Assessment of willingness to donate eyes among patients attending ophthalmology and ENT clinics At Muhimbili National Hospital

Felicite Mukamana, MD

MMed (Ophthalmology) Dissertation
Muhimbili University of Health and Allied Sciences
October, 2018

Muhimbili University of Health and Allied Sciences

Department of Ophthalmology

ASSESSMENT OF WILLINGNESS TO DONATE EYES AMONG PATIENTS ATTENDING OPHTHALMOLOGY AND ENT CLINICS AT MUHIMBILI NATIONAL HOSPITAL

By

Félicité Mukamana

A Dissertation Submitted in (Partial) Fulfillment of the Requirements for Degree of Master of Medicine (Ophthalmology) of

Muhimbili University of Healthy and Allied Sciences
October, 2018

CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance by Muhimbili University of Health and Allied Science a dissertation entitled: **"Assessment of willingness to donate eyes among patients attending Ophthalmology and ENT clinics at Muhimbili National Hospital",** in (partial) fulfillment of the requirements for the degree of Master of Medicine (Ophthalmology) of Muhimbili University of Health and Allied Science.

_____

Dr. Suzan Mosenene

Supervisor

_____

Date

_____

Dr. John Kisimbi

Co-Supervisor

_____

Date

DECLARATION AND COPYRIGHT

I, **Dr. Félicité Mukamana,** declare that this **dissertation** is my own original work and that it has not been presented and will not be presented to any other university for a similar or any other degree award.

Signature: ..... **Date:** .....

This dissertation is a copyright material protected under the Berne Convention, the Copyright Act of 1999 and other international and national enactments, in that behalf, on intellectual property. It may not be reproduced by any means in full or in part, except for short extracts in fair dealings; for research or private study, critical scholarly review or discourse with an acknowledgement, without the written permission of the Directorate of Postgraduate Studies, on behalf of both author and the Muhimbili University of Health and Allied Science.

ACKNOWLEDGEMENT

I would like to sincerely acknowledge my supervisors, Dr Suzan Mosenene and Dr John Kisimbi for their tireless efforts in providing guidance throughout the preparation and finalization of this dissertation. I would like also to thank Dr Milka Mafwiri, Dr Anna Sanyiwa and Dr Celina Mhina for the inputs, guidance and encouragement they provided during the whole duration of the study. I appreciate the help and support that I received from all Ophthalmology staff at MNH during this work. I am also truly grateful to my classmates and all fellow residents in ophthalmology department for all kind of help during this work.

I extend my gratitude to Mr. Bruckse Marunde, Epidemiology department/MUHAS for his scientific guidance provided during this work. I also acknowledge the assistance received from Mr. Reid Mchome research department /MNH, Mrs. Juni Samwel, bloc manager New OPD/MNH, Mrs. Khadija Ndemba, Mr. Mussa Kalimanzila, Mrs. Eunice F. Kawamala and Mr. Sebastian S. Luziga, nurses/MNH. May my appreciations go to Mr. Steven Mwelele and Doris Mbata /Statisticians as well as to the library staff/MUHAS for their support in making this work meaningful.

I acknowledge my Sponsor, “Fred Hollows Foundation” for the provided financial support to cover the cost of this work. I acknowledge the sacrifice of my husband Dr Elie Ahorugereye and our sons, Mugisha E. Lucky and Mucyo B. Léon as well as my entire family for their endless prayers, encouragement and all support provided during the hours spent to make this wok possible.

I am foremost grateful to the Almighty God for standing by me and giving me the capability to accomplish this study.

DEDICATION

To Almighty God, to my beloved mother, to my sons and my late husband, I dedicate this work.

ABSTRACT

Background: Eye donation is an act of high-level kindness to humanity and the society, which involves the will of a person to consent for removing his/her, eyes from the body after death. This consent can be signed by the donor before his/her death by writing a will to be an eye donor (pledge eyes), but also the permission can be given by a close relative of the deceased, if he/she did not deny to be a donor while still alive. Donated eyes are used to treat patients with blindness due to corneal diseases, by corneal transplant. Eyes which cannot be used for corneal transplant can be used for research and teaching purposes.

Willingness to donate eyes depends on awareness about importance of eye donation within the population. Therefore, it is important to know the factors associated with the willingness to donates eyes in order to have sustainable local corneal transplant services.

Objective: The aim of this study was to assess willingness to donate eyes among patients attending the Ophthalmology and ENT (Ear, Nose and Throat) clinics in Muhimbili National Hospital (MNH)".

Methodology: A cross sectional descriptive hospital based study with quantitative and qualitative approaches was done from July to December 2017. Study participants for quantitative part were selected by systematic random sampling technique. A predesigned pretested questionnaire was used and a face to face interview was conducted to correct data for quantitative part of the study. Qualitative data were collected through focus group discussion (FGD) and study participants were selected by purposive sampling technique.

Data analysis: Quantitative data analysis was performed using SPSS version.20; Chi-square ($\chi 2$) and t tests were performed and multivariate analysis was done to test association between variables. Frequencies and proportions were selected according to level of measurement. P value of < 0.05 was estimated as statistically significant. Data were summarized in tables, pie and bar charts for easy presentation. Systematic thematic analysis was used for qualitative data, whereby all similar themes were grouped accordingly.

Results: A total of 434 participants were enrolled in the study and the response rate was 100%. Majority were female (58.06%), 74.1% were from Dar es Salaam and 44.9% were in age group between “18-33” years. One third (32.5%) of all respondents, were aware that eyes can be donated and 83.7% of them knew that donated eyes are used for corneal transplant. Only 13.5% know that consent for eye donation can be signed by a close relative of a deceased person. Willingness to donate eyes in this study was observed in 47.9% of all respondents. The main reason for willingness to donate eyes was to help a blind a person (64.2%). About 29.5% were willing to donate eyes because they will not need them after death and 6.3% were willing because it is a noble work.

Perceived reasons for unwillingness were lack of information about eye donation (31.7%) while 24.7% were uncertain on the use of donated eyes and religious reasons composed 22.0%. Only 4.4% said that eye donation is against their culture. Willingness to donate eyes was associated with awareness (p=0.0001), sex (p=0.049) and religion (p=0.010). For all participants, 82.2% said eye donation services are important for the population and 45.1% of them think that to become an eye donor is a personal decision. Common perceived reasons for eye donation importance were that eye donation services can reduce the burden of blindness (83.5%) and Corneal transplant services would be cost effective (47.1%). Among participants who said that eye donation services are not important, 53.5% of them think that eye donation is a kind of organ trafficking.

Eight themes emerged from FGD: Helping others, Religion, fear, death and body, organ trafficking, community education, benefits of eye donation, decision making about becoming an eye donor.

Conclusion: The present study showed that majority of the participants was not aware of eye donation. However, willingness to donate eyes was seen in nearly a half of study participants and most of the participants think that eye donations services are important for the population. Negative perception about eye donation was associated with lack of information, cultural beliefs, religious beliefs as well as personal fear. Therefore, raising awareness about eye donation through community education is important to raise willingness to donate eyes.

TABLE OF CONTENTS

CERTIFICATION i
DECLARATION AND COPYRIGHT ii
ACKNOWLEDGEMENT iii
DEDICATION iv
ABSTRACT v
TABLE OF CONTENTS vii
LIST OF TABLES ix
LIST OF FIGURES x
ABBREVIATIONS xi
DEFINITIONS OF KEY TERMS xii
CHAPTER ONE 1
1.0. INTRODUCTION 1
1.1. Literature review 3
1.1.1. Willingness to donate eyes 3
1.1.2. Factors affecting willingness to donate eyes 3
1.2. Problem statement 8
1.3. Rationale 8
1.4. Research questions 9
1.5. Conceptual framework 9
1.6. Objectives 11
1.6.1. Broad objective 11
1.6.2. Specific objectives 11
CHAPTER TWO 12
2.0. METHODOLOGY 12
2.1. Study design and Study area 12
2.2. Study population and study period 13
2.3. Sample size estimation for quantitative survey 13
2.3.1. Inclusion criteria 13

2.3.2 Exclusion criteria....13
2.4.Sampling and data collection technique....14
2.5.Data collection tool....15
2.6.Data analysis....15
2.7.Ethical issues....16
CHAPTER THREE....17
3.0. QUANTITATIVE RESULTS....17
3.1.Qualitative results....24
CHAPTER FOUR....29
4.0. DISCUSSION....29
CHAPTER FIVE....35
5.1 Conclusion....35
5.2 Recommendations....35
REFERENCES....36
APPENDICES....40
Appendix I: Questionnaire – English Version....40
Appendix II: Questionnaire – Swahili Version....44
Appendix III: Focus Group Discussion guide – English and Swahili Version....48
Appendix IV: Informed Consent – English Version....49
Appendix V: Informed Consent – Swahili Version....50

LIST OF TABLES

Table 1: Demographic characteristics of participants 17

Table 2: Level of knowledge about eye donation among participants who are aware.....18

Table 3: Knowledge about eye donation among participants who were aware 19

Table 4: Perceived reasons associated with willingness to donate eyes.....20

Table 5: Factors affecting willingness to donate eyes.....21

Table 6: Reasons associated with perception about eye donation services.....22

LIST OF FIGURES

Figure 1: Conceptual framework.....10

Figure 2: Map of Tanzania showing regions.....12

Figure 3: Awareness about eye donation.....18

Figure 4:Willingness to donate eyes.....20

Figure 5: Perception about eye donation.....22

FFigure 6: Person to consult before writing a will for eye donation.....23

ABBREVIATIONS

CI	Confidence Interval
ENT	Ear Nose and Throat
FGD	Focus Group Discussion
MNH	Muhimbili National Hospital
MUHAS	Muhimbili University of Health and Allied Science
OR	Odd Ratio
SPSS	Statistical package for social sciences
TV	Television
WHO	World Health Organization

DEFINITIONS OF KEY TERMS

Awareness: knowledge of something's existence, understanding of a situation or subject at present time based on information or experience.

Blindness: According to WHO, blindness means a visual acuity less than 3/60 or visual field less than 20 degrees from the fixation point; in the best corrected eye.

Cornea: The cornea is the transparent outer coat of the eye which occupies $1/6^{th}$ anterior part of the eyeball.

Cornea blindness: Loss of vision caused by corneal diseases where other parts of the eye are normal.

Cornea transplant: A surgical procedure which involves the replacement of a diseased cornea by a healthy cornea from a human donor.

Eye bank: A place for : Recovering, evaluation, and distribution of ocular tissues for transplantation, research and education.

Eye donation: Act of giving eyes after one's death to be removed from his/her body, for the purpose of transplantation, research or education.

Willingness: Being ready at doing something or at accepting something to happen**.**

CHAPTER ONE

1.0. INTRODUCTION

Eye donation is an act of high level kindness to humanity and the society which involve the will of a person to consent for removing one's eyes from the body after death (1). This consent can be signed by the donor before his/her death by writing a will to be an eye donor (pledge eyes), or the permission can be given by a close relative of the deceased (if he/she did not deny to be a donor while still alive) (2,3). Donated eyes are used to treat most cases of blindness due to corneal diseases by corneal transplant, but also they are used for research and teaching purposes.

