



UNIVERSITY *of*
RWANDA

**KNOWLEDGE, ATTITUDE AND PERCEPTIONS TOWARDS KIDNEY DONATION
AMONG NURSING STUDENTS AT THE COLLEGE OF MEDICINE AND HEALTH
SCIENCES, UNIVERSITY OF RWANDA**

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College of Medicine and Health sciences

School of Nursing and Midwifery

Masters of Nephrology Nursing

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By

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A Research project submitted in partial fulfillment for the degree of
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In the College of Medicine and Health Sciences

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Kigali, September, 2019

DECLARATION

Declaration I, Marie Louise UWINGABIYE, do hereby declare that this dissertation submitted for the degree of Master of Science in nephrology Track at the University of Rwanda/ College of Medicine and Health Sciences is my original work and has not previously been submitted elsewhere. Also, I do declare that a complete list of references is provided indicating all the sources of information quoted or cited.

Student Name: Louise UWINGABIYE

Date and signature

DEDICATION

God almighty

Family members

Colleagues and Lecturers

I dedicate this work

Your love, support and tolerance helped me through this Master's learning.

May almighty God abundantly bless you.

ACKNOWLEDGEMENTS

I do acknowledge with sincere gratitude, the support and guidance from my supervisors, Dr. Lakshmi RAJESWARAN and Mr. Vedaste BAZIGA. My appreciation also goes to my colleagues and to all who actively participated in this study.

Thank you so much.

ABSTRACT

Background: Kidney dysfunction and failure account for increased mortality rates across most population groups globally. Kidney donation and transplantation is a process whereby individuals agree to donate a healthy organ that is then transplanted to the body of a person with either a damaged, failed or dysfunctional organ in order to save their lives as well as improving the quality of life. The current literature does not show the published evidence on the knowledge, attitude and perception towards organ donation in nurses in Rwanda. The aim of this study was to explore knowledge, attitudes and perceptions towards organ donation among nursing students at the University of Rwanda.

Methods: A cross-sectional study design using quantitative approach was chosen to meet the objectives of the study. One hundred seventy nine (179) students at the University of Rwanda, College of Medicine and Health Sciences, School of Nursing and Midwifery, Rwamagana campus, participated in the present study. Participants were randomly selected. Data were analyzed quantitatively and relationship between knowledge, attitude, perception and socio demographic characteristics variables was reported using chi-square test at the level of significance $< \text{or} = \text{at } 0.05$

Results: The results showed low level of knowledge on kidney donation among study participants (51%). Attitudes were reported to be negative in 63% of cases and no association was found between knowledge and attitude towards kidney organ donation among study participants. Perception were reported by the big majority of the participants that would prefer to donate their organ to a family member as reported by 68.6% while 36.9% of the study participants believe that the greatest important factor to consider when they decide to donate their organ in a case there is a need would be their close relative.

Conclusion and recommendation: The study reported not satisfactory results on knowledge and attitude of study participants. This is a big issue since these future nurses will be expected to support kidney donation in one way or another. Interventions to change the current situation are urgently needed.

Key words: Knowledge, attitude, perception, Kidney donation, nursing students, Rwanda

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LIST OF SYMMBOLS/ABBREVIATIONS

ODT: Organ Donation and Transplantation

UR- CMHS IRB: University of Rwanda, College of Medicine and Health Sciences Institutional Review Board.

WHO: World Health Organization

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CHAPTER ONE: INTRODUCTION

1.1 INTRODUCTION

1.2. STUDY BACKGROUND

Kidney dysfunction is responsible for mortality across different population globally (Jawoniyi *et al.*, 2018). The same author (Jawoniyi *et al.*, 2018) argues that kidney dysfunction can be addresses by donation or transplantation of an organ from a donor who is healthy to ultimately save the lives of the receiver.

Organ donation history can be traced back in 1760 in India and United Kingdom, where the first neonatal transplant was performed, it is in the same year that Indian amendments of transplantation of human organs and tissues were approved, and in 2008, 2011, 2014 were signed (Sulania*et al.*, 2016).

It is reported that in the United States, organ donation and transplantation accounts for 1% and among all donated organs, kidney accounts number one, followed by liver compared to the other donated organs. (Ojo, Heinrichs and Jean, 2004; Delmonico *et al.*, 2005). The recent statistics in the United States showed a decline in living organ donations but on the other hand the deceased donations had increased from 2004 to 2008; it is reported that the living liver donors dropped to lesser than 50% while donation after cardiac death has increased 10 folds; and much attention was put on understanding the health risks associated with organ transplantation(Klein *et al.*, 2010; Wolfe, Roys and Merion, 2010).

The demand and the supply of organs in population in need presents a mismatch in almost every country; it is suggested that health professionals may play an important role in eliminating barriers and increasing organ donation rates (Bharambe, Rathod and Angadi, 2016). The reported barriers include among others the availability of potential donors, transplantation infrastructure which encompasses the capacity, coordination and the required training; healthcare expenditures, and public awareness as well as attitudes towards organ donation (Symvoulakis *et al.*, 2014). Other factors include the public perception about ODT mostly linked to ethnicity culture, religion, and to education levels(Carmen, 2009; Oliver *et al.*, 2011).

The study conducted at the University of Auckland, New Zealand revealed that medical students support organ donation but their knowledge was limited and in a case a patient wants to know more about the organ donation, students themselves did not know where they can get information from (Ingham *et al.*, 2015). The quite similar findings were observed at Qassim University, in Central Saudi Arabia whereby students mentioned that their primary source of information on organ donation was television and students expressed that there was a low public awareness on that subject (Almohsen *et al.*, 2016). Low public awareness was also reported at the University of King Abdulaziz, Jeddah, Saudi Arabia but the level of knowledge among the students was quite good where 437(90.9%) students knew what organ donation means, 433(90%) supported organ donation, and 90(18.7%) knew someone who had donated an organ and a half of the participants were willing to donate their organ to their family alone, 198(41.2%) were willing to donate to any deserving patient while 439(91.3%) rejected that religion precluded organ donation (Say edalaminet *al.*, 2017).

The existing evidence from the study done in Greece to report on knowledge and attitude of health sciences students highlighted that there was knowledge and attitude deficit towards organ donation among the studied population whereby the participants mentioned that they would not wish that their organ can be removed after death and be donated to someone else; and they were opposing the existing national system to legalize kidney donation after death (Symvoulakis *et al.*, 2014).

It was further noticed that awareness of medical professionals as well as the general public about organ donation is key to address the global scarcity of organs to be donated, so as attitude and experience of organ donation among health professionals as well as legal and legislations pertaining the transfer of an organ from a donor to a receiver are in place (Jawoniyet *al.*, 2018).

The existing scholarship on organ donation especially kidneys in developing countries with a focus on Africa is lower compared to the rest of the globe (Muller, White and Delmonico, 2014).

Existing scholarship on organ donation in Africa is accumulated in South Africa contexts in diverse populations including nurses, white, black, rural as well as urban populations (Crymble *et al.*, 2017; Fabian and Crymble, 2017; Thomson, 2017). The current scholarship does not show the published evidence on the knowledge, attitude and perception towards organ donation in nurses in

Rwandan context, the available information is accumulated in newspapers, the only existing literature talks about blood donation (Tagny CT, Diarra A, Yahaya R, Hakizimana M, Nguessan A, Mbensa G, Nébié Y, Dahourou H, Mbanya D, Shiboski C, Murphy E, 2009). Therefore, this study attempts to document existing knowledge, attitude and perceptions of nursing students towards organ donation as growing practice to save lives in end of life patients presenting with life threatening conditions.

1.3.PROBLEM STATEMENT

The demand and the supply of organs in population in need presents a mismatch in almost every country; it is suggested that health care workforce constitute a pillar in addressing barriers to organ donation by increasing awareness (Bharambe, Rathod and Angadi, 2016). However in developing countries, the literature shows that most of health care personnel lack the fundamental knowledge on current practices of organ donation in their countries so that they can orient the potential donor as well as those who will to be able to have the basic knowledge and requirements on organ donation. In South African, it was reported that nurses have positive attitude towards deceased organ donation, however, nurses' personal beliefs do not influence the donor increase (Crymble et al., 2017).

The existing gap of organ need and potential donors backfires the nurses whose task includes also mobilizing the general community to donate their organs for transplantation. The anecdotal information in Rwanda on organ donation and transplantation is that most of recipient go outside the country to look for treatment. Such treatment are expensive and not accessible for the financially disadvantaged populations. Such interventions to be done in Rwanda, the health sector workforce needs to be equipped with knowledge and positive attitude towards organ donation as it was argued that healthcare professionals partly account for the global shortage in organ donation, but their roles, knowledge, awareness, skills and competencies might impact upon the organ donation and transplantation process(Jawoniyiet al., 2018). The public hospital protocol in practice does not include kidney donation as package for people with organ or kidney failures, yet people in need of kidney transplant are increasing.

