

**MAGNITUDE AND FACTORS ASSOCIATED WITH REPEAT
BLOOD DONATION AT DAR ES SALAAM BLOOD TRANSFUSION
CENTERS IN TANZANIA**

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**Master of Public Health Dissertation
Muhimbili University of Health and Allied Sciences
October, 2019**

**Muhimbili University of Health and Allied Sciences
School of Public Health and Social Sciences**



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DONATION AT DAR ES SALAAM BLOOD TRANSFUSION CENTER'S
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By

Goodluck Eliakim Mwanga

**A Dissertation Submitted in (Partial) Fulfilment of the Requirements for the
Degree Master of Public Health**

**Muhimbili University of Health and Allied Sciences
October, 2019**

CERTIFICATION

The undersigned certify that he has read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciences a dissertation entitled: “**Magnitude and factors associated with repeat blood donation at Dar es Salaam blood transfusion centers in Tanzania**”, in (partial) fulfillment of the requirements for the degree of Masters of Public Health of Muhimbili University of Health and Allied Sciences.

Dr. Innocent A. Semali

(Supervisor)

Date

DECLARATION AND COPYRIGHT

I, **Goodluck Eliakim Mwanga**, I declare that this **dissertation** is my own original work and that it has not been presented and it will not be presented to any other University for the similar or any other degree award.

Signature.....

Date

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ACKNOWLEDGEMENT

First of all, I am overly grateful to the Almighty God for giving me the strength, perseverance, knowledge and zeal to strive for the best.

Special thanks to my supervisor Dr. Innocent Semali for the mentorship, invaluable and unlimited time, support and advice offered towards the preparation of this dissertation.

I would like to acknowledge the management of National Blood Transfusion Service, Mwananyamala Referral Hospital and Muhimbili National Hospital for their cooperation and allowing me to conduct the research at their donation centers.

My appreciation to Mr Panga Onna Duma from FELTP for the great support and advice offered during the data analysis process. Mr Anfrid Mahenge (NIMR- Mbeya), Mr Oscar Mwashuiya (TNBTS) and Dr. Avelyine Mgasas (Laboratory Manager ENBTS) for their advice and support.

I wish to express my gratitude to my family and friends for encouragement during my dissertation work, with a special thanks to my parents.

Lastly but not the least, I wish to extend my thanks to my research assistants Mrs Bathsheba Swai (ENBTS), Mrs Loveness Masonda (Mwananyamala Referral Hospital) and Mr Baraka Edwin (MNH) for assisting me in the data collection process, I say thank you very much.

DEDICATION

I dedicate this dissertation to my beloved sisters Happy and Glory Eliakim Mwanga and Mr. and Mrs. Eliakim Andrea Mwanga and my entire family for their love, patience, encouragement, prayers and unwavering support during my studies.

ABSTRACT

Introduction: Blood donors who repeat blood donation are considered as the safest type of blood donor due to lower prevalence of Transfusion Transmitted Infections (TTI's) seroreactivity than other donors. In Tanzania, there is a high number of first-time donors who did not return for more donations. However, there is increase in a number of first time donors ranging from 80% to 94% in 2014 to 2017. The low number of repeat blood donors in Tanzania leads to high prevalence of TTI's among blood donated.

Objective: To find out the magnitude and factors associated with repeat blood donation at Dar es Salaam blood transfusion centers in Tanzania.

Method; Across-sectional study was conducted in three high volume centers namely Muhimbili National Hospital, Mwanysamala and Eastern Zone Blood Transfusion Center. The data was collected for the period of 16 weeks starting from August to November 2018. Three hundred ninety-three blood donors were recruited into the study. Conveniently sampling technique was used to select the study sites and study subject was systematic randomly selected from the list of recruited blood donors in the study sites. The frequency and proportion were used for categorical variables while mean and standard deviation for the continuous variable. The Chi-square test was used to assess the strength of association, 95% CI and p-value 0.05 cut off was also used to assess the level of significance. Data analyzed using the Epi info version 7 and Stata version 13.1 software.

Results: Of the 393 participants, 48% were repeat blood donation. Age group appeared to be associated with repeated donation up to more than 46 years had higher odds of repeat donation by 2.93 times, (AOR (95% CI); 2.93 (1.28-6.72)); $P = 0.010$ and awareness on blood donation promotion campaigns through mass media within 3 months had odds of repeat blood donation by 12.34 times compared with blood donors who are not aware on the blood donation promotion campaigns within 3 months (AOR (95% CI); 12.34 (1.56-13.50)); $P < 0.001$.

Conclusion: The magnitude of repeat blood donation was low while the knowledge of the blood donation promotion campaigns has confirmed the positive impact on repeating of donation; thus dissemination of knowledge is crucial in retaining the potential donors.

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OPERATIONAL DEFINITION OF TERMS

A **regular blood donor** is the one who has donated at least three times, the last donation being within the previous year, and continues to donate regularly at least once per year.

Remunerated donors are individuals who give blood in return for money or other forms of payment.

Voluntary Non-Remunerated Blood Donor (VNRD) is the benevolent individual who gives blood for the treatment of recipients they are not familiar with.

Family/replacement donors are also voluntary and non-remunerated, however, their donation is triggered by hospital or blood center staff and is intended to replace the blood needed by a hospitalized family member or friend in a context of blood shortage.

Safe blood: Means blood that is free from transfusion-transmissible diseases, drugs, alcohol, chemical substances, or other extraneous factors that might cause harm or danger to the recipient.

Safe blood donor is one who reported no behavioral risks in response to the pre-donation survey and provided a blood donation that is negative on all laboratory screening tests for prevalent and emerging Transfusion-Transmissible Infections (TTI's).

LIST OF ABBREVIATIONS

AOR	Adjusted Odds Ratio
CI	Confidence Interval
ENBTS	Eastern National Blood Transfusion Service Center
MNH	Muhimbili National Hospital
MUHAS	Muhimbili University of Health and Allied Sciences
NBTS	National Blood Transfusion Service
TTI's	Transfusion Transmissible Infections
VNRBD	Voluntary Non-Remunerated Blood Donation
WHO	World Health Organization

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Blood transfusion contributes to saving millions of lives every year, improves life expectancy, the quality of life of patients suffering from life-threatening conditions, and supports complex medical and surgical procedures (Amin *et al* 2010). However, there is apparent scare of worsening blood shortages and unsafe blood supplies which is becoming a public health concern necessitating concerted researches. Globally 112.5 million blood units are collected annually which are not enough to cover 234 million major operations that are performed worldwide every year, with 63 million people undergoing surgery for traumatic injuries, 31 million or more for treating cancers and another 10 million for pregnancy-related complications (WHO and International Federation of Red Cross and Red Crescent Societies, 2010).

Blood donation programs collect blood from four types of blood donors which are autologous donor, replacement donor, remunerated or paid donors and voluntary donors. The voluntary donors with the regularity of donating blood are considered safest type of donor type and without them, there is no country or program can provide sufficient blood for its national requirement (WHO and International Federation of Red Cross and Red Crescent Societies, 2010).

Half of the collected blood worldwide is collected from high-income countries, home to 19% of the world's population (WHO, 2017) while the remaining half comes from 81% of world population. Example, about 85 % of blood collected in Europe is from voluntary non remunerated regular donor. Europe contributes 30% of global collected blood but it is home to 11% of the global population while Africa contributes only 4% of global blood with a higher population more than Europe. These differences attributed by the fact that Europe has more proportion of repeat blood donors compared to Africa, such as Iceland and Netherlands have reported more than 80% of donor repetition while in Africa countries such as Tanzania and

Kenya report less than 20% of donor repetition (WHO, 2011; Reikvam *et al.*, 2012; WHO, 2017).

