donation ... It's your headline. But you can also choose to make a headline '1000 voluntary donors gave blood to save lives'.

Discussion

In the current paper, we elicited some recommendations for designing culturally-appropriate communication interventions. We categorized the recommendation into three main themes: channels of communication, type of communication approach, and types of messages.

Our finding that the mass media plays an important role in promoting blood donation mirrors that of other studies which have mentioned the mass media as having a great potential to promote blood donation (Agbovi *et al*., 2006; Allain *et al*., 2008; Appiah *et al*., 2013; Diakhate *et al*., 2010; Duboz *et al*., 2010; Odongo *et al*., 2011; Owusu-Ofori *et al*., 2010; von Zahran & von Ali, 2013). However, the specific recommendation that journalists should report positively about blood donations appears to be novel. However, because the mass media have their independence to report about an event, whether positive or negative, such a recommendation may be difficult to implement.

It was an important observation that media profiling of blood donors who have achieved certain milestones such as donating 50 times could not only help recruit more members but could potentially serve as non-cash incentives. This finding resembles that of other studies in Nigeria that show that people would be motivated to donate blood if their names were mentioned in the mass media (Olaiya *et al*., 2004; Salaudeen & Odeh, 2011). However, some blood donors with purely altruistic motives may not want others to know about the lives they are saving because of their blood. It could also be that some blood donors may want to hide their identities for unknown reasons. Thus, such incentives need to be discussed with potential recipients before implementing them.

The recommendation that mobile phones be used to send text messages about blood donation seems feasible in Ghana and other countries in Sub-Saharan Africa given the increasing number of people using mobile phones in these countries. For example, data show that mobile phones are 10 times more available in Ghanaian homes than are

landline phones (Bowen, 2010). The use of mobile phone technology to aid blood donation has been described in some studies in Africa. These studies showed that people have positive attitudes to using mobile phone in promoting blood donation (Gombachika & Monawe, 2011; Mbui *et al*., 2010; Odongo *et al*., 2010; Odongo *et al*., 2011, Sekongo *et al*., 2011; Wangendo, 2012; Wangendo *et al*., 2011).

Another innovative recommendation was that Ghana Blood Service liaise with mobile phone operators to design caller tunes to promote blood donations seems innovative. If such a recommendation is implemented, especially using local languages, it could help those who cannot speak or understand English become aware of the need for blood donation. Given that many people in Ghana have access to cell phones and prefer to receive calls rather than read text messages, this technology could reach more people than short message service (SMS). The blood donation caller tune technology could be useful in other African countries because caller tunes are popular in many parts of Africa.

Face-to-face communication strategies such as talking with friends, talking about blood donations in schools, and having workshops that involve blood donors and the public were highly valued by respondents. A study has shown that 80% of blood donors talk about blood donation in their communities (Sekongo *et al*., 2011).Thus, it may be important to design interventions to educate blood donors on how to talk to their colleagues or friends about blood donation.

Kreuter and colleagues (2003) have described five approaches for designing culturally appropriate communication approaches, namely peripheral, evidential,

linguistic, constituent-involving, and socio-cultural. The current study showed that the five communication approaches relevant for designing culturally appropriate interventions as proposed by Kreuter and colleagues (2003) seem particularly promising with regard to blood donation in Ghana. Peripheral approaches such as using images familiar to people who are targets of interventions will appeal to both literate and illiterate people. In Ghana, just like many other African countries, footballers who play for national teams are often revered in society. Using images of these footballers and other popular figures could help entice their followers to donate blood.

Evidential approaches require that people who are targets of interventions become aware of the evidence of the existence of the problem or evidence of the impacts. Our finding that health professionals should provide statistics about the number of lives donated blood could save is an example of an evidential approach. Such an approach may persuade blood donors and the general population to pay more attention to blood donation. For example, if people become aware that others are dying because of the lack of blood, they may be motivated to donate blood. To have such evidence, it would be helpful for the National Blood Service, Ghana, to estimate how many pints of blood are needed, and how much is available, perhaps on monthly basis. Studies on the impact of blood donation on the lives of patients who require transfusion may also be necessary. If national statistics are unavailable, those designing interventions could use the findings of a study that shows that in Africa, 26% of maternal deaths due to hemorrhage are associated with lack of blood in hospitals (Bates *et al*., 2008). Media

profiling of recipients of blood may also persuade people to donate in part because such reports could let the public appreciate the positive impact of blood donation.

Interventions that actively involve blood donors were mentioned as having the potential to make impact. As the saying goes, "seeing is believing." Because many misconceptions about blood donation exist in Ghana, people who are donating blood could be very effective ambassadors to promote blood donation. Veteran blood donors could be used in advertisements and in donor recruitment drives.

Language is an important cultural factor in designing interventions. In Ghana there are 46 local languages. Respondents said that designing interventions in the languages of the target audiences could help promote their acceptance and contribute to more people donating blood. Given the power of radio in giving voices to people in their own local languages, it may be important to target local language radio stations as agents of change.

Socio-cultural approaches to designing blood donation interventions for Ghana may also require that additional values, beliefs, and attitudes of Ghanaians be integrated into such interventions. Studies have shown that churches and mosques can serve as important avenues for blood donation and as donor recruitment promoters (Allain *et al*., 2008; Asenso-Mensah *et al*.,2013; Blok, 2006; Odongo *et al*., 2009; Onuh *et al*., 2012; Owusu-Ofori *et al*., 2010).

Further work

The current study suggests more opportunities for further work. First, surveys with a large sample size should be conducted to determine whether the interventions identified in the current study may seem acceptable to target audiences: the general public, including blood donors; health care professionals; and media professionals. Second, because this study did not involve non-blood donors, it may be appropriate to seek their perspectives for developing culturally sensitive communication interventions to attract them to donate blood. Third, research is required to identify the best strategies for targeting specific segments of society such as men, women, workers, students, and associations. Finally, study of the efficacy of interventions such as use of mass media, social media, and cellular phones to promote blood donation should be conducted. These studies may help promote blood donation.

