



**INSTITUTE OF HEALTH
FACULTY OF MEDICAL SCIENCES
DEPARTMENT OF BIOMEDICAL SCIENCES**

**ASSESSMENT OF KNOWLEDGE, ATTITUDE, AND WILLINGNESS
TOWARDS BODY AND CADAVERIC ORGAN DONATION AND
THEIR ASSOCIATED FACTORS AMONG HEALTHCARE
PROFESSIONALS WORKING IN JIMMA UNIVERSITY MEDICAL
CENTRE: AN INSTITUTION BASED CROSS-SECTIONAL STUDY**

BY:

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JIMMA, ETHIOPIA

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ABSTRACT

BACKGROUND: *In the history of medical science, cadavers were a precious resource for both teaching and researching human anatomy and cadaver dissection has been an integral part of anatomy teaching in medical schools around the world. Till date, the importance of student- cadaver encounter remains paramount. However, anatomical institutes in Ethiopia frequently report a gap between supply of bodies for dissection and demand. In order to continue the invaluable educational experience of cadaver dissection, there must be research on the ways of obtaining this precious anatomy education resource.*

OBJECTIVES: *To investigate knowledge, attitude and willingness to body and cadaveric organ donation and their associated factors among health care professionals working at Jimma University Medical Centre (JUMC).*

METHODS: *A cross-sectional study was conducted among healthcare professionals working in JUMC. The study participants were selected using systematic sampling method. The data were collected by using structured questionnaires and entered to Epi-Data version 3.1 and were analyzed using SPSS version 20.0. Descriptive statistics, chi square, and logistic regression analysis were used for analysis and statistical significance was declared at $p < 0.05$.*

RESULTS: *A total of 296 healthcare professionals were included into the study out of whom 153 (51.7%) were male and 143 (48.3%) were female. The age of the respondents ranged from 21 to 60 years, with a mean age of 28.03 ± 4.56 years.. One hundred ninety one (64.5%) of the participants had adequate knowledge about body donation whereas about 233 (78.7%) had adequate knowledge about cadaveric organ donation. Similarly, 138 (46.6%), and 164 (55.4%) of the professionals had good attitude towards body and cadaveric organ donation, respectively. Of the total respondents who showed good attitude towards body donation, about half encourage it to be done in Ethiopia. The willingness to donate body was 63 (21.3%) and the willingness to donate cadaveric organs was 117 (39.5%). The major factors that influence knowledge, attitude, and willingness of health care professionals towards body and cadaveric organ donation are sex, level of education, category of education, year of service, ethnicity and marital status.*

CONCLUSION: *Healthcare professionals working at JUMC are well aware of body and cadaveric organ donation although their attitude and willingness to donate are not as good as their knowledge. Factors such as sex, level of education, category of education, year of service, ethnicity and marital status affect the knowledge, attitude, and willingness to donate body and cadaveric organ.*

KEYWORDS: *Body donation; Cadaveric organ donation; Knowledge; Attitude; Willingness; Healthcare professionals; JUMC.*

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ACRONYMS

APR - Anatomy and Physiology Revealed

CI - confidence interval

IRODaT - International Registry on Organ Donation and Transplantation

JUMC- Jimma University Medical Centre.

NGOs - Nongovernmental organizations.

USA - United States of America.

WHO - World health organization

WHO-GODT- World Health Organization global observatory on organ donation and
transplantation

CHAPTER ONE

INTRODUCTION

1.1. Background

Anatomy is a cornerstone for medical education regardless of nation or specialty. Gross anatomy particularly is best learned and explored through dissection of human body. And hence, anatomical principles underpin the foundations of medical and surgical practice (1). Relevance of body dissection through the proper use of cadavers is of prime importance before learning living anatomy (2).

Cadavers are a precious resource for both teaching and researching human anatomy and dissection has been an integral part of human anatomy education in medical schools around the world (3-6). There is consensus that the teaching anatomy to medical students should be rationalized, horizontally and vertically integrated with other medical subjects, and taught using a variety of techniques, with dissection as the main tool (7). Studies confirm that till date the importance of student- cadaver encounter remains paramount in medical education (8). However, medical schools frequently report a gap between supply of bodies for dissection and demand (9). The number of available bodies is far lower than the required. This has posed a serious problem to medical education and will seriously affect the future medical education. Therefore, donations of whole human bodies are essential for medical and scientific progress (1, 9).

Cadavers for anatomical studies can be obtained by a variety of methods. Yet, studies argue that the main source should be donation (2). Donations of whole human bodies are essential for medical science progress. Therefore, factors that influence body donations to medical science affect dissection-based anatomy studies (10). Scholars revealed that body donation is the greatest gift for medical science and technology. Knowledge obtained through dissection of the human body is an indispensable part of the education of healthcare professionals. Through body donation, the donor helps train our medical doctors, specialists and other healthcare professionals (11, 12).

The first documented human dissection was performed in Egypt by Herophilus of Chalcedon and Erasistratus of Chios of Ptolemaic Medical School. Herophilus performed six hundred human dissections (13). Despite the fact that cadaver dissection for anatomy education has been practiced long ago, historical studies conducted on anatomy reported that human cadaveric dissection has survived the test of time (6). Studies from different corners of the world argue that the gross anatomy dissection course is a cost-intensive piece of medical education that students and professionals alike describe as very important within the overall undergraduate and post graduate medical curricula (14, 15). This course is widely appreciated as being the most significant components of medical education and the study of anatomy through the dissected cadaver is viewed as the uniquely defining feature of medical courses (15). It is important for medical students and future doctors, especially surgeons, radiologists, and pathologists to acquire basic scientific knowledge of human anatomy (16). In addition to being the backbone of medical sciences, anatomical knowledge is of critical necessity in clinical examination of patients, diagnosis of diseases, and consultation with other medical personnel (15, 16).

Cadaver is the first patient for medical students (9) and human body dissection is a prerequisite for the training of healthcare professionals and the conduct of medical research (17). Cadavers allow students to practice on patients who don't feel pain. They help surgeons develop new procedures without risking lives. Dentists dissect their heads and torsos, and physiotherapists study their musculoskeletal systems. Cadavers teach the students what they cannot learn from models (18). Cadaver dissection based anatomy education makes the medical students a skilled doctor with innovative insights by dissecting different parts of the body and for preparing museum specimens for future study and references (19).

In developed countries, cadavers are used by pharmaceutical companies to test drugs on them, and automakers employ them as crash-test dummies; and to research how cadavers decompose over time (20). There is an ever increasing demand for cadavers for dissection due to increase in the number of medical schools in the world (21). Since the last decade, there is a mushrooming of medical schools in Ethiopia. Not only the number of schools but also the number of students enrolled into each medical school has increased. As a result, it has become very difficult to fulfill the needs of schools and students due to the relatively small

supply of cadavers. This diminished opportunity for an individual medical student to carry out dissection of the cadaver (21, 22). Large groups of medical and other health science students primarily observe the dissection process or are lectured over prosecuted bodies. In order to continue the invaluable educational experience of cadaver dissection, there must be a renewed drive to encourage whole body donation to medical science. More cadavers are needed to maintain the quality of medical education and serve the growing requirements of surgical training and research (1). Responsibility for this should lie with those who derive maximal benefit from the resource, namely the medical professionals (22). According to a study conducted in India, the medical students and medical health professionals are potential donors among others. So, they must be approached for pledge form (for voluntary body and organ donation) submission (23).

Organ donation is giving an organ to help someone who needs a transplant (24). Organ transplant becomes an essential mode of treatment when there is an end stage organ failure in a patient (25). Transplantation provides benefits to society as a whole as well as to the individuals who receive transplants. It is often the most cost-effective form of treatment for end-stage disease patients and offers the opportunity for patients disabled by illness to play a fuller and more active role in society, thus reducing the costs of health care and social care. However, this form of treatment is limited by the availability of human organs suitable for transplant (19, 24). After death, many of the organs such as heart, lungs, kidneys, liver, small bowel, pancreas, corneas, tissue, bone marrow and others can be donated and transplanted to the patient seeking transplantation (19, 25). In general, acquired or developmental damage of any organ due to any reason leaves the victim crippled. In such circumstances, to overcome the problems organ transplant becomes an essential mode of treatment (19, 26, 27). The good results have led to a more general application of this procedure to save the lives of the patients.

Organ donation can be done in two ways. The first is live donation in which the person donates as he is alive. Kidney and blood can be donated in this way. The second way of organ donation is deceased donation. This type is called cadaveric organ donation. Many of body organs can be donated in this way (19, 22-27). Despite the fact that organ transplantation is saving the lives of several people all over the world, there is an increasing discrepancy between the number of potential donors and recipients (5, 6, 28).

To achieve cadaveric organ donation, it is necessary to act at 2 levels: the general public and healthcare workers (28, 29). Specifically, the attitudes of healthcare workers about organ donation and transplantation are fundamental to obtaining organs. This is because the medical profession plays a central role in raising public awareness of both living and post-mortem organ donation. Healthcare professionals are the critical link in augmenting public awareness about organ donation (29). Many developed countries have designed programs specifically to allow medical professionals to promote better public understanding and awareness of organ and body donation. The approach of health care workers influences not only potential donors but also donor families.

In recent years intense interest towards organ donation from World Health Organization (WHO), and professional bodies that are led by The International Transplantation Society. Their efforts have focused on the development of a series of legal and ethical frameworks, designed to encourage all countries to eradicate unacceptable practices while introducing programs that strive to achieve national or regional self-sufficiency in meeting the need for organ transplants. These programs should seek to develop deceased donation to its maximum potential (27).

In summary, unclaimed body donation should never be more than a temporary solution for anatomy education. It is essential to raise public awareness in order to start body and cadaveric organ donation in Ethiopia. The public awareness and willingness is important for continuous supply of bodies and organs for the patients with organ failure and the medical and aligned sciences (30-32). Public attitude can be addressed by research and education (32). Therefore, the major aim of the current study is to assess the knowledge, attitude and willingness of Jimma University Medical Centre (JUMC) health care professionals towards body and cadaveric organ donation for anatomy education, research and transplantation purpose.

1.2. Statement of the Problem

Whole body donation helps the medical students to become a skilled doctor with innovative insights by dissecting different parts of the body and for preparing museum specimens for future study and references (19). Yet, not all universities use dissection to teach human gross

anatomy. One reason for this is the scarcity of bodies. The lack of cadavers is a common barrier to many medical schools, particularly so for those that have not established a body donation program (31). This remains in contrast to countries that established such programs during the 20th century and currently have a relatively large supply of cadavers. The practice of body donation has evolved over centuries and there are still considerable discrepancies among countries regarding the means by which human bodies are acquired and used for education and research (32, 19).

Body donations for medical research and training have been increasing dramatically in developed countries (33, 34). This growing popularity of body donation has been seen in the Dutch population (35). The country has well-established donation programs to use body dissection to teach human gross anatomy (36–38). Even, there is a surplus of cadavers in this country. To avoid a surplus of incoming bodies in this country, several anatomy institutes have actually decided to decline new registrations of body donation. In contrast to this, there are countries without donation programs that use unclaimed bodies or perhaps a few donated bodies instead (39-43).

Donated cadavers now make up 80% of the total cadavers in North American medical schools and, surprisingly, all the cadavers used for dissection in the United Kingdom are donated (41). Body donation is a common practice in these countries. In contrast to this, countries such as China did not have a well-developed body donation program in the past. But, China changed the situation after several research and education (44). A study conducted in this country reported that donation of body is important to not only medicine development, but the social civilization also (45). In March 2010, China launched a pilot programmed of deceased organ donation in 10 provinces and cities (45).

However, the deceased donor rate of China remains significantly lower than Spain and other Western countries (45). This is because there is still insufficient research on body donation in China to provide information on how to increase the body donation rate. Comprehensive research has been performed on the motivation for body donation in Western countries (46).

A study conducted by Gangata et al (41) revealed that despite about 90% of the surveyed medical schools in Africa used cadaveric dissections; almost all of them use unclaimed

bodies. The study also indicated that the sources of some cadavers used in African medical schools are not clearly known (41). Noticeably, there is shortage of unclaimed bodies in most medical schools in Africa. There are many medical schools in the continent that use prosecuted bodies to teach their students (43). Therefore, scarcity of unclaimed bodies for dissection necessitates development of human body bequest programs in Africa.

A study from Johannesburg, South Africa indicated that, for over a significant period of time, unclaimed cadavers have performed an essential role in the teaching of anatomy in South Africa (47). According to this study, a significant decrease in the number of cadavers received during the period 2000-2013 and a slow bequest program over the same period of time has led to concerns about the sustainability of teaching anatomy through dissection. Decreases in the numbers of cadavers of males and cadavers of the black population group occurred between 1990 and 2013 and of bequests from 2000 to 2013.

According to a study from Nigerian, anatomy education in most African countries is limited by an insufficient number of cadavers for students to undertake dissection. This already significant shortage is exacerbated by an increasing number of medical schools and students (48). The study argue that proactive measures should be taken that are aimed at improving the perception and attitudes of Nigerian anatomists.

In South Africa and Zimbabwe, donations are mostly from the white community of the countries. Medical schools in some Islamic countries like Libya import cadavers from India. The lack of knowledge about body donation programs and firmly held cultural and religious burial traditions may explain the lack of bequests from black communities (41). In the University Of Nairobi (UoN), all of the cadavers used for dissection are unclaimed bodies. The catchment area of collecting cadavers has been increased to address the need for cadavers in UoN, with increased competition for this resource from other medical schools of the country (5).

Despite the fact that there is a well-developed body donation program in many western countries and in some African countries, the program is totally absent in Ethiopia; which necessitates researching and creating awareness in the community. The act of body donation should be guided by laws and ethical frameworks and should develop alongside the needs for medical knowledge and for improved teaching of human anatomy.

There will also be a future need for human bodies in Ethiopia to ensure optimal pre- and post-graduate training and for use in biomedical research. Good body donation practice should be adopted wherever possible, moving away from the use of unclaimed bodies of dubious provenance and adopting strategies to favor the establishment of successful donation programs (32). Organ donation and transplant rates vary widely across the globe, but there remains an almost universal shortage of deceased donors. The unmet need for transplants has resulted in many systematic approaches to increase donor rates (49).