The College of Medicine and Health Science produces the medical personnel workforce in Rwanda which include nurses who are key pillars in management of all cases in public hospitals. The

existing nursing curricular captures nephrology at a master's level and does not deepen to take into account kidney donation as package for undergraduate program. Yet, the majority of health workers who serve the population have the undergraduate education. Therefore, in depth study on knowledge attitude and perception with regards kidney donation would be used as a basis on the status of kidney donation and the views of nursing students on how this practice can be improved in Rwandan health care system.

1.4. THE AIM OF STUDY

The present study aimed at exploring knowledge, attitudes and perceptions among then using students towards kidney donation at the University of Rwanda, College of Medicine and Health Sciences.

1.5. RESEARCH OBJECTIVIES

The objectives of this research are the following:

1. To assess the knowledge of level 2 to level 4 nursing students at the University of Rwanda, College of Medicine and Health Sciences towards kidney organ donation.
2. To assess the attitude of level 2 to level 4 nursing students at the University of Rwanda College of Medicine and Health Sciences towards kidney organ donation.
3. To assess the perception of level 2 to level 4 nursing students at the University of Rwanda College of Medicine and Health Sciences towards donating kidney organs.
4. To explore the possible relationship between attitude, knowledge, and socio demographic characteristics of level 2 to level 4 nursing students at the University of Rwanda towards kidney organ donation.

1.6. RESEARCH QUESTIONS

1. At which level knowledge of nursing students at the University of Rwanda towards organ donation is ?
2. What are nursing student's attitudes towards organ donation at the University of Rwanda?

3. What are nursing student's perceptions towards organ donation at the University of Rwanda?
4. What is the relationship between knowledge, attitude and socio demographic characteristics of nursing students at the University of Rwanda towards organ donation?

1.7. SIGNIFICANCE OF THE STUDY

This study is likely to identify the existing level of Knowledge, attitudes and perceptions of nursing students towards organ donation. Its results may be beneficial to:

Nursing Education can be impacted on way that the existing curriculum can be influenced by the existing practice and incorporate organ donation component.

Nursing Practice by providing the overview of the existing status, hence the kidney organ donation and transplantation can be improved by informing the general public on the required beliefs and perception as far as kidney organ donation is concerned. Community can benefit from the results of the present study in a way that those who wish to donate their organ and in need can have the references. Policy makers may use the results of the present study to put in place policies backed by existing evidence in nursing profession in relation organ donation.

Nursing research may be informed by the current knowledge of the nurses on the subject matter and design interventions to raise knowledge and awareness in general.

Policies: The policies and procedure that guide organ donation can be elaborated and implemented at different levels of health care systems in Rwanda by basing on the results of the present study.

1.8 DEFINITION OF CONCEPTS

Knowledge: According to the Medical Sub Heading (MESH) terminologies, knowledge is defined as the facts, or any truth that accumulates through the course of time and have impact on information and its volume that determines some ones action. The English Oxford dictionary defines knowledge as facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject (Oxford Dictionary).

Operationally, knowledge in the present study will be tackling what students know on kidney organ donation practices.

Attitude: is a behavior towards a given object,, mental or neural state that determines the reaction

towards a certain object, it is a mindset that influence someone action to a particular circumstance due to his/her temperament (Pickens, 2005).

Perception: is a set of understandings or interpretation or how a circumstance is regarded. In the context of the present study, perception is used to get the understanding of the nurse of kidney donation (Oxford Dictionary).

Organ donation: is defined as a process to remove an organ from one person to another through a surgical process (Patthi *et al.*, 2015). Operationally, it is defined as the process of giving human cell, tissue, organ or any other part of the body for the purpose of transplantation (Sulania *et al.*, 2016).

1.9.STRUCTURE/ORGANIZATION OF THE STUDY

This study is composed by six chapters.

Chapter one focuses on general introduction, background of the study, problem statement, objectives and research questions, and significant of study, chapter two discusses the literature pertaining to the study, chapter three details the methods used, chapter four reports on results, chapter five discusses the results and finally, chapter six reports on conclusion and recommendations.

1.10. CONCLUSION OF CHAPTER ONE

The chapter one presented the background, problem statement, purpose of the study, research objectives and questions, definitions and significance of the study. The next chapter presented the literature.

CHAPTER 2. LITERATURE REVIEW

2.1. INTRODUCTION

This chapter highlights the overview of organ donation practices; knowledge, perceptions, opinions and beliefs about organ donation; and public awareness of organ donation and transplantation. The search strategies used include searching in medical datasets such as HINARI, PUBMED, African journals online and by means of google scholar. The search terms used were Organ donation, transplantation, Africa, knowledge, attitudes.

2.2. THEORETICAL LITERATURE

2.2.1. Organ donation practices

Organ donation data vary across different countries but its shortage is a worldwide issue. In order to address this shortage, different approaches were put in place to increase the donors though some practices are beyond the set legal and ethical acceptability (Rudge *et al.*, 2012).

The agreed international practices has put the general guidelines on organ donation was established by the World Health Organization (WHO) as follow (Rudge *et al.*, 2012).

The WHO guidelines stipulates that kidneys may be removed from the bodies of people after death and be donated to another person if consent are obtained.

The guidelines further adds that medical personnel involved in donation and transplantation process should not be in direct relationship with the receiver of the organ (Rudge *et al.*, 2012).

The WHO guidelines further highlight that donation from a deceased person should be responding to the therapeutic potential, but local country domestic regulations should be applied. In general, living donors should be genetically, legally, or emotionally related to their recipients(Rudge *et al.*, 2012).

The consent process should be taken into serious considerations when organ donation is suggested, in addition, care and follow up should be taken into consideration so that the donor is well informed about the risks, benefits as well as consequences pertaining donation process (Rudge *et al.*, 2012).

It is further indicated in the guides that no part of the body of a living minor should be removed for the purpose of transplantation other than narrow exceptions allowed under national law. Therefore, specific measures should be in place in favor of the minors and in a case of a need, assent from the guardians or parents has to be obtained before any attempt of donation or transplantation (Rudge *et al.*, 2012).

The donation should be free of charge without any rewards, selling, purchasing of organ for transplantation should be banned but with exception to the expenses incurred during the process (Rudge *et al.*, 2012). Any act involving the promotion or any means of awareness to donate organs should follow country regulations. Promotional activities on the need for or availability of organ in exchange of money should be prohibited (Rudge *et al.*, 2012).

Doctors and other health professionals should not engage in transplantation procedures, and health insurers and other payers should not cover such procedures, if the cells, tissues, or organs concerned have been obtained through exploitation or coercion of, or payment to, the donor or the next of kin of a deceased donor (Oliver *et al.*, 2011).

All health-care facilities and professionals involved in cell, tissue, or organ procurement and transplantation procedures should be prohibited from receiving any payment that exceeds the justifiable fee for the services rendered (Oliver *et al.*, 2011).

The allocation of organs, cells, and tissues should be guided by clinical criteria and ethical norms, not financial or other considerations. Allocation rules, defined by appropriately constituted committees, should be equitable, externally justified, and transparent (Oliver *et al.*, 2011).

Safety measures and procedures efficacy should be taken into account so that long term outcomes of the donated organ is expected, therefore harm and benefit is counted for, and this has to be at the same level from national or international procedures (Oliver *et al.*, 2011).

Ethics and confidentiality issues should be taken into serious account so that the privacy of the people involved in the process is maintained (Oliver *et al.*, 2011).

Kidney donation is a medical procedure which requires legal, ethical and cultural considerations before it is done, it is in addition, a medical procedure that the screening of who is donating and who receives the kidney should be done. Religious and cultural issues should be also taken into

consideration before the donation is done. In some parts of the world Cadaveric transplant is hampered by religious beliefs, cultural traditions, social norms and ethical principles. In some regions, cadaveric donation is diminished for religious grounds(Oliver *et al.*, 2011). The same authors reported that in Islam, the majority of scholars have decreed that cadaveric donation is permitted. However, two major Muslim scholars, Bin Othaimen in Saudi Arabia and Al-Sha'arawi in Egypt, have published edicts against cadaveric donation. In Japan, it is believed that no part of a dead person is removed until the burial to protect the dead one.

The donation of kidney as well as other organ is done following a waiting list due to the fact that there is a mismatch between the donor and recipients numbers whereby for instance in one hospital in Saudi Arabia, 8000 patients were waiting for donation while only 100 kidneys were available in 2002 (Oliver *et al.*, 2011)

2.2.2 Types of Kidney donations

Organ donation in its different procedures depends on who to donate and who to receive, this involves biologically related donors to relate to family members, and this in most cases is done electively rather than being an emergency operation (Hakim and Papalois, 2003).