In conclusion, the current study showed that many culturally appropriate interventions to promote blood donation are possible in Ghana. In designing such interventions factors such as communication channel, approach and message, could influence acceptability among intended audiences. Our findings offer important lessons for Ghana, and possibly other African countries in dire need of blood in their hospitals.

CHAPTER V

SUMMARY AND CONCLUSIONS

This dissertation has presented an overview of the influence of culture and communication on blood donation in Sub-Saharan Africa. This chapter has five main objectives: (1) to provide a recap of the study significance and methods of the study, (2) to summarize the study's key findings, (3) to integrate the findings with that of the literature, (4) to discuss the strengths and limitations of the study, and (5) to suggest recommendations for practice, policy, and future research.

Recap of study significance and methods

Inadequate blood donation is a major public health problem in Sub-Saharan Africa. This dissertation (1) used the PRECEDE-PROCEED model as an organizing tool to briefly discuss factors that influence blood donation in Sub-Saharan Africa and (2) described the role of culture and communication in blood donation in Sub-Saharan Africa with particular emphasis on Ghana. The study was needed for three main reasons. First, few papers have discussed factors that influence blood donation in Sub-Saharan Africa and therefore more studies on this subject are needed. Second, studies of the influence of culture and communication on blood donation in different parts of Sub-Saharan Africa has not been integrated, thus making it difficult to identify common barriers to, and motivations for, blood donation in the region. Third, the findings can help promote adequate blood donations in Sub-Saharan Africa by identifying or developing culturally relevant interventions.

To identify the role of culture and communication to influence blood donation in Sub-Saharan Africa, two main research methods were used: a systematic literature review that focused on Sub-Saharan Africa, and secondary analyses of transcripts of interviews and focus group discussions about blood donation in Ghana. The systematic literature review was performed from June to August 2013. The interviews and focus group discussions among physicians, blood donors, and journalists in Ghana were conducted in Fall 2012 as part of a Wellcome Trust-funded project which was administered by the Liverpool School of Tropical Medicine, United Kingdom. Institutional review board approval was sought from Texas A&M University to facilitate the use of the transcripts for secondary analysis. The analyses of the transcripts were done after the review to ensure that key themes in the literature were considered.

The systematic literature review resulted in one paper: "Cultural context and role of communication in promoting adequate blood donation in Sub-Saharan Africa: A systematic literature review." The analyses of the interviews and focus group discussions resulted in two papers: "Barriers to blood donation in Ghana: Perspectives of health professionals, journalists, and voluntary blood donors" and "Recommendations for designing culturally appropriate communication interventions for promoting voluntary blood donation in Africa: A case study of Ghana."

Summary of key findings

The key findings of this dissertation regard the influence of culture and communication on blood donation in Sub-Saharan Africa, barriers to blood donation in Ghana, and

recommendations for designing culturally appropriate interventions for promoting blood donation in Ghana.

Influence of culture and communication on blood donation in Sub-Saharan Africa

Review of the literature identified 36 studies (made up of 24 journal articles and 17 peer-reviewed conference abstracts) that focused on the role of culture and communication on blood donation. Of the 49 Sub-Saharan African countries, 15 were represented: Burkina Faso, Cameroon, Cote d'Ivoire, Ethiopia, Ghana, Kenya, Nigeria, Malawi, Senegal, Sierra Leone, South Africa, Sudan, Tanzania, Togo, and Uganda. None of the studies involved more than one country.

Among the 36 studies, 24 used questionnaire surveys or quantitative methods, three used qualitative methods such as focus group discussions and interviews, three used both quantitative and qualitative methods, and six used case studies. No study used randomized control trials or quasi-experimental trials. In addition, none of the reports of quantitative studies described the reliability and validity of questionnaires used.

The studies targeted a variety of populations: the general population, students, blood donors, school teachers, pregnant women, or spouses of pregnant women. Some were of more than one population. One study included journalists as respondents. No study differentiated categories of blood donors such as first time blood donors, repeat blood donors, or relapse blood donors.

Eight key myths associated with blood donation were identified. Among the myths was the belief that a person does not have enough blood in the body to donate or a

person is not strong enough. Other myths included "a blood donor may get infectious disease (especially HIV) from donation," "blood donation causes decreased sexual desire, especially in males," and "donated blood may be used for witchcraft/rituals."

Many communication channels and approaches were identified as having the potential to increase blood donation. Eight studies indicated that the mass media can serve as a channel for dissemination of knowledge about blood donation. These studies included two that described an effective partnership between a blood bank and a radio station. The literature also indicated that recognition in the mass media could serve as a non-cash incentive for blood donation. Six papers discussed the potential of using mobile phones to promote blood donation. None of the studies discussed the use of social media to promote blood donation.

Finally, 12 studies indicated that face-to-face communication approaches such as workshops, village meetings, community members talking about blood donation had the potential to increase blood donation in Sub-Saharan Africa.

Barriers to blood donation in Ghana

Analysis of the interview and focus group discussion transcripts led to identification of three main themes regarding barriers to blood donation. First, some members of the public had negative beliefs about blood donation. Examples included the belief that blood donation may cause impotence among men, and the misconception that hospitals sell blood donated voluntarily. Second, some behaviors of health professionals, such as not educating the public and journalists about the importance of blood donation, were

mentioned as barriers to blood donation. Finally, negative media reporting about blood donation, such as indicating the percentage of blood donors at a blood donation drive with HIV, was seen as deterrent to blood donation.

Designing communication interventions to increase blood donation in Ghana

Three main sets of recommendations for designing culturally appropriate interventions were identified by analyzing interview and focus group discussion transcripts.