The situation in sub Saharan countries shows that in more than 37 countries, their blood collection is less than 10 units of blood per 1000 population while 25 of these countries collect less than half of the minimum estimated transfusion blood units in their countries (Tapko *et al.*, 2006; Chevalier *et al.*, 2016). To fill this gap, most of the countries including Tanzania, collect blood from other types of donors, who compromise the safety of collected blood by raising the prevalence of Transfusion Transmitted Infections (TTI's) such as Human Immunodeficiency Virus (HIV), Syphilis and Hepatitis.

Besides of the low number of this safest blood donor in Africa, summary report of countries supported by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) 2011-2014, reveal that most of Africa sub-Saharan countries improve the proportion of repetitive non remunerated donors, however, in Tanzania a declines of 10% of repeat blood donor was reported (Chevalier *et al.*, 2016). It is essential to not only retain active donors but also to continuously recruit new donors to replace those who retire from the donation. This study explores the magnitude of repeat blood donors and its associated factors; in order to assist the National Blood Transfusion Service Center (NBTS) and other related stakeholders to opt and prioritize best methods and strategies of increasing repetition of blood donation in Tanzania.

1.2 Problem Statement

The safest type of blood donors is one who donates repeatedly which also regarded as the foundation of a safe and sustainable source of blood supply by WHO. It was observed that their Transfusion Transmissible Infections (TTI's) seroreactivity incidence is lower not only when compared with general population but also with other types of blood donors, therefore, they increase efficiency and reduce running cost of blood transfusion service programs (Francis Sarkodie, Oliver Hassall, Ellis Owusu-Dabo *et al.*, 2015; Nair and Mammen, 2015; WHO, 2017).

In Tanzania, there is high demand for blood in the community in which the national blood donation needs were met by only 30% (Africa, 2015). However, most of the donors are first time donors who do not return for more donations (National Blood Transfusion Service, 2015) with a notable increase in the number of first time donors 80% - 94% from 2014 to 2017 respectively (National Blood Transfusion Service, 2015; Service, 2018). The increase of first-time blood donors than regular donors does not only increase TTI's prevalence to donated blood but also have adverse effects on the efficiency and cost of blood donation services. In 2016, Tanzania national blood bank program discarded a lot of blood collected due to TTI's and other blood non-conformity which cost the program Tsh 999 million (449,550 USD) attributed by a lower number of reliable blood donors (National Blood Transfusion Service, 2015).

Thus, there is a need of efforts to increase repeated donation of blood. However, in response to the problem, there is a necessitate to have a better understanding about factors associated with the repeat of blood donation among people donating blood and hence came with better strategies for increasing the number of repetitive donors.

1.3 Conceptual framework

Description of the framework: This study aims to find factors associated with repeat blood donation; those factors were divided into access factors, socio-demographic characteristics and cue to action.

The term access is often used to describe factors or characteristics that influence one's initial contact with or use of services (Andersen *et al*, 2005) also access factors requires gaining entry into the health-care system, getting access to sites of care where patients can receive needed services, and finding providers who meet the needs of patients and with whom patients can develop a relationship based on mutual communication and trust (AHRQ, 2009) which were time of donating blood ; it favor people to repeat blood donation , such as most of public workers prefer to donate weekends rather than weekdays while for business men is vice versa, intentions to donate at the future (if the person has no intention to donate at the future it may hinder the repetition of blood donation), donation environment (some people see it is conducive to donate blood in permanent blood centers while others prefer to be followed to their work or residence area by mobile donation centers

Socio-demographic characteristics can have association with repetition of blood donation; such as sex (female are not allowed to donate blood during their menstruation cycle), age, educational level and occupation can alter the repetition of blood donor.

This study also looks at the association between repeat blood donation and cue of action, which were heard of mass media blood donation promotion within 3 months and reminder from blood transfusion service.

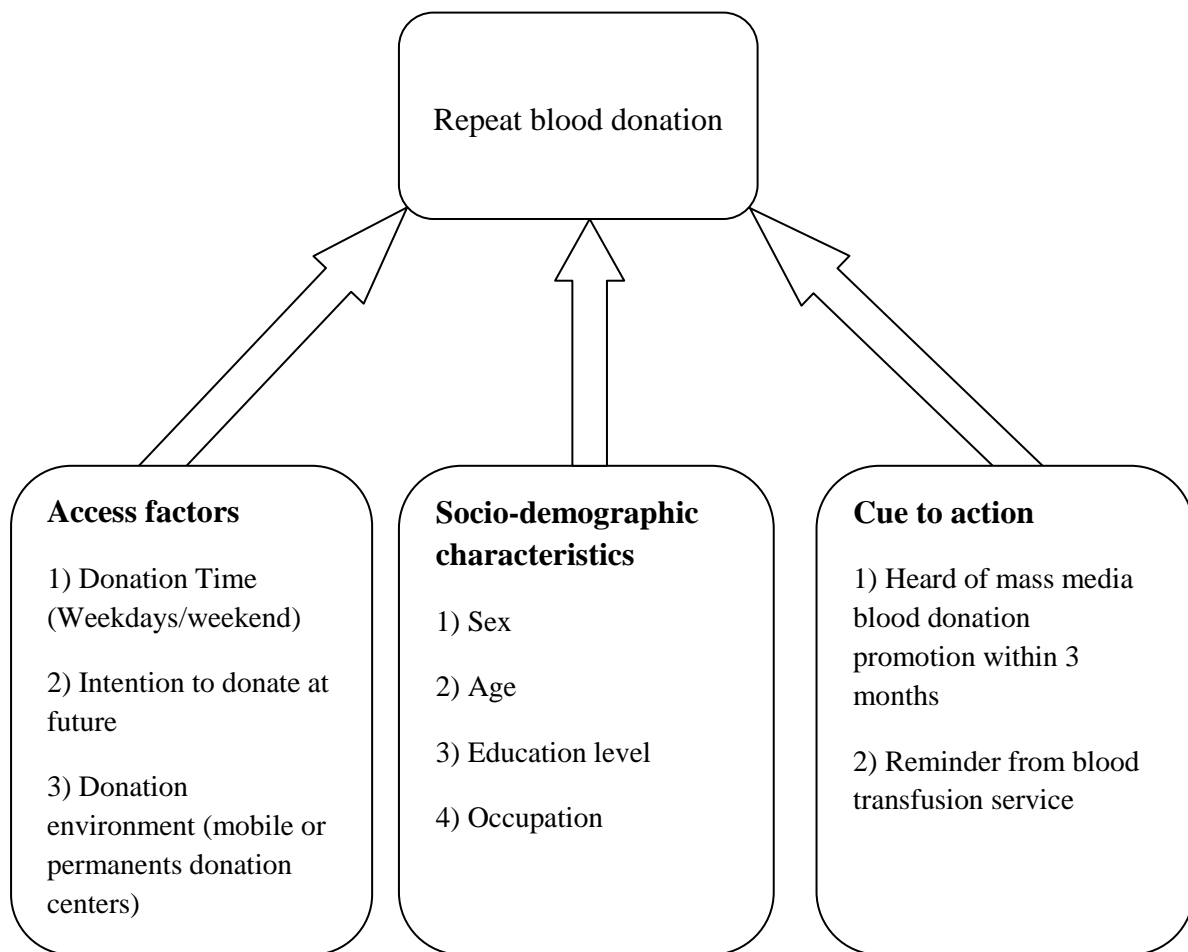


Figure 1: Interaction between repeat blood donation and associated factors

1.4 Rationale of the study

Repeat blood donors are the safest group of donors and the source of sustainable national blood supplies sufficient for the country blood demand. In order to have sustainable adequate blood supply for the nation and to increase efficiency of the blood transfusion services, there is a necessity of increasing the proportion of safe blood donors. Findings of this study will enable policymakers and other stakeholders of blood donation programs such as National Blood Transfusion Service (NBTS) to develop effective strategies of recruiting and retaining repeating voluntary blood donors.