Children as donors and emotionally related donors on the other hand, in this case children are allowed to give their kidneys or any other organ to their family members, close relatives or friends but this has to be approved by the ethical committee to protect the rights of minors.

2.3. EMPIRICAL LITERATURE

This section highlights the available empirical evidence related to kidney donation in different settings. It starts by knowledge, perceptions and opinions of nurses towards kidney donation, public attitude and awareness on organ donation and transplantation.

2.3.1. KNOWLEDGE, PERCEPTIONS, OPINIONS AND PERSONAL BELIEFS ABOUT KIDNEY DONATION

Knowledge, perception, opinions and beliefs on organ donation literature is documented across different regions and continents.

A study conducted in Greece to report on the knowledge, attitudes and concerns of undergraduate students, enrolled in three health science disciplines, in regards to organ donation demonstrated that out of 510 students who participated in the study; 78% of all participants agreed that they can leave their kidneys for transplantation (Symvoulakiset al., 2014). The same study revealed a limited awareness in regards to organ donation system and identified knowledge deficits and concerns which would be reached through public awareness messages.

The like findings were observed at the university in Central Saudi Arabia where most of students (85.1%) in 195 believed that there is low public awareness regarding the subject (Almohsenet al., 2016). The same results were documented at the University of Auckland where medical students documented to have inadequate knowledge which is required to provide information to the patients (Ingham et al., 2015).

The study conducted to report on knowledge and attitudes about organ donation revealed that among 409 medical students studied, 44.8% had sufficient knowledge, 40.1% reported insufficient knowledge (Bilgelet al., 2006). The same study added that the source of knowledge was media (72.1%), the willingness to donate(58.4%), the will to donate to the family members was (39.9%).

Knowledge, attitudes and beliefs gaps on organ donation were documented in different studies and suggested the targeted programs at the University levels to boost knowledge, attitude and perceptions on organ donation especially in University students (Hamed and Elhosseney Awad, 2015; Almohsen *et al.*, 2016; Bharambe, Rathod and Angadi, 2016; Crymble *et al.*, 2017)

2.3.2. PUBLIC ATTITUDE AND AWARENESS ON ORGAN DONATION AND TRANSPLANTATION

The public attitude and awareness towards organ donation is documented and influenced by different factors to mention culture, race among others. The study conducted in the United States of America found out that race, religion, and education attainments were factors of organ donor registration, non-Hispanic whites were most likely to be registered as donors compared to the other races studied (Ginossaret al., 2017). The differences were earlier registered in African contexts.

A study conducted in Western Indian on 200 participants, 86% were aware of the term organ donation but knowledge about its various aspects was low (Balwaniet al., 2015). The same study

reveals that awareness about organ donation varied from medical fraternity (48%), mass media(21%), and other respondents(59%) believe that there is a danger in donating process, and some(74%) believed that they would consider donation while 16% were ready to donate in any circumstances (Balwaniet *al.*, 2015).

The University African-American students showed different beliefs, attitudes, and rates of participation regarding organ donation among a sample of 683 racially and ethnically mixed university students in the United States of America. The study indicated that African-American students differ significantly from white students in their attitudes and beliefs toward organ donation, while Asian-American, Hispanic, and international students were similar to white students in their attitudes and beliefs regarding organ donation (Rubens, 1996). The study showed that whites in general most strongly supported organ donation (89.5%), closely followed by Hispanics (85.9%) and Asian Americans (85.5%).

African Americans showed the least support for organ donation at 61.8%. Most of the students strongly agreed or agreed that if they were critically ill they would accept an organ transplant (81.8%). By conclusion, the literature showed a knowledge and attitude gap on organ donation across different groups most particularly to the nursing and medical students. The studies suggested the targeted interventions including embedding organ donation in curriculum, public awareness and legislation.

2.4. CRITICAL REVIEW AND RESEARCH GAP IDENTIFICATION

The gap identified is linked to the fact that organ donation literature is accumulated in developed world in comparison to developing countries. In addition, it was reported that organ donation differ according to the races, and awareness was reported to be low.

In conclusion, the literature discussed the available evidence in relation to kidney organ donation, it started by elaborating on general concepts of organ donation, followed by empirical studies.

1.5. CONCEPTUAL FRAMEWORK

The conceptual framework explains the ".....path of a research and grounds it firmly in theoretical constructs, they give the ground for research to generate results that can be generalized..."

(Dickson, Adu-Agyem and Emad Kamil, 2018). The present study is guided by the following framework which illustrates the levels and factors to which organ donation decision at both individual and systemic level can be taken.

The present framework guides the study in a way that demographic variables and nurses exposures may determine the knowledge attitudes and beliefs towards organ donation. This has ultimate goal to improve the patient's condition with regards to the need for the organ replacement.

The present framework is based on updated overview of organ donation and transplantation, which highlights the framework of health system capacity for organ donation and solid organ transplantation in a country (Sulania *et al.*, 2016).

Knowledge, attitude and perception are based on the knowledge acquisition grounded theory in nursing which stipulates that accumulation or storage of the body of nursing depends upon different factors ranging from the experience, the personal attributes (demographics, professional experience), exposures(awareness, policies in place), and it is summarized in three element for a nurse to become a professional nurse in a study entitled: "... Theoretical nursing knowledge, acquisition of clinical experience and the relative acquisition of nursing experiences by (Sulania *et al.*, 2016)...."

Therefore, accumulation of the three layers of knowledge acquisition might influence personal knowledge, attitude and perception towards a certain service rendered in nursing profession (Hassanian, Ahanchian and Karimi-moonaghi, 2018).

The present framework is based organ donation models from the literature(Maciel, Hwang and Greer, 2017).

Independent
Variables

(Dependent) variables

Outcome variables

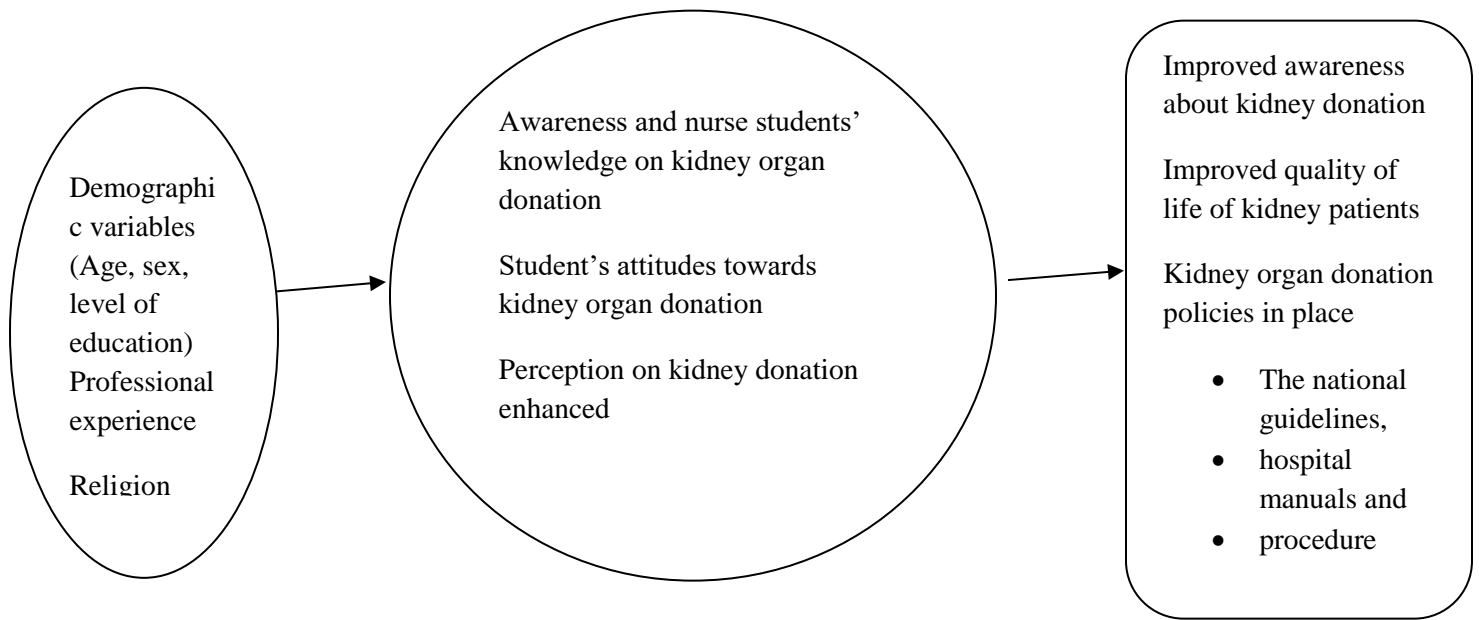


Figure 1. Conceptual framework (Maciel, Hwang and Greer, 2017)

CONCLUSION OF CHAPTER TWO

Chapter two presented the literature review relevant to the study with key concepts in relation to the kidney organ donation in different settings, theoretical approach and literature review as well as the gap that was identified in the existing scholarship.