First, suitable channels of communication should be used to promote blood donation. For example, because adults in Ghana hardly use social media unlike the youth, social media was mentioned as being suitable for promoting blood donation among the youth but not adults.

Second, culturally relevant approaches to designing communication interventions were suggested. These approaches included using visuals or images familiar to people, such as pictures of celebrities; using both English and local languages; and informing people of the impact of lack of blood.

Third, respondents indicated that blood donation messages should (1) aim at allaying people's fears about blood donation, (2) debunk misconceptions about blood donation, including the belief that donating blood may make men impotent, (3) be clear, catchy, and concise.

Brief discussion of the key findings

The key findings may have some implications for Sub-Saharan Africa and Ghana in particular. In the review, because there was no single study that involved more than one country in Sub-Saharan Africa, the lack of large-scale multi-country studies about the role of culture and communication in blood donation could make identifying common barriers to, and motivators of, blood donation in Sub-Saharan Africa difficult. The lack of such large-scale studies may have implications for designing interventions appropriate for more than one country.

In the review, the lack of rigorous research methods such as randomized control trials could be the reason a recent review of efficacy of interventions to increase blood donation did not identify a single study from Sub-Saharan Africa (Godin *et al*., 2012). Also, because the studies did not discuss reliability and validity of instruments used to measure some myths about blood donations, the reliability and validity of some findings about cultural variables may be questionable. Indeed, some studies in different countries used different words to suggest the same outcome measure.

Although the review identified different populations as targets, many other relevant populations were lacking or inadequately represented. For example, few studies targeted media professionals, policymakers, teachers, parents, and religious leaders although they can be influential in promoting blood donation. A recent review has shown that scholars paid little attention to targeting different populations of blood donors: first time donor, repeat donor, and relapse donor (Godin *et al*., 2012). This

current review mirrored this observation given that the culture or communication interventions for first time or repeat blood donors were not addressed.

The myths about blood donation identified in the eight countries suggest a general lack of awareness and knowledge about blood itself and blood donation. Also, the observation that religion can be both a deterrent to, and motivator of, blood donation suggests those designing blood donation interventions in religious organizations should consider being selective given that not all religious groups may be interested.

Knowledge of the communication strategies identified in the review may aid in increasing blood donation in Sub-Saharan Africa. In particular, the use of mass media as a non-cash incentive to promote blood donation could be effective if there are strong partnerships between blood banks and media organizations. In such scenario, the media professionals could mention names, or profile dedicated blood donors at their news media at no cost to blood banks.

Like the findings of a previous study (Godin *et al*., 2012), this review did not identify the use of social media to promote blood donation. However, social media is gradually penetrating Africa. For example, according to Bullas (2013), GlobalWebIndex found that in the second quarter of 2013, South Africa had the highest proportion of active Facebook users worldwide (68%). Thus, there appears to be high potential for use of social media to promote blood donation in Sub-Saharan Africa in the future.

Moreover, this review shows that using mobile phone technology could be useful in promoting blood donation in Sub-Saharan Africa, in part because the identified studies showed that respondents had a positive attitude to its use. However, because of

the potential of sharing mobile phones in Africa, it would be important not to use mobile phone short message service to provide sensitive information, such as blood test results.

An important contribution of this dissertation is the identification that unfavorable media reporting about blood donation could serve as a barrier to blood donation. This finding appears to be novel, given that a recent review (Bednall & Bove, 2011) of self-reported factors that could either motivate people to donate blood or deter them from donating blood did not identify this factor.

Another important contribution of this dissertation is the finding that mobile phone caller tunes or ringback tones can be used to promote blood donation. This study appears to be the first to identify such an intervention. In Africa, caller tunes are popular, but to my knowledge they have not been used presenting messages or songs about blood donation. If effective, use of caller tunes could serve as a model for disseminating other health messages.

Finally, an important contribution of this dissertation is the finding that some blood donors would like to be more involved in blood donor recruitment in Ghana. This finding is particularly important given that blood donors could be used as agents for changing people's perceptions and knowledge about blood donation.

Study strengths and limitations

This study has several strengths and limitations.

Study strengths

First, the systematic literature review used several approaches for selecting articles. These approaches included using not only such databases as MEDLINE/PubMed, PsycINFO, CINAHL, EMBASE, and Proquest Dissertations and Theses but also databases such as African Journals Online, Africa Index Medicus, and Global Health. Also, not only studies in English were selected but also those published in French with English abstracts. Thus, the current review was relatively comprehensive.

Second, this literature review identified both qualitative and studies on the influence of culture and communication on blood donation. Many reviews have focused mainly on quantitative studies with descriptive statistics, thereby missing perspectives identified through qualitative studies.

Third, the current study appears to be the first to integrate information on myths associated with blood donation in Sub-Saharan Africa.

Fourth, it was appropriate to use qualitative methods to study cultural and communication factors that influence blood donation in Ghana. This is because qualitative methods have largely not been used to study blood donation in Ghana.

Finally, the current dissertation identified barriers to blood donation and recommendations for designing culturally appropriate interventions in Ghana through the perspectives of journalists in addition to physicians and blood donors. To my

knowledge, using journalists as respondents for studying blood donation is innovative in Africa in part because scholars have largely not included them in such studies.

Study limitations

The study also had some limitations. First, it relied on qualitative data that had been collected before the systematic literature review was done. Had the systematic literature review been done first, the populations studied and questions asked might have differed somewhat. For example, non-blood donors would have been included.

Second, selection bias could have occurred through the methods used for identifying the 36 studies. The studies were limited to two main official languages in Sub-Saharan Africa: English and French. However, some countries in Sub-Saharan Africa do not have French and English as official languages. For example, Angola, Cape Verde, and Mozambique have Portuguese as their official language. Thus, studies about blood donation published in these countries in their official languages may have been missed. Moreover, only publications available in specific electronic databases were considered, and thus we may have missed unpublished papers or those that have been published in journals not covered in the indexes used.