Organ trafficking; the sale and purchase of human organs for transplantation; is a widespread crime. One reason for this criminal is shortage of donated organs. Estimates put the worldwide number of commercial transplantations; transplantations that involve payment for the organ; at about 10,000 annually, roughly 10 percent of all transplantations. Many countries have laws that prohibit the selling and buying of organs and ban physicians from transplanting organs obtained through payment (50). Organ trafficking is an illegal means of meeting the shortage of transplants. It is a stateless crimes, legitimacy, and international criminal. The activity also flourishes for several interacting reasons, such as medical needs, poverty and criminality (51). A medical student in China was cheated and killed by organ traffickers for her two kidneys. Reports indicate that many people in the world were killed by traffickers for their organs. Developing donation practice is essential to control organ trafficking. Therefore, it is noteworthy to research the attitude of the community and promote donation through education in order to control trafficking (52 - 55).

In Germany approximately 3000 organs are transplanted annually (56). Yet, in the Netherlands, like in many other European countries, there is a considerable shortage of vital organs such as heart, eye, and kidneys for transplantation purposes (57). In countries where donation practice is highly developed, organ donors prefer deceased donation to live donation. This is confirmed by a study conducted in China which reported 60.1% of study participants approved deceased donation whereas only 48.5% approved living donation (58).

Attitudes toward future application of xenotransplantation were quite positive among doctors in Spain. There was a clear difference in attitude according to job category ($P=0.018$): approval rates were 89% for doctors, 76% for nurses, and 70% for ancillary personnel.

However, the attitudes of nursing and ancillary personnel were similar to those of the general population (59).

According to WHO guiding principle 3, donations from deceased persons should be developed to their maximum therapeutic potential. There is a recognized need for communities, and health professionals, to become better educated about donation and transplantation and that is the key to the success of deceased donation programs. The transparent oversight of the health authorities over donation and transplantation activities is also essential to increase the trust of the public in the system (60).

The International Registry in Organ Donation and Transplantation (IRODaT) presents final data on worldwide donation and transplantation activity to the community. IRODaT has been collecting and disseminating worldwide data since 1998. In this issue, it is shown that most of the countries that report the major activity in actual deceased donors are located in the European region (61). According to a study from Nigeria, the attitude of health care workers towards organ donation is cardinal to the successful implementation and sustainability of transplant programs. The study found that Nigerian health care workers have a positive attitude toward organ donation (62).

In Ethiopia, there are studies that assessed knowledge, attitude, and practice towards blood donation and their associated factors among health care providers (63, 64). Unfortunately, the researcher could not find a single study conducted on body and cadaveric organ donation among health care workers in Ethiopia.

In developed countries, body parts such as the head, hand and leg had been transplanted. For instance, Italian neurosurgeon Sergio Canavero and partner Dr. Xiaoping Ren of Harbin Medical University in China had performed the world's first successful human head transplant in November 2017. The transplant aimed at helping a patient who suffered from brain diseases (65-67). Although cadaveric organ donation and transplantation research and practice are highly advanced in developed countries, there is limited data to guide programs or plan interventions in Ethiopia which necessitated conducting the current study.

1.3. Significance of the Study

While organ donations save countless lives every year, the good that can come from anatomical body donations is boundless. With the increasing demands for more healthcare workers in Ethiopia, many medical schools have been set up. In order to continue training of well qualified medical doctors and advancement of medical research, we need to explore ways of obtaining bodies and organs. Therefore, the present study is the first step for assessing the awareness of health care professionals regarding donation of cadavers and cadaveric organs.

Although there are studies that assessed knowledge, attitude, and practice of blood donation in Ethiopia, there are no studies that assessed the knowledge, attitude, and willingness towards body and cadaveric organ donation and their associated factors among healthcare professionals in Ethiopia. Hence, the current study will fill the gap existing in the area.

WHO global observatory on organ donation and transplantation (WHO-GODT) reported that there is very high need for organ receiving in Ethiopia despite the fact that low attitude and willingness exists in the country. Therefore, it is noteworthy to research the risk factors for the low attitude, and willingness towards body and cadaveric organ donation. In order to upraise body donation practice in Ethiopia, it is important to research the problem. The best study subjects for this should be health care professionals for two reasons. Firstly, because they are the ones who get maximum benefit from donation through education. Secondly, because the attitudes of health care workers can play a vital role in educating the general public regarding organ and body donation. This necessitates researching the problem in health care professionals.

Ethiopia is one of the major countries in which humans have been trafficked. Conversely, organ steal and trafficking is commonly seen in human trafficking. Physicians and other health care professionals seem well placed to play a role in the monitoring and, perhaps, in the curtailment of the trafficking in human beings for the purpose of organ removal. They serve as important sources of information for patients and may have access to information that can be used to gain a greater understanding. Therefore, the awareness of these professionals will be useful.

Hence, the researcher believes that this study is highly valuable, timely and important. Assessing this problem and their associated factors among health care professionals is useful in view of the scarce data in Ethiopia and will refine, revise, or extend the existing knowledge on the area in the world. Finally, the results of this study are expected to help for education and health sector planning.

CHAPTER TWO

LITERATURE REVIEW

2.1. Historical Background of Cadaveric Dissection

Dissection of human body started in ancient Greece in the 3rd century BC. This practice revived in medieval Italy during 14th century AD and it evolved in Europe and United States of America over centuries. The recorded history showed that the first peoples to dissect human bodies were two Greek physicians Herophilus (335-280 BC) and Erasistratus (c.304-c.250 BC). Andreas Vesalius (1514-1564), a Flemish-born anatomist, is credited as the father of modern Anatomy for his contribution in dispelling many misconceptions about human body and its functions by dissecting human bodies (6).

Since then the dissection of human body for medical education and research become a common place in various medical schools. Cadavers were sourced from the bodies of death convicted criminals and dissected in the public as a capital punishment. The bodies of those peoples of course served both the legal education and advancing the knowledge of medical sciences (13).

2.2. Regional Differences in Body and Cadaveric Organ Donation

Studies indicate that there are still considerable discrepancies among countries regarding the means by which human bodies are acquired for anatomy education and research (19, 32). More than 430 whole-body donations have been received since body donation service was commenced in 2005 in University of Arizona in United States (68). Donated cadavers now make up 80% of the total cadavers in North American medical schools. In United Kingdom, all the cadavers used for dissection are collected from donation program (41). The Conscious Body Donation Program conducted by the Department of Human Anatomy, Medical University of Silesia, Katowice, Poland started since 2003. It was aimed at obtaining informed donors' bodies for the purpose of teaching anatomy (69). China did not have well-grounded body donation program in the past. But, the situation was changed after several

community research and education (44). There is also a well-established body donation program in Islamic republic of Iran (4).

In Africa, the reality is different. Although about 90% of the surveyed medical schools in the continent used cadaveric dissections, almost all of them use unclaimed bodies (41). Even, the sources of cadavers in some African medical schools are not clearly known. Moreover, medical schools in many Africa countries suffer from shortage of cadavers. This remains in contrast to developed countries that established donation programs during the 20th century and currently have a relatively large supply of cadavers to teach their students (31).

There will also be a future need for human bodies to ensure optimal pre- and post-graduate training and for use in biomedical research. Good body donation practice should be adopted wherever possible, moving away from the use of unclaimed bodies of uncertain origin and adopting strategies to favor the establishment of successful donation programs (32). With regard to Ethiopia, the country hasn't developed body donation program yet. Hence, all the medical schools in the country rely upon unclaimed bodies.

2.3. Importance of Body and Cadaveric Organ Donations

Anatomy is one of the first, most basic and yet one of the most important subjects studied by medical students worldwide. A sound knowledge of anatomy is essential from the beginning of a medical education and knowledge obtained through dissection of human body is an indispensable part of the education of health care professionals (8).

The finding of a study conducted by Achlan J. C and his colleagues indicated that students who learn human anatomy using cadavers have a better understanding of the subject matter of anatomy and they were more careful for their patients in their clinical practice because they learn patient handling and surgical experience during dissection (70).

Medical and dental schools can give students a hands-on experience of working in the human body to learn the skills they will ultimately use to save lives (32). Medical research facilities use cadavers to make advances in technology, procedures, and anatomical understanding that translate into improved patient care. Even the most experienced doctors stand to benefit, cadavers providing a safe way for practicing new methods and adding value to their continuing medical education. While there are other methods for obtaining anatomical

knowledge, a hands-on experience provides students with insight into how certain diseases can affect the body, the tactility of human tissues and organs, and how to treat a human body with the upmost respect. Because of the endless practical medical uses for cadavers, there is a high demand. In the United States, in particular, there are various ways of obtaining cadavers for medical study, two of the most common being willed body programs and private supply companies (20, 32).

Using a multilevel, quasi-experimental-control design, a study compared the effects of “Anatomy and Physiology Revealed” (APR) multimedia learning system with a traditional undergraduate human cadaver laboratory. According to the findings of this study, multimedia and simulation programs are increasingly being used for anatomy instruction, yet it remains unclear how learning with these technologies compares with learning with actual human cadavers. APR is a model-based multimedia simulation tool that uses high-resolution pictures to construct a prosecuted cadaver. APR also provides animations showing the function of specific anatomical structures. Results showed that the human cadaver laboratory offered a significant advantage over the multimedia simulation program on cadaver-based measures of identification and explanatory knowledge (32, 19, 71).

Studies indicate that cadaver dissection is still important for (i) establishing the primacy of the patient (ii) apprehension of the multidimensional body (iii) touch-mediated perception of the cadaver/patient (iv) anatomical variability (v) learning the basic language of medicine (vi) competence in diagnostic imaging (vii) cadaver/patient-centered computer-assisted learning (viii) peer group learning and for (ix) training for the medical specialties. Cadaver-based anatomical education is a prerequisite of optimal training for the use of biomedical informatics. When connected to dissection, medical informatics can expedite and enhance preparation for a patient-based medical profession. Actual dissection is equally necessary for acquisition of scientific skills and for a communicative, moral, ethical, and humanistic approach to patient care (72).

Birth defects, non-communicable and autoimmune diseases may cause the anatomical and physiological failure of important organs of body. In such situations, where medical treatment fails, organ transplant is the treatment of choice. However this can be possible only if donated organs or tissue are at hand in organ banks. Organ donation is the donation of biological

living tissue or an organ from a living or dead body to a living recipient for the purpose of transplantation (19, 58).

Organ or tissue donation can be classified as.

- i. Live tissue donation. E.g. Blood (Which is relatively common in Ethiopia), Bone marrow, Liver, etc.
- ii. Live organ donation. E.g. Kidney
- iii. Organ donation at Brain death. E.g. kidney, heart, skin, cornea, and heart valves etc.
- iv. After complete death. E.g. Whole body and cadaveric organs.

Donated organ/tissue can be used for transplantation to save the life of a diseased person whereas donated whole body is used for teaching and research purpose (19). The success of clinical transplantation as a therapy for end-stage organ failure is limited by the availability of suitable organs for transplant (73). These problems have solutions which involve the full range of societal, professional, governmental and political environments. Non-communicable diseases, which result end stage organ failure, have become virulent. They have become major cause of morbidity and mortality (74). Donated organs are needed to save the lives of these patients.

Millions of Patients in developing countries await corneal transplants to restore their sight (75). In South Africa, in one month time; about one thousand people go home to die because of the failure of their kidneys (76). There are over 120,000 people in the USA waiting for an organ transplant (77). The lives of these patients can be saved if organs are donated in enough number and timely. Therefore, without body and organ donations, the goals and purposes of any given anatomical and medical institution remain unfulfilled.

2.4. Knowledge and Attitude towards Body and Cadaveric Organ Donation

In a study conducted among health professionals in India, the results showed that 8% of the medical professionals were unaware of the term body donation and 85% believed that donated bodies were misused (12). A large proportion of the respondents of this study did not know about the authority that oversaw body donation, or its criteria for accepting donated bodies and diseases for which bodies were screened before acceptance. The result suggests that educating medical students and professionals regarding the altruistic act of body donation is as important as educating the general public.

Another study from Dublin, Ireland, reported that about 41% of the participants had good attitude to donate body and about 48.4% of the participants of the study said that they would have encouraged the public to donate and 39.6% would have recommended donation to a family member (22). However, the finding of a study conducted in Bursa, Turkey, showed that anatomists' attitudes towards body dissection and donation are dependent upon gender, upon the extent of teaching experience, and upon transcendental convictions (78).

In a cross-sectional study conducted between October 2013 and January 2014 among 400 health care professionals working in 7 hospitals in China (58) it was found that over 90% of the participants knew about organ donation, but only 17.4% had taken part in some training courses or lectures about organ donation. This study reported that doctors know more than nurses and nonclinical staffs. Altogether, 60.1% were in favor of deceased donation; however, only 48.5% approved living donation. Doctors' attitudes were more positive than nurses and nonclinical both in deceased donation ($P < 0.01$) and in living donation ($P < 0.05$). In all, 49.3% were enthusiastic to donate their own organs postmortem, and doctors had higher motivation to donation postmortem compared with nurses and nonclinical staffs ($P < 0.01$). The most (49.2%) commonly cited reason for refraining from donation was: "afraid that organs would be picked up inhumanely and body would be disfigured.

In another cross-sectional study conducted among 560 Iranian physicians including nephrologists, urologists and internists, it is reported that out of 560 participants, 435 (78%) agreed with organ donation after death and 285 (51%) agreed with living kidney donation. In the end, the study concluded that physicians had a good attitude towards organ and tissue donation despite additional awareness and education of physicians is needed in all areas of the organ donation process in Iran (79).

According to a study conducted in Turkey, out of 474 nurses who participated in the study, the majority of the nurses (87.7%) had positive thoughts about the organ donation, but only 10.8% knew the donation law, 68.8% would consider donating organs of their own, 58.7% would consider signing a consent card, and only 36.7% would donate organs for their family members (80).

In a study conducted on health workers in Southwest Nigeria it is reported that out of 766 participants, majority (93.3%) of participants had heard of organ donation; 82.5% had

desirable knowledge (81). A study from South Africa reported that out of 348 respondents participated in the study, only 8% of were registered donors. Of the 315 “non-donors,” the main reason for not donating was “I have not really thought about organ donation” (82). The finding of another study from Nigeria indicate that there was a significant variation of awareness by education and ethnicity ($P < 0.05$) (83).

2.5. Willingness for Body and Cadaveric Organ Donation

In a study conducted by scholars from John Hopkins Medical Institution in Maryland, USA, it is reported that out of 385 participants, 49% gave testimony for whole body donation (84). The findings from a study from the same country indicates that out of 185 patients, 86 were willing to donate organ, 42 were unwilling, and 57 were unsure (85).