CHAPTER 3: METHODOLOGY

3.1. INTRODUCTION

The present study aimed at exploring knowledge, attitudes and perceptions on kidney organ donation among nursing students at the University of Rwanda. The present chapter summarizes the process that followed to respond to the objectives of the study from. It starts from design, approach, setting, population, sampling, sample size, inclusion and exclusion criteria, instruments used, data management and analysis as well ethical consideration problems and finally limitations of study.

3.2. STUDY DESIGN

The present study is cross-sectional using quantitative approach to meet the objectives of the study. Quantitative research is the numerical representation and manipulation of observations for the purpose of describing and explaining the phenomena that those observations reflect (Polit and Beck, 2008). The present study analyzed the level of knowledge, attitudes and perceptions towards kidney donation in the studied population and described the phenomenon as reported by the respondents themselves in point of time.

3. 3. RESEARCH APPROACH

The quantitative non-experimental approach was applied to the present research , in order to get the statistic measurements.

3.3. STUDY SETTING

The study was conducted at the University of Rwanda, College of Medicine and Health Sciences, a college that hosts all undergraduate nursing students in Rwamagana campus due to its proxy to the researcher.

Rwamagana campus is located in Rwamagana district accommodate mostly students from level two to level four bachelors program. Nursing students are the future leaders in nursing profession to influence the positive behaviors and attitude of the general community towards organ donation. Nurses are the big workforce for health that is serving the wide community from the rural areas to

the urban. Therefore, their knowledge can wide spread and positively influence the Rwandan community.

3.4. POPULATION

The target population was nursing students from level two to level four bachelor's degree programs. Basing on data from registrar office, Rwamagana campus hosts 511 in total in which 390 are registered in level two to level four. Therefore, the present study used 390 students as a sampling basis to have a representation sample of this population.

The undergraduate students are the ones that are required to be interacting with the community compared to the postgraduate ones who are supposed to be in decision making positions. They are in addition constitute a big majority of the workforce in Rwandan health sector. In addition, the undergraduate students are expected to be equipped with knowledge and skills required to manage cases that either waiting for kidney donation or have gone transplantation due to the rapid growth of health sector in Rwanda in which sophisticated technologies are being introduced as far as renal diseases management is concerned. It is also necessary that students have the basic knowledge to educate the community on importance of kidney donation.

3.7. SAMPLING

Convenience method was used during recruitment. This was done by recruiting the study participants who were present at the study site during the period of data collection whereby whoever wished to be part of the study was given the study instrument.

3.7.1. SAMPLE SIZE

The sample size was calculated by the formula of Taro Yamane:

$$n = \frac{N}{1 + N(e)^2}$$

With

n: sample size

N: Total population

e: margin error (0.05%)

$$\text{Therefore, } n = \frac{390}{1+390(0.05)^2} = 179$$

Using this above information, the calculated sample size is n= 179 subjects

3.6.2. Sampling strategy

Convenience sampling was used ; and consists of a group of individuals who are most conveniently available (voluntary) and whose are ready during the period of research.

3.6.1. INCLUSION CRITERIA

All registered nursing students form level 2 to level 4 were part of the study regardless any circumstances. There was no refusal at the time of data collection as all sampled students accepted to be part of the study, and this made the response rate 100%.

3.6.2.2 EXCLUSION CRITERIA

Students in level one bachelor's degree due to its less exposure to the nursing practice, and the ones who would not consent.

3.7. VALIDITY AND RELIABILITY

Validity and Reliability of data collection tool

Reliability and validity

The reliability of the tool was measured by calculating the Cronbach Alpha of the questionnaire.

The reliability was calculated by means of SPSS where by the Cronbach Alpha value was 0.86. Both supervisors with expertise in the domain and the nursing staff reviewed the questions one by one to test their internal consistency whereby questions not related to the topic were removed and replaced by the ones deemed necessary to be added. The researcher pre-tested it to ensure the completeness and easy readability prior to the study.

After the tool is crosschecked, and confirmed to be used for data collection, students were approached through their departments and their representatives were key to orient how many students are available in the time of data collection. A list of available students was used, all available students were approached to consent. The students were informed on the purpose of the study and voluntarily participation was assured through a consent form signing. Then participants filled the questionnaires that were handed to the researcher after completion.

3.8. DATA COLLECTION

The data were collected by the means of an adapted questionnaire which was validated in India context (Balwani et al., 2015). The questionnaire is composed of two sections: Socio-demographics, knowledge and attitude towards organ donation validated in general population. The questionnaire was adapted to the Rwandan context where some questions were removed to fit into the context. The removed questions were mainly the ones about ethnicity, region where participants come from, religion practices that are not found in Rwanda among others. The researcher acknowledged the original authors of the tools in citation.

Pre testing of the instrument

The pre testing was conducted on 18 nurses which were excluded in the main study to test the adequacy and internal validity of instrument. The pretest was done on few participants to ensure that the researcher be able to analyze its results in shortest period possible and conduct the main study. The pre-test was done on 10% of the total sample which is 18 participants. During the pilot, questions that are not applicable to the research site were removed and others adapted for its suitability such as ethnicity, regions or municipalities of the participants, among others.

3.9. DATA ANALYSIS

After data collection, data were analyzed by means of SPSS version 21. The data were analyzed quantitatively with a descriptive statistics. Then, presented by means of tables to meet the objectives. Relationship were reported using bi-variate analysis and chi-square test at the level of significance set at ≤ 0.05 . The knowledge and attitude were measured in relation to demographic characteristics.

The level of knowledge on kidney organ donation was measured by means of computation of all knowledge questions to come up with knowledge scores, the mean was calculated and values above the mean were reported to be high level of knowledge while the lower score to the mean were reported to constitute the low level of knowledge.

Attitudes questions were computed to come up with attitudes scores which later provided the mean score of attitude, the scores below the mean were reported to be negative attitude and the scores greater than the mean were reported to be positive attitude.

3.10. ETHICAL CONSIDERATIONS

The study ensured that the questions are clear and comprehensible to the respondents; the confidentiality was kept as neither name nor any other personal identification were mentioned on the questionnaire. Ethical approval for the present study was sought from the UR- CMHS IRB and it was granted. In addition, the permission was sought at study site. Participants were informed about their freedom to participate and that they could withdraw from the study at any time they wanted. Participants were provided information about the study. All selected participants signed a written consent form before their participation in the study. There was no remuneration to participate in the study, the results may be dissemination for the purpose of wider awareness but no name of the participants has to be displayed.

3.11. DATA MANAGEMENT

To reduce the risk of errors and ensure confidentiality in data management, the researcher focused on:

After data collection, questionnaires were checked one by one to confirm correctness of the responses.

After data collection, the questionnaires without names of the participants and consent forms were stored in a locked cupboard by the researcher so that no one has access to them and ensure the confidentiality of the respondents. The data have to be destroyed according to the University of Rwanda policy on data destruction.

3.12. DATA DISSEMINATION

The results of this study can be published in order to have a wider access to the public audience who can then provide inputs and feedback for implementation

3.13. LIMITATIONS AND CHALLENGES

Nursing students have 60% of the total study hours in clinical placement which hindered a timely access to participants on campus as wished.

The study was limited in scope as only students at one campus were part of the study, therefore, the results can neither be generalized the whole country nor to the whole University of Rwanda.

The fact that the population in the present study is only nurses studying in a higher learning institution; the results are not generalizable to other nurses in practice.

By conveniently sampling only one campus at the University of Rwanda, does not represent all nurses at the University.

Sample size was small to represent the view of all nursing students, study site was only one to represent the entire country, and a multistage sampling would be used as a strategy to get a representativeness of the sample.

3.14. CONCLUSION OF CHAPTER THREE

The chapter three reported on the process and methods followed to be able to achieve objectives of this study.

CHAPTER: 4. RESULTS

4.0. INTRODUCTION

This chapter reports the results of the present study in relation to the objectives. It starts by socio-demographic characteristics of the participants, the level of knowledge and attitudes towards organ donation followed by perceptions of the participants towards organ donation

4.1. DEMOGRAPHIC CHARACTERISTICS

The total of 179 participants participated in the study out of 179 predetermined sample. This response rate is equivalent to 100%.

Table 1. Socio-demographic variables

Variables		N	%
Age	20- 24	143	80
	25-29	29	16
	30- 34	4	2
	40-49	1	1
	No response	2	1
Total		179	100
Sex	Male	103	58
	Female	75	42
	Total	178	99
	No response	1	1
Total		179	100
Marital Status	Single	170	95
	Married	7	4
	No response	2	1
Total		179	100
Level of education	Bachelors program class level 2	114	64
	Bachelors program class level 3	12	7
	Bachelors program class4	53	30
	Total	179	100
Religion	Islam	4	2
	Christianity	164	92
	Others (specify)	5	3
	No response	6	3
Total		179	100

The results in table 3 one show that the majority of the study participants are male (57.9%) and fall in 20-24 age category (80%). As far as marital status is concerned, the single dominated (96%).