Third, the qualitative studies were conducted only in Accra, Ghana, and thus the insights may be relevant only to part of Ghana.

Finally, although in Africa family or replacement blood donors and voluntary blood donors tend to be popular, the qualitative study that formed part of this dissertation focused on only voluntary blood donors. Thus, the perspectives of family replacement

blood donors may have been missed.

Despite these limitations, the current study integrates how culture and communication influence blood donation in Sub-Saharan Africa and Ghana in particular. In doing so, the study identifies some suggestions for addressing inadequate blood donation in countries in Sub-Saharan Africa, especially Ghana.

Recommendations for practice, policy and future research

The current dissertation suggests some recommendations for practice, policy, and future research.

Recommendations for practice

First, the current findings suggest a potential for stronger partnerships between staff of national blood transfusion centers across Africa and other institutions, including the media, religious bodies, and telecommunication companies.

Second, individuals and institutions with interest in blood donation should recognize the perceived and real barriers to blood donation, and try to address them in their interventions. For example, barriers such as the perception that donated blood may be sold for hospitals to make money could be addressed with adequate education of the general public.

Third, blood transfusion services across Africa should consider designing additional culturally appropriate interventions to boost blood donation. Such interventions must take into account the languages spoken by the target audience and the

types of myths about blood donation to be demystified. For example, if practitioners would like to debunk the myth that blood donation makes men become impotent, they could design billboards with veteran men blood donors and their children.

Fourth, blood transfusion services across Africa should explore non-cash incentives for blood donation. This may include profiling some exemplary blood donors in the mass media, and giving some non-cash awards to veteran blood donors.

Finally, health professionals who are not yet blood donors should consider becoming blood donors too. As a physician blood donor indicated, when health professionals are blood donors, they can become more effective advocates of blood donation.

Recommendations for policy

This dissertation suggests some recommendations for policy about blood donation. First, guidelines for media reporting about blood donation should be designed with inputs from health professionals and media professionals. Such guidelines could facilitate media reporting about donation in ways that do not deter people from donating blood.

Second, social mobilization strategies for promoting blood donation should be developed with inputs from a variety of stakeholders, including the Red Cross, religious organizations, schools, and media organizations. In Kenya, blood donation mobilization strategy has helped increase voluntary blood donation (Odongo *et al*., 2010b).

Third, blood donation should have a strong political support from the government. In addition, local and international agencies with interest in those who are

most vulnerable to lack of blood in African hospitals, for example women and children, should commit funding to blood donor motivation and recruitment activities to boost blood donation.

Finally, African countries without national policies on blood donation should consider having them. Those with such policies should adequately implement them. Doing so may ensure that blood donation is adequately supported.

Recommendations for future research

The current study suggests opportunities for further research.

First, there should be rigorous study designs for exploring the impact of culture and communication on blood donation in Sub-Saharan Africa. Also, the questionnaire items should have their reliability and validity determined.

Second, scholars should design common themes for studying the impact of culture and communication in Sub-Saharan Africa. For example, countries should devise similar questionnaires for studying myths or misconceptions about blood donation, so findings from such studies could be compared across countries.

Third, research is required to identify the best strategies for promoting blood donation among specific segments of society, including the youth and adults. Such research could be both qualitative and quantitative.

Fourth, researchers with interest in promoting blood donation in Sub-Saharan Africa should conduct intervention studies to test how different approaches could help increase blood donation. Such interventions could include use of mobile phones, social

media, mass media and face-to-face communications to boost blood donation. The efficacies of such pilot interventions should be determined.

Fifth, the influence of culture and communication on blood donation should be explored from the perspectives of stakeholders who have received little scholarly attention. These include teachers and parents; health professionals; pregnant women, spouses of pregnant women; opinion leaders, including the clergy; staff of non-profit organizations, and policymakers.

Sixth, quantitative studies with a large sample sizes should be conducted to determine whether the interventions identified in the current study may be acceptable to target audiences: general public, including blood donors; health care professionals, and media professionals.

Seventh, because the qualitative studies in Ghana did not involve non-blood donors, their perspectives for developing culturally sensitive communication interventions to attract them to donate blood may also be worth undertaking both qualitatively and quantitatively.

Finally, adequate blood donation in Sub-Saharan Africa is a public health necessity that requires serious and continuous attention from not only researchers but everyone with a stake in promoting the wellbeing of the vulnerable in society.

REFERENCES

Agbovi, K. K., Kolou, M., Feteke, L., Haudrechy, D., North, M. L., & Segbena, A. Y. (2006). Knowledge, attitudes and practices about blood donation. A sociological study among the population of Lome in Togo. [Etude des connaissances, attitudes et pratiques en matiere de don de sang. Enquete sociologique dans la population de Lome (Togo).] *Transfusion Clinique Et Biologique, 13*(4), 260-265.

Ahmed, S. G., Gamas, M. G., & Kagu, M. B. (2006). Declining frequency of blood donation among elites in Maiduguri, Nigeria. *African Journal of Medicine & Medical Sciences, 35*(3), 359-363.

Allain, J. P., Sarkodie, F., Boateng, P., Asenso, K., Kyerematen, E., & Owusu-Ofori, S. (2008). A pool of repeat blood donors can be generated with little expense to the blood center in Sub-Saharan Africa. *Transfusion, 48*(4), 735-741.

Appiah, B. (2012). Africa's road to blood ruin. *Canadian Medical Association Journal*, *184*(7), E341-E342.

Appiah, B., Bates, I., Owusu-Ofori, S., & Dunn, A. (2013). Ethical and cultural concerns for health professionals, media and the public in promoting adequate and safe blood transfusion services in Africa: A case study of Ghana. *Vox Sanguinis, 105*, 96.