Blindness due to cornea diseases is called "corneal blindness" and is the third most common cause of blindness worldwide; accounting for 7% of overall blindness (4,5). In Africa, the overall prevalence of bilateral and unilateral corneal opacification is estimated at 1.16% and 2.07% respectively (4). In central Tanzania, prevalence of binocular and uniocular blindness were estimated at 1.26% and 4.32% respectively where corneal opacities were responsible for 44% of binocular and 39% of monocular blindness respectively (4,6,7).

Corneal transplant remains the gold standard treatment for corneal blindness and it is the most common transplant performed worldwide with overall success rate of 85% (good success rate is related to avascular property of the cornea) (8–10). Common corneal diseases that indicates corneal transplant include keratoconus, Bullous keratopathy, corneal dystrophies, regrafts, corneal scars etc. Eye donors are generally all people aged from 6 years to 70 years old, donated eyes should be harvested from the donor's body within 6 hours after death (8,9,11).

On transplant point of view, some common conditions can prevent a person to be a donor. These include systemic infections due to bacteria, fungi and viruses diagnosed at death. Different neurologic conditions, blood and lymphoid cancers are also barrier to eye donation for transplant (10,12). All ocular infections which are active at the time of donor's death, ocular malignancies and any other ocular disease which affect corneal integrity are also barriers to eye donation for transplant purpose (12).

Eye donation is a key factor for a sustainable corneal transplant services. However, willingness to donate eyes as well as other organs is a complex process with legal, ethical and socio-cultural barriers (13). In countries where an opt-in system of law is used (donors must give explicit consent), eye donors are few compared with countries where an opt-out system is used; whereby anyone who has not refused is a donor (8,14). Religion and culture can also affect negatively the one's willingness to donate eyes even when awareness is good (2,6,15).

Awareness about eye and other organs donation and willingness to donate are two important factors for a living person to become a donor. The next of kin may refuse to consent for organ donation of eligible donors. However, next of kin are more likely to consent for organ recovery if the deceased had indicated the willingness to be organ donors during their lifetime (16). Therefore, the willingness of the family of a deceased donor to honor the will of their relative is the most important factor to make eye donation possible. This influence of the next of kin of deceased make eye and other organs donation to be not only an individual willingness but it involve even close relative of the donor and sometimes the whole family (17,18).

The barriers to eye donation have the consequence that eye donation is still unsatisfactory worldwide and the number of patients in need of corneal transplant is far higher than the number of people willing to donate eyes (5,8,19). A global survey done on corneal transplant and eye bank showed that the ratio demand/supply is 70:1 worldwide and only 37.5% have adequate access to corneal transplant. According this survey, high number of people who have no access to corneal transplant services found in Africa and many countries of Asia (8).

In developed countries, much attention has been given to factors affecting public behavior towards eye donation and corneal tissue availability. In Asian countries like India, Malaysia and Singapore, there is an increase in awareness on eye donation and the willingness to donate eyes, also increases with time due to influence of education and technology (2,3,9,20). In most African countries, the factors affecting willingness to donate eyes are not well known (3,8). Therefore, it is difficult to have enough tissues for transplant and to have sustainable eye banks.

1.1. Literature review

1.1.1. Willingness to donate eyes

Willingness to donate eyes is a dynamic parameter that changes with time, place and population. It seems to be low in some developing countries because of socio-culture influence (8,15,21,22). Among studies done in Asia, Yew et al. estimated the willingness to donate eyes at 67% among Singaporean adult. It was estimated at 32.9% in Rural population of India by Krishnaiah et al., while Bhandary et al. reported 34.42% in Maleka/Malaysia (9,19,20). In the study done by Lawlor et al. in Australia (New South Wales), willingness to donate eyes was 59.0% (14).

In Africa, studies done in Nigeria showed that the willingness to donate eyes was reported to be 33.3% in the study done among medical doctors in Delta state by Abadom et al. and 14.2% among university students by Eze et al. In rural population of central Ethiopia, the study done by Gessesse et al. estimated the willingness to donate eyes at 57.9% (15,23,24). In Tanzania, no studies reported about willingness to donate eyes.

1.1.2. Factors affecting willingness to donate eyes

1.1.2.1 Demographic factors

Gender had been reported to affect willingness to donate eyes. In studies done in Malaysia by Bhandary et al., rural population of India by Krishnaiah et al., and in Nigeria by Abadom et al., males were more willing to donate eyes than females (20,23,25). However, females were more aware and willing to donate eyes than males in the study in Saudi Arabia by Hameed et al. (27).

The effect of age on willingness to donate eyes is not similar in different populations. Among both urban and rural population of India, Dandona et al. and Krishnaiah et al. reported that old age (>60yrs) was more associated with unwillingness to donate, while in Singapore, Mariella et al. reported low willingness to donate eyes in youth compared to adults (9,25,27,28)**.** However, in the studies done in Malaysia and Ethiopia by Bhandary et al. and Gessesse et al. respectively , age did not affect the willingness to donate eyes (5,20)**.**

Unclear religious rules about eye and other organ donation may be the cause of this disparity of the willingness and perception towards eye donation among different religious groups. In the study done in Singaporean youth by Mariella et al., assurance that their religions support eye donation was among five given reasons which can make them feel positive about eye donation. In the study done in the UK among Asian populations by Randhawa et al., some participants claimed that there is a need of clarification from their religion whether eye donation is good or bad thing to do (13,28).

According to a global survey about eye banking done by Gain et al., Christian countries showed a high level of cornea procurement compared to other religions (8). In central Ethiopia the study done by Gessesse et al. religious reasons for unwillingness were given by 46.4% of Muslims, 25.8% of Orthodox Christians and 15.8% of Protestant Christians (5). Low willingness to donate eyes was associated with Islam religion in studies done in Singaporean youth by Mariella et al. and in urban population of Southern India by Dandona et al. (21,24).

Cultural beliefs are also among factors that affect willingness to donate eyes and other organs donation in general. In central Ethiopia, 59% of people who were unwilling to donate eyes said that the body should be buried intact (5). Among medical doctors in Nigeria, cultural beliefs contributed to unwillingness to donate eyes by 9% (23). This was also seen in a study done by Waziri et al. among Ophthalmologists in Nigeria where sociocultural beliefs being among important reasons for unwillingness to donate eyes in this group (15).

Different studies have shown that the level of education has an impact on willingness to donate eyes. In rural populations of central Ethiopia, the willingness to donate eyes was associated with the level of education where people with secondary school and above were more willing to donate eyes compared other groups with a lower level of education (5). The same impact of education on willingness to donate eyes was again observed among rural population of India, where the willingness was 94.3% in people who went to university while it was 11.3% in illiterates. A similar association was also seen in a study done in Maleka, Malaysia (25).

Reports from different literature have shown that occupation has a positive effect on awareness about eye donation but was not associated with willingness to donate eyes.

In Maleka/Malaysia Bhandary et al. reported that willingness to donate eyes among medical personnel was 23.7% while in nonmedical it was 36.1% (20). In 3 different studies done in Nigerian, being medical personnel did not improve the willingness to donate eyes: Eze at al. estimated the willingness to donate eyes at 13.1% and 16% among medical and in nonmedical students respectively. Abadom et al. reported that the willingness to donate eyes was 33.3%, among medical doctors in delta state, while Waziri et al. reported 21% among ophthalmologists (15,23,24).

The study done among medical students in Saudi Arabia, reported that willingness to donate eyes was 21.1%(26). These findings are quite different from studies done in India; where Care et al. reported that willingness to donate eyes was 87.2% among medical students in New Delhi and Gupta et al. reported 85.1% of nursing school students in Bangalore to be willing to donate their eyes (30,31).

1.1.2.2 Awareness about eye donation

Awareness of eye donation is an important predictor of willingness to donate eyes. In studies done in Maharashtra/ India by Srivastava et al. and in the rural population of central Ethiopia by Gessesse et al., willingness to donate eyes was found higher in people who were already aware of eye donation before the study (2,5).

Lack of awareness about eye donation was reported to be associated with unwillingness to donate eyes by 39.18% in rural Karnataka /India by Yajaman et al. and 50.6% among rural population of southern India by Krishnaiah et al. (19,25). However, in the study done in Chandigarh/ India by Puri et al. among women, awareness was high (82.4%) but willingness to donate was low (14%).

Similar results were seen in Malaysia by Bhandary et al., where awareness was 69% but willingness to donate eyes was 23.75%; as well as in the study done in Nigeria by Waziri et al. where almost all participants were aware of eye donation but the willingness to donate eyes was only 21% (15,20,21,23).

1.1.2.3. Perceptions about eye donation

Different literatures showed that positive perception about eye donation is associated with willingness to donate eyes. This was seen in the study done among rural population of central Ethiopia where 85.5% of participants who were aware of eye donation had positive perception about eye donation and among them, 83.1% were willing to donate their eyes (5). Body respect and disfigurement are concerns about eye donation and reasons for unwillingness to donate eyes and other organs reported by a number of literatures. In the study done in New South Wales /Australia by Lawlor et al. participants showed selective refusal to donate eyes because they think it destroy the identity of the person(31).

Among some populations, people associate eye and other organs donation with organ trafficking. That was observed in the study done among doctors Delta state/ Nigeria, where 7.9% of them thought eye donation can be a part of illegal trade. Organ trafficking related to organ donations, mistrust to medical personnel in terms of distribution of donated organs and unethical organs harvesting have been reported in a study done in the USA by Morgan et al. as well as in the meta-analysis of qualitative studies about organ donation by Newton et al.(16,32).

The concern of medical mistrust had been reported again by De Moraes et al. in the study done in Sao Paulo/ Brazil where some participants thought doctors may accelerate the death of donors to sell the organs to people who need organ transplant(33). The same worry was again stated in Kenya (interview with Daily nation) where some responders thought that eye donation can influence organ trafficking (19).

1.1.2.4. Decision making in the family

In some communities, there is a strong familial interdependence which may hinder the decision about eye donation. This was observed in the study done by Puri et al. among women in Chandigarh/ India; around 56% of women responded that they should first discuss with their husbands, and 21% should discuss with their sons before deciding to be eye donors (21). In the study done among Singaporean adults by Yew et al., family objection contributed on unwillingness to donate eyes by 49.2%. In Delta state /Nigeria, 27.3% of doctors who were

unwilling to donate eyes stated family objection as a reason to not donate eyes. Among rural population of central Ethiopia, 35% of participants who were unwilling to donate eyes feared family objection (5,9,23). The same concern of family objection was reported also in the meta-analysis of qualitative by Newton J. et al where some respondents were willing to donate organs but failed to do so because their family members did not like it (16).

1.2. Problem statement

Willingness to donate eyes and other organs in general is still unsatisfactory worldwide. This problem is more prominent in low income countries where the awareness about eye and other organs donation is still low, but also factors like cultural beliefs and religion may affect people's decision making in terms of organ donation.