4.2. KNOWLEDGE OF NURSING STUDENTS TOWARDS KIDNEY ORGAN DONATION

Table 2. Knowledge questions (N=179)

Variables		N	%
Q1. Have you heard of the term “organ donation”	No	2	1.1
	Yes	177	98.9
	Total	179	100.0
Q2. Have you heard of the “ Organ transplantation	No	3	1.7
	Yes	176	98.3
	Total	179	100.0
Q3. Are you aware of “ transplantation of human organ act in Rwanda	No	88	49.2
	Yes	91	50.8
	Total	179	100.0
Q4. Can a brain dead patients kidney be donated	No	59	33.0
	Yes	120	67.0
	Total	179	100.0

Table2. Knowledge questions (continued)

Variables		N	%
Q5. Will certified brain dead registered organ donor be immediately disconnected from the ventilator	No	94	52.5
	Yes	85	47.5
	Total	179	100.0
Q6. Can parents/ guardians make substitute decision making for mentally disabled persons in the regard of organ donation	No	58	32.4
	Yes	121	67.6
	Total	179	100.0
Q7. Donor's human leukocytes antigen must be identical to that of recipient for any organ donation	No	50	27.9
	Yes	128	71.5
	10.00	1	.6
	Total	179	100.0
Q8. Malignancy is contra indicated to cadaveric organ donation	No	55	30.7
	Yes	124	69.3
	Total	179	100.0
Q9. Hepatitis B and C carriers can donate all of their solid organs	No	151	84.4
Q10. Hepatitis B and C carriers can donate all of their solid organs	No	151	84.4
	Yes	28	15.6
	Total	179	100.0
Q11. Malignancy is always a contra indication to donate organ	No	55	30.7
	Yes	124	69.3
	Total	179	100.0

Table2. Knowledge questions (continued)

Variables		N	%
Q12.Can a person live with one kidney	No	9	5.0
	Yes	169	94.4
	11.00	1	.6
	Total	179	100.0
Q13. Heart, lungs, skin, bone marrow, kidney, liver, pancreas, heart, cornea Can be donated by a cadaver donor	No	81	45.3
	Yes	98	54.7
	Total	179	100.0
Q14. The organ that can be donated when you are alive are kidney, pancreas and liver	No	61	34.1
	Yes	118	65.9
	Total	179	100.0
Q15. Organ donation is risky for the recipient	No	59	33.0
	Yes	120	67.0
	Total	179	100.0
Q16. Organ donation is beneficial to the society	No	12	6.7
	Yes	167	93.3
	Total	179	100.0
Q17. If you are a registered donor you are kept alive until your organs are removed	No	53	29.6
	Yes	126	70.4
	Total	179	100.0
Q18. Transplants survival rates today are very low in Rwanda	No	56	31.3
	Yes	123	68.7
	Total	179	100.0

Table2. Knowledge questions (continued)

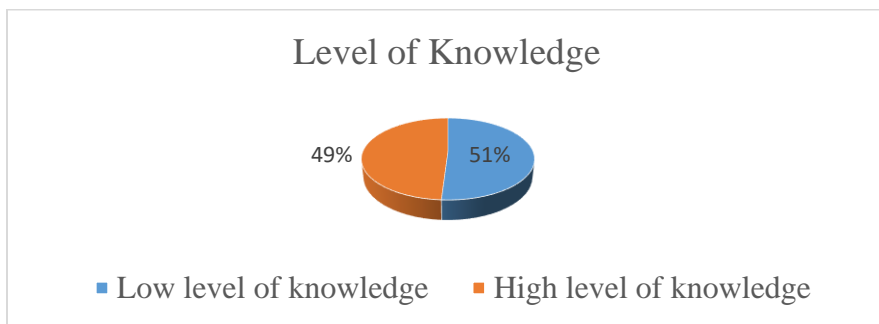
Variables		N	%
Q19. Transplants survival rates today are very low in Rwanda	No	56	31.3
	Yes	123	68.7
	Total	179	100.0
Q20. Chances of the recipient to return to normal life is possible after organ donation	No	7	3.9
	Yes	171	95.5
	11.00	1	.6
	Total	179	100.0
Q21. Kidney is the organ which is commonly donated	No	4	2.2
	Yes	175	97.8
	Total	179	100.0
Q22. Irreversible death of the brainstem is called brain death	No	30	16.8
	Yes	149	83.2
	Total	179	100.0
Q23. Only same race person can donate the kidney (African to African)	No	144	80.4
	Yes	35	19.6
	Total	179	100.0
Q24. It is necessary to preserve the kidney in a simple cold storage system	No	60	33.5
	Yes	119	66.5
	Total	179	100.0
Q25. Animal kidneys can be donated to the human beings	No	162	90.5
	Yes	17	9.5
	Total	179	100.0

Table2. Knowledge questions (continued)

Variables		N	%
Q26. Kidney harvested from the cadaver donor can be preserved for 3 months	No	84	46.9
	Yes	95	53.1
	Total	179	100.0
Q27. Multiple organ donation is allowed from a cadaver donor	No	67	37.4
	Yes	112	62.6
	Total	179	100.0
Q28. Living donor can have multiple physical risk	No	31	17.3
	Yes	148	82.7
	Total	179	100.0
Q29. Altruism is an act of giving the organ freely without any reward	No	42	23.5
	Yes	137	76.5
	Total	179	100.0
Q30. Buying and selling organ is an illegal practice	No	64	35.8
	Yes	115	64.2
	Total	179	100.0
Q31. The donor can retract the offer to donate at any time	Yes	108	60.3
	Total	179	100.0
Q32. Kidney harvested from the cadaver donor can be preserved for 3 months	No	84	46.9
	Yes	95	53.1
	Total	179	100.0
Q33. Multiple organ donation is allowed from a cadaver donor	No	67	37.4
	Yes	112	62.6

The level of knowledge on kidney organ donation was measured by means of computation of all knowledge questions to come up with knowledge scores, the mean was calculated and values above the mean were reported to be high level of knowledge while the lower score to the mean were reported to constitute the low level of knowledge.

Figure 2. The level of knowledge on kidney organ donation



The results in figure 2 indicate that the majority of the study participants have the low level of knowledge on organ donation practices where the majority (51%) of all study participants have responded not to know the best practices as far as kidney donation is concerned.

Personal attitudes towards kidney organ donation.

Attitudes questions were computed to come up with attitudes scores which later provided the mean score of attitude, the scores below the mean were reported to be negative attitude and the scores greater than the mean were reported to be positive attitude.

Table 3. Attitude towards kidney organ donation

Variables		N	%
Q1. Do you support organ donation?	No	5	2.8
	Yes	173	96.6
	Non response	1	0.6
	Total	179	100
Q2. Do you agree to donate to organ when you die?	No	29	16.2
	Yes	150	83.8
	Total	179	100.0
Q3. Do you feel comfortable to think or talk about organ donation?	No	10	5.6
	Yes	168	93.9
	Total	178	99.4

Table 3. Attitude towards kidney organ donation (Continued)

Variables		N	%
Q4. Do you agree to donate your family member's organ?	No	23	12.8
	Yes	156	87.2
	Total	179	100.0
Q5. Do you think donating organ gives life to another person?	Yes	178	99.4
	Total	179	100.0
Q6. Does your religion agree with organ donation or transplantation?	No	7	3.9
	Yes	169	94.4
	Total	176	98.3
Q7. Do you believe that your body should be kept intact after your death?	No	93	52.0
	Yes	84	46.9
	Total	177	98.9
Q8. Do you have fear that your body will be disfigured if you donate organ?	No	99	55.3
	Yes	79	44.1
	Total	178	99.4
Q9. Does your culture allow you donate organ?	No	6	3.4
	Yes	172	96.1
	Total	178	99.4
Q11. Do you think live organ donation is better than cadaveric organ donation in solving the shortage?	No	46	25.7
	Yes	130	72.6
	Total	178	99.4

Table 3. Attitude towards kidney organ donation (Continued)

Variables		N	%
Q12. Are you comfortable in receiving organ from another person?	No	31	17.3
	Yes	147	82.1
Q13. Are you comfortable in discussing about organ donation to your community members	No	8	4.5
	Yes	170	95.0
	Total	178	99.4
Q14. Would you consider becoming a live donor if a young child required a kidney?	No	25	14.0
	Yes	153	85.5
	Total	179	100.0
Q15. Would consider becoming a live donor if an adult required a kidney?	No	56	31.3
	Yes	121	67.6
	Total	177	98.9
Q16. Do you think that registering to be a donor is like inviting death?	No	135	75.4
	Yes	44	24.6
	Total	179	100.0
Q17. Do you think organ donation is a taboo for many African countries?	No	123	68.7
	Yes	54	30.2
	Total	178	99.4
Q18. Do you think health care professionals can create a barrier in organ donation	No	86	48.0
	Yes	91	50.8
	Total	177	98.9

Table 3. Attitude towards kidney organ donation (Continued)

Variables		N	%
Q19. A woman with children can donate organ	No	52	29.1
	Yes	125	69.8
Q20. Are you comfortable in talking to traditional healers can promote organ donation?	No	97	54.2
	Yes	82	45.8
	Total	179	100.0
21. Do you believe that your ancestors will not be happy if you donate your organ	No	140	78.2
	Yes	39	21.8
	Total	179	100.0

Attempt was done to ask the participants if they would wish to donate their organ when they die and the majority (84%) mentioned that they would wish to do so.