1.5 Research questions

1.5.1 Broad Research questions

What are the magnitude of repeat blood donation and its associated factors among blood donor in Dar es Salaam donation centers?

1.5.2 Specific research questions

1. What is the proportion of repeat blood donors in Dar es Salaam region?
2. What factors are associated with repeat blood donation among blood donors in Dar es Salaam in 2018?

1.6 Objectives of the study

1.6.1 Broad objective

To determine the magnitude of repeat blood donation and its associated factors among blood donors at Dar es Salaam blood donation centers in 2018.

1.6.2 Specific objectives

1. To determine the proportion of repeat blood donors among people donating blood at Dar es Salaam blood donation centers from August to November 2018.
2. To determine factors associated with repeat blood donation among people donating blood at Dar es Salaam blood donation centers from August to November 2018.

CHAPTER TWO

2.0 LITERATURE REVIEW

Blood transfusion has been identified as one of the eight life-saving signal functions that should be available in a first referral level healthcare facility providing comprehensive emergency care (WHO and International Federation of Red Cross and Red Crescent Societies, 2007) and there are no substitutes for it (Ministry of Health and Family Welfare, 2007). Millions of people depend on blood donated by blood donors to survive such as in low and middle countries, up to 67% of all blood transfusions are transfused to children under the age of 5 years followed by pregnant mothers, but still more blood is needed which can prevent 20% of maternal deaths and 15% of child deaths attributed to severe anemia in the Southern African countries (WHO and International Federation of Red Cross and Red Crescent Societies, 2007; WHO, 2017), another example of one of sub Saharan African country (Nigeria), estimated blood needed per 1000 populations is 10 while the National blood transfusion service supplies 0.3 per 1000 populations (Fasola, 2017) .

Even though there is an establishment of National blood transfusion service in most countries, the existence, sustenance and efficiency of the blood banks depend on reliable blood donors. Due to this there is necessitate to increase the safe blood supply in these African countries through repetition of blood donation for people who are eligible to donate blood. Before finding new strategies and methods to combat this problem some previous researchers seek or apply different methods of increasing the number of repeat donor in their settings. The following are the magnitude of repeat blood donor in different locations and their associated factors.

2.1 Magnitude of blood repetition

By 2020 the World Health Organization's (WHO) aim to obtain all blood supplies from voluntary unpaid donors for all countries (WHO, 2011). Until 2016 the average donations given by repeat voluntary non-remunerated blood donors by WHO region were: 26% for

Africa, 19% for Americas, 30% for Eastern Mediterranean, 47% for South-East Asia, 48% for Western Pacific and 85% for Europe (WHO, 2017).

Even though Africa WHO region has an average of 26% of repeat donation there are high differences within countries which range from 2% in Guinea to 86% in South Africa. In East Africa countries: Uganda and Burundi have more than 40% of repeat donation, Rwanda 39% while Kenya and Tanzania have less than 20% of repeat donation (WHO, 2017).

In Tanzania blood collection by NBTS is 3.2 units per 1000 people (2014) (Africa, 2015), in which the blood donated from repetitive donors contribute 4% of all donated blood in the country (NBTS, 2018). Mauka et al found that in Northern Zone Blood Transfusion Center which serves four Northern regions in the country (Arusha, Kilimanjaro, Tanga, and Manyara) the donation proportion of repeat donation which is 63.9% (Mauka *et al.*, 2015). But when it comes to Eastern zone National Blood Transfusion Service who contribute the high proportion of blood donated in the country much is not understood regarding the magnitude of this problem, thus this study provides the answer to that.

2.2 Factors associated with repeat blood donation

In high-income countries, about 99.7% of blood donation is by voluntary non-remunerated donors (VNRD) (WHO, 2012). The major factors that hinder repeat blood donation are: time constraints, general physical problems and being ineligible to donate due to medical deferral criteria (Wevers *et al.*, 2014). In high-income countries, they have different management towards repeating blood donation such as a study done at Los Angeles - America by Shan Yuan et al 2015 show that donors are connected to blood donation centers through the use of mobile software applications with devices such as smart phone, desktop, personal computer (PCs) and tablets. In which 25% of donors are reminded and arranged their donation through a mobile application (Yuan *et al.*, 2016).

In Malaysia, young adults are a good potential source of repeat donation where nearly a quarter of blood supply of the country comes from university student donors who are in their early 20s. One of the major factors discussed by Jaafar et al is participating in campus held blood-donation programs is an important recruiting platform for university students to repeat blood donation. The motive for these young first-time donors participating in this activity varies and includes: experiencing something new, peer pressure, pursuing personal benefits, such as free health check-ups (Jaafar *et al.*, 2017).

Low number of repeat donation **is** common in third world countries especially sub-Saharan Africa. The blood collected from non remunerated donors contributes 10-30% of the collected blood (Asamoah-Akuoko *et al.*, 2017). There are studies which identify different hindrance factors which differ according to study area and settings in sub Sahara Africa which most of them **are** based in misperceptions about blood and blood donation due to lack of knowledge (awareness), cultural influences and resource constraints (Koster and Hassall, 2011; Salaudeen and Odeh, 2011; Asamoah-Akuoko *et al.*, 2017). Such as in Cameroon and Central Africa believe blood is private, precious and cannot be shared or taken outside the body except under the extreme circumstances of saving a life, especially that of a family member (Koster and Hassall, 2011; Asamoah-Akuoko *et al.*, 2017) or in South Africa, Muthivhi *et al* (2015) identified cynicism or skepticism due to the belief that blood donated by black people would be discarded, as a key deterrent which results causing the majority of blood (more than 62%) collected from White donors who make up 11% of the population while only 24% of blood is collected from Black donors who make up 83% of the South Africa population (Muthivhi *et al.*, 2015). Intention to donate and altruism was identified as the major motivator for willing to donate again in sub-Saharan Africa when mentioned in 20 studies reviewed by Asamoah-Akuoko *et al* in 2015. This is important to ascertain since intention has been frequently used as a proxy measure for actual return behavior in evaluation of strategies and donor research studies.

In Africa, there are some countries such as Zimbabwe and Ghana introduce their own way of increasing repeat of blood donation for their blood donors. In Zimbabwe they initiate Club 25 which launched in 1989 where students pledged to donate blood 25 times by the time they reached the age of 25 which results in 70% of the blood collected in Zimbabwe is from students and the HIV infection rates among blood donors fell from 4.45% in 1989 to 0.35% in 2005, while the infection rate in the general population was 21.3% (WHO, 2006). This is one of the African countries which benefits from these repeat blood donors after increasing their number. In Ghana the role of mass media (radio) is seen where there is a partnership between teaching hospital and a local FM radio station which calling three times a year for donation at the radio station and results into increase repeatability of blood donors by 63.6% while other voluntary donors who do not listen the radio repeat donation by (15 to 30)% (Jean-Pierre Allain, 2011).