In Africa, there is a gap in knowledge about factors which may influence people's willingness to donate eyes. Therefore, it is difficult in majority of countries to have local corneal transplant services and sustainable eye bank. As low income countries are not able to import corneal tissues for all patients with corneal blindness and patients cannot afford corneal transplant services outside their countries, the prevalence of corneal blindness increases.

To our knowledge, no prior study was done in Tanzania about eye donation and factors that are associated with willingness to donate eyes. There is also a gap on knowledge about people's perception about eye donation. Therefore, there is a need to conduct this study in order to have a baseline information about eye donation in Tanzania.

1.3. Rationale

People with corneal blindness can highly benefit from eye donation when done locally in their countries. Recognition of factors that affect willingness to donate eyes can help in community education, hence establishment of sustainable eye banking and corneal transplant services. This study was done to assess and document the level of willingness and associated factors among adult people in Tanzania.

Results on awareness about eye donation would help eye care providers in planning for health education about eye donation and its importance. The findings on willingness and perception towards eye donation will provide an idea that establishment of eye bank and sustainable corneal transplant services may be possible in Tanzania. This study would also serve as reference for other similar studies.

1.4. Research questions

1. What is the proportion of people willing to donate eyes among patients attending ophthalmology and ENT clinics at MNH?
2. What is the proportion of patients who are aware of eye donation among patients attending ophthalmology and ENT clinics at MNH?
3. What are the factors that affect willingness for eye donation in patients attending ophthalmology and ENT clinics at MNH?
4. What is the perception about eye donation among patients attending Ophthalmology and ENT clinics at MNH?

1.5. Conceptual framework

Recognition of factors affecting willingness to donate eyes in the population helps as a guidance in community education, raise awareness about eye donation hence increase the willingness to donate eyes.

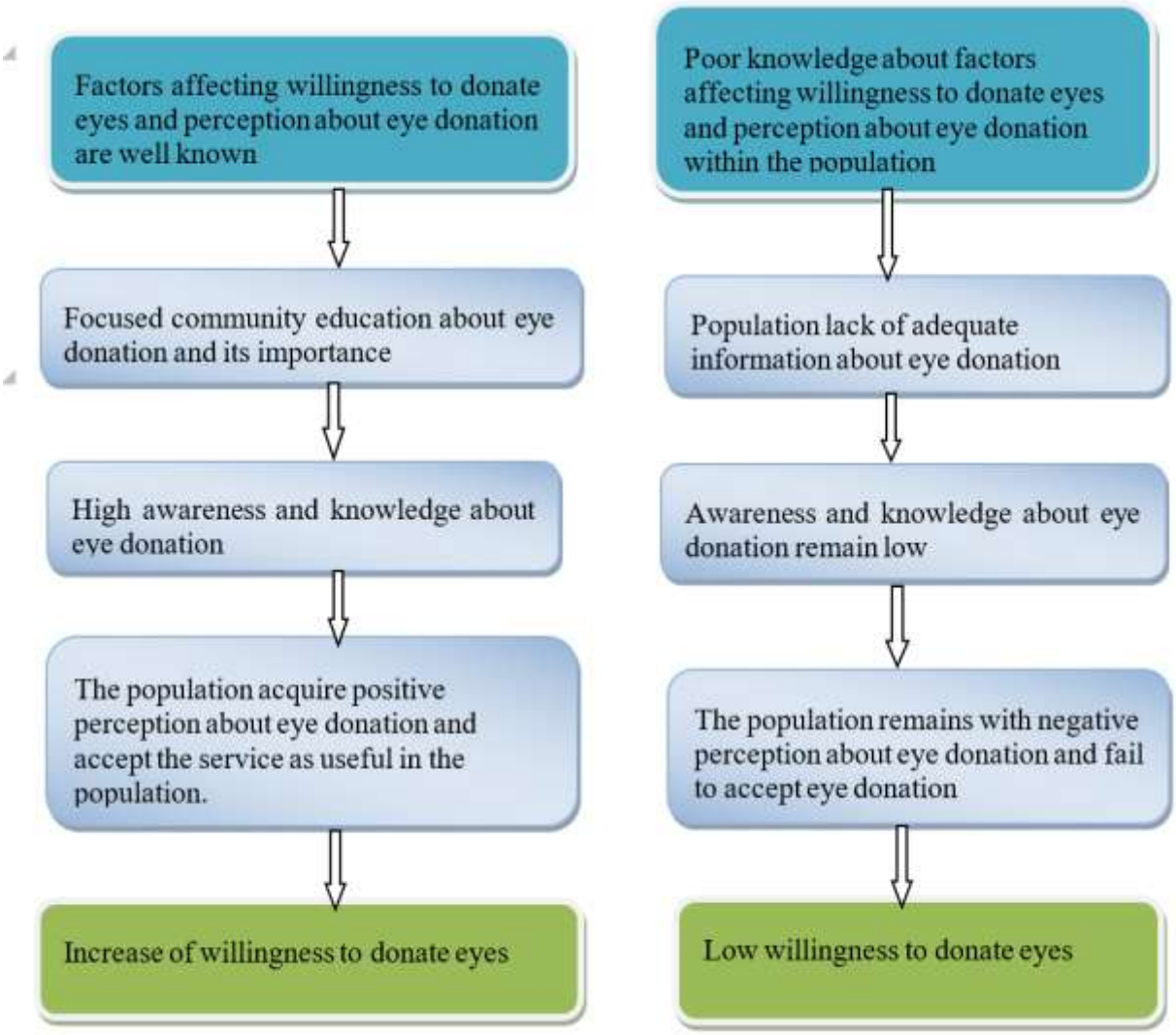


Figure 1: Willingness to donate eyes and associated factors.

1.6. Objectives

1.6.1. Broad objective

To assess willingness to donate eyes among patients attending ophthalmology and ENT clinics at Muhimbili National Hospital. (MNH)

1.6.2. Specific objectives

1. To determine the proportion of patients who are aware of eye donation
2. To determine the proportion of patients who are willing to donate their eyes
3. To identify factors that affect willingness to donate eyes
4. To assess patients' perception towards eye donation

CHAPTER TWO

2.0. METHODOLOGY

2.1. Study design and Study area

This was a Cross-sectional hospital based study with quantitative and qualitative approach. It was conducted in Ophthalmology and ENT outpatient clinics, at Muhimbili National Hospital (MNH). MNH is located in Upanga West, Ilala district of Dar es Salaam, Tanzania. It is the largest tertiary referral hospital. It serves patients referred from other health facilities all over the country and serves as teaching hospital for Muhimbili University of Health and Allied Sciences (MUHAS). Ophthalmology and ENT clinics serve outpatients from Dar es Salaam region as well as patients referred from other regions who need specialized consultation in those fields. They are conducted every day during week days, and an average of 40 patients is seen every day in each clinic.



Figure 2: Map of Tanzania showing regions (source google maps)

2.2. Study population and study period

Adult patients who attended Ophthalmology and ENT clinics during the study period (July 2017 - December 2017) constituted the study population.

2.3. Sample size estimation for quantitative survey

In this study, sample size estimation for proportions was used for the sample calculation as follow: $n = \frac{z^2 p(100 - p)}{\varepsilon^2}$

n = Minimum required sample size, z= statistic value for the level of confidence, p= Expected proportion with the characteristic of interest, ε=Maximum likely error/ margin of error

Therefore, ε= 5% (marginal error)

Z=1.96 (95% level of confidence),

p= 57.9% (from a study done in Ethiopia, where willingness to donate eyes is 57.9%)

$$n = \frac{(1.96)^2 57.9(100 - 57.9)}{(5)^2}$$

The minimum sample size calculated for quantitative data was 374 participants. However, a total of 434 participants were recruited.

2.3.1. Inclusion criteria

All patients attending Ophthalmology and ENT outpatient clinics at MNH

2.3.2 Exclusion criteria

1. Patients under 18yrs old
2. Patients with mental health disorders
3. Patients who can't speak Swahili or English

2.4.Sampling and data collection technique

Quantitative data

Study participants for quantitative survey were chosen through systematic random sampling technique. In fact, 8 participants were needed on each data collection day. Therefore, the total number of the booking list of the concerned day was divided by 8 to get the k factor. The first participant was the first patient on the list then every k+1 patient was chosen. As data were collected every Monday in Ophthalmology clinic and Thursday in ENT clinic. A minimum of 16 participants were selected each week in order to allow recruitment to go on throughout the 21weeks study period.

Two nurses were recruited as research assistants and trained about participants' recruitment. All selected participants who met the inclusion criteria were informed about the study by the principal investigator. Once patient agreed to participate in the study, she/he was requested to sign a written consent form. The research assistant was required to take demographic data from selected participants and make sure they were not late for their routine care they came for. A face to face interview was conducted by the principal investigator, who also ensured completeness of data for all study participants.

Qualitative data

Participants for qualitative data were selected by purposive sampling technique. Two "focus group discussion" (FGD) were done. Participants for FGD were selected from those who participated in quantitative survey. Each FGD had participants from Dar es Salaam as well as participants from other regions, but also participants who were willing and those who were not willing to donate eyes. Therefore, two groups of participants were formed, one for male (8 participants), and another for female (9 participants). Single-gender FGDs were chosen to allow each gender to discuss freely personal issues and express perceptions and emotions about eye and organ donation.

2.5. Data collection tool

Quantitative data

During quantitative data collection, predesigned pretested (tested in ophthalmology ward on 10 patients) questionnaire was used. It was prepared in English and translated in Kiswahili for data collection. The questionnaire was a forced choice format, where the participant was asked to choose among given options. In case the participant had different views, there was an option called "others", where a different option given by a participant was written. The level of knowledge of participants was graded according to modified Bloom's cut off points as: High (≥8 correct answers →≥80%), Moderate (5to 7 correct answers→50%-70%) and Low (less than 5 correct answers→≤50%). A copy of the questionnaire was provided in appendix to serve as reference.

Qualitative data

For the qualitative part of the study, guiding script was used during FGD (conducted in Kiswahili). It included open ended questions (to allow detailed discussion) about awareness of organ donation (introductory question), perceptions about eye donation, benefit of eye donation in the community and consent for eye donation. The discussion did not follow any structured order. However, probing and additional questions were sometimes needed to guide the discussion and clarify unclear concepts. A copy of FGD guide was provided in appendix for reference.

The mean time for each FGD was 45 minutes. To limit distraction and to ensure anonymity of the study participants, a special room at adult ophthalmology department was used. Audio tape was used rather than videotape as well as codes rather than names of participants.

2.6. Data analysis

Quantitative data were captured through the questionnaire and imported in SPSS version.20 for cleaning and analysis. Chi-square ($\chi 2$) and t tests were performed, multinomial logistic regression was done to test association between willingness to donate eyes and other variables. Frequencies and proportions were selected according to the level of measurement of each

variable of interest. P value of < 0.05 was estimated statistically significant. Data were summarized in tables, pie and bar charts for presentation.