A recent cross sectional study from India reported that only 22% of polled physicians were willing to donate their bodies for medical education out of 97 study participants, but 68% expected the public to do the same. While only 7% had already registered their own names for body donation, 64% were not aware of any known person having registered and 72% indicated that their decision would not be influenced even if they knew of friends who had registered (12). On the contrary, another study from a similar country indicated that attitude regarding cadaveric organ donation is good but willingness to donate body for teaching purpose is very poor. Only 5.66% respondents were willing to donate their body for dissection purpose and 18.66% for both purposes (86).

The findings of a cross-sectional survey from Mexico indicate that out of a total of 517 participants, the willingness of medical students and teachers to donate their own bodies as well as those of family members increased after exposure to cadaver dissection while reluctance regarding such practices decreased by half ($P < 0.0001$ and $P < 0.05$). Professors had the highest rates of positive opinions regarding their own body donation (74.9%), with 18.8% undecided (31). Similarly, a study from Iran reported that 77% of the students expressed their agreement toward the idea of utilizing body donation services, though only 25.4% of participants were willing to donate their own bodies (6).

Willingness to donate organ is affected by socio-cultural and religious values (87). According to a study from China, 49.3% of the participants were willing to donate their own organs

postmortem, and doctors had higher willingness to donation postmortem compared with nurses and nonclinical staffs ($P < 0.01$) (58). Similarly, in a study conducted in USA it was found that out of 385 participants (84% of randomized homes), 254 (66%) were extremely willing to donate to a sibling but only 179 (47%) had designated themselves a cadaveric donor on their drivers' licenses (88).

When the willingness to donate organ in USA is compared to the willingness in Taiwan, the Taiwanese people are more willing than the people in USA. In a study conducted on 1010 study subjects in Taiwan, it is found that out of the whole participants, 71.9% were willing to donate organs (89). Yet, the willingness to donate organs is lower in Turkey. The finding of a study from Turkey indicate that the majority nurses who were study subjects had positive views about the issue, but only 34.4% showed willingness to talk to families and ask for donations, 84.0% would inform potential donors in the unit (80).

The willingness to donate organs is poorer in Africa when it is compared to countries in other parts of the world. In a study from Nigeria it is reported that out of 766 participants of the study, the majority (93.3%) had heard of organ donation; 82.5% had desirable knowledge. Only 29.5% and 39.4% were willing to donate and counsel potential organ donors, respectively; 36.5% would consider signing organ donation cards (81). Another finding from a similar country indicates that out of the 172 respondents, 102 (59.3%) reported willingness to donate an organ. The majority of Muslims respondents willing to donate would prefer living donation. Being a medical doctor (odds ratio of 2.64 [1.17-5.94]) was the strongest predictor of willingness to donate an organ. One of the most common reasons for unwillingness to donate was "mistrust of the health sector" (90). On the contrary, in a study conducted in Kano, Nigeria, it was found that most respondents, 303 (79.1%), were willing to donate an organ (83). The investigators of this research argue that the high level of awareness and willingness to donate organs in this society could be further enhanced by intensive information, education and communication strategies providing clear messages on societal benefits, religious aspects and bioethical guidance regarding organ donation.

2.6. Factors Associated with Willingness to Body and Organ Donation

Various factors were reported to be associated with willingness to donate body and organ. In a study conducted by John Hopkins University, it was found that demographic and attitudinal factors are strongly related to willingness to consider whole body donation. In bivariate analysis, the study found that younger age, African-American race/ethnicity, less education and income, greater number of dependents, marital status, and attitudes about religion/spirituality, trust in hospitals, and income, gender, and racial/ethnic discrimination in hospitals were statistically significantly associated with 40–70% less odds of willingness to consider donation. After adjustment, persons of African-American race/ethnicity, less education, and those agreeing with the statements, “Rich patients receive better care at hospitals than poor patients,” and “White patients receive better care at hospitals than other racial or ethnic groups,” had 40–60% less odds of willingness to consider donation when compared to their counterparts. Respondents' race/ethnicity and education contributed most to willingness to consider donation (84).

In 2012 a multicenter prospective survey of donors registering during 2010 in three different geographical locations, New Zealand, Ireland, and the Republic of South Africa, was conducted to identify donor characteristics. In this study, it was found that some variations between locations were noted including donor age, the mode of program awareness, occupation, relationship status, political preference, organ donor status and with whom donors had discussed their decision to donate (2).

In another study from USA, it was round that, older age, comorbid conditions, mistrust in hospitals, and concerns about discrimination in hospitals were statistically significantly associated with less willingness to donate living related organs, although African-Americans, older age, lower education, lack of insurance, unemployment, comorbid conditions, and religion/spirituality were associated with less willingness to donate cadaveric organs. After adjusting for potential confounders, only mistrust in hospitals and concerns about discrimination remained strongly and independently associated with 50 to 60% less odds of willingness to donate living related organs [[relative odds [95% confidence intervals (CI)]: 0.4 (0.2-0.7) to 0.5 (0.3-1.0) and 0.4 (0.2-0.9), respectively]] although presence of dependents was associated with 70% higher odds of willingness to donate living related organs [relative

odds (95% CI): 1.7 (1.0-3.0)]. In contrast, older age, employment status, religion/spirituality, and mistrust in hospitals were associated with 50 to 90% less odds of willingness to donate living related organs cadaveric organs [relative odds (95% CI): 0.3 (0.1-0.8), 0.4 (0.2-0.8), 0.1 (0.1- 0.5) to 0.5 (0.2-0.9), and 0.3 (0.2-0.6), respectively]. Mistrust in hospitals and concerns about the surgical donation procedure contributed most to the variation in willingness to be a living related donor, although race contributed most to the variation in willingness to be a cadaveric donor (88).

The findings of a study conducted in Islamic State of Iran indicated that factors such as "payment" were associated with willingness to become donors. All factors of awareness except "previous awareness of organization" were associated with cultural acceptability. In this study, students suggested that encouraging people to register for body donation using mass media (25.6%) and teaching students to respect cadavers in the dissection environment (24.8%) were the best solutions for addressing the lack of cadavers. These findings indicated that a lack of awareness about body donation might be the main factor responsible for unwillingness towards body donation; therefore, the study argued that improving the public's awareness and addressing the willingness of students regarding body donation may help overcome the current lack of donated cadavers (4).

In a study conducted in Taiwan, the willingness was associated with a higher education level and prior registered willingness to donate organs. In multivariate analysis of the study, it was found that factors associated with willingness to donate organs included college or graduate school diploma (odds ratio [OR] 1.571, 95% confidence interval [CI] 1.166-2.191), registered willingness to donate in the National Health Insurance system (OR 9.430, 95% CI 1.269-70.051) (89). . In another study conducted in Poland, it was found that widows were more likely to make the decision to donate than widowers (69).

In a study from Africa, socio demographic variables such as gender [adjusted odds ratio (AOR) = 2.13; 95% confidence interval (CI): 1.40-4.95], educational attainment (AOR = 2.55; 95% CI: 1.35-5.88), marital status (AOR = 4.5; 95% CI: 2.97-9.1), religion (AOR = 3.40; 95% CI: 1.43-8.10) and ethnicity (AOR = 2.36; 95% CI 1.04-5.35) were significant predictors of willingness to donate an organ. Preferred organ recipients were parents (48.9%), children (21.3%), spouses (14.6%) and other relatives (13.4%). Reasons for willingness to

donate organs included religion (51.2%), moral obligation (21.4%) and compassion (11.9%), among others. However, there was widespread ignorance of religious precepts concerning organ donation (83). According to the finding of this study from Nigeria, at each level of health care, permission by religion to donate organs influenced positive attitudes (willingness to donate, readiness to counsel families of potential donors, and signing of organ donation cards) toward organ donation. Good knowledge of organ donation only significantly influenced readiness to counsel donors ($P < 0.05$) and not willingness to donate ($P > 0.05$). At each level of health care, young health care workers ($P < 0.05$) and women ($P > 0.05$) would be willing to donate, whereas men show positive attitude in signing of organ donor cards ($P < 0.05$) and counseling of families of potential donors ($P > 0.05$) (91).

Conceptual Framework

Based on literature evidence a theoretical framework indicated in Figure 1 was developed.

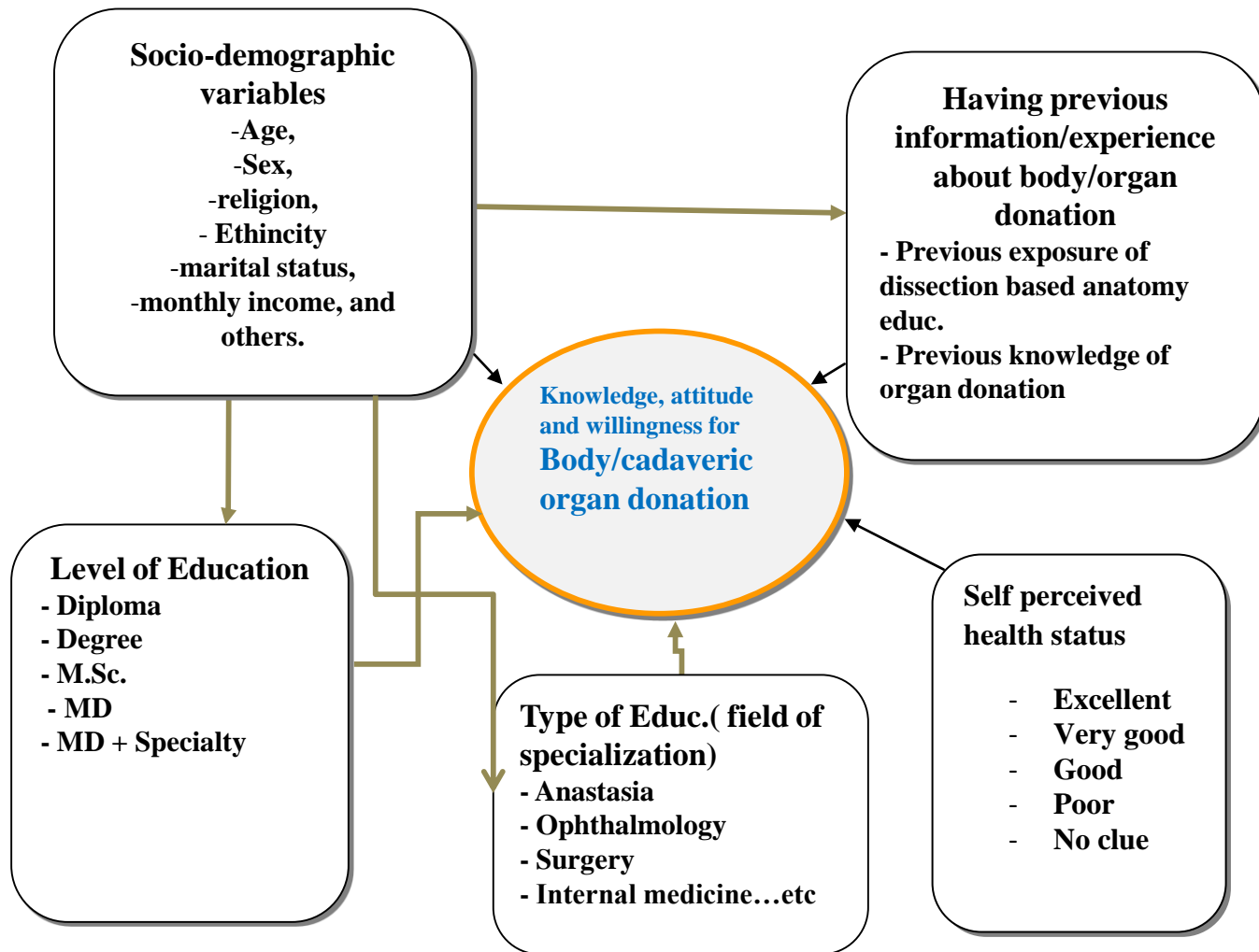


Figure 1. Shows Conceptual frame work of knowledge, attitude, and willingness towards body and cadaveric organ donation and their associated factors among healthcare professionals developed after revising different literatures, 2018.

CHAPTER THREE

OBJECTIVES

3.1. General Objective

- ✓ To investigate knowledge, attitude and willingness towards body and cadaveric organ donation and their associated factors among health care professionals working at Jimma University Medical Centre.

3.2. Specific Objectives

- To assess knowledge of Jimma University Medical Centre health care professionals about body and cadaveric organ donation.
- To determine the attitude of Jimma University Medical Centre health care professionals towards body and cadaveric organ donation.
- To determine willingness of Jimma University Medical Centre healthcare professionals towards body and cadaveric organ donation.
- To identify factors associated with knowledge, attitude and willingness of body and cadaveric organ donation among Jimma University Medical Centre health care professionals.

CHAPTER FOUR

METHODS AND PARTICIPANTS

4.1. Study Area and Period

The study was conducted at Jimma university Medical center (JUMC). JUMC is found in Jimma town and the town is 358 km to Southwest of Addis Ababa, the capital of Ethiopia. The hospital is one of the oldest public hospitals in the country. It was established in 1930 E.C by Italian invaders for the service of their soldiers.

Even though old for its age, it had not made remarkable physical facility improvement for years. However, in the later times it became evident that some buildings were constructed and equipped with necessary medical facilities to respond to the ever-growing pressure of health service demand and clinical teaching derived from the public and Jimma University, respectively. Especially, after transfer of its ownership to Jimma University, the university has made relentless efforts in extensive renovation and expansion work to make the hospital conducive for service, teaching and research. The hospital provides services like surgical, gynecological and obstetrics, medical, pediatrics, ophthalmologic and diagnostic facilities. It has a total of 896 health professionals out of whom 490 are males and 406 are females.

The study period was from March 30, 2010 E.C to May 30, 2010 E. C.

4.2. Study Design

An institution based cross-sectional study was employed to assess the knowledge, attitude and willingness towards body and cadaveric organ donation and their associated factors among health care professionals in JUMC.

4.3. Population

4.3.1 Source population: All health care professionals working at JUMC during the study period.

4.3.2 Study Population: Sampled health care professionals who were working at JUMC during the study period.

4.4. Eligibility Criteria

4.4.1. Inclusion criteria

Health care professionals who are permanent employee of JUMC and who had been working in the hospital for the past 6 months before the study period were included.

4.4.2. Exclusion criteria

- Health care professionals at annual leave were excluded.
- Health care professionals who were practicing in the university were excluded.
- Medical and other health science students and teachers of the university who are on attachment at JUMC were excluded.
- Health care professionals who were not willing to participate in the study were excluded from the study.