Appiah, B., Bates, I., Owusu-Ofori, S., & Dunn, A. (2013). Culturally relevant communication interventions to promote voluntary blood donations in Ghana: an observational, interview-based study. *The Lancet*, *382*, 8.

Asenso-Mensah, K., Achina, G., Appiah, R., Owusu-Ofori, S., & Allain, J. P. (2013). Can family or replacement blood donors become regular volunteer donors? *Transfusion*. Advance online publication. doi: 10.1111/trf.12216

Awodu, O., Nwagu, M. U., & Bazuaye, G. N. (2011). Awareness of blood donation among university undergraduates in Southern Nigeria. *Vox Sanguinis, 101*, 123.

Basavaraju, S. V., Mwangi, J., Kellogg, T. A., Odawo, L., Marum, L. H., & 2007 Kenya AIDS Indicator Survey,Group. (2010). Quantification of print, radio and television exposure among previous blood donors in Kenya: An opportunity for encouraging repeat donation in a resource-limited setting?. *Vox Sanguinis, 99*(3), 274-277.

Bates, I., Chapotera, G. K., McKew, S., & van den Broek, N. (2008). Maternal mortality in sub-Saharan Africa: the contribution of ineffective blood transfusion services.

BJOG: An International Journal of Obstetrics and Gynaecology, 115(11), 1331-1339

Bednall, T. C., & Bove, L. L. (2011). Donating blood: A meta-analytic review of self-reported motivators and deterrents. *Transfusion Medicine Reviews, 25*(4), 317-334.

Bloch, E., Reddy, V., Raju, V., Moleli, N., Mathavha, K., Russell, B., . . . Crookes, R. (2012a). Factors motivating for or deterring against blood donation in Black South Africans: Results from focus group research. *Transfusion, 52*, 102A-103A.

Bloch, E. M., Vermeulen, M., & Murphy, E. (2012b). Blood transfusion safety in Africa: a literature review of infectious disease and organizational challenges. *Transfusion medicine reviews*, *26*(2), 164-180.

Bowen, H. (2010). Making connections: Using data on Ghanaians' media use and communication habits as a practical tool in development work. InterMedia Survey Institute. Retrieved July 5, 2013, from http://www.audiencescapes.org/sites/default/files/AudienceScapes%20Ghana%20Survey%20Research%20Report%202010.pdf

Boyd, C. O. (2001). Phenomenology the method. In *PL Munhall (Ed.), Nursing research: A Qualitative Perspective* (3rd ed.). (pp 93-122). Sudbury, MA: Jones & Bartlett.

Bullas J. (2013, September 20). 12 Awesome Social Media Facts and Statistics for 2013. Retrieved September 22, 2013. from http://www.jeffbullas.com/2013/09/20/12-awesome-social-media-facts-and-statistics-for-2013/#mukMrE4hLgEKboIg.99

Centers for Disease Control and Prevention [CDC] (2011) Progress toward strengthening national blood transfusion Services — 14 Countries, 2008–2010. *Mortality and Morbidity Weekly Reports*, 60(46);1578-1582.

Copeman, J. (2009). Introduction: blood donation, bioeconomy, culture. *Body & Society*, *15*(2), 1-28.

Crosby, R., & Noar, S. M. (2011). What is a planning model? An introduction to PRECEDE-PROCEED. *Journal of Public Health Dentistry, 71*, S7-S15.

Dadzie, E.A. (2012, January 2)."Girl 15 dies, as lab technician 'denies' her blood at Effia Nkwanta hospital". Accessed March 4, 2012, from http://edition.myjoyonline.com/pages/news/201201/80315.php

Dahourou, H., Tapko, J. B., Kienou, K., Nebie, K., & Sanou, M. (2010). Recruitment of blood donors in Burkina Faso: How to avoid donations from family members?. *Biologicals, 38*(1), 39-42.

Diakhate, L., Blavy, G., & Akue, B. A. (1984). Blood transfusion in Senegal: Psychophysiologic study of blood donation. [La transfusion sanguine au Senegal: etude psychosociologique du don du sang.] *Bulletin De La Societe De Pathologie Exotique Et De Ses Filiales, 77*(5), 699-704.

Diakhate, L., Blavy, G., Akue, B. A., & Thiam, D. (1984). Blood transfusion in Senegal: Psychosociological study of blood donation. [La transfusion sanguine au Senegal: etude psychosociologique du don du sang.] *Dakar Medical, 29*(2), 343-348.

Duboz, P., Macia, E., & Cuneo, B. (2010). Sociodemographic and attitudinal factors to blood donation in the urban population of Dakar,Senegal. *Transfusion, 50*(12), 2713-2720.

Gielen, A.C., McDonald, E.M., Gary, T.L., & Bone, L.R.(2008). Using the PROCEDE-PROCEED model to apply health behavior theories. In K. Glanz, B.K. Rimer, & K. Visnwanath (Eds.). Health behavior and health education: theory, research, and practice. (pp 407-434). San Francisco, CA: John Wiley & Sons, Inc.

Gillespie, T. W., & Hillyer, C. D. (2002). Blood donors and factors impacting the blood donation decision. *Transfusion Medicine Reviews*, *16*(2), 115-130.

Glaser, B. G. (1965). The constant comparative method of qualitative analysis. *Social Problems*, *12*(4), 436-445.

Glynn, S. A., Schreiber, G. B., Murphy, E. L., Kessler, D., Higgins, M., Wright, D. J., ... & Smith, J. W. (2006). Factors influencing the decision to donate: racial and ethnic comparisons. *Transfusion*, *46*(6), 980-990.