About qualitative data, the researcher replayed the tape. The tape-recorded discussions from FGDs were manually transcribed verbatim in MS Word file to maintain the original meaning. Then, FGD were translated in English (keeping original Kiswahili document). Systematic thematic analysis was done, whereby all themes emerged from FGD were grouped accordingly.

2.7. Ethical issues

Ethical clearance was issued by MUHAS ethical committee, MNH research department, Ophthalmology and ENT departments. Children (under 18 years of age), patients with mental health problem as well as patients who need urgent care were not recruited in this study.

Each participant signed freely an informed consent written in Swahili before entering the study. The consent form showed the details about the study and the researcher. To insure confidentiality during data collection, codes were used for questionnaire and respondent's identification rather than names of participants.

CHAPTER THREE

3.0. QUANTITATIVE RESULTS

A total of 434 participants were interviewed in this study. Females were 58.0%; Female to Male ratio was1.4:1. The most frequent age group was between "18-33" years (44.93%). (Table 1)

Table 1: Demographic characteristics of participants

Characteristics		Frequency	Percent
Age group(years)	18-33	195	44.9%
	34-48	141	32.5%
	49-63	71	16.3%
	64 and above	27	6.3%
Sex	Male	182	42.0%
	Female	252	58.0%
Religion	Muslim	182	41.9%
	Christian	252	58.0%
Marital status	Single	127	29.2%
	Married	279	64.3%
	Widow/widower	19	4.4%
	Divorced	9	2.1%
Residence	Dar es Salaam	322	74.1%
	Other*	112	25.8%
Level of education	No formal education	19	4.4%
	Primary	172	39.6%
	Secondary	126	29.0%
	College	117	27.0%
Occupation	Health workers	38	8.8%
	Medical students	25	5.8%
	Others students	17	3.9%
	Teachers	28	6.5%
	Other occupations	326	75.1%

Note *Other *represented regions included: Pwani, Morogoro, Dodoma, Tanga, Lindi, Mtwara Kilimanjaro, Kigoma, Kagera, Mbeya, Ruvuma, Rukwa, Mwanza, Singida, Mara, Iringa, Shinyanga and Zanzibar.*

Among all participants, only 32.5% were aware about eye donation (Figure 3).

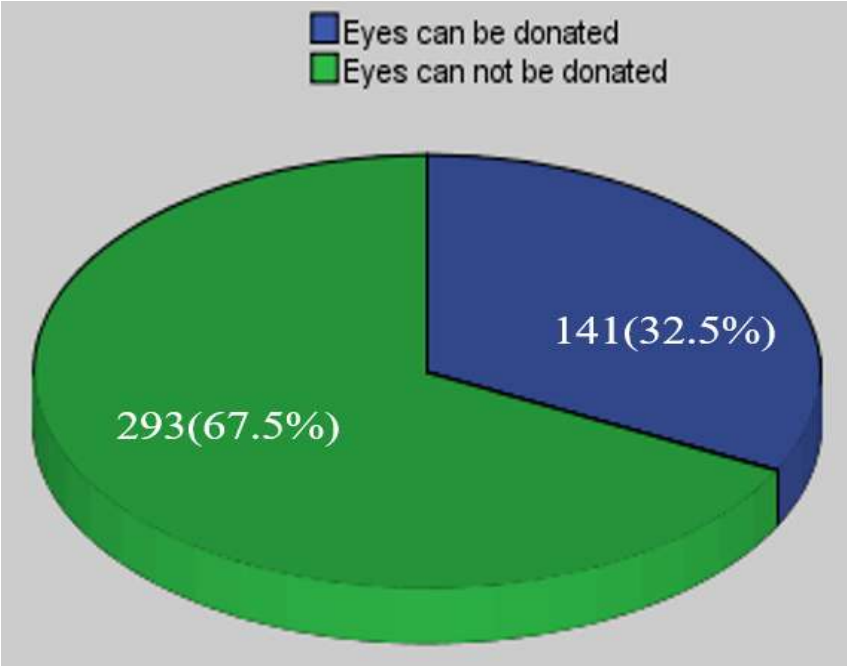


Figure 3: Awareness about eye donation

Table 2: Level of knowledge about eye donation among participants who are aware (N=141)

Grades of knowledge*	Frequency	%
High	3	2.1%
Moderate	84	59.6%
Low	54	38.3%
Total	141	100%

Note*The rating was done according to number of answers given by the respondent among 10 questions captured in table 3.*

For participants who were aware about eye donation, more than a half had moderate knowledge about eye donation (Table 2).

Table 3: Knowledge about eye donation among participants who were aware (N=141)

Knowledge questions about eye donation	Frequency	Percentage
Use of donated eyes		
1.Corneal transplant	118	83.7%
2.Teaching and research	35	24.8%
Eligible donors for transplant purposes		
3.People with good health	55	39.0%
Non eligible for transplant purposes		
4.People with infectious diseases	96	68.1%
5.Children under 5 years	68	48.2%
6.Old people above 70 year	75	53.2%
How to become an eye donor?		
7.Writing a will before death	95	67.4%
8.Consent from close relative after death	19	13.5%
When donated eyes are removed from donor's body?		
9.Short time after donor's death	47	33.3%
Who is eligible to receive donated eye?		
10.Any person in need	98	69.5%

Note*Frequencies and percentages cannot be summed up because of possibility of multiple responses for a single participant.*

Among participants who were aware of eye donation, 83.7% knew that donated eyes are used for corneal transplant (Table 3).

The proportion of participants who were willing to donate eyes was 47.9% (Figure 4).

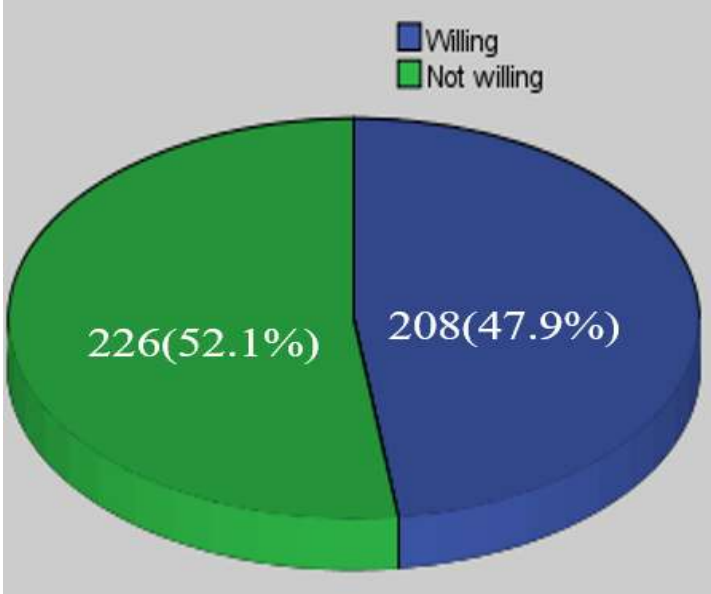


Figure 4: Willingness to donate eyes

Table 4: Perceived reasons associated with willingness to donate eyes

Reason for willingness / unwillingness to donate eyes		Frequency	Percentage
Reasons for willingness	It is a noble work	13	6.3%
	To help a blind person	133	64.3%
	I don't need eyes after death	62	29.5%
Reasons for unwillingness	It is against my religion	50	22.0%
	It is against my culture belief	10	4.4%
	I am not sure of the use of donated eyes	56	24.7%
	I need more information	72	31.7%
	Other reasons*	38	17.2%

Note: Other reasons given included: eye problems, too old to donate; fear, honour of the body after death, health problems, wants to be buried complete.*

To help a blind person was the most frequent reason for willingness (64.25%), while lack of information was the most frequent reason for unwillingness (31.72%). (Table 4)

Table 5: Factors affecting willingness to donate eyes

Factors		Willing	Not willing	OR*	CI	p-value
Age	18-33	96(49.2%)	99(50.8%)	1.180	0.436-3.190	
	34-48	67(47.5%)	74(52.5%)	1.158	0.443-3.023	
	49-63	34(47.9%)	37(52.1%)	1.070	0.393-2.912	0.895
	≥64	11(40.7%)	16(59.3%)	1.000		
Sex	Male	101(55.5%)	81(44.5%	1.773	1.167-2.694	0.049
	Female	107(42.5%)	145(57.5)	1.000		
Religion	Muslim	70(38.5%)	112(61.5)	0.578	0.381-0.876	0.010
	Christian	138(54.8%)	114(45.2)	1.000		
	None	3 (15.8%)	16(84.2%)	0.187	0.048-0.732	0.327
Education	Primary	80 (46.5%)	92 (53.5%)	0.898	0.524-1539	
	Secondary	58(46.0%)	68(54.0%)	0.763	0.444-1.310	
	College	67(57.3%)	50(42.7%)	1.000		
Awareness	Aware	92(65.2%)	49(34.8%)	2.865	1.886-4353	<0.0001
	Not aware	116(39.6)	177(60.%)	1.000		

***Note** * OR adjusted for all factors in the table.*

Multinomial logistic regression showed that willingness to donate eyes was associated with awareness, religion and sex (Table 5).

Eighty-two percent of study participants agreed that eye donation is important (Figure 5).

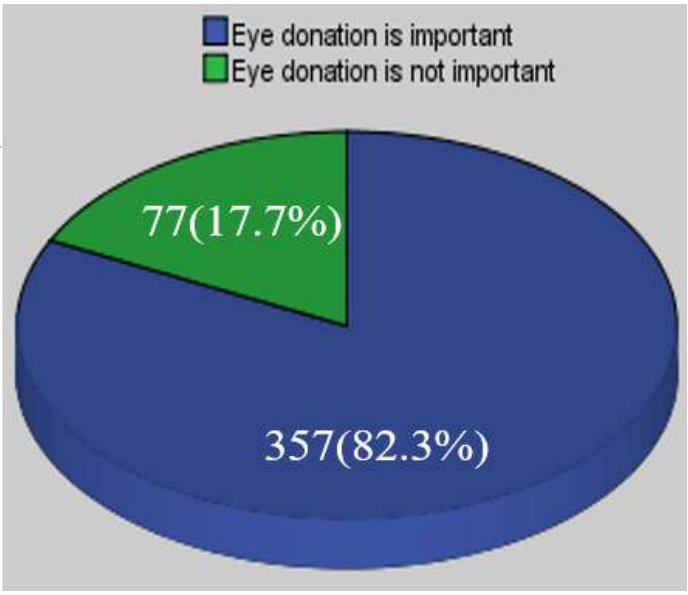


Figure 5: Perception about eye donation

Table 6: Reasons associated with perception about eye donation services

Perception	Associated reasons	Frequency*	Percent*
Positive	Can reduce the burden of blindness	298	83.5%
	CT** services will be cost effective	168	47.1%
	Can give money to donors and their families	6	1.7%
Negative	Donor cannot benefit from the service	19	24.0%
	Donor/family may be socially stigmatized	15	18.7%
	It is torture to the dead person	32	41.3%
	It is a can cause organ trafficking	41	53.3%