4.5. Sample size determination

The sample size is calculated using single population proportion formula based on the following assumptions:

- P = 50%, i.e., anticipated prevalence of adequate knowledge, attitude, and willingness level.
- The level of confidence, $\alpha = 0.05$ (95%).
- Margin of error tolerated, $d = 0.05$ (5%)

$$n = \frac{[Z_{\alpha/2}]^2 p [1-p]}{d^2}$$

$$n = \frac{[1.96]^2 \times 0.50[1-0.50]}{[0.05]^2} = 384$$

Since the source population contains a finite population less than 10,000, population correction formula was used as follows:

$$nf = \frac{n}{1 + \frac{n}{N}} = \frac{384}{1 + \frac{384}{896}} = 269$$

Where:

n = initial sample size

nf= Adjusted sample size

N= Total population

$Z_{\alpha/2}$ = Z value at 95% CI =1.96

Two hundred and sixty nine health care professionals were selected. A 10 % non-response rate (27 people) was also calculated and allocated. This finally enabled to include 296 samples into this study.

4.6. Sampling Procedure /Technique

First, the list of health care professionals is collected from statistics office. Then, systematic sampling method was used to select sample population. To employ this sampling technique, the sample interval (K) was first calculated by dividing the total population size by the sample size:

$$K = \frac{N}{n} = \frac{896}{296} = 3$$

Therefore, after the first K is randomly selected from the list of health professionals, every third health professional was selected until 296 samples were allocated into the study.

4.7. Data Collection Tool and Procedures

Data were collected using self-administered structured questionnaire having the following three parts:

Part I: Questions designed to assess socioeconomic and demographic status of the professionals.

Part II: Questions designed to characterize participants' knowledge, attitude, and willingness regarding body donation.

Part III: Questions designed to characterize participants' knowledge, attitude and willingness regarding cadaveric organ donation.

All sampled participants were contacted for participation and the study was explained to them. After obtaining written informed consent, the participants were told to follow the instructions written in the questionnaire. An opportunity to ask questions was given and clarifications were made by the data collectors when needed.

The process to fill in the whole questionnaire took about 15 minutes. Questionnaires were returned on the same day of data collection. The data were collected in three months.

4.8. Study Variables

4.8.1. Dependent variable

- Knowledge, attitude and willingness to donate body or cadaveric organs.

4.8.2. Independent variables

Socioeconomic and demographic variables: Age, Sex, Religion, Ethnicity, level of education, category of education, work experience as a health care professionals, marital status, monthly income, and self-perceived health status.

4.9. Data Analysis

After checking the collected data for completeness, the data were double entered into Epi-data version 3.1 and exported into SPSS version 20.0 for analysis. Reliability analysis was applied to test the internal consistency (reliability) of the data; it was considered as having high internal consistency if the Cronbach's alpha value is more than 0.7. Descriptive statistics like frequency distribution, percentages, measures of central tendency and dispersions, tables and charts were applied for analysis of the Socio demographic and each questions of the questionnaire.

Chi square computation and bivariate analysis were done to assess the association between explanatory variables and outcome variable of the study. All variables with a p-value of < 0.25 in bivariate analysis were included into multivariable logistic regression model in which odds ratio with 95% confidence intervals were estimated to identify

independent factors of knowledge, attitude, and willingness to donate body and cadaveric organs. P- Value < 0.05 was employed to declare the statistical significance. Backward logistic regression variable selection was used for multiple logistic regressions. Finally, Hosmer and Lemeshow test at p-value > 0.05 was applied to test model fitness.

4.10. Data quality management

To assure the quality of the data, high emphasis was given in designing data collection instrument for its simplicity. The collected data were reviewed and checked for completeness and relevance by the supervisors.

To identify potential problems and to make important modifications, the questionnaire was pretested prior to the actual data collection among 15 (5%) health care professionals at Shenen Gibe Hospital.

4.11. Ethical consideration

Ethical approval was done by Jimma University, Institute of Health, Institutional Review Board and Letter of Permission was obtained prior to data collection. The purpose of the study was explained and written consent was obtained from the study subjects. Moreover, confidentiality and anonymity was maintained by the investigator and research assistants throughout the study.

4.12. Plan for Dissemination of Results/Findings

The results of this study will be disseminated or communicated to Jimma University, Institute of Health, Department of Biomedical Science (Anatomy), Federal Ministry of Health Ethiopia and Federal ministry of Education of Ethiopia.

Moreover, it will also be presented in seminars, workshops and scientific conferences. Finally, manuscripts of the study will be developed for publication of the findings in reputable scientific journals.

CHAPTER FIVE

RESULTS

5.1. Socio-demographic Characteristics

A total of 296 health care professionals were included into the study out of whom 153(51.7%) were male and 143(48.3%) were female. The age ranged from 21 to 60 years with a mean of 28.03 ± 4.56 years. About 53 (17.9%) of the participants had diploma (22 male and 31 female); 184 (62.2%) had bachelor degree (98 male and 86 female); 40(13.5%) had medical doctorate degree (20 male and 20 female); 18(6.1%) had master's degree (12 male and 6 female); and 1(0.3%) had specialty certificate in ophthalmology. Data regarding socio-demographic and working experience of the studied health professionals are indicated in Table 1.

The category of profession was diverse among the study population despite the majority of the respondents or 125 (42.2%) were nurses. About 54 (18.2%) were clinical laboratory technologists; 28 (9.5%) were pharmacists; 15(5.1%) were anesthesiologists; 4(1.4%) were radiologists; 40 (12.8%) were generic doctors; 1 (0.3%) was ophthalmologist; and 29 (9.8%) were others.

The mean year of service was 5.4 ± 4.17 years despite the majority of the respondents had served the hospital between one and five years (64.9%) and about 85 (28.7%) had served the hospital between six and ten years. There was only one study participant who served the hospital for more than 21 years (Table 1).

Regarding marital status, 137 (46.3%) were single, 158(53.4%) were married and 1(0.3%) was divorced. More than half of the respondents or 153(51.7%) were Orthodox believers whereas 62(20.9%) were Muslims and 61(20.6%) were Protestants. About 147 (49.7%) of the professionals reported that they have excellent self-perceived health status; 135 (45.6%) reported very good, 14 (4.7%) reported good health status and none reported poor self-perceived health status (Table).

Table 1: Socio-demographic characteristics of healthcare professionals working in JUMC, 2018

Variables (n=296)	Frequency (n)	Percentage (%)
Sex		
Male	153	51.7
Female	143	48.3
Age (years)		
21 – 25	76	25.8
26 - 30	173	58.5
31 – 35	28	9.6
36 - 40	13	4.4
41 – 45	4	1.3
46 ⁺	2	0.6
Level of education currently achieved		
Diploma	53	17.9
Bachelor	184	62.2
Master	18	6.1
Medical Doctorate	40	13.5
Specialty certificate	1	0.3
Category of profession		
Nurses	125	42.2
Clinical Lab	54	18.2
Pharmacists	28	9.5
Anesthesiologists	15	5.1
Radiologists	4	1.4
Gen doctors	40	12.8
Special doctors	1	0.3
Others	29	9.8
Year of service as healthcare professional (years)		
1 - 5	192	64.9
6 - 10	85	28.7
11-15	9	3.0
16-20	9	3.0
> 21 ⁺	1	0.3
Marital status		
Single	137	46.3
Married	158	53.4

Divorced	1	0.3
Religion		
Orthodox	153	51.7
Muslim	62	20.9
Protestant	61	20.6
Catholic	6	2.0
Others	14	4.7
Ethnicity		
Oromo	135	45.6
Amhara	61	20.6
Tigre	3	1.0
Kefa	9	3.0
Others	88	29.7
Self-perceived health status		
Excellent	147	49.7
Very Good	135	45.6
Good	14	4.7

5.2. Knowledge about Body Donation and its Associated Factors

The data regarding the level of knowledge on body donation and the responses of the professionals on knowledge assessing questions are indicated in Figure 2 and Table 2. From the total study participants, 191 (64.5%) had adequate knowledge about body donation. There was no a significant difference in the knowledge of body donation between males and females (105 vs 86; $P=0.127$). But professionals with willingness for body donation were better informed than those without (50 vs 92; $P=0.006$). About seventy six of study participants (26.7%) heard of body donation from anatomy classes and 46 (15.5%) of them heard the knowledge from the internet. Sources such as television, friends, and newspaper comprise 27 (9.1%), 12 (4.1%), and 11 (3.7%), respectively.

Regarding the ways that they had learned anatomy during their tertiary education, more than half of them or 172 (58.1%) indicated that they had learned anatomy without dissection of cadavers and only 69 (23.3%) had learned anatomy with dissection of cadavers. About 18.6%

of the professionals did not know whether or not anatomy education in universities and medical schools is given with cadaveric dissection.

About half of the professionals; 145 (49.0%), indicated that the purpose of body donation is both for anatomical study and research and transplantation of organs for patients with end stage organ failure. But 53 (17.9%) of the professionals indicated that the purpose is only for transplantation of organs. Yet, 49 (16.6%) of them did not have any idea about the purpose of body donation. On the other hand, concerning the factors that are criteria to exclude body from donation, about 109 (36.8%) of the participants said that obese bodies are excluded from donation for education and research, 59 (19.9%) said that emaciated bodies are excluded from donation and 10 (3.4%) indicated that suicide bodies are excluded from donation.

Concerning screening/selection and exclusion of bodies from recruitment to dissection, about 187 (63.7%) of the professionals indicated that bodies that are infected with HIV are screened and excluded from recruitment; about 93 (31.4%) indicated that bodies that are infected with hepatitis are screened and excluded; about 11 (3.7%) indicated that bodies that are infected with tuberculosis are screened and excluded, 2 (0.7%) said that bodies that are infected with syphilis are screened and excluded and the other 2 (0.7%) said that spore bearing bodies are screened and excluded from recruitment.

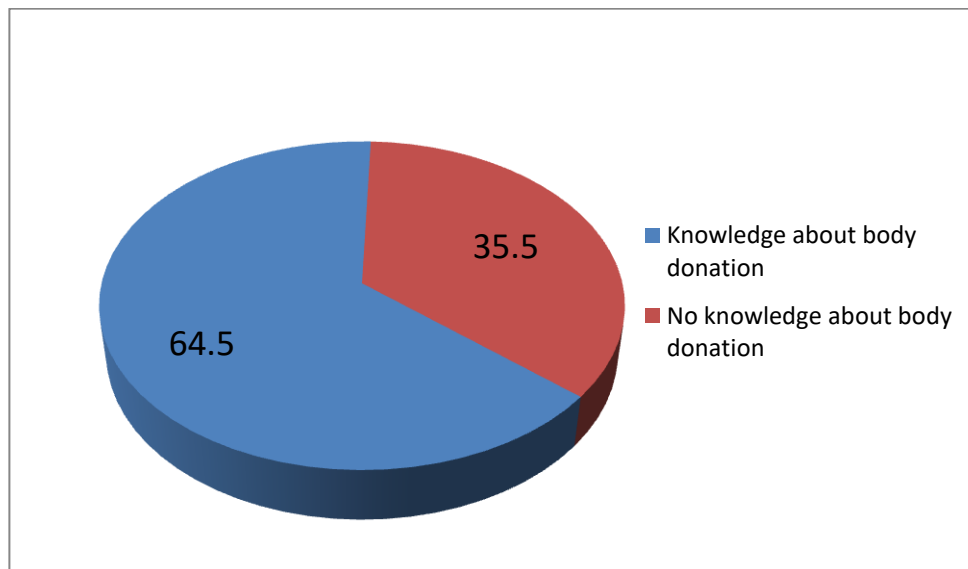


Figure 2: Health care professionals working in JUMC who ever heard about body donation; 2018.

The finding of factors associated with knowledge about body donation indicate that age (26-30 years: COR=1.22; 95% CI= 2.32, 5.34; P=0.126; 31-35 years: COR= 2.49; 95% CI= 3.56, 6.71; P=0.027; 36-40 years: COR=2.94; 95% CI= 2.58,7.37; P=0.066; 41-45 years: COR=3.55; 95% CI=1.69,6.39; P=0.031); level of education achieved at the time of the study (bachelor degree: COR=1.73; 95% CI=1.78,6.11; P= 0.110; Master: COR=1.59; 95% CI=1.41,5.44; P=0.200; medical doctorate: COR=2.30; 95% CI=2.71,8.55; P=0.184); ethnicity (Oromo: COR= 1.412; 95% CI=0.19,0.88; P=0.022 and Amhara: COR=1.327; 95% CI=0.13,0.78; P=0.013) and self- perceived health status (excellent: COR=0.39; 95% CI=1.10,5.52; P=0.176 and very good: COR=0.37; 95% CI=2.09, 4.41; P=0.147) were significantly associated with the knowledge of body donation in bivariate analysis. The variables that showed statistically significant association in the bivariate analysis were transferred and further analyzed in multivariable logistic regression to adjust for potential confounders. Accordingly, level of education achieved at the time of the study (bachelor: AOR=1.154; 95% CI=1.40, 9.46; P=0.012; master: AOR=3.981; 95% CI=3.00, 5.27; P=0.000 and medical doctorate: AOR=4.086; 95% CI= 4.92, 7.24 P=0.000) and ethnicity (Oromo: AOR=2.322; 95% CI=1.18,4.54 P=0.014 and Amhara: AOR=3.056; 95% CI=1.36,6.85 P=0.007) were factors independently associated with knowledge of body donation.

Table 2: Proportion of Healthcare Professionals Working in JUMC Who Correctly Answered Knowledge Questions, Southwest Ethiopia, 2018.