Godin, G., Vezina-Im, L. A., Belanger-Gravel, A., & Amireault, S. (2012). Efficacy of interventions promoting blood donation: A systematic review. *Transfusion Medicine Reviews, 26*(3), 224-237

Green, L. W., & Kreuter, M. W. (2005). *Health program planning: an educational and ecological approach*. New York: McGraw-Hill.

Groenewald, T. (2004). A phenomenological research design illustrated. *International Journal of Qualitative Methods,* 3(1). Article 4.

Holmberg, J. A., Basavaraju, S., Reed, C., Drammeh, B., & Qualls, M. (2011). Progress

towards strengthening national blood transfusion services: 14 countries, 2008–2010. *MMWR*, *60*, 1578-1582.

Howat, P., Jones, S., Hall, M., Cross, D., & Stevenson, M. (1997). The PRECEDE-PROCEED model: application to planning a child pedestrian injury prevention program. *Injury Prevention, 3*(4), 282-287.

Jacobs, B., & Berege, Z. A. (1995). Attitudes and beliefs about blood donation among adults in Mwanza region, Tanzania. *East African Medical Journal, 72*(6), 345-348.

Koster, J., & Hassall, O. W. (2011). Attitudes towards blood donation and transfusion in Bamenda,Republic of Cameroon. *Transfusion Medicine, 21*(5), 301-307.

Kreuter, M. W., & McClure, S. M. (2004). The role of culture in health communication. *Annu. Rev. Public Health*, *25*, 439-455

Kwansah-Aidoo, K. (2001). Telling stories: The epistemological value of anecdotes in Ghanaian communication research. *Media, Culture & Society*, *23*(3), 359-380.

Lacetera, N. & Macis,M. (2008). Social image concerns and pro-social behavior. IZA Discussion Paper no. 3771.

Lane, S., & Arnold, E. (2011). Qualitative research: a valuable tool for transfusion medicine. *Transfusion*, *51*(6), 1150-1153.

Lara, A. M., Kandulu, J., Chisuwo, L., Kashoti, A., Mundy, C., & Bates, I. (2007). Laboratory costs of a hospital-based blood transfusion service in Malawi. *Journal of Clinical Pathology*, *60*(10), 1117-1120.

Los, A. P., Mutegombwa, S. N., Gabra, G. S., & Smit Sibinga, C. T. (2009a.). Liaison role of school teachers in blood collection, donor motivation and retention at schools. *Transfusion, 49*, 66A.

Los, T., Gabra, G., Mutegombwa, S., & Sibinga, C. S. (2009b.). The role of school teachers to support blood collection and donor retention at schools. *Vox Sanguinis, 96*, 28-29.

Lownik, E., Riley, E., Konstenius, T., Riley, W., & McCullough, J. (2012). Knowledge, attitudes and practices surveys of blood donation in developing countries. *Vox Sanguinis, 103*(1), 64-74.

Mbui, A., Odongo, T. J., & Dahir, A. (2010). Blood donor notification; lack of information of notifiable diseases by parents of minor donors. *Transfusion, 50*, 100A.

McKenzie, J.F., Neiger, B.L., & Thackeray R.(2009). *Planning, implementing, and evaluating health promotion programs*. San Francisco, CA: Pearson Benjamin Cummings

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-Analyses: The PRISMA Statement. *Journal of Clinical Epidemiology, 62*(10), 1006-1012.

Mwaba, K., & Keikelame, M. J. (1995). Blood donation behaviour and beliefs among a sample of high school students in Mmabatho. *Curationis, 18*(3), 2-3.

Nebie, K. Y., Olinger, C. M., Kafando, E., Dahourou, H., Diallo, S., Kientega, Y., . . . Muller, C. P. (2007). [Lack of knowledge among blood donors in Burkina Faso (West Africa); potential obstacle to transfusion security]. [Faible niveau de connaissances des donneurs de sang au Burkina Faso; une entrave potentielle a la securite transfusionnelle.] *Transfusion Clinique Et Biologique, 14*(5), 446-452.

Obi, S. N. (2007). Antenatal blood donation for pregnant Nigerian mothers: The husbands' perspective. *Journal of Obstetrics & Gynaecology, 27*(5), 467-469.

Odongo, T., Dahir, A., & Kinyota, P. (2011). Kenya NBTS experience: A marketing communication approach to blood donor recruitment. *Vox Sanguinis, 101*, 123.

Odongo, T., Mvere, D., Kimani, D., Oduor, M., & Dahir, A. (2010a). Kenya experience; A marketing approach to blood donor recruitment. *Vox Sanguinis, 99*, 42.

Odongo, T. J., Oduor, M. O., & Ochieng, B. (2010b). Determining the results notification preferences of high school blood donors in Kenya. *Transfusion, 50*, 238A-239A.

Odongo, T. J., Sugut, W. K., Mwangi, J. W., Kimani, D. K., Nyamongo, J. A., Maikweki, L., . . . Mvere, D. (2009). Re-branding the Kenya national blood transfusion service: A prospect for improving visibility. *Transfusion, 49*, 254A.

Okpara, R. A. (1989). Attitudes of Nigerians towards blood donation and blood transfusion. *Tropical & Geographical Medicine, 41*(1), 89-93.

Olaiya, M. A., Alakija, W., Ajala, A., & Olatunji, R. O. (2004). Knowledge, attitudes, beliefs and motivations towards blood donations among blood donors in Lagos, Nigeria. *Transfusion Medicine, 14*(1), 13-17.

Onoh, R. C., Ugochukwu, U. O., Nkwo, E. C., Ezeonu, P. O., Onoh, J. T., Esike, C. O. U., & Onyebuchi, A. K. (2012). Attitude of antenatal clients toward prenatal blood

donation at Abakaliki, southeast Nigeria. *International Journal of Gynecology and Obstetrics, 119*, S444.