***Note**: One respondent could give more than one answer ****CT**: Corneal Transplant*

The most frequent reason associated with positive perception was that “eye donation can reduce the burden of blindness”, while negative perception was mainly associated with the fact that “eye donation can cause organ trafficking”. (Table 6)

Nearly half of the participants who agreed that eye donation is important (positive perception) believe that to become an eye donor is a personal decision. (Figure 6)

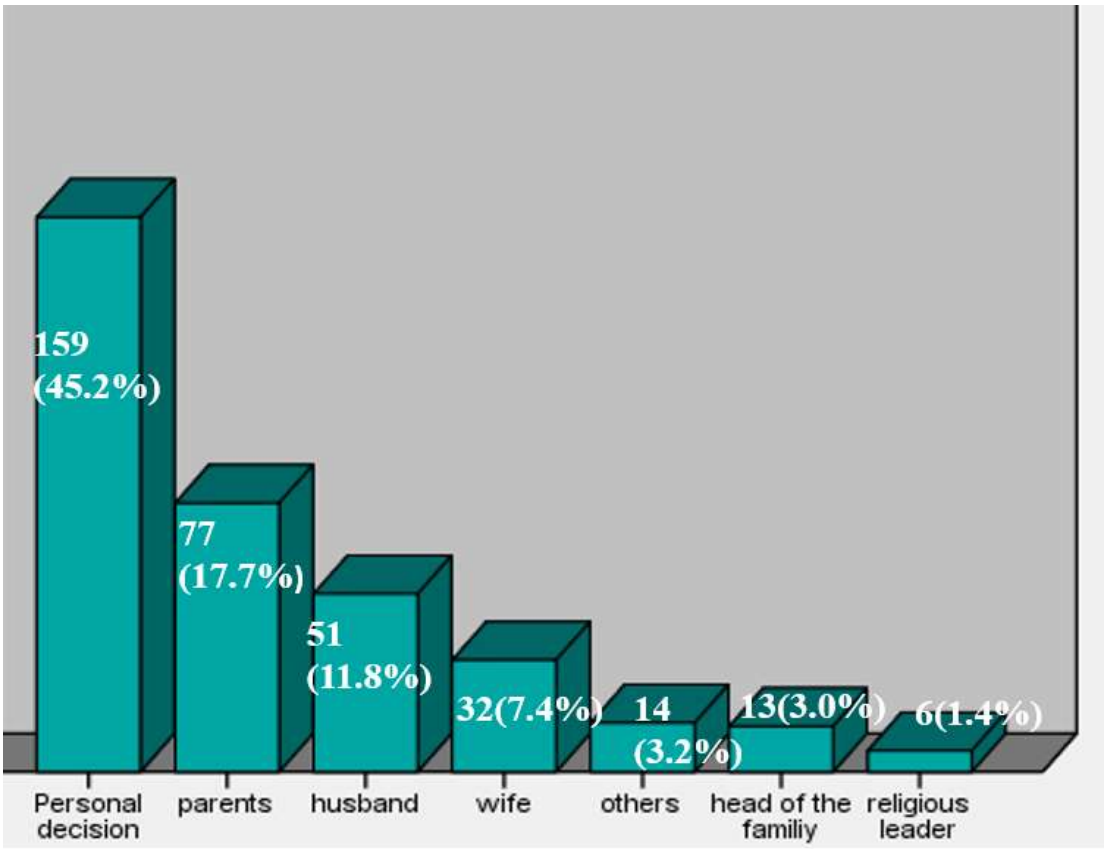


Figure 6: Person to consult before writing a will for eye donation (N=357)

Note: *Others included "children, blood brothers and blood sisters*

3.1. Qualitative results

Different ideas about eye donation were revealed after analysis focus group discussion (FGD)and they were grouped in eight main themes.

Theme 1. Helping others

Participants had different perception about eye donation. Some perceived it as good thing to be done but others thought it is not right and can cause problems. Some said: *Something to help a sick person, it cannot be a problem. As the blood, even though with the blood you are still alive but it is the same, to help a person who is alive. (FGD, female)*

Eye donation is a good thing to do if it can help another person as long as the appearance of the face will not be affected as said by a female participant: *For me if you tell me to donate my eyes after my death to help another person, there is no problem as long as my look will not be affected. Because if my children see me at last they may run away saying this is not our mum. If I will look normal, no problem. (FGD, female)***.**

Theme 2. Religion

On the other hand, participants who were not willing to donate eyes in both groups raised the issue of religious beliefs as barrier to donate eyes. The concern of after life was revealed, there is a possibility that people will be resurrected without eyes if they donate them, as said by one respondent: *"We were told that there is resurrection after death, one will ask, when the end comes and being resurrected he/she will not have an eye (FGD, Male)*

Others fear to be answerable before God, but also think that transplant seems as if people want to challenge God in creation as stated by a female participant in this words: *Myself I cannot accept to donate. First of all, in my religious beliefs, God created everybody with his/her organs. As you remove my organ and put it in another body, it is as if you are teaching God to create. Then if God protected me with all my organs up to my death if you remove some of them and I am going to Him, I think it is not right! (FGD, Christian)*

Theme 3: Fear

Personal fear emerged as a barrier to donate, one participant commented: *For me, I don't want to comment anything because I see huuum! to be removed an eye is another story. I take it in another perspective. I see aaaa! I cannot donate my eyes even if I am dead…. I don't know I am scared. (FGD, female).*

Fear of the community harm to donors by people who have relatives in need of organ transplant was raised also. A male participant stated*: It is suspicious. Assume I know you as an eye donor and you have good vision, I can plan and kill you so that your eyes are given to my relative who is in need of them. (FGD, male).*

A kind of jealousy was expressed especially about donating for close relative. Family members of the donor may feel bad seeing the recipient of their relative's eyes. One participant claimed: *That process of donating for your close relative is difficult. Imagine your father is dead, his eyes are used by someone else and he/she is enjoying life, seeing him/her is really painful." (FGD, male).*

Theme 4. Death and body

Traditional beliefs associated with death were raised as far as eye donation is concerned. Some participants think eye donation services may be perceived as a kind of disrespect of the deceased person. Here are some quotations from FGD: *In our African community and Tanzania specifically, it is important to respect the body of a dead person. If you start saying the need of removing eyes, it can bring problems. (FGD, female)*

Some participants think that it may be illegal to transplant an organ from a dead person but also not acceptable to separates organs when somebody is dead: *I think that to receive an organ from a dead person is against human right, why take an organ from a dead person and give it to a living one? A person should be buried complete. (FGD, male)*

Emotions and fear associated with death were also expressed: *To remove eyes while a person is dead!! It is still a big problem. In normal circumstances just like that!! (FGD, female)*

Natural fear of a dead person may lead to refusal of donated eyes (people may be afraid to receive eyes from dead persons) and interfere with eye donation services. Some of the study

participants commented in these words: *I don't think that people will accept to receive eyes from a dead person. I don't think so. (FGD, female).*

Participants said that it is not good to ask for consent for organ donation while a person is dying, that can increase stress for relative and hinder willingness to donate eyes: *Talk to healthy people. go in schools and somewhere else, let people sign while they do not show any sign of disease or death, like in blood donation. But if you wait for somebody to be sick and you start telling people "we need eyes of your relative. eeh! (FGD, female).*

Participants also raised the issue that it may be difficult to talk about eye donation with somebody who is not stable emotionally: *To discuss eye donation with relative is not easy. First of all, you have to know that they have lost their beloved one! (FGD, female).*

Theme 5. Organ trafficking

The approach to the community may also affect their perception and make the community to accept the services or refuse them. Some participants raised the issue of advertisement and others raised the issue of payments. It was stated this way*: It should not be a business to advertise because people will think of organ trafficking or witchcraft. Yeah, do not advertise people's organs. Give education but not advertisements. (FGD, female)*.

Warning about buying organs was given in these words: *If you will be buying organs, it will cause murders in the community. But if you put a clear process to donate, nothing bad will happen. (FGD, female).*

Theme 6. Community education

Participants perceived eye donation as something which the community will accept as time goes on, but with some conditions**.** Community education was the main condition under which eye donation can be accepted. Participants expressed their ideas like this: *First you provide education to people regarding eye donation, when they are educated, they will just accept, what matters is education (FGD, male)*

If you give education about the importance of it, it will be accepted. If it is possible for that cornea to help a person to see again, it will be accepted! (FGD, female)

If the community is educated, then people will be able to differentiate between legal and illegal things. (FGD, female)

Time also is a condition to accept the service. As time goes on, people will see and know more about the service and accept it. Participants brought it out in these statements: *This is a new thing, but I can remember when people were talking about the blood donation that people are put on a stamp and the blood is sucked out. But now they are used to it. (FGD, male)*

Acceptance and willingness to donate eyes can also be supported by the evidence from people who benefited from donated eyes. That concern was raised in both female and male FGD.A male participant explained in these words: *I was just saying that, people who have been benefited from this service should come out as vivid examples so that other people or the whole community would see the importance of this service. (FGD, male)*

Theme 7. Benefit of eye donation services

Health benefit: Eye donation in the country will contribute in lessening the burden of blindness. That will improve life of people with corneal blindness and contribute to the economy of the country: *it will reduce the number of blind people, people will have their sight back and continue with their daily activities, because the dead person has no any potential, instead of being buried with the organ, it is better to give to someone who is still alive. (FGD, male).*

Eye donation services will help blind people to be productive again. This was stated by one of the FGD member in these words: *It will increase manpower, I have an example of my uncle, who got education through government, and then he has his leg amputated, he cannot work anymore hence the decrease of manpower, but as for this when this comes, it will increase manpower. (FGD, female)*

Economic benefit: It will reduce the cost that is used when people go abroad for corneal transplant. It will also help those who could not afford the treatment abroad. This was mentioned by both female and male groups:

It will reduce the cost of treatment, you know going abroad for treatment, and getting treatment in the country are two different things, it will reduce the cost, for abroad, there is transport cost, accommodation cost and food costs (FGD, female)

Another kind of economic benefit that was mentioned by male group, was that, instead of money being send abroad, they will just remain here for the benefit of the country.

It will help. Our money instead of taking it to India, it will just remain here for the development of our country. (FGD male).

Professional benefits: Once the service is launched in the country, the number of professionals will increase in our country, people will get jobs in that knew field of work: *When this service is put in place, our people will benefit, because they will just go and specialise on that issue. Other people will be hired to work in those services. (FGD, female).*

Local doctors will gain trust from the population: *You know we tend to trust doctors from foreign countries but if the service will be efficient here, we will also trust our doctors. (FGD, female).*

Theme 8. Decision making about being an eye donor

Most of the participants said that to become eye donor is personal decision but family members should be informed to avoid any misunderstandings when the donor is gone. Few said they should inform their relative before they sign consent and a lawyer should be involved.