Figure 3. Agreement with organ donation

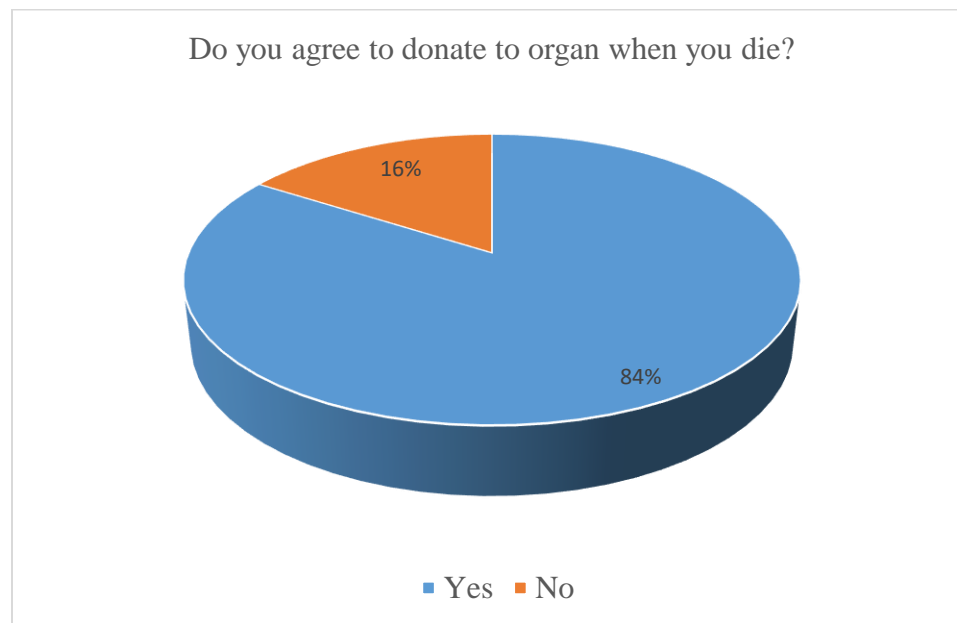
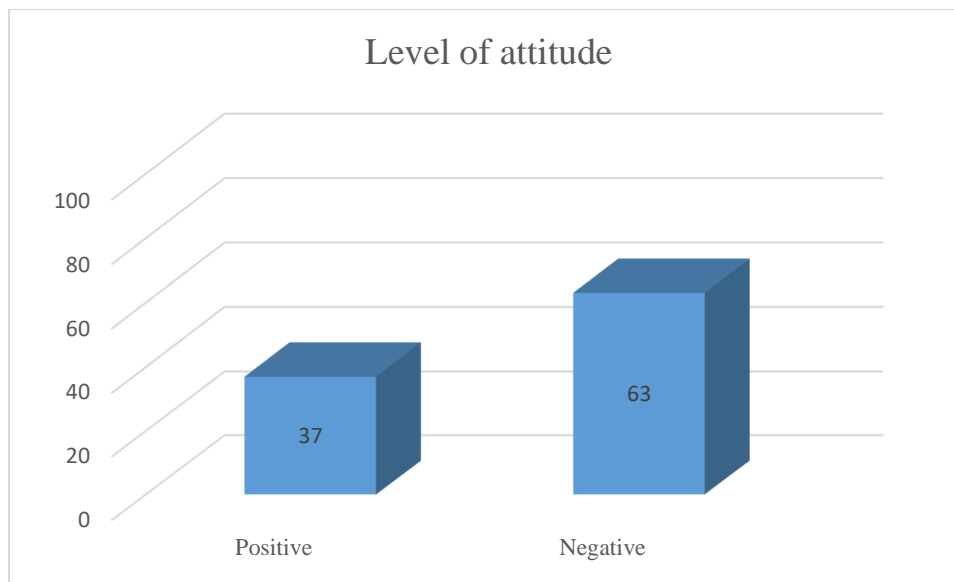


Figure 4. Level of attitude



Overall, the majority of participants (63%) have a negative attitude on kidney donation

The relationship between the willingness to donate organ and socio-demographic characteristics

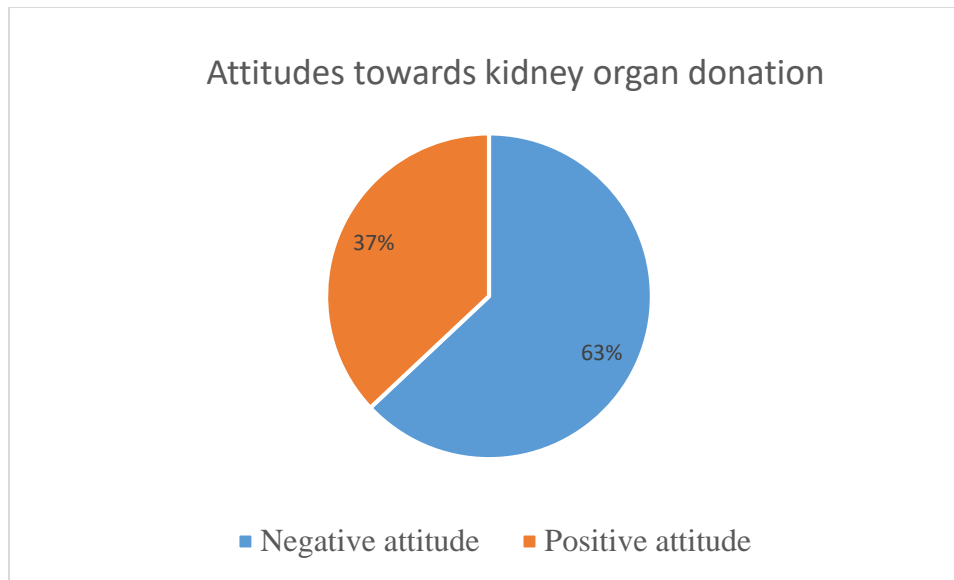
The results show that there is association between the willingness to donate organs and the level of education of the participants (P= 0.038), other variables did not show any association.

Table 4. Relationship between the willingness to donate organ and socio-demographic data

Variables		Would you agree to donate to organ when you die?			P-Value
		Yes	No	Total	
Marital Status	Single	142	28	170	0.242
	Married	7	0	7	
Total		149	28	177	
Education level	Bachelors program class level 2	17	97	114	0.038
	Bachelors program class level 3	1	11	12	
	Bachelors program class4	11	42	53	
Total		149	28	177	
sex	Male	87	16	103	

	Female	63	12	75	0.933
Total		150	28	178	
Age of the participants	20- 24	121	22	143	0.688
	25-29	23	6	29	
	30- 34	4	0	4	
	40-49	1	0	1	
Total		149	28	177	
Religion	Islam	4	0	4	
	Christianity	139	25	164	0.221
	Others (specify)	3	2	5	
Total		146	27	173	

Figure 5. Attitude towards organ donation.



The results in figure 5 highlight that most of the participants have negative attitudes towards organ donation (63%).

Table 5. The relationship between knowledge and attitude

Variables		Level of attitude		Total	P-Value
		Negative attitudes	Positive attitudes		
Level of Knowledge	Low level of Knowledge	76	44	120	0.935
	High level of Knowledge	37	22	59	
Total		113	66	179	

The results in table 5 show that there is no relationship between knowledge levels and attitude of the participants towards kidney donation at the study setting.

The relationship between knowledge and demographic variables

Table 6. Relationships between knowledge and demographic variables

Variables	Level of Knowledge			P- Value	
	Low level of Knowledge	High level of Knowledge	Total		
Education level					
	Bachelors program class level 2	75	28	103	0.173
	Bachelors program class level 3	9	3	12	
	Bachelors program class level 4	24	28	62	
Total		118	59	177	
Marital Status	Single	113	57	170	0.785
	Married	5	2	7	
Total		118	59	177	
Age of the participants	20- 24	101	42	143	0.94
	25-29	16	13	29	
	30- 34	1	3	4	
	40-49	1	0	1	
Total		119	58	177	
Gender	Male	72	31	103	0.311
	Female	47	28	75	
Total		119	59	178	
Religion	Islam	4	0	4	0.161
	Christianity	111	53	164	
	Others (specify)	2	3	5	
Total		117	56	173	

The data table 6 highlight that there is no any relationship between knowledge on organ donation and demographic data of the study participants. But education level and Muslim believers trend to have a close relationship to organ donation though not significant association was reported ($P=0.173$ and 0.161) respectively.