There are several studies that show the association of factors in blood repetition of voluntary blood donors. In age and sex specifically, younger people less than 35 years and men revealed to be more regular donors than older people or women donor (Healy, 2000; Masser *et al.*, 2008; Mauka *et al.*, 2015) while other studies from developed countries states 'the older, the donor' (Sénémeaud *et al.*, 2014; Wevers *et al.*, 2014). Intention to return, good donation experience, and having a convenient distance location appear to significantly predict donor return in most of setting other than Tanzania (Healy, 2000; Schlumpf *et al.*, 2008). Critical to retaining donors is the donation experience itself. Donors with mild reactions or other negative experiences are less likely to return (Schlumpf *et al.*, 2008), regular hours of operation and convenient location of fixed venues could encourage repeat donations at frequent intervals and therefore help to maintain a stable donor pool Convenience of donation environment has also been highlighted as one of the considerations for blood donation (BeldaSuárez *et al.*, 2004; Schreiber *et al.*, 2006; Schlumpf *et al.*, 2008).

In the northern regions of Tanzania, there is a study conducted by Mauka *et al* 2014 described factors associated with repeat blood donation by using telephone interview to those who were in e-Delphyn Blood Bank Software from 2012 to 2014. The study points out several factors selected for repetitive blood donation which included recall bias. Results obtained in that study was: the significant predictors were living in Arusha which had lower odds of repeat donation compared to those living in Kilimanjaro, knowledge of time interval between donations increased odds of repeating donations and the altruistic score had a minor effect on increasing odds of repeating donation.

In Tanzania, despite the presence of well established National Blood Transfusion Service (NBTS) from 2004, there is no specific program responsible for increasing repetition of blood donation which results into 94% of all donors donated in 2017 are first donors (NBTSservice, 2018). Also, there is limited knowledge about which factors affect people donating their blood in Dar es Salaam region. This study explored a number of factors associated with repeat blood donation which includes; demographic factors, intention to donate, an influence of mass media and which type of mass media influence the most, optimum time to donate (in terms of days of the week and hours) and remainder from blood service program to donate.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study design

This study was cross-sectional, conducted for three months from August to November 2018.

3.2 Study area

The study was conducted in Dar es Salaam which is the largest city in Tanzania with a population of 5.8 million people (Tanzania Bureau for Statistics, 2017). The city's land area is 538 square miles, making the population density 8,100 people per square mile. A blood transfusion service in Tanzania is a centralized system where NBTS is responsible to coordinate all blood transfusion activities, in which each region are within four blood NBTS zones. Dar es Salaam is located in Eastern Blood Transfusion services along with Morogoro, Dodoma and Coastal regions Dar es Salaam contributes the highest proportion (about 20%) of all collected blood units in the country (2017 NBTS report). This region has nine blood collection centers. Some of the centers include Temeke Referral Hospital, Amana Referral hospital, Muhimbili National Hospital, Mwananyamala Referral Hospital and Eastern Zone Blood Transfusion Center all located in Dar es Salaam.

3.3 Study population

The study population included clients who came for blood donation from August to November 2018 in selected blood donation sites which were Mwananyamala Referral Hospital and Eastern Zone Blood Transfusion Center and Muhimbili National Hospital.

3.4 Sample size

Sample size obtained by using Kish and Lisle formula for cross-sectional studies (1965) in which the sample size calculated by the following formula: $n = (z^2 p (1-p)) / d^2$. Where:

n = sample size

z = Z score for 95% confidence interval = 1.96,

p = prevalence of repeated blood donation = 63.9 % (Mauka *et al* 2014),

d = tolerable error =5%.

$$n = \frac{1.96^2 \times 0.639 (1 - 0.639)}{(0.05)^2}$$

$$n = 354$$

Plus 10% of non response which included. Which is 'n' = $n / (1 - 0.1)$

$$'n' = 354 / (1 - 0.1)$$

$$'n' = 393$$

Therefore the minimum number of study participants in the study was 393.

3.5 Sampling procedure

Whereas blood donation centers in Dar es Salaam were nine, decision was made to study three which contributed highly to the blood donation in Dar es Salaam. The three were Muhimbili, Mwananyamala and Eastern zone which together contribute 84.1% of all collected blood in the Dar es Salaam region (According to annual NBTS 2018 report). Systematic sampling technique was used to obtain research participants. Each center contributed equally to the study population, thus each center contributed 131 study subjects.

Based on the record books total number of people who can be found within the study period of 44 days was $(44 \times 17) = 748$. Whereas the sample size was 393, was systematically sampled from the overall total (748) using a sampling interval of two. Thus, in every center, every second donor was included in the study. Hence every 2nd participant was sampled from people who donated blood during the working hours (from 8:00 am – 3:30 pm) from Monday to Friday until the required minimum sample of participants obtained.

3.6 Inclusion and exclusion criteria

Inclusion criteria: Blood donors, who donated blood at selected blood donation centers during the study period and who voluntarily provided consent to participate in the study.

Exclusion criteria: The study excluded all clients who donated blood who fail to either understand the study or provide consent to participate in the study.

3.7 Study variables

3.7.1 Dependent variable

The dependent variable was repeat blood donation; it was positive if the study subject had made another donation prior to the current donation and negative otherwise.

3.7.2 Independent variables

The independent variables of this study included; Social demographic characteristics such as age (in years), sex, site of donation, educational level and occupation. Donation environment characteristics (if it is either permanent or mobile donation center), heard of mass media blood donation promotion within 3 months, intention to donate at future (measured in Likert scale, donation time (either weekdays/weekend) and reminder from blood transfusion service.

3.8 Data collection

The study used closed-end questionnaire which has been previously used and verified in a previous study (Mauka *et al* 2014) and however, to meet the objectives of the study as well as taking into the local context, the questionnaire was adopted in line with the local contexts. The questionnaire consisted of standardized questions directed to both first-time donors and regularly donors directed to each group separately. It was filled for each client who provided consent to the study.

3.9 Pretesting

Questionnaires were pre-tested to reveal any lack of clarity for responses with individuals equivalent to 5% (20 questionnaires) of the calculated sample size among blood donors donated at Muhimbili National Hospital.

3.10 Training of research assistants

Training was given to research assistants for one day by the principal. The training focused on understanding each question, the process obtaining consent, confidentiality of the information gathered and quality of data collection. Emphasis was given on the significance and appropriate meanings of each question as well as how to explain to the participants in an understandable manner if required. Data collectors were recruited from medical staff with a minimum of diploma level.

3.10 Data management and analysis

Filled questionnaires were organized and checked every day at the field for errors and to ensure their completeness. Data were entered and cleaned using Microsoft Excel, analyzed using the Epi info version 7 and Stata. Epi info version 7 used in descriptive analyses while Stata software was used in the advanced analysis (bivariate and multivariate analysis). Descriptive analysis was done whereby the median for continuous data, frequency and percentage were used to summarize the categorical data while logistic regressions analysis was implemented to explore and determine the relationship of factors on outcome variables. In this study, a p-value of <0.05 was considered as statistically significant with 95% confidence level and 5% margin of error.

3.11 Ethical consideration

This study was channeled through the Research and Publication Ethical committees of Muhimbili University of Health and Allied Sciences (MUHAS) for clearance with reference number DA. 2872/298/01A (please refer to appendix V and VI). Also, the study was done after approval of selected blood donation centers managers (please refer to reference letters VII, VIII and IX). All blood donors who participated in this study were well informed about the study before they are asked to respond to the questions. Information obtained was only used for this study and be kept confidentially. Confidentiality was maintained whereby numbers are used in the questionnaires instead of respondents' names for the purpose of gathering information. Access to data obtained from questionnaires is restricted to the researcher (Tanzania National Health Research Ethics Committee, 2009). Initiatives will also be made to present the results at national and international conferences and publish them in peer-reviewed scientific journals.