For me that one, I see it is my personal decision, but it is mandatory to tell my relatives that I signed a donor card that my eyes will be taken after my death. By informing them, at the time of my death they will not be astonished or think any witchcraft issues. (FGD, female)

Firm decision to be an eye donor is necessary to convince family members: *That is like sacrifice. If I decide to help someone with my eyes after my death, I will educate them and tell them that it is a sacrifice to give sight to someone because me I am no longer alive…so they won't refuse. Telling them before or after I sign, it won't change my decision. (FGD, female).*

CHAPTER FOUR

4.0. DISCUSSION

The majority of participants in this study were females, this is similar to previous studies like that done by Gessesse et al and Hussen et al. in central and Northern West Ethiopia respectively as well as by Srivastava et al. in India (2,5,35). In the current study, a bigger number of females may be due to the fact that females are more likely to seek medical attention and they are more in hospital than males.

About one third of participants were aware of eye donation. These results are comparable to studies done in central Ethiopia by Gessesse et al. and rural India by Krishnaiah et al. (5,25). However, the awareness in the current study is low compared to the study done by Srivastava S. et al in Maharashtra/India and in urban populations of southern India by Dandona R. et al. (2,27). This difference may be due to the fact that eye donation services have not yet started in Tanzania. Therefore, the population have low awareness about it. Among all participants who were aware of eye donation, majority knew that donated eyes are used for corneal transplant. People are likely to know corneal transplant as the only use of donated corneas as compared to other uses like research and teaching, that's why previous studies also reported corneal transplant to be the most known use of donated eyes (2,3,19,20).

The proportion of participants who were willing to donate eyes was high in this study compared to awareness. These results agreed with the study done by Gessesse G. et al. in a rural populations of central Ethiopia, where willingness to donate eyes was good compared to awareness(5). The finding however is in contrary to other studies like those done in Nigeria and Asia where the proportion of people willing to donate eyes seemed to be low compared to awareness(9,15,19–21,23). This disparity might be due to differences in socio-cultural beliefs.

Willingness to donate eyes is influenced by a number of factors like awareness about eye donation. Respondents who were aware of eye donation were more willing to donate their eyes compared to others. This agreed with the study done by Gessesse G et al. in Central Ethiopia as well as the study done by Yew et al. among Singaporean (5,9). However, these results varied with the majority of studies done in Nigeria and Asian countries (9,15,19–

21,23,27). These studies may not be directly comparable to the present study because of differences in age; culture, ethnicity and religion.

The results of the present study showed that male sex was associated with willingness to donate eyes. The same results were seen in studies done in India, Malaysia and Nigeria (3,20,23,25), but sex did not affect the willingness to donate eyes in studies done in Ethiopia and Singapore(5,9). However, the study done by Lawlor et al. in New South Wales/Australia demonstrated high willingness to donate eyes in females than males (14). In this study during FGD, there was no clear difference between male and female group about willingness and perception about eye donation.

The most common reason associated with willingness to donate eyes was "to help a blind person." Compassion and care to others, especially those who are suffering in one way or another, is a natural character shared by humanity in different populations and culture. Participants expressed this character during FGD, where they said it is not a problem to help a blind person with their eyes after death. The same reason was highly associated with willingness to donate eyes in previous studies done in different areas including Ethiopia, Nigeria , Denmark and Asian countries(5,9,19,23,36). A qualitative study done in the USA, also reported one participant expressing that: *I don't think there's anything better that you can do in your life, than giving organs to s!!! to some deserving person, someone whose life may be very important to his or her family (person 2, Dyad 16)* (32).

The need for more information about eye donation was the most frequent reason for unwillingness to donate eyes in the present study. It is obvious that people need information about eye donation, because eye donation services have not yet started in Tanzania. Participants who were aware about eye donation got the information from Radio and TV, listened or watched what is done in other countries. However, a big proportion of the population never heard about eye donation.

Lack of information affects the community perception and results in low willingness to donate eyes. Community education using media and incorporation of the subject in health education program help to educate the population and change their perception, hence improve willingness. Participants of this study in both male and female FGD raised that concern, explaining that education is important for the community to accept eye donation services.

Lack of information about eye donation was the first reason for unwillingness in other previous studies done in Nigeria and India (19,23,25,27).

The second most frequent reason for unwillingness in the current study was "not sure of the use of donated eyes." The reason was given by 48.0% of respondents in the study done among adult Singaporeans by Yew at al. (9). This reason is associated with low knowledge about eye donation service and its importance in the population. As expressed by participants in FGD, the population need to know the importance of eye donation for them to accept the service and be willing to donate their eyes. The participants perceived that it will be good to use the beneficiaries of corneal transplant as ambassadors in the process of giving education to the community as stated by one of the male participants: *I was just saying that, people who have benefited from this service should come out as vivid examples so that other people or the whole community would see the importance of this service.*

Religious reasons were also associated with unwillingness to donate eyes in this study. The same reasons were given in the study done in Ethiopia, but less common in majority of studies done in Asia (2,5,9,25). Religious beliefs are intertwined with people's life and have influence on their decision making. In the current study, participants in both male and female groups expressed a bond between religion and decision making, especially about the body and organs. Majority of religious teachings say that we are all created by God. Therefore, only God has power on our bodies and God will punish people who donated their organs. In a meta-synthesis of the qualitative literatures done by Newton D. et al. a participant claimed: *"The organs will be witness to your actions on Judgement Day." UK, Indo-Asian, Muslim, male, 37 years old)* (16).

After life is also a theme taught by a good number of religious beliefs and it was raised in the current study in both male and female groups. It applies immediately to organ donation because it brings people to think that after death they will have a second life with incomplete organs if they donate some of them. The concern of after life was raised in the study done in the USA by Morgan S. et al., where a participant exclaimed: *Yeah, St. Peter is working through his list. "Oh, come on in. Whoa! You're missing a kidney, Sorry"*(32).

Fear has been reported to be associated with unwillingness to donate eyes and other organs. Fear may be associated to the act of organ removal or death related fear. For some people

believe that if you talk more about death, you may end up dying prematurely. Similarly, death related fear has been reported as raised by a participant in the study done in USA, *"Talking about bad things sometime gives them the power to happen." (African-American, female)*(16).

Majority of participants agree that eye donation is important for the population, and they believe that eye donation services can reduce the burden of blindness. The same positive perception was seen in the study done in rural populations of central Ethiopia where 85.5% of study participants believed that eye donation can help someone blind to see again(5). Positive perception was associated with willingness to donate eyes. In this study, only 5.2% of participants who believe that eye donation is not important were willing to donate eyes and the same findings were reported in the study done in central Ethiopia (5).

During FGD, participants explained about benefits of eye donation services more than expected. About health benefits, participants explained that eye donation will help some blind people to see and work again. Regarding economic benefits: participants claimed that the service will help to decrease the money spent on treatment in foreign countries, but also those who are not able to go abroad for the same treatment will have access to the service in the country. Professional benefits were also conversed. Eye donation service will create jobs and learning opportunities for medical professionals.

Among participants who said that eye donation is not important, about a half of them believed that eye donation "can cause organ trafficking". The same concerns were reported in the study done among medical doctors in Nigeria where 15.8% of those who were unwilling to donate their eyes, believed that donated eyes may be used in illegal trade. The same reason was given by 14.0% of unwilling participants in the study done in New South Wales/Australia(14,23).

During FGD, participants did not talk clearly in details about organ trafficking issues but some statements emerged from the discussion seem to be indirectly talking about the issue. Participants gave a kind of warning to hospitals not to buy or to advertise organ donation because it can cause murders in the community. '

The same theme about organ trafficking associated with organ donation was discussed in the study done in the USA where study participants were claiming that rich people can buy organs helped by health workers*: …. but what they were doing was harvesting organs. And sell them and the person would immediately die in a coma, but actually all their organs was gone. But*

no one found out before they died and then they'd bury them. But, you know, I don't know what all I've read, but that's one I have (person 2, dyad 59) (32). It is not ethical to advertise and to buy human organs. However, people are somehow suspicious because they do not have clear information about it.

The second most common reason for negative perception was "eye donation is torture to the dead person(donor)". This statement has some similarity with that given by 35.0% of respondents who were not willing to donate their eyes in the study done in New South Wales/ Australia; where they said that they feel uncomfortable with the thought of someone cutting into their eyes. Similar concern was seen in 49.2% of unwilling participants in the study done among Singaporean adults, where they stated that after eye donation the body would not be treated with proper respect (9,14).

The issue of body respect was among the discussed subject during FGD, and participants in both groups male and female seemed to be much concerned about the issue. The dead person should be buried complete! That was a most common reason for not donating eyes during the focus group discussion. To remove some organs from the body, would be disrespecting the deceased and violating human rights.

On the other hand, there is a misunderstanding on how an organ of a dead person can live in the body of a living person, as stated by a participant: *Others will think that to receive an organ from a dead person is against human right why take an organ from a dead person and give it to a living one? A person should be buried complete."* The concern of the body respect after death is shared by different communities. The concern goes about the body manipulation while harvesting donated organs, remaining family members stressed by seeing the body of their relative incomplete and others are concerned about cultural rituals associated with dead body. Same reasons were given in the study done in the UK among Asian populations: "*On the one hand it's a good thing to help others but on the other hand our bodies are specific to ourselves. How can it be good to mix your body with another? I can't distinguish what's good or bad in this case, there are no absolutes" (PW)*(13).

Some respondents of the present study said eye donation is not important because the donors do not benefit from it. The same concern about benefits in eye donation was raised in the study done among Singaporean adults, but also in rural population of Central Ethiopia (5,9). These

statements of negative perception might be associated with poor knowledge, as majority of respondents with negative perception in this study had never heard about eye donation. This was confirmed by participants in focus group discussions who kept insisting about community education about eye donation before the service starts.

Consent for eye donation is a personal decision. That was said by near a half of participants who agreed that eye donation is important. Personal decision making about being an eye donor or not was confirmed during focus group discussion. However, family members should be informed to avoid any misunderstanding after donor's death. When family members of an organ donor are not informed before, it might cause misunderstanding among family members when it comes to consent for organs' harvest from the body of their beloved one. Therefore, to carry an organ donor card is a personal decision but organ donation as a whole is a family matter.

The rest of the participants in quantitative part of this study expressed dependence on their family members before deciding to be an eye donor. The majority mentioned parents and spouses, few mentioned head of the family and religious leaders. It is important to maintain family unity after death of a member of the family, some people who do not have objection to organ donation end up not donating because some of their family members do not like organ donation and transplant. A participant in the study done in UK claimed*: "I personally have no objection but my father does, so I am not sure."* (*UK, Indo-Asian, female, 20 years old)*(13). In this study, as the service has not yet started, family reaction about eye donation is not yet experienced and cannot be discussed now. However, it has to be reviewed in the future when eye donation services are established in the country.

CHAPTER FIVE

5.1 Conclusion

The present study showed that majority of the participants were not aware of eye donation. However, willingness to donate eyes was seen in nearly a half of study participants. Willingness to donate eyes was associated with awareness about eye donation, religion and sex. Most of the participants think that eye donations services are important for the population and to become an eye donor is a personal decision. Negative perception about eye donation was associated lack of information, cultural beliefs, religious beliefs as well as personal fear.