The relationship between attitude and demographic variables

Table 7. Relationships between attitude and demographic variables

		Level of attitude		Total	P-Value
		Negative attitudes	Positive attitudes		
Age of the participants	20- 24	90	53	143	0.566
	25-29	19	10	29	
	30- 34	3	1	4	
	40-49	0	1	1	
Total		112	65	177	
Sex	Male	76	27	103	0.001
	Female	37	38	75	
Total		113	65	178	
Level of education	Bachelors program class level 2	73	41	114	0.426
	Bachelors program class level 3	8	4	12	
	Bachelors program class4	32	21	53	
Total		113	66	179	
Marital Status	Single	109	61	170	0.253
	Married	3	4	7	
Total		112	65	177	
Religion	Islam	3	1	4	0.199
	Christianity	102	62	164	
	Others (specify)	5	0	5	
Total		110	63	173	

The results in table 7 indicated that gender is associated with attitude of the participants towards organ donation. Other variables are not associated with attitude of participants towards organ donation.

Perceptions towards kidney organ donation

Table 8. Perception about organ donation

Variables		N	%
Which factor holds the greatest importance to you when you decide to donate your organ in a case there is a need?	Relationship to recipient	65	36.9%
	Age of the recipient	36	20.5%
	Religion of the recipient	5	2.8%
	Health status of the recipient	57	32.4%
	Others	11	6.3%
Who would you like to donate your kidney?	Stranger	3	1.7%
	Family member	120	68.6%
	Friends	7	4.0%
	Orphan	5	2.9%
	Physically challenged person	39	22.3%
	Family member ,Friends and Orphan	1	.6%
What is your perception towards kidney organ donation?	To help others out of sympathy	93	53.1%
	To get away with the guilt feeling	6	3.4%
	To satisfy my religious beliefs	5	2.9%
	To feel immortal	3	1.7%
	To be useful to the society	68	38.9%

Table8. Perception about organ donation(Continued)

Variables		N	%
	Relationship to recipient	65	36.9%

Which factor holds the greatest importance to you when you decide to donate your organ in a case there is a need?	Age of the recipient	36	20.5%
	Religion of the recipient	5	2.8%
	Health status of the recipient	57	32.4%
	Others	11	6.3%
Who would you like to donate your kidney?	Stranger	3	1.7%
	Family member	120	68.6%
	Friends	7	4.0%
	Orphan	5	2.9%
	Physically challenged person	39	22.3%
	Family member ,Friends and Orphan	1	.6%
	To help others out of sympathy	93	53.1%
What is your perception towards kidney organ donation?	To get away with the guilt feeling	6	3.4%
	To satisfy my religious beliefs	5	2.9%
	To feel immortal	3	1.7%
	To be useful to the society	68	38.9%

Table8. Perception about organ donation (Continued)

Variables		n	%
If you are not willing to donate your organ to be donated what could be the reasons	I am afraid of disfigurement	43	24.9%
	I am Concerned about organ trading	7	4.0%
	Due to Health reasons	100	57.8%
	Due to religion	6	3.5%
	I am too young / old to donate	16	9.2%
	According to your understanding who should be given preference for the recipient of the organ?	People who never had transplant before	41
People who have already had one transplant		10	5.7%
Young patient		110	62.5%
Wealthy people		12	6.8%
Person above 60 years		2	1.1%
people who never had transplant before and wealthy people		1	.6%
For donation after death, who should give consent?	Family	144	82.3%
	Spouse	27	15.4%
	Friend	1	.6%
	Family and Spouse	2	1.1%
Who should make such decisions about organ donation in case of unclaimed dead bodies?	Charitable organization	11	6.4%
	Medical colleges/doctors	69	39.9%
	Police	21	12.1%
	A judge	14	8.1%
	No one	58	33.5%
Should organ donation be promoted?	Yes	167	96.0%
	No	7	4.0%
Is there any need for having effective laws to govern the process of organ donation?	Yes	161	91.5%
	No	15	8.5%

The results in table 8 summarizes the results on the perceptions of the participants towards kidney organ donation. It is reported that the big majority of the participants would prefer to donate their organ to a family member as reported by 68.6% while 36.9% of the study participants believe that

the greatest important factor to consider when they decide to donate their organ in a case there is a need would be their close relative.

Other perceptions were reported to different degrees. In addition, participants were asked to report on what was their perception towards kidney organ donation and 53.1 % reported to donate their organs in order to help others out of sympathy. And they believe that organ can be given to young people.

Table 9. Relationship between Perception and the level of attitudes towards kidney organ donation

Variables		Level of attitude		Total	P-Value
		Negative attitudes	Positive attitudes		
Which factor holds the greatest importance to you when you decide to donate your organ in a case there is a need?	Relationship to recipient	63	41	104	
	Age of the recipient	1	1	2	
	Religion of the recipient	2	3	5	
	Health status of the recipient	40	17	57	0.591
	Others	7	4	11	
Total		113	66	179	
Who would you like to donate your kidney?	Stranger	9	3	12	
	Family member	68	47	115	
	Friends	6	1	7	
	Orphan	3	2	5	
	Physically challenged person	26	13	39	0.569
	Family member ,Friends and Orphan	1	0	1	
Total		113	66	179	
What is your perception	To help others out of sympathy	68	35	103	

towards kidney organ donation?	To satisfy my religious beliefs	4	1	5	0.578
	To feel immortal	2	1	3	
	To be useful to the society	39	29	68	
Total		113	66	179	
If you are not willing to donate your organ to be donated what could be the reasons	I am afraid of disfigurement	36	20	56	
	Due to Health reasons	66	35	101	0.414
	Due to religion	2	4	6	
	I am too young / old to donate	9	7	16	
Total		113	66	179	
According to your understanding who should be given preference for the recipient of the organ?	People who never had transplant before	39	15	54	
	Young patient	65	45	110	0.224
	Wealthy people	7	5	12	
	Person above 60 years	2	0	2	
	people who never had transplant before and wealthy people	0	1	1	
Total		113	66	179	
For donation after death, who should give consent?	Family	110	65	175	
	Spouse	1	0	1	0.724
	Friend	1	0	1	
	Family and Spouse	1	1	2	
Total		113	66	179	
Who should make such decisions about organ donation in case of	Charitable organization	7	4	11	
	Police	12	9	21	
	A judge	13	1	14	0.115
	No one	81	52	133	

unclaimed dead bodies?					
Total		113	66	179	
Should organ donation be promoted?	No	6	1	7	0.206
	Yes	107	65	172	
Total		113	66	179	
Is there any need for having effective laws to govern the process of organ donation?	No	11	4	15	0.392
	Yes	102	62	164	
Total		113	66	179	

The results in table 9 of the relationship between the levels of attitudes and perception did not show any relationship between the variables (All P value are >0.05)

CHAPTER 5. DISCUSSION OF THE RESULTS

5.0. INTRODUCTION

This chapter discusses the results in relation to the objective of the present study. It starts by the level of knowledge and attitudes towards organ donation followed by perceptions of the participants towards organ donation.

5.1. KNOWLEDGE OF NURSING STUDENTS TOWARDS KIDNEY ORGAN DONATION.

Knowledge on kidney organ donation was reported as low due to the high percentage of respondents who scores low level on knowledge questions (51%). The results are not far from other studies conducted on knowledge and attitudes about organ donation among 409 medical students, where 44.8% had sufficient knowledge about organ donation, and 40.1% reported insufficient knowledge about organ transplantation (Bilgel et al., 2006.). The present study is in conformity with the literature which suggested that the targeted programs at the University levels to boost knowledge, attitude and perceptions on organ donation especially in University students (Hamed and Elhosseny Awad, 2015; Almohsen et al., 2016; Bharambe, Rathod and Angadi, 2016; Crymble et al., 2017). This reported low knowledge might be linked to low public awareness on organ donation at the study settings as it was mentioned in others studies which suggested that knowledge deficits and concern would be reached through public awareness messages, where suggestion on public awareness would reverse the situation . observed at the university in Central Saudi Arabia where most of students (85.1%) in 195 believed that there is low public awareness regarding the subject (Almohsen et al., 2016)

Adding the course on organ donation in the curricula of nurses at bachelors' level would improve the situation.