CHAPTER FOUR

4.0 RESULTS

4.1 Socio-demographic characteristics of participants.

A total of 393 blood donors participated in this study. The age of respondents ranged between 18 and 60 years and most (84%) were males. Most of the donors have a secondary education level (42.5%) and also most (56.5%) of the study participants were self-employed (Refer to Table 1).

Table 1: Socio-demographic characteristic of blood donors (n= 393)

Characteristic	Frequency	Proportion (%)
Sex		
Male	330	84.0
Female	63	16.0
Sites of donation		
Mwananyamala	131	33.3
Muhimbili	131	33.3
EZBTC	131	33.3
Age		
17-26	128	32.5
27-36	150	38.2
37-46	79	20.1
>46	36	9.2
Education level		
No formal education	10	2.4
Primary school	154	39.2
Secondary school	167	42.5
College/University	62	15.8
Occupation		
Private	82	20.9
Public servant	23	5.9
Self employed	222	56.5
Student	43	10.9
Unemployed	23	5.9

4.2 Other characteristics of study participants

First time donors were 205 (52%) while repeat donors were 188 (48%), the proportion of blood donors who had high intention to donate in the future was 89.1%, have good experience in their last donation (96.4%), they have heard blood donation campaigns from mass media within the last three months (82.4%) and 50.1% heard blood donation campaigns from blood donation promotion. Also, most (65%) preferred to donate from 08 –11 AM (Table 2).

Table 2: Donor characteristics of the participants

Variable	Frequency (n= 393)	Proportion (%)
Donation frequency		
Once	205	52.1
Twice	96	24.4
Thrice	30	7.6
Fourth and above	62	15.8
Experience in the last donation		
Bad	14	3.6
Good	373	96.4
Intention to donate at future		
High	350	89.1
Low	43	10.9
Mass media within 3 months		
Yes	324	82.4
No	69	17.6
Where is mass media		
Blood donation promotion	163	50.1
Internet	15	4.63
Radio program	83	25.6
Television	63	19.4
Optimum environment		
Mobile blood donation	180	45.8
Permanent donation stations	213	54.2
Optimal periods of donation time		
Before 2 AM	33	8.4
From 08 –11 AM	255	64.9
From 12-15 PM	78	19.9
From 16-19 PM	23	5.9
After 19 PM	4	1.0
Optimal days to donate		
Weekdays	215	54.7
Weekends	178	45.3
Need of reminder		
Yes	211	53.7
No	182	46.3

4.3 Factors associated with repeat blood donation

4.3.1 Bivariate analysis for socio-demographic factors associated with repeat donation

Bivariate analysis was performed; associated factors included social demographic factors, sex, age group and occupation of the participants, Table 3. The difference between the first donor and repeat blood donor was statistically significant ($P < 0.05$).

Table 3: Proportion of repeat blood donors by socio-demographic factors

Variable	First-time donor n (%)	Repeat donor n (%)	P-value
Sex			0.013
Male	164 (79.6)	166 (88.8)	
Female	42 (20.4)	21 (11.2)	
Site of donor			0.109
Mwananyamala	50 (24.2)	81 (43.3)	
Muhimbili	96 (46.4)	35 (18.7)	
ENBTS	60 (29.0)	71 (38.0)	
Age group			0.025
17-26	70 (34.5)	47 (26.3)	
27-36	85(41.9)	65 (36.3)	
37-46	36 (17.7)	43 (24.0)	
>46	12(5.9)	24 (13.4)	
Education level			0.096
No formal education	6 (2.9)	4 (2.1)	
Primary school	92 (44.7)	62 (33.1)	
Secondary school	77 (37.4)	90 (48.1)	
College/University	31 (15.0)	31 (16.6)	
Occupation			< 0.001
Private	38 (18.4)	44 (23.5)	
Public servant	2 (1.0)	21 (11.2)	
Self-employed	127 (61.7)	95 (50.8)	
Student	25 (12.1)	18 (9.6)	
Unemployed	14 (6.8)	9 (4.8)	

4.3.2 Bivariate analysis by other characteristics factors associated with repeat donation

When bivariate analysis was performed with other characteristics in the study, the significant difference was seen in the following variables: donation frequency, experience in the last donation, heard of mass media within 3 months, type of mass media used and need of reminder as seen in table 4.

Table 4: Proportion of repeat blood donors by related factors

Variable	First time donor n (%)	Repeat donor n (%)	P-value
Experience in the last donation			0.011
Bad	12 (5.8)	2 (1.1)	
Good	194 (94.2)	185 (98.8)	
Intention to donate at future			0.077
High	178 (86.4)	172 (92.0)	
Low	28 (13.6)	15 (8.0)	
Mass media within 3 Months			0.001
Yes	157 (76.2)	167(89.3)	
No	49 (22.3)	20 (10.7)	
Where is mass media			0.014
Blood donation promotion	84 (51.5)	79 (47.3)	
Internet	8 (53.5)	7 (4.2)	
Radio program	28 (17.8)	55 (32.9)	
Television	37 (23.6)	26 (15.6)	
Optimum Environment			0.178
Mobile blood donation	101(49.0)	79 (42.2)	
Permanent donation stations	105 (51.0)	108 (58.8)	
Optimal periods of donation Time			0.052
Before 2 AM	19 (9.2)	14 (7.5)	
From 08 –11 AM	120 (58.3)	135 (72.1)	
From 12-15 PM	49 (23.8)	29 (15.5)	
From 16-19 PM	16 (7.8)	7 (3.7)	
After 19 PM	2 (1.0)	2 (1.1)	
Optimal days to donate			0.383
Weekdays	117(56.8)	98 (52.4)	
Weekends	89 (43.2)	89 (47.6)	
Need for reminder			<0.001
Yes	131 (63.6)	80 (82.5)	
No	75 (36.4)	17 (17.5)	

4.3.3 Multivariate logistic regression for factors associated with repeat donation.

Table 5 presents results of multivariate analysis revealing that factors which remained significant predictors of repeat donations included age group of more than 46 years compared to younger ages had more than twice the odds of repeat donation 2.93 (1.28-6.72); P = 0.010 and heard of blood donation promotion campaigns through mass media within 3 months compared to less had more than twelve time the odds of repeat blood donation 12.34 (1.56-13.50); P = <0.001).

Table 5: Socio-demographic and donor characteristics of the participants by donor status

Characteristics	Crude OR (95% C.I)	P-value	Adjusted OR (95% C.I)	P-value
Sex				
Male	2.02 (1.15- 3.57)	0.015	10.25 (0.66-160.31)	0.097
Female	Reference			
Age group				
17-26	Reference			
27-36	1.10 (0.69-1.75)	0.699	1.08 (0.68-1.73)	0.743
37-46	1.73 (0.97-3.08)	0.062	1.75 (0.98-3.12)	0.060
>46	2.97 (1.31-6.76)	0.009	2.93 (1.28-6.72)	0.010
Experience in the last donation				
Bad	Reference			
Good	5.72 (1.26- 25.91)	0.024	4.99 (1.20-23.92)	0.035
Mass media within 3 Months				
Yes	2.60 (1.48- 4.58)	0.001	12.34(1.56- 13.50)	<0.001
No	Reference			
Which mass media				
Blood donation promotion	1.07 (0.37- 3.10)	0.894	7.51(0.43- 129.60)	0.165
Internet	Reference			
Radio program	2.24 (0.74- 6.82)	0.154	12.71(0.78- 208.33)	0.075
Television	0.80 (0.26-2.49)	0.704		

Variables which remain significance after multivariate analysis are factors associated with repeat donation which are age group of more than 46 years, heard of blood donation promotion campaigns through mass media within 3 months and good experience in the last donation.