Ottong, J. G., Asuquo, E. E., Olaniran, N. S., Duke, F. D., & Abia, R. P. (1997). Community mobilization for blood donation, Cross river state, Nigeria.The calabar PMM team. *International Journal of Gynaecology & Obstetrics, 59*(Suppl 2), S119-25.

Owusu-Ofori, S., Asenso-Mensah, K., Boateng, P., Sarkodie, F., & Allain, J. P. (2010). Fostering repeat donations in Ghana. *Biologicals, 38*(1), 47-52.

Oyarebu, K. A. (1982). A survey in Benin city, Nigeria. Attitude to blood donation and blood transfusion. *Hygie, 1*(3-4), 17-20.

Palmer, M., Larkin, M., de Visser, R., & Fadden, G. (2010). Developing an interpretative phenomenological approach to focus group data. *Qualitative research in Psychology*, *7*(2), 99-121.

Piliavin, J. A. (1990). Why do they give the gift of life? A review of research on blood donors since 1977. *Transfusion*, *30*(5), 444-459.

Polonsky, M. J., Renzaho, A., & Brijnath, B. (2011). Barriers to blood donation in African communities in Australia: the role of home and host country culture and experience. *Transfusion*, *51*(8), 1809-1819.

Reddy, R., Olmsted, M., Muthivhi, T., Park, H., Sha, M., Mokoena, T., . . . Murphy, E. L. (2013). Motivators and deterrents to blood donation among black South Africans: A qualitative analysis of focus group data. *Vox Sanguinis, 105*, 16-17.

Rubinson, L., & Baillie, L. (1981). Planning school based sexuality programs utilizing the PRECEDE model. *Journal of School Health, 51*(4), 282-287.

Sacchini, D., Liumbruno, G. M., Bruno, G., Liumbruno, C., Rafanelli, D., Minacori, R., ... & Spagnolo, A. G. (2013). Ethical and deontological issues in Transfusion Medicine. *Blood Transfusion*, *11*(1), 14.

Salaudeen, A. G., Musa, O. I., Awoyemi, A. O., Bolarinwa, A. O., Adegboye, A. O., & Samuel, S. O. (2011). Community survey on blood donation practices in a northern state of nigeria. *Journal of Preventive Medicine & Hygiene, 52*(1), 21-25.

Salaudeen, A. G., & Odeh, E. (2011). Knowledge and behavior towards voluntary blood donation among students of a tertiary institution in nigeria. *Nigerian Journal of Clinical Practice, 14*(3), 303-307.

Sekongo, Y. M., Yao, D., Konate, S., Kabore, S., Dembele, B., Kouamenan, G., . . . Tchimou, J. (2011). Satisfaction survey of blood donors in national center for blood in Abidjan, Cote d'ivoire. *Vox Sanguinis, 101*, 51.

Sengeh, P., Samai, O., Sidique, S. K., Kebbie, A., Fofana, P., & Stephens, S. (1997). Improving blood availability in a district hospital, Bo, Sierra Leone. the bo PMM team. *International Journal of Gynaecology & Obstetrics, 59*(Suppl 2), S127-34.

Tagny, C. T., Diarra, A., Yahaya, R., Hakizimana, M., Nguessan, A., Mbensa, G., . . . Lefrère, J. J. (2009). Characteristics of blood donors and donated blood in sub-Saharan Francophone Africa. *Transfusion, 49*(8), 1592-1599.

Titmuss, R. (1971). The gift of blood. *Society*, *8*(3), 18-26.

Umeora, O. U., Onuh, S. O., & Umeora, M. C. (2005). Socio-cultural barriers to voluntary blood donation for obstetric use in a rural nigerian village. *African Journal of Reproductive Health, 9*(3), 72-76.

Von Zahran, M., & Von Ali, M. (2013). Assessment of motivating and demotivating factors of voluntary blood donation among the students of Khartoum state universities (november, 2009-may, 2010). *Vox Sanguinis, 105*, 101.

Wakefield, M. A., Loken, B., & Hornik, R. C. (2010). Use of mass media campaigns to change health behaviour. *The Lancet, 376*(9748), 1261-1271.

Wangendo, J. N. (2012). Feasibility and acceptability of SMS technology among blood donors in Nairobi. *Vox Sanguinis, 103*, 93-94.

Wangendo, J. N., Ochieng, B., & Oduor, M. (2011). Feasibility and acceptability of SMS technology among blood donors in nairobi. *Transfusion, 51*, 106A-107A.

Windsor, R. A. (1986). An application of the PRECEDE model for planning and evaluating health education methods for pregnant smokers. *Hygie, 5*(3), 38-44.

Wondimagegnehu, B. T. (2009). Willingness to voluntarily donate blood among high school students in addis ababa: Assessment of determinants using theory of planned behavior. *Transfusion, 49*, 251A.

World Health Organization (2010). Towards 100% voluntary blood donation: A framework for action. Accessed August 12, 2012, from www.who.int/**blood**safety/publications/9789241599696_eng.pdf

World Health Organization (2011). Blood Safety. Key global facts and figures. Accessed February 20, 2012, from http://www.who.int/worldblooddonorday/media/who_blood_safety_factsheet_2011.pdf

APPENDIX A

SEARCH TERMS USED FOR MEDLINE/PUBMED

1. exp Blood Donors/

2. (blood adj1 (donat$ or donor$)).ti,ab.

3. or/1-2

4. exp "Africa South of the Sahara"/

5. sub-saharan.ti,ab.

6. subsaharan.ti,ab.

7. (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 dIvoire 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).ti,ab.