5.2. ATTITUDE OF NURSING STUDENTS TOWARDS KIDNEY ORGAN DONATION.

The results show that the respondent reported the willingness to donate their organs once they die as witnessed by the majority of the participants (84%). The results are in conformity with the study conducted in 30 volunteers at the University of California, San Francisco (UCSF) Health Science campus to assess and compare recruitment barriers to deceased donor registration efforts and health fair attendees which reported the high willingness of 83% (Kirsten Regalia, Patricia Zheng, Stefan Sillau, Anuj Aggarwal, Oliver Bellevue, Oren K. Fix, Jennifer Prinz, Susan Dunn, 2014, Symvoulakis et al., 2014).

Most of the participants (36.9%) would wish to donate their kidney to their relatives, family member (68.6%), and the majority (57.8%) fear to donate kidney due to health reasons. The results are in line with evidence that there is a relationship reported to be between organ donation and the family of deceased organ donors in donation process(Dicks et al., 2018)

However, the overall result on the attitude has shown that it was negative in 63% of cases ,

This is a big issue since these future nurses will be expected to support kidney donation in one way or another. Interventions to change the current situation should be designed and implemented.

5.3. PERCEPTIONS OF THE STUDY PARTICIPANTS TOWARDS KIDNEY ORGAN DONATION

The results on perceptions indicated that nursing students would consider donate their organs depending on different reasons, some mentioned that family members would be a priority for them to donate their organs, other participants fear organ donation due to health related reasons. . In addition, others preferred to donate their organ out sympathy. This is in conformity with the literature which indicated that 78% of participants in a study conducted in Greece agreed that they can leave their kidneys for transplantation(Symvoulakis *et al.*, 2014).

CHAPTER 6. CONCLUSION AND RECOMMENDATION

6.1. CONCLUSION

This research reported level of knowledge, attitude and perceptions of nursing students at the University of Rwanda towards kidney organ donation.

It shows that the level of knowledge is low and students tend to have negative attitudes towards organ donation. It was shown that students would prefer to donate their organ only for their family members due to health related reasons.

Basing on the results of the present study, the following recommendations may be of use for future improvement.

6.2. RECOMMENDATIONS

NURSING EDUCATION:

To include kidney organ donation in the curriculum and sensitize students to be donors

To provide continuous training in the area of organ donation in nursing

Facilitate students in fellowship outside the country so as the get exposure on best practice in organ donation in other countries

Students are recommended to participate in public awareness done targeting the general public to donate their organs

NURSING RESEARCH: To conduct research that report on factors that may hinder nursing student to donate organ

NURSING ADMINISTRATION: To strengthen the knowledge on organ donation among health professional who participate to the training/practice of nursing students

STAKEHOLDERS: To partner with the University of Rwanda in strengthening the capacity of students on organ donation as future health service cadres

To deploy nephrologist nurse in different health facilities to transfer knowledge to fellow nurses so as kidney organ donation knowledge can be boosted

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APPENDICES

CONSENT FORM

**Knowledge, Attitude and Perceptions towards Kidney Donation among nursing Students
at the College of Medicine and Health Sciences, University of Rwanda**

I, _____ agree to participate in the study
“.....” I am aware that participation in the study is voluntarily and
I will not be paid for the participation. In addition, all information provided will be treated with
confidentiality and that my anonymity will be maintained. I am aware that the results of this
study may be published but I will not be identified as an individual. I reserve the right to
withdraw from the study at any time if I so wish.

If you have any question regarding the study, you can call the Principal Investigator at
0788672883 or his supervisor at

.../.../....

Signature of participant

Date

Signature

Marie Louise UWINGABIYE

THE RESEARCH TOOL

Knowledge, Attitude and Perceptions towards Kidney Donation among nursing Students at the College of Medicine and Health Sciences, University of Rwanda

SECTION 1. DEMOGRAPHIC CHARACTERISTICS

(1) Age (in years):

20- 24

25-29

30- 34

35-39

40-49

(2) Gender

(a) Male (b) Female

(3) Education level:

3/ Professional education

(d) Bachelors program class level 1

(e) Bachelors program class level 2

(f) Bachelors program class level 3

(g) Bachelors program class level 4

(h) Bachelors program class level 5

(4) Marital Status:

(a) Single

(b) Married

(c) Separated

(d) Divorced

(5) Religion:

(a) Islam

(b) Christianity

(c) No religion (d) Others (specify) _____

SECTION 2: KNOWLEDGE

S.NO	Questions	Yes	NO
1	Have you heard of the term “organ donation”		
2	Have you heard of the “ Organ transplantation		
3	Are you aware of “ transplantation of human organ act in Rwanda		
4	Can a brain dead patients kidney be donated		
5	Will certified brain dead registered organ donor be immediately disconnected from the ventilator		
6	Can parents/ guardians make substitute decision making for mentally disabled persons in the regard of organ donation		
7	Donor ‘s and recipient’s blood group must be matched		

8	Donor's human leukocytes antigen must be identical to that of recipient for any organ donation		
9	Malignancy is contra indicated to cadaveric organ donation		
10	Hepatitis B and C carriers can donate all of their solid organs		
11	Malignancy is always a contra indication to donate organ		
12	Can a person live with one kidney		
13	Heart, lungs, skin, bone marrow, kidney, liver, pancreas, heart, cornea Can be donated by a cadaver donor		
14	The organ that can be donated when you are alive are kidney, pancreas and liver		
15	Organ donation is risky for the recipient		
16	Organ donation is beneficial to the society		
17	If you are a registered donor you are kept alive until your organs are removed		
18	Transplants survival rates today are very low in Rwanda		
19	Chances of the recipient to return to normal life is possible after organ donation		
20	Kidney is the organ which is commonly donated		

21	Irreversible death of the brainstem is called brain death		
22	Only same race person can donate the kidney (African to African)		
23	It is necessary to preserve the kidney in a simple cold storage system		
24	Animal kidneys can be donated to the human beings		
25	Kidney harvested from the cadaver donor can be preserved for 3 months		
26	Multiple organ donation is allowed from a cadaver donor		
27	Living donor can have multiple physical risk		
28	Altruism is a act of giving the organ freely without any reward		
29	Buying and selling organ is an illegal practice		
30	The donor can retract the offer to donate at any time.		

SECTION 3: ATTITUDE AND PERCEPTION TOWARDS KIDNEY ORGAN DONATION

S.NO	Question	Yes	No
1	Do you support organ donation?		
2	Do you agree to donate to organ when you die?		

3	Do you feel comfortable to think or talk about organ donation?		
4	Do you agree to donate your family member's organ?		
5	Do you think donating organ gives life to another person?		
6	Does your religion agree with organ donation or transplantation?		
7	Do you believe that your body should be kept intact after your death?		
8	Do you have fear that your body will be disfigured if you donate organ?		
9	Does your culture allow you donate organ?		
10	Do you think live organ donation is better than cadaveric organ donation in solving the shortage?		
11	Are you comfortable in receiving organ from another person?		
12	Are you comfortable in discussing about organ donation to your community members		
13	Would you consider becoming a live donor if a young child required a kidney?		
14	Would consider becoming a live donor if an adult required a kidney?		

15	Do you think that registering to be a donor is like inviting death?		
16	Do you think organ donation is a taboo for many African countries?		
17	Do you think health care professionals can create a barrier in organ donation		
18	A women with children can donate organ		
19	Are you comfortable in talking to traditional healers can promote organ donation?		
20	Do you believe that your ancestors will not be happy if you donate your organ		

SECTION 4: KIDNEY ORGAN DONATION PERCEPTION

1. Which factor holds the greatest importance to you when you decide to donate your organ?
 - a) Relationship to recipient
 - b) Age of the recipient
 - c) Religion of the recipient
 - d) Health status of the recipient
 - e) Others

2. Who would you like to donate your kidney?
 - a) Stranger
 - b) Family member
 - c) Friends
 - d) Orphan
 - e) Physically challenged person

3. What is your perception towards kidney organ donation?

- a) To help others out of sympathy
 - b) To get away with the guilt feeling
 - c) To satisfy my religious beliefs
 - d) To feel immortal
 - e) To be useful to the society
4. If you are not willing to donate your organ to be donated what could be the reasons?
- a) I am afraid of disfigurement
 - b) I am Concerned about organ trading
 - c) Due to Health reasons
 - d) Due to religion
 - e) I am too young / old to donate
5. According to your understanding who should be given preference for the recipient of the organ?
- a) People who never had transplant before
 - b) People who have already had one transplant
 - c) Young patient
 - d) Wealthy people
 - e) Person above 60 years
6. For donation after death, who should give consent?
- (a) Family
 - (b) Spouse
 - (c) Friend
7. Who should make such decisions about organ donation in case of unclaimed dead bodies?
- (a) Charitable organization
 - (b) Medical colleges/doctors
 - (c) Police

(d) A judge

(e) No one

8. Should organ donation be promoted?

(a) Yes

(b) No

9. Is there any need for having effective laws to govern the process of organ donation?

(a) Yes

(b) No

Thank you for your time to complete this questionnaire