CHAPTER FIVE

5.0 DISCUSSION

The apparent scare of worsening blood shortages and unsafe blood supplies is becoming a public health concern necessitating concerted researches. Due to that this study explores the magnitude of safest group of donor and finds its associated factors of repeat blood donation. This study reveal that the proportion of repeat blood donation in Dar es Salaam is 48% of the blood donated, while the factors are associated with repeat blood donation among people donating blood in Dar es Salaam are age group of more than 46 years heard of blood donation promotion campaigns through mass media within 3 months and good experience in the last donation.

The current study has revealed the proportion of repeat blood donor is 48% of total participants compared to first blood donor in Dar es Salaam; however this finding was higher compared with NBTS 2018 annual report which show that there is only 4% of donated blood in Tanzania in 2017 are from the repeat donors. The difference in finding may due to this study was only focused to Dar es Salaam population while the annual report take into consideration the whole country. Also, the proportion of repeat donors found in this study (48%) is higher than median of 26% (range from 2% to 80%) of 31 African countries where neighboring countries (Uganda, Kenya and Rwanda) have less proportion of repeat donor compared to the results from this study. That notwithstanding, a study done by Mauka et al in Northern zone of Tanzania found that, the proportion of the first donor was lower (36.1%) compared to repeat donors.

This study revealed that, the age group of more than 46 years is one of the factors that was among significant predictors of repeat donations with higher odds of repeat donation by 2.93 times. This result match with the results found by Sénémeaud *et al.*, 2014 and Wevers *et al.*, 2014 where they conclude that “the older the donor” the more likely was to repeat donation of blood. It is contrasted with the findings of Healy, 2000; Masser *et al.*, 2008 and Mauka *et al.*,

2015 when they reported that younger people less than 35 years revealed to be more regular donors than older people.

This noted differences among age groups may be explained by life course perspective in which the overall, a higher proportion of people in their 20s have time constraints related to work/ studies, and hence moving or being farther away from the blood drive. For people in their 30s, pregnancy and family responsibilities were more significant factors for them and, for people in their 40s, health problems were more commonly cited than for other groups. These results are very much a reflection of events that typically occur at these different stages of life (Charbonneau *et al.*, 2016).

The heard of blood donation promotion campaigns through mass media within 3 months acts as a significant predictor with odds of repeat blood donation by 12.34 times compared with blood donors who had not heard mass media within 3 months, these findings are not match with results provided by Destaw Bantayehu, 2015 where his study at Addis Abbaba (Ethiopia) found that mass media within 3 months is not a significant predictor of repeat blood donor (Destaw Bantayehu *et al.*, 2015). The study also reveal difference with other previous studies when exploring the type of mass media where donor receive blood donation promotion, half of participants heard from blood donation promotion done in community which mostly is done as outreach programs and not from electronic media (which includes radio, television and internet). Though the study area is one of the big cities in East Africa (Dar es Salaam), role of electronic mass media (in general) for blood donation services is still low compared to community blood donation promotion while in developed countries the role of electronic application is very high and more than 20% of blood donation is arranged through a mobile phone application (Yuan *et al.*, 2016). These findings may change perspectives of NBTS and related stakeholders (including planners and policy makers) to put more effort and priority to blood donation education and activities performed in the community rather than in electronic media,

In our study, good experience in last donation was significantly associated with repeat blood donation. It has been demonstrated by other studies that good handling of blood donors during the whole process of donation will increase the probability of returning of blood donors and building up the high intention to donate again (Charbonneau, 2016)(Mauka *et al.*, 2015). Precounseling of blood donors on presumed adverse reactions may prepare the donors for unforeseen “bad experience.”

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATION

6.1 Conclusion

From the study, the magnitude of repeat blood donation was low while the factors associated with repeat blood donation among blood donors in Dar es Salaam were age group of more than 46 years, heard of blood donation promotion campaigns through mass media within 3 months and good experience in the last donation. Knowledge of the blood donation promotion campaigns has confirmed the positive impact on repeating of donation; thus dissemination of knowledge is crucial in retaining the potential donors. Also good previous experience motivates donors to return for more donations.

More studies are needed to find out the reasons of variation of repeat blood donor within a country where NBTS annual reports find out repeat donors is 6% in the whole country also the reasons behind failure to retain regular blood donors.

6.2 Recommendation

We recommend the following to improve the proportional of repeat donors:

- National Blood Transfusion Services (NBTS) as the main stakeholder of blood transfusion services should invest more in community blood donation campaign (outreach) to create awareness in our community in order to emphasize the importance of blood donation and its repetition since half of the people who donate blood receive the information through this source of information.
- Blood donation personnel's should be taught the importance of repeat donors for the safety of patients and efficiency of Blood Transfusion program.
- NBTS should provide supportive supervision on good customer care for blood donors for them to have good experience of blood donation and hence easily to return for more donations.

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APPENDICES

Appendix I: Consent Form (English Version)

STUDY TITLE: "Magnitude and factors influencing people to repeat blood donation at Dar es Salaam blood transfusion centers in Tanzania"

Investigator's statement

My name is Goodluck E. Mwanga, I am doing this study as part of the requirements to complete Master degree of Public health at Muhimbili University of Health and Allied Sciences (MUHAS). The purpose of this form is to give you information about the study. Kindly read it carefully, and ask me questions about anything that is not clear to you, regarding what I will ask you to do, the risks and benefits involved and your rights as a volunteer. You can also ask about anything you wish to know about the study. When all is well understood so you can make an informed consent whether to participate in the study or not. If you wish to be contacted with the results of the tests, you will be requested to provide your mobile telephone numbers. You will also be asked to sign or thumbprint on the form as a sign that you have accepted by your choice to participate in the study.

Purpose of the Study

Study aims at understanding the factors that would motivate or hinder people to repeat blood donation in order to assist blood transfusion services to increase the donation frequency of non remunerated voluntary donor hence provision of blood and blood products that are reliable, safe, quality, accessible at reasonable time and cost, as well as adequate to meet national blood needs

Risks or discomfort

There is no anticipated mediate, short-term, or long-term risks or distresses that may arise out participation in this study. But should you be uncomfortable with any of the questions asked, you are free to decline and withdraw your consent. It will not in any way affect your access to services in this department

Benefits and compensations

There is no additional cost to you due to your participation in the study, and no physical injuries are anticipated. There will be no compensation.

Confidentiality

Participation in this study is voluntary and you can decline and your consent without loss of any benefits or any penalties. Your name will not be used on the study data forms only study numbers will be used. All your personal information will be treated confidentially. The investigator may use the data for analysis and quality control purposes or publication but your identity will never be reported.

Who to call in case of a query or problem after the study

You can call the investigator on the phone line below and additional contacts for the Principal investigator

Principle investigator	Institution	Mobile phone number
Goodluck E. Mwanga	Muhimbili University of Health and allied sciences	0767 159 580

Participants' statement and signature

The study described above has been explained to me. I have had a chance to ask questions and feel satisfied to make an informed consent to take part in this study. If in future I wish to ask any questions about the study I can contact the investigator through the provided contacts.

.....

.....

.....