Knowledge Variables	Characteristics	Frequency	Percentage
Have you ever heard of ‘‘body/cadaver donation’’? (n=296)	Yes	191	64.5
	No	105	35.5
From which of the following sources did you hear about body/cadaver donation? (n=191)	Anatomy class	79	26.7
	news paper	11	3.7
	Television	27	9.1
	Friends	12	4.1
	Internet	46	15.5
	Radio	9	3.0
	Other	7	2.3
Had you taken any training course or lecture about body donation in Ethiopia or abroad?	Yes	27	9.1
	No	269	90.9
	Total	296	100.0
Correctly define body donation (n=296)	giving body with consent	16	5.4
	giving body without consent	4	1.4
	unclaimed body	7	2.3
	Not sure	269	90.9
How did you learn anatomy when you were studying the course at University/college level? (n=296)	Theory with dissection	69	23.3
	Theory without dissection	172	58.1
	I do not know whether or not anatomy education is given with cadaveric dissection.	55	18.6
	Anatomical study & research	49	16.6
For which of the following purposes is body donated? (n=296)	Transplantation of organs	53	17.9
	Both	145	49.0
	No idea about this	49	16.6
Which department/s handle/s body supply for anatomical dissection in school of medicine in Jimma University? (n=296)	Anatomy	112	37.8
	Surgery	25	8.4
	Internal medicine	6	2.0
	Pathology	81	27.4
	Not sure	72	24.3

What are the factors that exclude a body from donation OR criteria for accepting donated bodies? (n=296)	Obese body	109	36.8
	Decomposed body	39	13.2
	Autopsied body	79	26.7
	Suicide body	10	3.4
	Emaciated body	59	19.9
For which of the following diseases, donated bodies should be screened for? (n=296)	HIV	187	63.2
	Hepatitis	93	31.4
	TB	11	3.7
	Syphilis	2	0.7
	Spore bearing	2	0.7
	Fungal infection	1	0.3

It was also found that health care professionals who have had medical doctorate degree during the time of the study had 4 times (AOR=4.086; 95% CI= 4.92, 7.24 P=0.000) more knowledge as compared to those who have had diploma. Similarly, health care professionals who were master degree holders during the time of the study had 4 times (AOR=3.981; 95% CI=3.00, 5.27; P=0.000) more knowledge as compared to diploma holders.

5.3. Attitude towards Body Donation, and its Associated Factors

Among the respondents, about 139 (46.6%) had good attitude towards body donation; of whom 64 (46%) were nurses; 25 (17.9%) were laboratory technologists; 17 (12.2%) were generic doctors; 10 (7.1%) pharmacy technicians; 8 (5.7%) were anesthesiologists; 1(0.7%) was radiologist; 1 (0.7%) was special doctor and 13 (9.3%) were others. Of the total respondents who showed good attitude towards body donation, only 43 (14.5%) agreed strongly and about half or 145 (49.0%) encourage it to be done in Ethiopia. The number of the respondents who showed negative attitude towards body donation is about 71 (24%); of whom about 39 (13.2%) showed disagreement and 32 (10.8%) showed strong disagreement.

The professionals were also asked whether or not their religious values restrict them from donating their bodies after they die. According to the result, about 90 (30.4%) of the professionals believe that their religion restricts body donation whereas about 75 (25.4%) believe that their religion doesn't restrict body donation and about 131 (44.3%) were not sure. Similarly, they were also asked whether or not the thoughts of their bodies being dissected

after donation affected their attitude towards donating their bodies. Accordingly, about 85 (28.7%) of the professionals consented that their body being dissected affected their attitude to donate their body and about 133 (44.9%) of the professionals disagreed that the thought of their body being dissected after donation did not affect their attitude to donate body. On the other hand, the respondents whose attitude towards body donation was good were asked whether or not their attitude to donate their bodies has any relation with their attitude to help the progress of medical science and education.

Table 3: Factors Associated with Knowledge about Body Donation among Healthcare Professionals (n = 296) Working in JUMC, Southwest Ethiopia, 2018.

Variable		Knowledge		Bivariate Logistic regression		Multivariate logistic regression	
		Yes	No	COR [95% CI]	P value	AOR [95% CI]	P value
Sex	Male	105	48	1.00			
	Female	86	57	0.69 [0.42,1.11]	0.328		
Age (year)	21–25	39	37	1.00			
	26-30	113	60	1.22 [2.32,5.34]*	0.126	2.18 [0.49,4.44]	0.570
	31– 35	21	7	2.49 [3.56,6.71]*	0.027	3.88 [0.91,2.61]	0.580
	36-40	12	1	2.94 [2.58,7.37]*	0.066	1.28 [0.77,4.66]	0.580
	41–45	4	-	3.55 [1.69,6.39]*	0.031	2.51 [0.61,3.81]	0.680
	46-50	1	-	0.61 [0.43,5.41]	0.360		
	51–55	1	-	0.89 [0.84,3.59]	0.348		
Level of education you currently achieved	Diploma	18	35	1.00			
	Bachelor	119	65	1.73 [1.78,6.11]*	0.110	1.154 [1.40,9.46]**	0.012
	Masters	14	4	1.59 [1.41,5.44]*	0.200	3.981 [3.00,5.27]**	0.000
	MD	39	1	2.30 [2.71,8.55]*	0.184	4.086 [4.92,7.24]**	0.000
	Specialty cert	1	-				
Category of profession	Nurses	66	59	1.698 [0.73,3.94]	0.268		
	Clinical Lab	34	20	1.118 [0.43,2.87]	0.287		
	Pharmacists	21	7	0.633 [0.20,1.199]	0.266		
	Anesthesiolog	11	4	0.691 [0.17,2.73]	0.299		
	Radiologists	1	3	5.700 [0.52,62.15]	0.393		
	Gen doctors	37	1	0.051 [0.006,1.43]	0.360		
	Special Dr.	2	1	0.950 [0.08,11.80]	0.968		
	Others	19	10	1.00			
Year of service as health care professional	1-5	114	78	1.00			
	6-10	60	25	0.81 [0.59,4.33]	0.390		
	11-15	8	1	1.32 [0.67,2.56]	0.403		
	16-20	8	1	1.03 [0.91,5.88]	0.299		
	> = 41	1	-				

Marital status	Single	87	50	1.00			
	Married	103	55	1.73 [0.62,4.91]	0.37		
	Divorced	1	0	2.44 [0.39,3.81]	0.49		
Religion	Orthodox	104	49	0.848 [0.27,2.66]	0.778		
	Muslim	37	25	1.216 [0.36,4.05]	0.750		
	Protestant	38	23	1.089 [0.32,3.65]	0.890		
	Catholic	3	3	1.800 [0.25,12.50]	0.552		
	Others	9	5	1.00			
Ethnicity	Oromo	86	49	1.412 [0.19,0.88]*	0.022	2.322 [1.18,4.54]**	0.014
	Amhara	46	15	1.327 [0.13,0.78]*	0.013	3.056 [1.36,6.85]**	0.007
	Tigre	2	1	1.130 [0.009,1.78]	0.327	7.601 [0.52,109.25]	0.136
	Kefa	6	3	1.284 [0.05,1.54]	0.545	3.947 [0.85,18.99]	0.087
	Other	51	37	1.00			
Self-perceived health status	Excellent	94	53	0.39 [1.10,5.52]*	0.176	1.844 [0.50,6.79]	0.358
	Very Good	92	43	0.37 [2.09,4.41]*	0.147	2.265 [0.61,8.33]	0.219
	Good	5	9	1.00			

*p-value ≤ 0.25 , **p-value < 0.05 , CI= confidence interval, COR= crude odds ratio, AOR= adjusted odds ratio.

According to the result of the study about 185 (62.5%) of the respondents agreed that the desire to help medical science and education has affected their attitude to donate body. Despite this, among the whole participants of the study about 208 (70.3%) believe that bodies in dissection rooms are misused and not properly disposed after use for teaching and research purpose. Questions were also raised for the health care professionals whether or not they would support the general public/community to donate body. The result indicated that about half or 153 (51.7%) of the respondents agreed that they would support the public to does so; nevertheless, about 65.6% argue that incentives should not be given for the donors.

The result of the study also indicates that about 91 (30.7%) of the professionals affirm that their attitude to donate their body may be affected if a known person donates his/her body. Concerning the consent that should be given for donation, about half of the participants (48.6%) indicated that donor's family should give consent when bodies are donated (Table 4).

According to binary logistic regression analysis of the factors, age (26-30 years: COR=1.72; 95% CI= 3.62, 7.11; P=0.071; 31-35 years: COR=1.62; 95% CI=4.57, 8.21; P= 0.050; 36-40

years COR= 0.91; 95% CI= 2.02, 6.34; P= 0.069; 56-60 years: COR= 0.82; 95% CI= 1.82, 9.01; P=0.150), level of education the professionals achieved at the time of the study (bachelor: COR= 0.76; 95% CI= 2.43, 10.22; P= 0.210; master: COR= 1.32; 95% CI=3.74, 8.11; P=0.180; medical doctorate: COR=2.67; 95% CI=1.44, 6.02; P=0.060), category of profession (clinical laboratory: COR=0.490; 95% CI 1.15, 1.57; P=0.230; anesthesiology: COI: 0.371; 95% CI=1.08, 1.65; P=0.193), year of service as a health care professional (6-10 years: COR= 1.78; 95% CI=1.34, 9.91; P=0.239; 11-15 years: COR=1.34; 95% CI=2.45, 6.89; P=0.201; 16-20 years: COR=2.44; 95% CI=3.21, 6.09), religion (catholic: COR=4.79; 95% CI=1.35, 64.84; P=0.238) and ethnicity (Oromo: COR=0.515; 95% CI=1.26, 3.92; P=0.057; Kaffa: COR=2.87; 95% CI=1.48,16.94; P=0.244) were associated with the attitude towards body donation.

However, the result of multivariate logistic regression analysis of indicates that level of education the professionals achieved during the study time (bachelor: AOR= 3.163; 95% CI= 1.52, 6.59; P=0.002; Masters: AOR=3.385; 95% CI=2.55, 11.35; P=0.000; medical doctorate: AOR=2.811; 95% CI=1.22, 6.47; P=0.015), category of profession (clinical laboratory: AOR=1.98; 95% CI=2.70, 12.09; P= 0.002; anesthesiology: AOR= 0.61; 95% CI=4.56, 6.10;

Table 4: Proportion of Health Care Professionals Working in JUMC Who Correctly Answered Attitude Questions, Southwest Ethiopia, 2018.

Attitude Variables (N=296)		Frequency	Percent
	Strongly agree	79	26.7
Bodies are donated for medical science and research in developed countries. Should it be encouraged in Ethiopia?	Agree	145	49.0
	Not sure	34	11.5
	Disagree	23	7.8
	Strongly disagree	15	5.1
As a medical professional, what is your <u>attitude</u> towards the possibility of your own body being used for donation for the advancement of medical science?	Strongly agree	43	14.5
	Agree	95	32.1
	Not sure	87	29.4
	Disagree	39	13.2
	Strongly disagree	32	10.8
Do your religion values restrict you from donating your body?	Strongly agree	51	17.2
	Agree	39	13.2
	Not sure	131	44.3
	Disagree	39	13.2
	Strongly disagree	36	12.2
Would your personal decision be in favor of body donation if hear/see that a known person had donated his/her body?	yes	91	30.7
	no	119	40.2
	not sure	86	29.1
Is the thought of your body being dissected, following donation, affecting your decision regarding donating your body?	yes	85	28.7
	no	133	44.9
	not sure	78	26.4
Do you feel that if you donate your body, you would help medical progress and the future generation?	yes	185	62.5
	no	51	17.2
	not sure	60	20.3
If you will donate your body for medical science, do you accept/agree it to be dissected for medical students' education (Acceptance of dissection on their donated bodies)?	strongly agree	53	17.9
	Agree	72	24.3
	Not sure	96	32.4
	Disagree	51	17.2
	strongly disagree	24	8.1
As a health professional, do you believe that donated bodies are misused (treated with disrespect at the anatomy table/not properly disposed after use for teaching purpose/sold	never	88	29.7
	sometimes	155	52.4
	often	13	4.4
	most of the time	29	9.8

for profit)?	all the time	11	3.7
Should the general public donate their bodies for medical education (expectations with regards to the general public's duty to donate bodies)?	strongly agree	39	13.2
	Agree	114	38.5
	Not sure	91	30.7
	Disagree	35	11.8
	Strongly disagree	17	5.7
Is it good to give incentives for people who are willing to donate their bodies after death (opinions on incentive based body donation)?	Strongly agree	33	11.1
	agree	69	23.3
	not sure	96	32.4
	disagree	62	20.9
	Strongly disagree	36	12.2
Following the death of the donor, who do you think has the authority to give consent for his/her body donation?	No one	19	6.4
	family	144	48.6
	spouse	35	11.8
	doctor	16	5.4
	other	49	16.6
	Don't know	33	11.1

P=0.006) and year of service as healthcare professional (6-10 years: AOR: 1.04; 95% CI=3.71, 6.34; P=0.004; 11-15 years: AOR=1.03; 95% CI=2.11, 4.71; P=0.009; 16-20 years: AOR=2.01; 95% CI=5.10, 7.25; P=0.002) were the factors independently associated with the attitude towards body donation (**Table 5**).

Accordingly, master's degree and medical doctorate degree holders have three times (AOR=3.385; 95% CI=2.55, 11.35; P=0.000; and AOR=2.811; 95% CI=1.22, 6.47; P=0.015, respectively) good attitude towards body donation as compared to diploma holders. Furthermore, health care professionals who served 16-20 years have 2 times (: AOR=2.01; 95% CI=5.10, 7.25; P=0.002) good attitude towards body donation as compared to those who served 1-5 years (**Table 5**).

5.4. Willingness to Donate Body and Its Associated Factors

Figure 3 and 4 show the overall willingness and the perception of the study subjects on body donation. The willingness to donate body among the participants of the study was found to be 63 (21.3%) of whom 36 (57.1%) were male and 27 (42.9%) are female. There was no a significant difference in the willingness to donate body between the two genders ($P=0.329$). The main reason of the professionals for the willingness was ‘to facilitate the advancement of medical education’ (about 33.3% responded in this way). The respondents who said: to save wastage of my body; to avoid funeral ceremony; and to support a new way were 20.5%, 15.4%, and 30.8%; respectively (See Figures 3 and 4).

Respondents who were unwilling to donate their body were also asked what their reasons are for their unwillingness. According to the findings of the study, 7.5% said that bodies can be wasted, 18.6% said that they do not like to be cut into pieces, 19.3 believe that bodies could be misused/ abused, 10.2% said religious barrier, 15.3% said that their families do not like the donation, 12.9% said that the develop psychological anxiety when they think about it, 11.9% said that they do not have any reason and 4.4% said that they have their own reason which they do not like to reveal.