5.2 Recommendations

1. Community health education about eye donation and its importance is needed to increase awareness and willingness to donate eyes.
2. A clear policy about eye donation needs to be communicated to the population in order to remove misconception about eye donation like “it can cause organ trafficking”.
3. There is a need to conduct a similar community based study, in order to have a real community’s perception towards eye donation services.

REFERENCES

1. Murugesan Vanathi, Radhika Tandon, Anita Panda SV& SK. Challenges of eye banking in a developing world. Expert Rev Ophthalmol. 2007;2(6):923–30.
2. Srivastava S, Kulthe BS G. H. Awareness of Eye Donation and Willingness to Donate Eyes in Population Attending Outdoor Patients Department of Ophthalmology at Sknmc , Pune (Maharashtra). Indian J Appl Res. 2015;5(1):451–3.
3. Tiwari R, Diwakar A, Marskole P, Bhargo L, Anwar D. A study to assess awareness on eye donation and willingness to pledge eyes for donation in adult population in Gwalior district (M.P.), India. Int J Res Med Sci. 2014;2(2):662.
4. New WHO estimates reveal downward trends in blindness and visual impairment worldwide. Int Agency Prev Blind. 2011;1–4.
5. Gw G, Tilahun Y. Willingness to donate eyes and associated factors among adults in a rural community in Central Ethiopia. J Ophthalmol East Cent South Africa . 2013;20–4.
6. Rapoza PA, West SK, Katala SJ TH. Prevalence and causes of vision loss in central Tanzania. Int Ophthalmol. 1991;15(2):123–9.
7. Rapoza PA1, West SK, Katala SJ, Munoz B TH. Etiology of corneal opacification in central Tanzania. Int Ophthalmol. 1993;17(1):47–51.
8. Gain P, Jullienne R, He Z, Aldossary M. Global Survey of Corneal Transplantation and Eye Banking. JAMA Ophthalmol. 2016;134(2):167–73.
9. Yew Y-W, Saw S-M, Pan JC-H, Shen H-M, Lwin M, Yew M-S, et al. Knowledge and beliefs on corneal donation in Singapore adults. Br J Ophthalmol. 2005;89(7):835–40.
10. American academy of ophthalmologist. External Disease and Cornea. In: Association T eye M, editor. Basic and clinical science courses. section 8. Life long education for the ohthalmologist; 2012. p. 471.

11. A.K.KHURANA. Comprehensive ophthalmology. 4th ed. TGgoyal DP, editor. New Delhi - 110002: New Age International (P) Ltd.PUBLISHERS; 2007. 593 p.

12. Standards T, Committee EB, Academy A, October O. Medical Standards. EBAA Med Stand. 2011;(October):1–46.

13. Randhawa G. An exploratory study examining the influence of religion on attitudes towards organ donation among the Asian population in Luton, UK. Nephrol Dial Transplant. 1998;13(8):1949–54.

14. Lawlor M, Kerridge I, Ankeny R, Dobbins TA, Billson F. Specific unwillingness to donate eyes: The impact of disfigurement, knowledge and procurement on corneal donation. Am J Transpl. 2010;10(3):657–63.

15. JM Waziri-Erameh, AO Ernest OE. Knowledge And Attitude Of Nigerian Ophthalmologists Towards Cornea Donation And Corneal Graft. J Med Biomed Res. 2007;5(1&2):26–34.

16. Newton JD. How does the general public view posthumous organ donation? A meta-synthesis of the qualitative literature. BMC Public Health. 2011;11(1):791.

17. Hermel M, Monhof K, Steinfeld A, Salla S, Hamsley N, Walter P, et al. The Role of Specifically Tailored Communication Training Among Factors Influencing Consent for Cornea Donation Requested Via Telephone. Transplantation. 2015;99(10):2223–9.

18. Gillon S, Hurlow A, Rayment C, Zacharias H, Lennard R. Obstacles to corneal donation amongst hospice inpatients: a questionnaire survey of multi-disciplinary team member's attitudes, knowledge, practice and experience. Palliat Med. 2012;26(7):939–46.

19. Yajaman SR, V S, S P. Awareness and Willingness of Eye Donation Among Attendants of Patients in Rural Karnataka. J Evid Based Med Hlthcare. 2015;2(43):7633–7.

20. Bhandary S, Khanna R, Rao K, Rao L, Lingam K, Binu V. Eye donation - Awareness and willingness among attendants of patients at various clinics in Melaka, Malaysia. Indian J Ophthalmol. 2011;59(1):41.

21. Puri S, Gupta N, Bansal S, Ram J, Arya S, Sood S. Gender - A barrier for Willingness to Eye Donation ? Int J Preven Curat Comm Med. 2016;2(1):31–5.

22. York NJ, Tinley C. Corneal donations in South Africa: A 15-year review. S Afr Med J. 2017;107(8):697–701.

23. Abadom EG, Otene CI, Enivwenae AO. Knowlegde and willingness to donate eye among medical doctors in delta state. J Dent Med Sci. 2014;13(6):57–63.

24. Eze BI, Okoye O, Eze JN. Knowledge and attitudes regarding eye donation and corneal transplant: Medical versus nonmedical university students in a developing country in Africa. Exp Clin Transplant. 2014;12(5):454–61.

25. Krishnaiah S, Kovai V, Nutheti R, Shamanna BR, Thomas R, Rao GN. Awareness of eye donation in the rural population of India. Indian J Ophthalmol. 2004;52(1):73–8.

26. Hameed N, Jadidy E. Knowledge and Attitude Regarding Eye Donation and Corneal Transplantation among Medical Students of Taibah University in Medina , Saudi Arabia 2015. Int J Acad Sci Res. 2015;3(4):18–26.

27. Dandona R, Dandona L, John RK, McCarty CA, Rao GN. Awareness of eye donation in an urban population in southern India. Aust N Z J Ophthalmol. 2001;79(2):96–102.

28. Mariella C, Paraz A, Thi H, Truong T, Sai DK, Yu Cajucom-Uy H, et al. Knowledge and attitudes toward corneal donation among Singaporean youth: a cross-sectional study. Eye Vis. 2016;3(17):1–10.

29. Care CE, Singh MM, Rahi M, Pagare D, Ingle GK. Medical students' perception on eye donation in Delhi. Indian J Ophthalmol. 2007;180(February):49–53.

30. Gupta A, Jain S, Jain T, Gupta K. Awareness and perception regarding eye donation in students of a nursing college in Bangalore. Indian J Community Med. 2009;34(2):122.

31. Lawlor M, Kerridge I. Understanding Selective Refusal of Eye Donation: Identity, Beauty, and Interpersonal Relationships. J Bioeth Inq. 2014;11(1):57–64.

32. Morgan SE, Harrison TR, Afifi WA, Long SD, Stephenson MT. In their own words: The reasons why people will (not) sign an organ donor card. Health Commun. 2008;23(1):23–33.

33. De Moraes EL, Massarollo MCKB. Reasons for the family members' refusal to donate organ and tissue for transplant. ACTA Paul Enferm. 2009;22(2):131–5.

34. Francis Mureithi. Corneal transplant: giving sight to others. Daily nation. 2016 Jul;957860-3288618-.

35. Hussen MS, Gebreselassie KL, Woredekal AT, Adimassu NF. Willingness to donate eyes and its associated factors among adults in Gondar town, North West Ethiopia. BMC Ophthalmol. 2017;17(1):1–6.

36. Nordfalk F, Olejaz M, Jensen AMB, Skovgaard LL, Hoeyer K. From motivation to acceptability: A survey of public attitudes towards organ donation in Denmark. Transplant Res. 2016;5(1):1–8.

APPENDICES

Appendix I: Questionnaire – English Version

Serial number……

I. Sex: 1. Male ( )

2. Female ( )

II. Age (years): **1.** 18-33 ( )

2. 34-48 ( )

3. 49-63( )

4. ≥64 ( )

III. Marital status: 1. Single ( )

2. Married ( )

3. Widow ( )

4. Divorced ( )

IV. Residence: 1. Dar es Salaam ( )

2. Other region (Specify)…….

V. Level of education: 1. No formal education ( )

2. Primary ( )

3. Secondary ( )

4. College Education ( )

VI. Occupation: 1. Health workers ( )

2. Others (specify) …….

VII. Religion: 1. Islam ( )

2. Christian ( )

3. Other (specify)……

VIII. Have you heard-about organ donation? 1. Yes ( )

2. No ( )

IX. If YES, where did you get information about organ donation? (Can tick multiple responses): 1. Radio / TV ( )

2. Newspaper ( )

3. Social media ( )

4. Health workers ( )

5. Other sources (specify)…….

X. Which organs can be donated?1…….

2……..

3. …….

4. …….

5. …….

XI. Can eyes be among organs which can be donated? 1. Yes

2. No ( )

XII. If YES, what is the use of donated eyes? (Can tick multiple answers):

1. Corneal transplant ( )

2. Teaching and research ( )

3. Don't know ( )

XIII. Which people are allowed to donate eyes for transplant purposes?

1. Anybody ( )

2. People with good health ( )

3. People without any eye problem ( )

4. Don't know ( )

XIV. Which people are not allowed to donate eyes for transplant purposes? (Can tick multiple answers)

1. Known patients with infectious diseases ( )
2. People who are wearing spectacles ( )
3. Children under 5years of age ( )
4. Old people above 70 years old( )
5. Don't know( )

XV. What is the process through which a person can become an eye donor? (Can tick multiple answers)

1. One should write a will (pledge eyes) when still alive ( )
2. After someone's death, his/her relatives can donate his or her eyes ( )
3. Don't know ( )

XVI. When are donated eyes harvested from the donor's body?

1. Anytime ( )
2. Short time before death ( )
3. Short time after death ( )
4. Don't know ( )

XVII. according to your knowledge, who can receive donated eyes?

1. Only people who are bloody related to the donor
2. Anybody in need
4. Don't know

XVIII. Grading of knowledge about eye donation (for the researcher only)

1. High ( )
2. Moderate ( )
3. Low ( )

XIV. Are you willing to donate your eyes after your death? 1. Yes ( )
2. No ( )

XX. If YES to who would you donates your eyes? 1. Family member ( )
2. Friend ( )
3. Anyone needy (
4. Other (specify)…….

XXI. If YES, why are you willing to donate your eyes?

1. It is a noble work ( )
2. To help a blind person ( )
3. I don't need eyes after death ( )
4. Other reasons (specify)…….

XXII. If NO, why are you not willing to donate your eyes?

1. It is against my Religion ( )
2. It is against my cultural beliefs ( )
3. I am not sure of the use of donated eyes ( )
3. I need more information ( )
5. Other reason (specify)……

XXIII. In your own opinions, are eye donation services are important for the population?

1.Important ( )
2. Not important ( )

XXIV. Why are they important? (CAN TICK MULTIPLE ANSWERS)

1. Can reduce the burden of blindness
2. CT services will be cost effective for needy people
3. Can give money to the donors and their family
4. Others reasons (specify)……

XXV. If important who should be consulted before consent to be an eye donor?

1. It should be a personal decision ( )
2. Wife ( )
3. Husband ( )
4. Parents ( )
5. Head of the Family ( )
6. Religious leaders ( )
7. Others (specify) …….