8. or/4-7

9. 3 and 8

10. limit 9 to (english or french)

APPENDIX B

CODING FORM FOR SYSTEMATIC LITERATURE REVIEW

Demographics
Q1

RefID

Related

Are there related articles? Enter RefIDs below, separate with a comma

Q2

Population of Focus (check all that apply)

- Potential donors/general population
- First time (novice donors)
- Repeat/experienced donors
- Unspecified
- Other (type in)

Q3

Geographic area (check all that apply)

Angola	Côte d'Ivoire	Lesotho	Rwanda	Togo
Benin	Djibouti	Liberia	Sao Tome and Principe	Uganda
Botswana	Equatorial Guinea	Madagascar	Senegal	Zambia
Burkina Faso	Eritrea	Malawi	Seychelles	Zimbabwe

☐ Burundi	☐ Ethiopia	☐ Mali	☐ Sierra Leone	☐ Central Africa
☐ Cameroon	☐ Gabon	☐ Mauritania	☐ Somalia	☐ East Africa
☐ Cape Verde	☐ The Gambia	☐ Mauritius	☐ South Africa	☐ Southern Africa
☐ Central African Republic	☐ Ghana	☐ Mozambique	☐ South Sudan	☐ West Africa
☐ Chad	☐ Guinea	☐ Namibia	☐ Sudan	☐ English speaking countries (Anglophone)
☐ Comoros	☐ Guinea-Bissau	☐ Niger	☐ Swaziland	☐ French speaking countries (Anglophone)
☐ Congo (Brazzaville)	☐ Kenya	☐ Nigeria	☐ Tanzania	☐ Sub-Saharan Africa
☐ Congo (Democratic Republic)				

Q4

☐

Is it peer reviewed

- ○ Yes
- ○ No

 If **No** Is **Selected**, Then Skip To **Non-peer reviewed publication types:**

 If **peer reviewed journal article** Is **Selected**, Then Skip To **Non-peer reviewed publication types:**

Q5

☐

Peer review publication types:

- peer reviewed journal article
- peer reviewed conference paper
- peer reviewed conference abstract
- other

Q6

Non-peer reviewed publication types:

- journal article
- news/newspaper article
- government document
- conference paper
- conference abstract
- letter/ comments/ editorials
- thesis/dissertation
- other

Q7

Type of study

- Interview (telephone)
- Interview (face to face)
- Focus group
- Survey
- unspecified
- other

Q8

Type of communication channel (check all that apply)

- Radio
- Television
- Newspaper
- Magazine
- Online media
- Video
- Book
- Pamphlet
- Leaflet
- Booklet
- Fact sheet
- Manual
- Social media (Facebook, twitter, LinkedIn, etc)?
- Mobile communication (cellphone, or SMS technology)
- Telephone
- Face-to-face communication
- Mobile vans
- Home visits
- Preaching/churches
- Unspecified (example, mention “education”)
- other

Q9

Outcome/result of communication

Q10

What aspects of culture are considered?

- Beliefs about blood donation
- Perceptions of blood donations
- Knowledge about blood donations
- Attitudes to blood donation
- Ties to families and friends
- Social norms (expectations, obligations, and sanctions currently anchored in social groups
- Subjective norms (a perceived social pressure to perform a behavior from significant others)
- Personal values (feelings of moral obligation; religious or spiritual affiliation)
- Pro-social motivation (altruism, collectivity, or helping community)
- Other:

Q11

Notes about culture

Q12

What aspects of ethics are mentioned?

- Incentives (cash)
- Incentives (non-cash)
- Informed consent
- Donor deferral due to ethics
- other

Q13

Notes on ethics

Q14

Other notes on article

APPENDIX C

AN INSTITUTIONAL REVIEW BOARD APPROVAL FOR PERFORMING SECONDARY ANALYSIS

DIVISION OF RESEARCH

Office of Research Compliance

DATE: September 10, 2013

MEMORANDUM

TO: Dr. Marcia G Ory, PhD, MPH
TAMHSC - School Of Rural Public Health - Health Promotion & Community Health Sciences

FROM: Office of Research Compliance
Institutional Review Board

SUBJECT: Exempt Approval

Protocol Number: IRB2013-0573

Title: Secondary Analysis of Blood Donations in Ghana: Barriers and Communication Interventions

Approval Date 09/10/2013

Continuing Review
Due: 07/31/2016

Expiration Date: 08/31/2016

Documents Reviewed
And Approved: Data Release letter

Provisions:

Comments:

This research project has been approved. As principal investigator, you assume the following responsibilities

1. **Continuing Review:** The protocol must be renewed by the expiration date in order to continue with the
   research project. A Continuing Review application along with required documents must be submitted by the continuing review deadline. Failure to do so may result in processing delays, study termination, and/or loss of funding.
2. **Completion Report:** Upon completion of the research project (including data analysis and final written papers), a Completion Report must be submitted to the IRB.
3. **Unanticipated Problems and Adverse Events:** Unanticipated problems and adverse events must be reported to the IRB immediately.
4. **Reports of Potential Non-compliance:** Potential non-compliance, including deviations from protocol and violations, must be reported to the IRB office immediately.
5. **Amendments:** Changes to the protocol must be requested by submitting an Amendment to the IRB for review. The Amendment must be approved by the IRB before being implemented.
6. **Consent Forms:** When using a consent form or information sheet, you must use the IRB stamped approved version. Please log into iRIS to download your stamped approved version of the consenting instruments. If you are unable to locate the stamped version in iRIS, please contact the office.
7. **Audit:** Your protocol may be subject to audit by the Human Subjects Post Approval Monitor. During the life of the study please review and document study progress using the PI self-assessment found on the RCB website as a method of preparation for the potential audit. Investigators are responsible for maintaining complete and accurate study records and making them available for inspection. Investigators are encouraged to request a pre-initiation site visit with the Post Approval Monitor. These visits are

750 Agronomy Road, Suite 2701
1186 TAMU
College Station, TX 77843-1186

Tel. 979.458.1467 Fax. 979.862.3176
http://rcb.tamu.edu