Table 5: Factors Associated With Attitude towards Body Donation among Health Care Professionals (N = 296) Working in JUMC, Southwest Ethiopia, 2018

Variable	Attitude		Bivariate Logistic regression		Multivariate logistic regression		
	Agree	Disagree	COR [95% CI]	P value	AOR [95% CI]	P value	
Sex	Male	79	74				
	Female	60	83	0.736 [0.42,1.28]	0.279		
Age (year)	21–25	31	45	1.00			
	26-30	77	96	1.72 [3.62,7.11]*	0.071	1.60 [0.17,7.10]	0.102
	31– 35	15	13	1.62 [4.57,8.21]*	0.050	1.434 [0.32,6.35]	0.075
	36-40	11	2	0.91 [2.02,6.34]*	0.069	1.434 [0.32,6.35]	0.085
	41–45	4	-				
	46-50	1	-				
	51–55	-	1				
Level of education you already achieved	Diploma	31	22	1.00			
	Bachelor	79	105	0.76 [2.43,10.22]*	0.210	3.163 [1.52,6.59]**	0.002
	Masters	11	7	1.32 [3.74,8.11]*	0.180	3.385 [2.55,11.35]**	0.000
	MD	18	22	2.67 [1.44,6.02]*	0.060	2.811 [1.22,6.47]**	0.015
	Specialty ce	-	1				
Category of profession	Nurses	64	61	0.573 [0.18,1.80]	0.340	1.11 [1.89,10.23]	0.590
	Clinical Lab	25	29	0.490 [1.15,1.57]*	0.230	1.98 [2.70,12.09]**	0.002
	Pharmacists	10	18	0.620 [0.16,2.33]	0.479	0.71 [0.34,7.32]	0.718
	Anesthesiol	8	7	0.371 [1.08,1.65]*	0.193	0.61 [4.56,6.10]**	0.006
	Radiologis	1	3	2.980 [0.10,87.99]	0.527	3.91 [0.81,13.01]	0.081
	Gen Dr.s	17	21	3.708 [0.07,93.15]	0.516	3.91 [0.71,4.11]	0.450
	Sp. doctors	1	2	2.713 [0.14,51.93]	0.508	2.01 [0.83, 5.89]	0.091
	Others	13	16	1.00			
Year of service as healthcare professional	1-5	82	110	1.00			
	6-10	42	43	1.78 [1.34,9.91]*	0.239	1.04 [3.71,6.34]**	0.004
	11-15	6	3	1.34 [2.45,6.89]*	0.201	1.03 [2.11,4.71]**	0.009
	16-20	8	1	2.44 [3.21,6.09]*	0.027	2.01 [5.10, 7.25]**	0.002
	≥41	1	-				
Marital status	Single	62	75	1.00			
	Married	76	82	3.31 [0.77,10.34]	0.277		

	Divorced	1	-				
Religion	Orthodox	74	79	1.067 [0.31,3.67]	0.918		
	Muslim	32	30	1.410 [0.37,5.34]	0.614		
	Protestant	26	35	2.059 [0.55,7.67]	0.282	0.831[0.31,2.24]	0.715
	Catholic	1	5	4.79 [1.35,64.84]*	0.238	0.831[0.31,2.24]	0.715
	Others	6	8	1.00			
Ethnicity	Oromo	75	60	0.515 [1.26,3.92]*	0.057	0.71 [0.37,11.45]	0.086
	Amhara	25	36	1.393 [0.62,3.08]	0.414	2.71 [0.08, 5.98]	0.138
	Tigre	-	3			.	
	Kefa	2	7	2.87 [1.48,16.94]*	0.244	1.72 [0.47,9.46]	0.490
	Other	37	51	1.00			
Self-perceived health status	Excellent	66	81	0.959 [0.26,3.51]	0.950		
	Very Good	67	68	0.645 [0.18,2.31]	0.501		
	Good	6	8	1.00			

*p-value < =0.25, **p-value < 0.05, CI= confidence interval, COR= crude odds ratio, AOR= adjusted odds ratio.

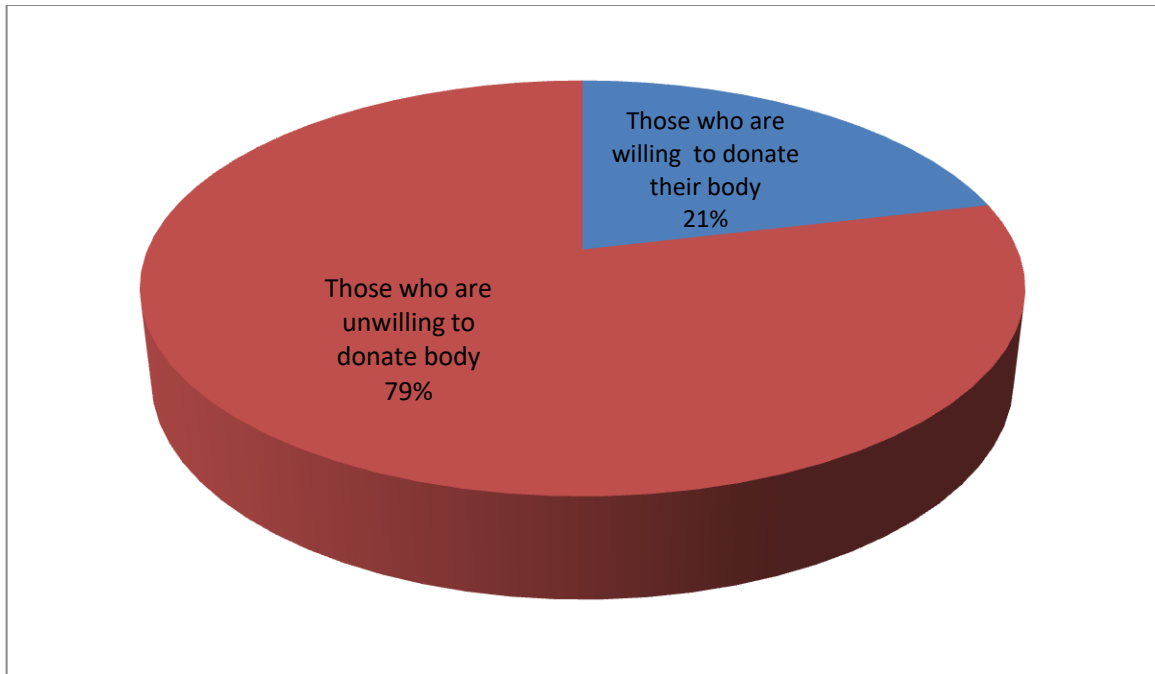


Figure 3: Willingness for body donation among health care professionals working in JUMC, 2018.

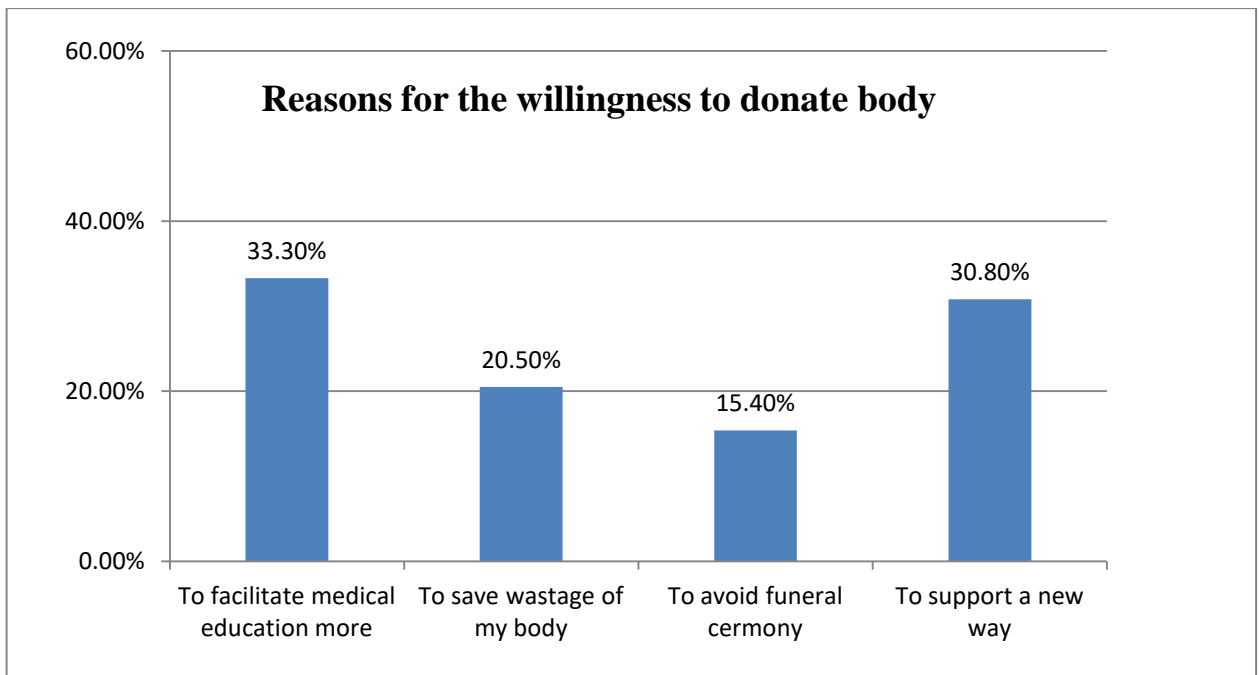


Figure 4: Bar graph indicating the reasons of health care professionals for willingness to donate their body; 2018.

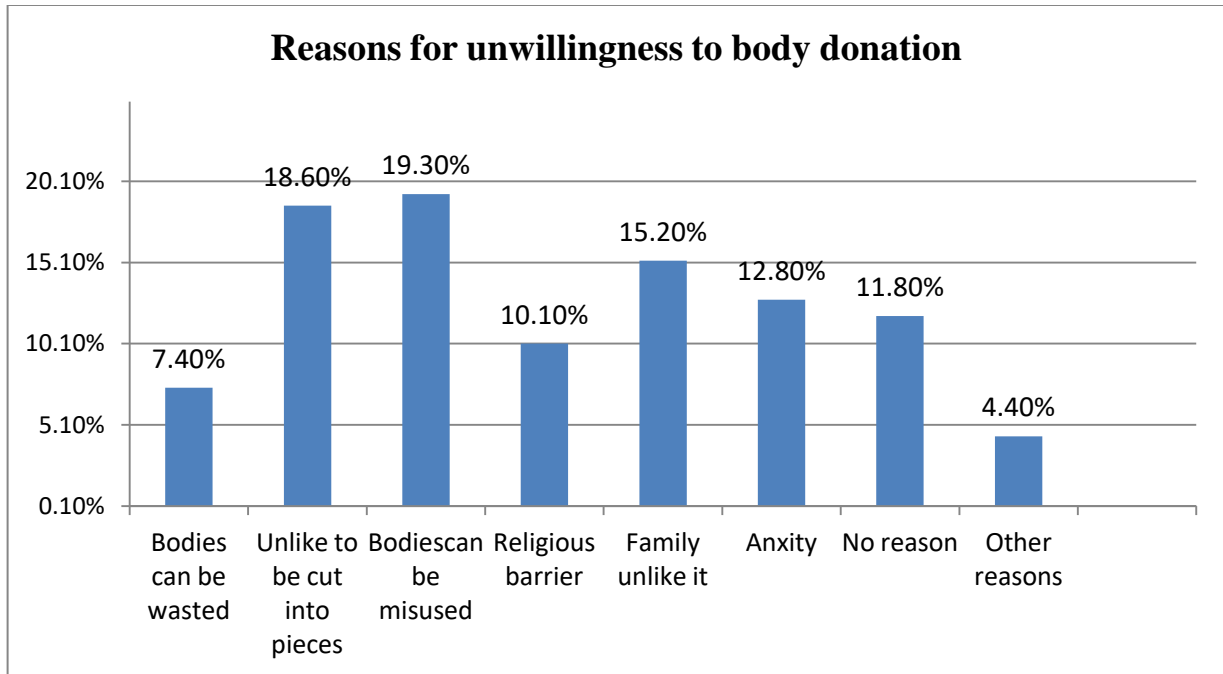


Figure 5: Bar graph indicating the reasons of health care professionals for their unwillingness to donate their body; 2018.

Factors associated with the willingness to donate body were level of education the professionals achieved at the time of the study (Bachelor: COR= 1.23; 95% CI=3.39, 4.22; P=0.034; masters: COR=2.44; 95% CI=1.92, 3.11; P=0.064; medical doctors: COR= 2.90; 95% CI=2.36, 9.01; P=0.005), category of profession (Nurses: COR= 1.03;95% CI= 3.22, 11.71; P=0.220; Clinical Lab: COR= 1.590;95% CI= 1.53, 6.07; P=0.034; Pharmacists: COR=1.69;95% CI = 4.16, 9.33; P=0.039; Anesthesiologist: COR= 2.371; 95% CI= 1.08, 5.65; P=0.113; Radiologists: COR= 2.080; 95% CI=3.10, 11.89; P=0.227; Generic doctors: COR=3.708;95% CI= 3.07, 12.15; P=0.006), year of service as healthcare professional (6-10 years: COR=1.78; 95% CI= 11.50, 16.91; P=0.203; 11-15 years: COR= 2.34; 95% CI= 2.09, 5.98; P=0.006; 16-20 years: COR=2.84; 95% CI=1.21, 8.55; P=0.091), marital status (Married: COR= 2.01; 95% CI = 4.77, 10.34; P=0.062) and religion (Muslim: COR= 3.156; 95% CI= 1.68, 14.54; P=0.140; Protestant: COR= 10.993; 95% CI= 2.166, 55.79; P=0.004).

Further analysis using multivariate logistic regression was carried out to assess the independent predictors of the willingness to donate body. Accordingly, level of education the professionals achieved during the time of the study (Bachelor; AOR= 3.163; 95% CI= 1.52, 6.59; P=0.002; Masters; AOR=5.385; 95% CI= 2.55, 11.35; P=0.000; medical doctors; AOR=

2.811; 95% CI= 1.22, 6.47; P=0.015), category of profession (Nurses: AOR= 1.03; 95% CI= 1.64, 6.7; P=0.041; Clinical La: AOR= 2.2; 95% CI= 3.58, 8.12; P=0.040; Pharmacists: AOR= 1.56; 95% CI= 2.07, 8.51; P=0.031; Anesthesiologist: AOR= 2.91; 95% CI= 2.36, 5.71; P=0.010; Radiologists: AOR= 3.163; 95% CI= 1.52, 6.59; P=0.004; Generic doctors: AOR= 5.385; 95% CI=2.55, 11.35; P=0.000), marital status (Married: AOR= 1.091; 95% CI=2.20, 5.40; P=0.000) and religion (Protestant: AOR= 0.139; 95% CI= 0.03, 0.61; P=0.009) were found to be the independent predictors of the willingness to donate body.

Factors associated with the willingness of the participants were shown in Table 6. The willingness to donate body was higher among those who had master's degree (AOR=5.385; 95% CI= 2.55, 11.35; P=0.000) and medical doctorate degree (AOR= 2.811; 95% CI= 1.22, 6.47; P=0.015) as compared to diploma holders. Similarly, the odds of willing to donate body were three times higher among radiologists and anesthesiologists as compared to others **(Table 6)**.