Participant signature/thumbprint

Mobile number

Date

Appendix II: Consent Form (Swahili Version)

FOMU YA IDHINI

Jina la Utafiti: Ukubwa na mambo yanayoshawishi watu kurudia uchangiaji wa damu katika vituo vya uchangiaji damu Dar es Salaam, Tanzania.

Utambulisho wa mtafiti

Naitwa Goodluck E. Mwanga , ninafanya utafiti huu kama sehemu ya mahitaji ya kukamilisha shahada ya ya uzamili katika Afya ya umma katika Chuo Kikuu cha Afya na Sayansi shirikishi cha Muhimbili. Kusudi la fomu hii ni kukupa taarifa kuhusu utafiti huu. Tafadhali isome fomu hii kwa uangalifu, na uulilize maswali ya chochote ambacho hukielewi, kuhusu kile nitakachokuomba kufanya, hadhari na faida zinazohusika na haki zako kama kujitolea. Unaweza pia kuuliza juu ya chochote unataka kujua kuhusu utafiti huu. Ukiisoma na kuridhika unaruhusiwa kushiriki katika utafiti au la. Ikiwa ungependa kuwasiliana na matokeo ya vipimo, utaombwa kutoa nambari za simu za mkononi. Pia utaombwa kusaini au kutia kidole kwenye fomu kama ishara kwamba umekubali kushiriki katika utafiti.

Kusudi la utafitihuu

Utafiti unalengo la kuelewa mambo ambayo yanawashawishi au kuzuia wat kurudia mchango wa damu ili kusaidia Mpango wa damu salama ili kuongeza kujirudia kwa mchango wa wachangiaji wahari ili utoaji wa damu na bidhaa zake kuweza kuaminika, salama, bora, kupatikana kwa wakati na gharama nzuri, pamoja na kutosha ili kukidhi mahitaji ya kitaifa ya damu

Athari au usumbufu

Hakuna athari wala matatizo ya muda mrefu au mfupi, yatakayotokana kwa kushiriki katika utafiti huu. Upo huru kukubali au kujitoa katika ushiriki wako muda wowote. Na haitakuadhiri kupata huduma katika kitengo hiki muda wowote.

Faida na fidia

Hakuna gharama ya ushiriki wako katika utafiti huu, na hakuna majeruhi ya kimwili yatakayosababishwa na utafiti huu. Hakutakuwa na fidia yeyote kwa ajili ya utafiti huu.

Usiri

Kushiriki katika utafiti huu ni kwa hiari na unaweza kujitoka bila kupoteza na faida yoyote au kupata adhabu yoyote. Jina lako halitatumiwa kwenye fomu za data za utafiti huu ila namba maalumu zitatumika. Maelezo yako yote yatakua siri. Matokeo ya vipimo yanaweza kuchapwa kwenye jarida la mafunzo.

Unaweza kumpigia simu kwa maswali au kujifunza juu ya utafiti huu

Unaweza kupiga simu kwenye namba iliyopo hapo chini na anwani za ziada kwa msimamizi wa Utafiti

Jina la mtafiti mkuu	Taasisi/Ofisi	Namba ya simu
Goodluck E. Mwanga	Chuo Kikuu cha Afya na Sayansi shirikishi cha Muhimbili	0754 159580

Taarifa ya mshiriki na saina

Maelezo ya Utafiti yalioelezwa hapo juu nimeelewa vizuri. Nimeuliza maswali na nimekubali kwa hiari yangu kushiriki katika utafiti huu. Ikiwa katika siku zijazo napenda kuuliza maswali yoyote kuhusu utafiti huu ninaweza kuwasiliana na mtafiti mkuu kwa namba za simu zilizotolewa.

.....
Saini/ Dole gumba la mshiriki

.....
tarehe

.....
Namba ya simu

Appendix III: Questionnaire (English Version)

DATE: (DD/MM/YYYY).....

Site.....

Questionnaire number.....

1. Socio-demographic variables

- a) Gender: Female Male
- b) Age:
- c) Education level: No formal education
 Primary school
 Secondary school
 College / University.
- d) Occupation:
 Unemployed
 Student
 Self-employed
 Public servant
 Private

2. Factors Blood donation variables

- a) Type of blood donor: First-time donor Regular donor
- b) How likely is it that you will donate blood again within the next 12 months?
 Definitely will donate Definitely will donate
 Probably will donate Might or might not donate
 Probability will not donate
- c) Have you heard or seen any mass media within 3 months which promote blood donation?
 Yes No

d) Places where blood donation promotions have been seen or heard within 3 months

- Television Radio programme Internet
 Blood donation promotion activity held in the community

3. The optimum condition for blood donation repetition.

a) Optimal environments for repetition of blood donation:

- Permanent donation stations
 Mobile blood- drive blood collection

b) Optimal periods of donation time:

- Early in the morning (before 08 AM)
 Morning (from 08 –11 AM)
 Afternoon (12-3 PM)
 Evening (04-07 PM)
 Night (after 07 PM)

c) Optimal days for blood transfusion

- Weekdays
 Weekend

f) Need of reminder for the future donation from blood donation service

- Yes
 No

Appendix IV: Questionnaire (Swahili Version)

Tarehe ya mahojiano...../...../.....

Mahali.....

Namba ya Dodoso.....

1. Taarifa binafsia) Jinsia : Mvulana Msichana

b) Umri:

c) Kiwango cha elimu: Hakuna elimu rasmi
 Shule ya msingi
 Shule ya sekondari
 Chuo

d) Kazi:

- Hafanyi kazi
- Mwanafunzi
- Amejiajiri
- Mtumishi wa umma
- Ameajiriwa na mtu au shirika binafsi

2. Mambo yanayowashawishi watu kurudia kuchangia wadamua) Aina ya mchangiaji wa damu: Mchangiaji wa mara ya kwanza
 Mchangaji wa mara kwa mara

b) Je! Ni uwezekano gani kwamba utachangia damu tena ndani ya miezi 12 ijayo?

- Hakika nitachangia damu Hakika sitachangia damu
- Pengine nitachangia damu Pengine sitachangia damu
- Inawezekana au haitaweza kuchangia

c) Je, umeisikia au umeona vyombo vya habari vya habari ndani ya miezi mitatu inayohamasisha uchangiaji wa damu? Ndio

Hapana

d) Kama umesikia au kuona, ni Maeneo yapi ambapo matangazo ya mchango wa damu yameonekana au kusikika ndani ya miezi mitatu

Televisheni Kipindi cha redio Interneti

Shughuli ya kukuza mchango wa damu uliofanyika katika jamii

e) Ni mazingira gani mazuri ya kurudia mchango wa damu:

Vituo vya kutolea damu vya kudumu.

Vituo vya ukusanyaji wa damu vinavyotembea

Maeneo mengine, ambayo ni.....

f) Kipindi kizuri cha muda wauchangiaji damu:

Mapema asubuhi (kabla ya 2 asubuhi)

Asubuhi (kutoka 02 -05 asubuhi)

Saa za mchana (06-09 Mchana)

Jioni (10-1 jioni)

Usiku (baada ya 1 jioni)

g) Siku nzuri zaidi za kuchangia damu

Siku za kazi (Jumatatu- Ijumaa)

Mwishoni mwa wiki (Jumamosi na Jumapili)

h) Unahitaji kukumbushwa kutoa damu kipindi kijacho nawatoa huduma za damu?,

Ndio

Hapana

Appendix V: Introduction Letter

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES OFFICE OF THE DIRECTOR OF POSTGRADUATE STUDIES

P.O. Box 65001
DAR ES SALAAM
TANZANIA
Web: www.muhas.ac.tz



Tel G/Line: +255-22-2150302/6 Ext. 1015
Direct Line: +255-22-2151378
Telefax: +255-22-2150465
E-mail: dpgs@muhas.ac.tz

Ref. No. HD/MUH/T.422/2015

2nd August, 2018

The Programme Manager
National Blood Transfusion Services
P.O. Box 65019
DAR ES SALAAM.