XXVI. Why are they not important? (can tick multiple answers)

1. Donor cannot benefit from the service ( )
2. Donor may be socially stigmatized ( )
3. It is a torturing action to the dead person ( )
4. It can cause organ trafficking ( )
5. Other reasons (specify)……

Appendix II: Questionnaire – Swahili Version

Nambari……..

I. Jinsia: 1.Mme ( )

2. Mke ( )

II. Umri: 1. 18-33 ( )

2. 34-48 ( )

3. 49-63 ( )

4. ≥64 ( )

III. Hali ya ndoa: 1. Sijaoa/Sijaolewa ( )

2. Mwana ndoa ( )

3. Mjane ( )

4. Talaka ( )

IV. Makazi: (Mkoa)…….

V.Dini: 1. Muislamu ( )

2. Mkristo ( )

3. Dini nyingine (taja)…….

VI. Kiwango cha Elimu: 1. Sijasoma ( )

2. Elimu ya msingi ( )

3. Elimu ya sekondari ( )

4. Elimu ya chuo ( )

VI**VII. Kazi unaofanya**: 1. Mfanyakazi wa afya ( )

2. Kazi nyingine (taja)……

VIII. Je, umeshawahi kusikia uchangiaji wa viungo vya mwili? 1. Ndio ( )

2. Hapana ( )

IX. Ulipata wapi habari hizo ? 1. Redio/ TV ( )

2. Magazeti ( )

3. Mitandao ya kijamii ( )

4. Kwa wafanyakazi wa afya ( )

5. Vyanzo vingine (taja)…….

X. Kama ndio, viungo gani vinavyoweza kuchangiwa? 1. …….

2. …….

3……

4. ……...

5……

XI. Macho ni kati ya viungo vinavyoweza kuchangiwa? 1. Ndio ( )

2. Hapana ( )

XII. Macho yanayochangiwa ana matumizi gani? (unaweza kuchagua zaidi ya jibu1)

1. Matibabu ya watu wenye ugonjwa wa kioo cha jicho ( )
2. Kufundisha na utafiti ( )
3. Vingine (taja)…….
4. Sijui ( )

XIII. Ni watu gani wanaruhusiwa kuchangia macho kwa ajili ya kupewa watu wengine?

1. Mtu yeyote ( )
2. Watu wenye afya njema ( )
3. Watu wasio na matatizo ya macho ( )
4. Sijui ( )

XIV. Ni watu gani wasioruhusiwa kuchangia macho kwa ajili ya kupewa watu wengine? (unaweza kuchagua zaidi ya jibu 1)

1. Watu wenye magonjwa ya kuambukiza ( )
2. Watu wanaovaa miwani ( )
3. Watoto chini ya miaka 5( )
4. Watu wenye umri zaidi ya miaka 70( )
5. Sijui ( )

XV. Ni kwa jinsi gani mtu anaweza kuwa mchangiaji wa macho?

1. Mhusika hutoa kibali cha maandishi kabla ya kifo chake ( )
2. Kibali huweza kutoka kwa ndugu wa marehemu ( )
3. Sijui ( )

XVI. Ni wakati gani macho yanatolewa kwenye mwili wa mchangiaji?

1. Wakati wowote ( )
2. Muda mfupi kabla ya kifo ( )
3. Muda mfupi baada ya kifo ( )
4. Sijui ( )

XVII. Kwa ufahamu wako, ni watu gani wanaweza kupewa macho yanayochangiwa?

1. Ndugu wa damu wa mchangiaji tu ( )
2. Mhitaji yeyote ( )
3. Sijui ( )

XVIII. Kiwango cha ufahamu kuhusu uchangiaji wa Macho (inahusu mtafiti tu)

1. Juu ( )
2. Wastani ( )
3. Chini ( )

XIX. Je, unaweza kuchangia macho yako baada ya kifo chako?

1. Ndio ( )
2. Hapana ( ) **kama hapana, jibu swali la XXII**

XX. Kama ndio, unaweza kumchangia nani?

1. Mwana familia ( )
2. Rafiki ( )
3. Mhitaji yeyote ( )
4. Mwingine (taja)…….

XXI. Ni kwa sababu gani uko tayari kuchangia macho yako?

1. Ni kitu cha heshima sana ( )
2. Kusaidia mtu asieona ( )
3. Sihitaji macho tena baada ya kifo ( )
4. Sababu nyingine (taja)……

XXII. Ni kwa sababu gani hauko tayari kuchangia macho yako?

1. Dini yangu hairuhusu ( )
2. Mila yangu hairuhusu ( )
3. Sina uhakika kwa matumizi ya macho yatakayochangiwa ( )
4. Nahitaji maelezo zaidi ( )
5. Sababu nyingine (taja)……

XXIII. Kwa maoni yako binafsi je, huduma za uchangiaji wa macho ni muhimu kwa jamii?

1. Ni muhimu ( )
2. Sio muhimu ( )-**jibu swali la XXVI**

XXIV. Kama ni muhimu, kwa nini? (unaweza kuchagua zaidi ya jibu1)

1. Huweza kupunguza mzigo wa upofu ( )
2. Itapunguza gharama za matibabu kwa wahitaji( )
3. Huweza kumpatia pesa mchangiaji na familia yake ( )
4. Sababu zingine (taja) ……..

XXV. Kama ni muhimu, nani anatakiwa kuombwa ruhusa na mtu anaetaka kuwa mchangiaji wa macho?

1. Ni uamuzi binafsi ( )
2. Mke ( )
3. Mme ( )
4. Wazazi ( )
5. Mkuu wa kaya ( )
6. Kiongozi wa dini ( )
7. Wengine (taja)……

XXVI. Kama sio muhimu , kwa sababu gani? (unaweza kuchagua zaidi ya jibu 1)

1. Mchangiaji hatafaidika na huduma ( )
2. Mchangiaji huweza kunyanyaswa na jamii ( )
3. Ni mateso kwa mwili wa marehemu ( )
4. Huweza kusababisha biashara ya viungo vya mwili ( )
5. Sababu nyingine (taja)……

Ahsante sana kwa ushiriki wako

Appendix III: Focus Group Discussion guide – English and Swahili Version

1. Have you heard about organ donation?

2. Which organs can be donated?

3. What are reasons which make you to be willing or not willing to donate eyes?

4. What is your perception when it comes to donate of an organ like eye?

5. Who should be consulted before consent to be an eye donor?

6. What is the importance of having eye donation services in the country like Tanzania?

Kiswahili

1. Umeshawahi kusikia uchangiaji wa viungo vya mwili?

2. Ni viungo gani vinavyoweza kuchangiwa?

3. Ni sababu zipi zinazoweza kukufanye uwe /usiwe tayari kuchangia viungo vya macho?

4. Una mtazamo gani kuhusu uchangiaji wa viungo vya mwili kama macho

5. Nani kuombwa ruhusa kablaya kutoa kibali cha uchangiajina vyungo vya macho.

6. Kuna umuhimu gani kuwa na huduma za uchangiaji wa macho katika nchi kama Tanzania?

Appendix IV: Informed Consent – English Version

Dear sir / madam

My name is Dr. FELICITE MUKAMANA, Student in Ophthalmology department, at Muhimbili University of Health and allied Sciences (MUHAS). I have been authorized by MUHAS Ethic committee and Muhimbili national Hospital (MNH) to conduct a study about eye donation.

Title of the study: Factors affecting awareness and willingness for eye donation among adult patients attending outpatient clinics at MNH, from June 2017 to December 2017.

Confidentiality: No names will be used in this study; only serial number will be used. All data collection forms will be used by researcher and her assistants. Report from this research will be a reflection of the community not individual report.

The study benefits: Your participation will be a contribution on eye donation services.

Risk: There will be no known risk associated with this study.

To participate in this study is voluntary; refusal to participate will not prevent you to get your medical services.

For further information,

Contact: Dr FELICITE MUKAMANA

Phone: +255787897215; e-mail mbfelicite7@gmail.com; P.O.BOX: 65001, Dar es Salaam

Or Dr SUZAN MOSENENE, Supervisor of this work; phone: +255689527952

The researcher has fully explained to me the purpose of the study and I have fully understood and hereby consent to participate in the study.

Serial no……..

Signature of the participant…… Date…….

I, ……. have fully explained the contents of the study to the participant and has accepted to participate in the study.

Signature of investigator …… Date…….

Appendix V: Informed Consent – Swahili Version

Naitwa Dr FELICITE MUKAMANA, ni mwanafunzi wa shahada ya udhamili katika chuo kikuu cha afya na sayansi shirikishi Muhimbili, idara ya magonjwa ya macho. Ninafanya utafiti kuhusu uchangiaji wa macho.

Lengo kuu la utafiti huu ni kutathmini ufahamu na utayari kuhusu uchangiaji wa macho katika wagonjwa wanaohudhuria kiliniki za wagonjwa wa nje hapa Hospitali Kuu Muhimbili.

Jinsi ya kushiriki: Ukikubali kushiriki, utahojiwa kwa kutumia dodoso kwa lugha ya Kiswahili.

Usiri: Usiri baina ya mgonjwa na mtafiti utahakikishwa kipindi chote cha utafiti. Majina hayatatumika bali namba. Taarifa zitakazokusanywa zitatumika kwa madhumuni ya utafiti huu tu.

Faida za kushiriki: Ushiriki wako utasaidia kuboresha namna ya kufahamisha wananchi umuhimu wa uchangiyaji wa macho na jinsi ya kuchangia.

Madhara: Hakuna madhara yanayo tegemewa kujitokeza kwa kushiriki kwako

Haki za kushiriki: Hakuna shuruti yoyote juu ya ushiriki wako katika utafiti huu.Una uwezo wa kukubali ama kukataa bila kutoa sababu zozote za kufanya hivyo. Utaendelea kupata matibabu kama wagonjwa wengine.

Wajibu wa mshiriki: Kuwa huru na kusema ukweli kuhusu ufahamu na utayari wako kuhusu uchangiaji wa macho.

Kwa maelezo zaidi, unaweza kuwasiliana na: Dr **FELICITE MUKAMANA**, Mtafiti

Simu : +255787897215 barua pepe: mbfelicite7@gmail.com

Au **Dr SUZAN MOSENENE**, msimamizi wa utafiti huu , Simu ya mkononi: +255689527952

Mimi nimepata maelezo sahihi kuhusu utafiti huu kutoka kwa mtafiti; nakubali kushiriki.

Nambari……...

Sahihi ya mshiriki……. Tarehe……..

Nimetoa maelezo sahihi kuhusu utafiti wangu kwa mhusika huu, anakubali kushiriki.

Jina la mtafiti: Dr Félicité Mukamana.

Sahihi ya mtafiti……. Tarehe……