Table 6: Factors associated with Willingness to donate body among health care professionals working in JUMC, Southwest Ethiopia, 2018 (n = 296)

Variable		Willingness		Bivariate Logistic regression		Multivariate logistic regression	
		Agree	Disagree	COR [95% CI]	P value	AOR [95% CI]	P value
Sex	Male	36	117	1.00			
	Female	27	116	0.756[0.43,1.32]	0.330		
Age	21–25	17	59	1.00			
	26-30	29	144	0.66[0.12,7.11]	0.334		
	31– 35	6	22	0.81[0.78,5.22]	0.489		
	36-40	7	6	0.43[0.31,2.41]	0.260		
	41–45	3	1	1.29[0.45,5.90]	0.361		
	46-50	1	-				
	51–55	-	1				
	56 - 60	17	59	0.82[0.60,9.01]	0.491		
Level of education you currently achieved	Diploma	16	37	1.00			
	Bachelor	35	149	1.23[3.39,4.22]*	0.034	3.163[1.52,6.59]**	0.002
	Masters	3	15	2.44[1.92,3.11]*	0.061	5.385[2.55,11.35]**	0.000
	MD	9	31	2.90[2.36,9.01]*	0.005	2.811[1.22,6.47]**	0.015
	Specialty certificate	-	1				
Category of profession	Nurses	33	92	1.03[3.22,11.71]*	0.220	1.03[1.64,6.75]**	0.041
	Clinical Lab	15	39	1.590[1.53,6.07]*	0.034	2.20[3.58,8.12]**	0.040
	Pharmacists	5	23	1.69[4.16,9.33]*	0.039	1.56[2.07,8.51]**	0.031
	Anesthesiol	1	14	2.371[1.08,5.65]*	0.113	2.91[2.36,5.71]**	0.010
	Radiologists	1	3	2.080[3.10,11.89]*	0.227	3.163[1.52,6.59]**	0.004
	Gen doctors	8	30	3.708[3.07,12.15]*	0.006	5.385[2.55,11.35]**	0.000
	Sp. doctors	-	1				
	Others	-	29	1.00			

Continued from table 6: *Factors associated with Willingness to donate body among health care professionals working in JUMC, Southwest Ethiopia, 2018 (n = 296)*

Year of service as healthcare professional	1-5	37	155	1.00			
	6-10	16	69	1.78[11.50,16.91]*	0.203	1.04[0.71,6.34]	0.074
	11-15	2	7	2.34[2.09,5.98]*	0.006	1.03[0.11,4.71]	0.061
	16-20	7	2	2.84[1.21,8.55]*	0.091	2.01[0.10, 7.25]	0.055
	21-25	-	-				
	26-30	-	-				
	31-35	-	-				
	36-40	-	-				
Marital status	≥41	1	-				
	Single	29	108	1.00			
	Married	33	125	2.01[4.77,10.34]*	0.062	1.091[2.20,5.40]**	0.000
	Divorced	1	-				
	Widowed						
Religion	Married but live in separated place	-	-				
	Orthodox	39	114	1.815[0.470,7.018]	0.387	0.553[0.16,1.84]	0.336
	Muslim	12	50	3.156[1.68,14.54]*	0.140	0.418[0.10,1.59]	0.201
	Protestant	7	54	10.993[2.166,55.79]*	0.004	0.139[0.03,0.61]**	0.009
	Catholic	-	6				
Ethnicity	Others	5	9	1.00			
	Oromo	31	104	0.852[0.34,2.07]	0.725		
	Amhara	11	50	1.524[0.54,4.26]	0.421		
	Tigre	-	3				
	Kefa	1	8	3.573[0.34,37.00]	0.286		
Self-perceived health status	Other	20	68	1.00			
	Excellent	35	112	0.666[0.13,3.22]	0.613		
	Very Good	25	110	0.952[0.200,4.54]	0.951		
	Good	3	11	1.00			
	Poor	-	-				

*p-value < =0.25, **p-value < 0.05, CI= confidence interval, COR= crude odds ratio, AOR= adjusted odds ratio.

5.5. Knowledge about Cadaveric Organ Donation and its associated factors

The results of the analyses of knowledge assessing questions are indicated in table 7. The proportion of the participants who had adequate knowledge about cadaveric organ was 233 (78.7%). Out of the total health care professionals who had adequate knowledge about cadaveric organ donation, about 88 (37.7%) were nurses, 40 (17.2%) were clinical laboratory technologists, 36 (15.4%) were generic doctors, 27 (11.7%) were clinical pharmacists, 13 (5.5%) were anesthesiologists, 3 (1.2%) were radiologists, 1 (0.4%) was special doctor, and 26 (11.2%) were others. When knowledge about cadaveric organ donation is cross tabulated to the level of education, it was found that out of the total health care professionals who had adequate knowledge about cadaveric organ donation, about 145 (62.3%) were bachelor degree holders, 37 (15.9%) were medical doctorate degree holders, 34 (14.9%) were diploma holders, 16 (6.8%) were master's degree holders, and 1 (0.4%) had specialty certificate in ophthalmology. Out of the nurses, about 88 (70.4%) had adequate knowledge but out of generic doctors about 37 (92.5% had adequate knowledge about cadaveric organ donation. There was no a significant difference between males and females regarding knowledge of cadaveric organ donation ($p=0.195$).

Regarding the source of knowledge about cadaveric organ donation, about 68 (29.2%) had got the knowledge from television; 57 (24.5%) had got it from internet; 41 (17.6%) had got from medical doctors; 39 (16.7%) had got from radio; 15 (6.4%) had got from friends; 4 (1.7%) had got from newspaper; and 9 (3.9%) had got it from other sources. Despite this, the proportion of health care professionals who took training on cadaveric organ donation was only 35 (11.8%). The result of the study also indicated that more than half of the respondents (54.1%) know the shortage status donated organs for patients with end stage organ failure.

Additionally, the participants of the study were asked the purposes that organs are donated. According to the findings of the study, about 75 (25.3%) of the participants said that organs are donated for transplantation purpose only, 41 (13.9%) said that organs are donated for research and education, 131 (44.3%) knew that organs are donated for both transplantation and science and education. But 49 (16.6%) had no idea about the purpose of organ donation. Moreover, about 185 (62.5%) of them do not know the time with in which an organ is taken from a dead body and reserved for transplantation or study.

Most importantly, the participants were asked about the reasons for the shortage status of organs across health institutions. The result indicated that about 94 (31.8%) of the participants argued that it is traditional view that made peoples' attitude low so that causing decreased donation; 70 (23.6%) argued that it is because of absence of an organized system developed for donation; 21 (7.1%) argued that it is because of mistrust in hospitals; 22 (7.4%) argued that it is because of absence of reasonable compensation that had been given for donors; and 69 (23.3%) argued that it is because of absence of knowledge among the professionals. Regarding judgment of death by clinicians, about 171 (57.8%) of the participants argue that it is cardiopulmonary casualty that is used to judge death of a person whereas about 59 (19.9%) argue that it is brain death that is used to judge death. But, about 66 (22.3%) of the professionals did not have any idea about judgment of death.

Table 7: Proportion of health care professionals working in JUMC who correctly answered knowledge questions about cadaveric organ donation, Southwest Ethiopia, 2018 (n = 296).

Knowledge variable		Frequency	Percent
Have you ever heard of the term “organ donation from dead body”?	Yes	233	78.7
	No	63	21.3
	Total	296	100.0
Organ donation can be done in which way?	From A Living Person Only	30	12.9
	After Death Of A Person	74	31.8
	Both	116	49.8
	Not Sure	13	5.6
	Total	233	100.0
From which of the following sources did you hear about cadaveric organ donation?	From Doc	41	17.6
	Internet	57	24.5
	TV	68	29.2
	Radio	39	16.7
	News Paper	4	1.7
	Friends	15	6.4
	Other	9	3.9
	Total	233	100.0
Had you taken part in some training courses or lectures about <u>cadaveric organ donation</u> in Ethiopia or abroad?	Yes	35	11.8
	No	261	88.2
	Total	296	100.0
Do you know the shortage status of organ?	Yes	136	45.9
	No	160	54.1
	Total	296	100.0
Do you know the purpose of cadaveric organ donation?	Study And Research	41	13.9
	Transplantation	75	25.3
	Both	131	44.3
	No Idea	49	16.6
	Total	296	100.0
Do you know the time with in which the organ is taken from a dead body and reserved?	Yes	111	37.5
	No	185	62.5
	Total	296	100.0
The reason for organ shortage in health and education is?	Tradition	94	31.8
	Economy	11	3.7
	No System	70	23.6

Continued from table 7: Proportion of health care professionals working in JUMC who correctly answered knowledge questions about cadaveric organ donation, Southwest Ethiopia, 2018 (n = 296).

	Mistrust	21	7.1
	No Compensation	22	7.4
	Luck Of Knowledge	69	23.3
	Total	296	100.0
Which diseases are donated organs screened for?	HIV	193	65.2
	Hepatitis	85	28.7
	Tb	17	5.7
	Spore	1	.3
	Total	296	100.0
What is the clinical reasonable criterion to judge death?	Cardiopulmonary	171	57.8
	Brain	59	19.9
	Not Sure	66	22.3
	Total	296	100.0
Who determines whether the patient in your hospital is dead or not?	Anesthesiologist	18	6.1
	Neurologist	13	4.4
	Cardiologist	70	23.6
	Not Sure	105	35.5
	Other	90	30.4
	Total	296	100.0

The results of bivariate and multivariate logistic regression analyses are indicated in **table 8**. Factors such as age (26-30 years; COR= 1.84; 95%CI= 1.42, 7.11; P=0.171; 31-35years: COR=1.52 95%CI= 3.57, 5.21; P=0.098; 36-40years; COR= 0.91 95%CI 1.02, 6.04; P=0.201), level of education the professionals achieved at the time of the study (Bachelor; COR= 1.06; 95%CI=3.73, 11.02; P=0.203; Masters; COR=1.32; 95%CI= 3.74, 8.11; P=0.181; medical doctors; COR=2.67; 95%CI= 1.44, 6.02; P=0.060), category of profession (Nurses; COR=2.018 95%CI=1.715.,5.69; P=0.185; Pharmacists; COR=0.178 95%CI= 1.01, 2.63; P=0.127; ; medical doctors; COR= 0.267 95% CI= 2.04, 6.48; P=0.132), year of service as healthcare professional (6-10 years; COR=2.78; 95% CI= 2.04, 8.51; P=0.200; 11-15

years; COR=1.34 95% CI=1.12, 7.80; P=0.208; 16-20 years: COR=2.81; 95% CI= 2.21, 6.00; P=0.024), religion (Muslim: COR=3.669; 95% CI= 3.66, 20.38; P=0.137: Protestant: COR=2.802; 95% CI= 2.52 ,14.86; P=0.226) and ethnicity (Oromo: COR= 0.526; 95% CI= 1.26,11.05; P=0.071: Amhara; COR= 0.232; 95% CI=0.80, 0.672; P=0.007) are the factors associated with knowledge about cadaveric organ donation.

Further analysis using multivariate logistic regression indicated that level of education they achieved at the time of the study (Bachelor; AOR=2.363; 95% CI= 2.92, 7.89; P=0.002; Masters; AOR=3.485; 95% CI=4.75, 10.05; P=0.012: medical doctors: AOR=4.941; 95% CI= 1.22, 5.77; P=0.005), category of profession (Nurses: AOR= 1.11; 95% CI=1.89, 10.23; P=0.002: medical doctors: AOR=3.91; 95% CI=1.71, 4.11; P=0.00), year of service as healthcare professional (6-10 years: AOR= 1.04; 95% CI=1.71, 8.14; P=0.014; 11-15 years: AOR=1.13; 95% CI= 2.11, 4.01; P=0.028; 16-20 years: AOR=2.71; 95% CI= 3.10, 6.65; P=0.031), and ethnicity (Amhara: AOR= 3.963; 95% CI=1.41, 11.11; P=0.009) are the factors independently associated with cadaveric organ donation knowledge.

The study showed that bachelor degree holders (AOR=2.363; 95% CI= 2.92, 7.89; P=0.002) were more than two times more knowledgeable than diploma holders and generic doctors are more than three times more knowledgeable than nurses (AOR=3.91; 95% CI=1.71, 4.11; P=0.00). Similarly, health care professionals who served 16-20 years have more than two times (AOR=2.71; 95% CI= 3.10, 6.65; P=0.031) more knowledge than those who served 1-5 years.