Re: INTRODUCTION LETTER

The bearer of this letter Mr. Goodluck E. Mwanga is a student at Muhimbili University of Health and Allied Sciences (MUHAS) who is pursuing MPhI-Distance Learning.

As part of his studies he intends to do a study titled: "*Magnitude and factors influencing people to repeat blood donation at Dar es Salaam blood transfusion centers in Tanzania*".

The research has been approved by the Chairman of University Senate.

Kindly provide him the necessary assistance to facilitate the conduct of his research.

We thank you for your cooperation.


Ms. S. Kamby

For: DIRECTOR, POSTGRADUATE STUDIES

cc: Dean, School of Public Health and Social Sciences
cc: Mr. Goodluck E. Mwanga

Appendix VI: Approval for Ethical Clearance

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES OFFICE OF THE DIRECTOR OF POSTGRADUATE STUDIES

P.O. Box 65001
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Direct Line: +255-22-2151378
Telefax: +255-22-2150465
E-mail: dpgs@muhas.ac.tz

Ref. No. DA.287/298/01A/

27th July, 2018

Mr. Goodluck E. Mwangi
MPH-Distance Learning
MUHAS

**RE: APPROVAL OF ETHICAL CLEARANCE FOR A STUDY TITLED:
"MAGNITUDE AND FACTORS INFLUENCING PEOPLE TO REPEAT BLOOD
DONATION AT DAR ES SALAAM BLOOD TRNASFUSION CENTERS IN
TANZANIA"**

Reference is made to the above heading.

I am pleased to inform you that, the Chairman has, on behalf of the Senate, approved ethical clearance for the above-mentioned study. Hence you may proceed with the planned study.


The ethical clearance is valid for one year only, from 27th July, 2018 to 26th July, 2019. In case you do not complete data analysis and dissertation report writing by 26th July, 2019, you will have to apply for renewal of ethical clearance prior to the expiry date.

Dr. Emmanuel Balandya
ACTING: DIRECTOR OF POSTGRADUATE STUDIES

cc: Director of Research and Publications
cc: Dean, School of Medicine

Appendix VII: Permission to collect data at MNH

MUHIMBILI NATIONAL HOSPITAL

Cables: "MUHIMBILI"		Postal Address:
Telephones: +255-22-2151367-9		P.O. Box 65000
FAX: +255-22-2150534		DAR ES SALAAM
Web: www.mnh.or.tz		Tanzania

In reply please quote:

MNH/TRC/Permission/2017/390

06th August, 2018

Head,
Central Pathology Laboratory Department,
Muhimbili National Hospital

RE: PERMISSION TO COLLECT DATA AT MNH

Name	Mr. Goodluck E. Mwanga
Title	"MAGNITUDE AND FACTORS INFLUENCING PEOPLE TO REPEAT BLOOD DONATION AT DAR ES SALAAM BLOOD TRANSFUSION CENTERS IN TANZANIA".
Institution	Muhimbili University of Health and Allied Sciences
Supervisor	Dr. Innocence Semali
Period	06/08/2018 to 30/01/2019 (6 months)

Permission has been granted to **Mr. Goodluck E. Mwanga** to collect data for the above study.

Please ensure that the researcher abide to the ethical principle and other conditions.

Sincerely,



Dr. Joan Rugemalila

For: Head of Teaching, Research and Consultancy Coordination Unit

HEAD TEACHING RESEARCH & CONSULTANCY UNIT
MUHIMBILI NATIONAL HOSPITAL
P. O. BOX 65000
DAR ES SALAAM

c.c. Mr. Goodluck E. Mwanga

Appendix VIII: Research work permit at Mwananyamala Hospital

KINONDONI MUNICIPAL COUNCIL
MUNICIPAL COUNCIL OF DAR ES SALAAM - THE MUNICIPAL DIRECTOR

Tel: 2171022
 Fax: 2172251

Utafitaji wa taifa wa taifa:

Kumb. No. PI/K/14.Vol.VI/



MUNICIPAL MEDICAL OFFICER OF HEALTH,
 KINONDONI MUNICIPAL COUNCIL
 P. O. BOX. 61665,
 DAR ES SALAAM.

Date: 7/08/2018

RECEIVED

07 AUG 2018

Health Facility I/C.

MWANANYAMALA HOSPITAL
Kinondoni Municipal.

*IE Blood bank
Kindly signance
this study
08/08/2018*

REF: RESEARCH WORK PERMIT.

Refer to the above heading.

DMO office is pleased to inform you health facility that GOODLUK E. NEWANGA which is/from MUHIMBI UNIVERSITY OF HEALTH AND ALLIED SCIENCE has been given a permit to perform the research work in your facility stating from AUGUST 2018 to OCTOBER 2018 the research is Titled, MAGNITUDE AND FACTORS INFLUENCING PEOPLE TO REPEAT BLOOD DONATION AT DAR ES SALAAM BLOOD TRANSFUSION CENTERS

Kindly receive & provide the necessary assistance in order to enable the student/organization to fulfill the activities comfortably.

Best wishes.


 MUNICIPAL MEDICAL OFFICER OF HEALTH
 KINONDONI MUNICIPAL COUNCIL
 RESEARCH COORDINATOR
 KINONDONI MUNICIPAL COUNCIL

*Please
Dear Salim
- Mc Patrice
- Mrs
- Mrs
13/8/18*

N:B Please share research report with M.M.O.H Office at the end of your study.

Appendix IX: Permission to conduct research at Eastern Zone NBTS

THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF HEALTH, COMMUNITY DEVELOPMENT, GENDER AND CHILDREN

Telegrams: "AFYA", Dodoma
 Telephone: +255 26 2323267
 Fax No. 40478 DODOMA
 (All letters should be addressed to The Permanent Secretary)
 In reply please quote:



University of Dodoma,
 Faculty of Social Science in
 Community Development
 Building No. 11
 P.O.Box 743,
 DODOMA

National Blood Transfusion Service
 P. O Box 65019
 Dar es Salaam, Tanzania
 Telephone: +255 2181872/3
 Fax no: 2181872

Ref.No.AB.46/500/02/22

07th August, 2018

Mr. Goodluck E.Mwanga
 MPH-Student
 Muhimbili University of Health and Allied Sciences (MUHAS)
 P.O.Box 65001
 DAR ES SALAAM

RE: PERMISSION TO CONDUCT RESEARCH AT ESTERN ZONE BLOOD TRANSFUSION CENTRE (EZBTC)

Kindly refer to the heading above

I am glad to inform you that the permission has been granted for you to conduct research at EZBTC in respect to the research project titled '*Magnitude and factors influencing people to repeat blood donation at Dar Es Salaam Blood Transfusion Centers in Tanzania*'

Please, as Principal Investigator ensure that you abide to research ethics principles which are listed here below

1. *Submit Study Findings to NBTS Research Ethics Review Committee for Review before publication*
2. *Protect anonymity and confidentiality of blood donors*

It is our sincere hope that the results of above mentioned study will contribute towards improving and promote blood donation in the country.

Wish you all the best


 Dr. Magdalena. A. Lyimo
 PROGRAM MANAGER