Table 8: Factors associated with knowledge towards cadaveric organ donation among health care professionals working in JUMC, Southwest Ethiopia; 2018 (n = 296)

Variable		Knowledge		Bivariate Logistic regression		Multivariate logistic regression	
		Agree	Disagree	COR(95%CI)	P value	AOR(95%CI)	P value
Sex	Male	125	28	1.00			
	Female	108	35	0.736[0.42,1.28]	0.510		
Age	21–25	53	23	1.00			
	26-30	143	30	1.84[1.42,7.11]*	0.171	1.720[0.87,7.10]	0.132
	31– 35	23	5	1.52[3.57,5.21]*	0.089	1.124[0.52,6.96]	0.230
	36-40	8	5	0.91[1.02,6.04]*	0.201	1.233[0.32,8.35]	0.835
	41–45	4	--				
	46-50	1	--				
	51–55	1	--				
Level of education you currently achieved	56 - 60	--	--				
	Diploma	34	19	1.00			
	Bachelor	145	39	1.06[3.73,11.02]*	0.203	2.363[2.92,7.89]**	0.002
	Masters	16	2	1.32[3.74,8.11]*	0.181	3.485[4.75,10.05]**	0.012
	MD	37	3	2.67[1.44,6.02]*	0.060	4.941[1.22,5.77]**	0.005
Category of profession	Specialty certificate	1	-				
	Nurses	88	37	2.018[1.715,5.69]*	0.185	1.11[1.89,10.23]**	0.002
	Clinical Lab	40	14	1.680[0.53,5.25]	0.372	1.98[0.70,12.09]	0.200
	Pharmacists	27	1	0.178[1.01,2.63]*	0.127	0.71[0.34,7.32]	0.218
	Anesthesiol	13	2	0.738[0.12,4.35]	0.738	0.61[4.56,6.10]	0.071
	Radiologists	3	1	1.600[0.13,18.72]	0.708	0.91[0.81,13.01]	0.081
	Gen doctors	36	2	0.267[2.04,6.48]*	0.132	3.91[1.71,4.11]**	0.007
	Sp. doctors	1	-				
Year of service as healthcare professional	Others	24	5	1.00			
	1-5	149	43	1.00			
	6-10	69	16	2.78[2.04,8.51]*	0.200	1.04[1.71,8.14]**	0.014
	11-15	7	2	1.34[1.12,7.80]*	0.208	1.13[2.11,4.01]**	0.028
	16-20	7	2	2.81[2.21,6.00]*	0.024	2.71[3.10, 6.65]**	0.031
	21-25	-	-				
	26-30	-	-				
	31-35	-	-				
	36-40	-	-				
≥41	1	-					

Continued from table 8: **Factors associated with knowledge towards cadaveric organ donation among health care professionals working in JUMC, Southwest Ethiopia; 2018 (n = 296)**

Marital status	Single	101	36	1.00			
	Married	131	27	1.87[0.27,9.04]	0.307		
	Divorced	1	-				
	Widowed	-	-				
	Married but live in separated place	-	-				
	Religion	Orthodox	124	29	2.236[0.43,11.43]	0.334	
	Muslim	46	16	3.669[3.66,20.38]*	0.137	0.479[0.09,2.37]	0.368
	Protestant	45	16	2.802[2.52,14.86]*	0.226	0.469[0.09,2.32]	0.354
	Catholic	6	-				
	Others	12	2	1.00			
Ethnicity	Oromo	105	30	0.526[1.26,11.05]*	0.071*	1.238[0.66,2.31]	0.502
	Amhara	56	5	0.232[0.80,0.672]*	0.007*	3.963[1.41,11.11]**	0.009
	Tigre	-	3				
	Kefa	7	2	0.691[0.12,3.75]	0.669		
	Other	65	23	1.00			
	Self-perceived health status	Excellent	106	41	1.253[0.31,4.95]	0.748	
Very Good		116	19	0.549[0.13,2.25]	0.404		
Good		11	3	1.00			
Poor		-	-				

*p-value < =0.25, **p-value < 0.05, CI= confidence interval, COR= crude odds ratio, AOR= adjusted odds ratio.

5.6. Attitude towards Cadaveric Organ Donation and its associated factors

The findings of the study regarding the attitude towards cadaveric organ donation indicate that about 164 (55.4%) of the professionals had good attitude towards cadaveric organ donation and of these, only 40 (20%) showed strong agreement but about 124 (41.9%) of them did not show strong agreement. Similarly, the proportion of the professionals who encouraged the practice of cadaveric organ donation in Ethiopia was about two-third or 199 (67.2%). Regarding the acceptability of cadaveric organ donation from the religious point of view in

Ethiopia, about 77 (26.0%) the respondents said that it is not acceptable from the religious point of view, about 44 (14.9%) said that it is acceptable whereas about 175 (59.1%) were no sure about it.

The respondents who did not have good attitude towards cadaveric organ donation were asked whether or not their personal decision regarding the attitude to donate cadaveric organ would be changed if a known person donates his/her organ. Accordingly, the finding indicated that only 1 (2.5%) of the respondents said he will be in favor of donating cadaveric organ if he sees a known person donating cadaveric organ. Similarly, they were asked what their attitude would be if they meet/see someone who was their friend is donating cadaveric body. According to the result, none of them would change their decision if they would see someone who was their friend donating cadaveric organ.

On the other hand the participants of the study were asked whether or not the thought of being cut following donation would affect their attitude to donate organ. According to the result, about 97 (32.8%) of the professionals agreed that their attitude to donate organ was affected by the thought of being cut/dissected. In the similar manner, they were asked whether or not they would believe that donated organs are misused. Consequently, about 50 (16.9%) believe that donated organs are misused whereas about 137 (46.3%) do not believe that donated organs are misused.

Questions were also raised for the health care professionals whether or not they would recommend the general public/community to donate their cadaveric organs. The result indicated that about 211 (71.6%) of them recommend the general public to do so. Regarding their attitude towards giving incentives for donors and their families, about half or 146 (49.3%) of the professionals supported it.

Table 9: Proportion of health care professionals working in JUMC who correctly answered attitude questions about cadaveric organ donation, Southwest Ethiopia, 2018

Attitude variable (N = 296)		Frequency	Percent	
Cadaveric organs are donated for medical science, research and transplantation in developed countries. Should it be encouraged in Ethiopia (belief in the usefulness of body donation)?	Yes	199	67.2	
	No	97	32.8	
As a medical professional, what is your <u>attitude</u> towards the possibility of your organs being used for donation after you die?	Strongly Agree	40	13.5	
	Agree	124	41.9	
	Not Sure	92	31.1	
	Disagree	24	8.1	
	Strongly Disagree	16	5.4	
Is cadaveric organ donation acceptable from a religious point of view in Ethiopia?	Yes	44	14.9	
	No	77	26.0	
	Not Sure	175	59.1	
Would your personal decision be in favor of cadaveric organ donation if you hear/see that a known person had donated his/her organs?	Yes	67	22.6	
	No	86	29.1	
	Not Sure	143	48.3	
If you know someone near by you(eg professional colleauge) has donated his/her body, would it affect your decision to donate?	Strongly Agree	Yes	19	47.5
		No	6	15.0
		Not Sure	15	37.5
	Not Sure	Yes	32	25.8
		No	43	34.6
		Not Sure	49	39.5
	Disagree	Yes	15	16.3
		No	25	27.1
		Not Sure	52	56.5
Strongly Disagree	Yes	1	4.1	
	No	9	37.5	
	Not Sure	14	58.3	
Is the thought of your body being cut,	Yes	0	0.00	
	No	3	18.7	
	Not Sure	13	81.2	
Is the thought of your body being cut,	Yes	97	32.8	
	No	123	41.6	

following donation, affecting your decision regarding donating your cadaveric organs?	Not Sure	76	25.7
	Yes	180	60.8
If you donate cadaveric organs, do you feel that you are helping patients with end stage organ failure and the medical profession?	No	30	10.1
	Not Sure	86	29.1
As a health professional, do you believe that donated organs are misused?	Strongly Agree	7	2.4
	Agree	43	14.5
	Not Sure	109	36.8
	Disagree	73	24.7
	Strongly Disagree	64	21.6
	Do you recommend the general public to donate cadaveric organs for patients suffering from organ failure and medical science education?	Strongly Agree	61
Do you recommend the general public to donate cadaveric organs for patients suffering from organ failure and medical science education?	Agree	151	51.0
	Not Sure	65	22.0
	Disagree	10	3.4
	Strongly Disagree	9	3.0
	Is it good to give incentives for people who are willing to donate their organs after death (o pinions on incentive based organ donation)?	Strongly Agree	22
Is it good to give incentives for people who are willing to donate their organs after death (o pinions on incentive based organ donation)?	Agree	124	41.9
	Not Sure	100	33.8
	Disagree	36	12.2
	Strongly Disagree	14	4.7
	Following the death of the donor, who do you think has the authority to give consent for cadaveric organ donation?	No One	30
Family		191	64.5
Spouse		17	5.7
Doc		5	1.7
Other		40	13.5
Don't Know		13	4.4

Regarding the factors associated with attitude towards cadaveric organ donation, sex of the professionals (Female: COR= 0.54; 95% CI= 0.31, 0.94; P=0.029), level of education the professionals achieved at the time of the study (Bachelor: COR=1.62; 95% CI= 1.00, 5.56; P= 0.059; Masters; COR= 1.92; 95% CI= 6.04, 8.91; P=0.007; medical doctors: COR= 2.04; 95% CI= 3.44, 6.02; P= 0.001), category of profession (Clinical Lab: COR= 0.601; 95% CI= 4.90, 8.91; P= 0.068; Pharmacists; COR= 0.590; 95% CI= 3.16, 6.33; P=0.095; Anesthesiol: COR=2.48; 95% CI=5.08, 8.15; P= 0.006; Radiologists: COR= 1.20; 95% CI=7.10, 13.59; P=0.103; medical doctors: COR= 2.91; 95% CI= 5.07, 11.15; P= 0.001) and year of service as healthcare professional (6-10 years: COR=2.41; 95% CI= 1.00, 7.61; P= 0.061; 11-15 years: COA= 3.66; 95% CI= 2.45, 6.89; P= 0.005; 16-20 years: COR= 2.44; 95% CI= 1.34, 8.12; P= 0.007) were significantly associated at bivariate analysis and they were candidates of multivariate analysis (All variables that had ($p \leq 0.25$)).

In multivariate analysis, the estimated odds ratio of sex (Female; AOR= 0.518; 95% CI= 9.12, 12.58; P= 0.004), level of education the professionals achieved at the time of the study (Bachelor; AOR= 1.91; 95% CI= 3.52, 9.00; P= 0.091; Masters: AOR= 2.78; 95% CI=3.11, 10.34; P= 0.006; medical doctors: AOR= 2.90; 95% CI=5.81, 8.09; P= 0.000), category of profession:(Clinical Lab; AOR= 0.51; 95% CI=5.91, 7.11; P=0.040; Pharmacists: AOR= 0.701; 95% CI= 1.89, 6.95; P=0.021; Anesthesiology; AOR=2.01; 95% CI=4.91, 19.23; P= 0.006; Gen doctors; AOR= 2.01; 95% CI=4.91, 18.71; P= 0.009), and year of service as healthcare professional (6-10 years: AOR= 1.04; 95% CI= 3.71, 6.34; P= 0.004; 11-15 years: AOR= 2.93; 95% CI= 2.11, 4.71; P=0.000) and 16-20 years: AOR= 2.01; 95% CI= 5.10, 7.25; P= 0.001) have found to be significant ($p < 0.05$). It means that, sex, level of education they achieved at the time of the study, category of profession, and year of service as healthcare professional have a significant influence on the attitude towards cadaveric organ donation.

With respect to the strength of association, female participants of the study have about half times (AOR= 0.518; 95% CI= 9.12, 12.58; P= 0.004) good attitude towards cadaveric organ donate as compared to male participants. By the same token, pharmacists have about half

times (AOR= 0.701; 95% CI= 1.89. 6.95; P=0.021) good attitude towards cadaveric organ donate as compared to radiologists. In contrast to this, health care professionals who served 11-15 years have about three times (AOR= 2.93; 95%CI= 2.11, 4.71; P=0.000) good attitude towards cadaveric organ donation as compared to those who served 1-5 years (**Table 10**).

Table 10: Factors Associated With Attitude towards Cadaveric Organ Donation among Health Care Professionals Working In JUMC, Southwest Ethiopia, 2018 (N = 296).

Variable		Attitude		Bivariate Logistic regression		Multivariate logistic regression	
		Agree	Disagree	COR(95%CI)	P value	AOR(95%CI)	P value
Sex	Male	94	59	1.00			
	Female	70	73	0.54[0.31,0.94]*	0.029	0.518[9.12,12.58]**	0.004
Age	21–25	39	37	1.00			
	26-30	101	72	1.06[0.12,3.31]	0.301		
	31– 35	16	12	1.09[0.55,6.01]	0.267		
	36-40	4	9	0.91[0.02,6.34]	0.461		
	41–45	3	1	0.52[0.41,7.90]	0.491		
	46-50	-	1				
	51–55	-	-				
	56 - 60	1	-				
Level of education you currently achieved	Diploma	32	21	1.00			
	Bachelor	95	89	1.62[1.00,5.56]*	0.059	1.91[3.52,9.00]*	0.091
	Masters	10	8	1.92[6.04,8.91]*	0.007	2.78[3.11,10.34]*	0.006
	MD	27	13	2.04[3.44,6.02]*	0.001	2.90[5.81,8.09]*	0.000
	Specialty certificate	-	1				
Category of profession	Nurses	61	64	1.00			
	Clinical Lab	28	26	0.601[4.90,8.91]*	0.068	0.51[5.91,7.11]**	0.040
	Pharmacists	20	8	0.590[3.16,6.33]*	0.095	0.701[1.89,6.95]**	0.021
	Anesthesiol.	12	3	2.48[5.08,8.15]*	0.006	2.01[4.91,19.23]**	0.006
	Radiologists	2	2	1.20[7.10,13.59]*	0.103	1.21[0.79,5.81]	0.061
	Gen doctors	25	13	2.91[5.07,11.15]*	0.001	2.01[4.91,18.71]**	0.009
	Sp. doctors	1	-				
	Others	1	-				
Year of service as healthcare professional	1-5	111	81	1.00			
	6-10	43	42	2.41[1.00,7.61]*	0.061	1.04[3.71,6.34]**	0.004
	11-15	3	6	3.66[2.45,6.89]*	0.005	2.93[2.11,4.71]**	0.000
	16-20	6	3	2.44[1.34,8.12]*	0.007	2.01[5.10, 7.25]**	0.001
	21-25	-	-				
	26-30	-	-				
	31-35	-	-				
	36-40	-	-				
	≥41	1	-				

Continued from table 10: Factors Associated With Attitude towards Cadaveric Organ Donation among Health Care Professionals Working In JUMC, Southwest Ethiopia, 2018 (N = 296).

Marital status	Single	77	60	1.00	
	Married	86	72	1.11[0.77,4.34]	0.309
	Divorced	1	0		
	Widowed	-	-		
	Married but live in separated place	-	-		
	Religion	Orthodox	90	63	1.208[0.34,4.23]
	Muslim	33	29	1.762[0.45,6.79]	0.411
	Protestant	30	31	2.003[0.53,7.55]	0.305
	Catholic	3	3	0.884[0.09,8.10]	0.913
	Others	8	6	1.00	
Ethnicity	Oromo	81	54	0.666[0.33,1.31]	0.267
	Amhara	31	30	1.039[0.47,2.26]	0.924
	Tigre	2	1	0.396[0.03,5.04]	0.476
	Kefa	5	4	0.675[0.14,3.12]	0.615
	Other	45	43	1.00	
Self-perceived health status	Excellent	77	70	1.334[0.37,4.72]	0.655
	Very Good	79	56	0.939[0.27,3.24]	0.920
	Good	8	6	1.00	
	Poor	-	-		

*p-value ≤ 0.25 , **p-value < 0.05 , CI= confidence interval, COR= crude odds ratio, AOR= adjusted odds ratio.

5.7. Willingness to Donate Cadaveric Organs and Its Associated Factors

The willingness to donate cadaveric organs among the participants of the study was found to be 117 (39.5%) of whom 72 (61.5%) are male and 45 (38.5%) are female. They professionals were asked what their reasons are for their willingness to donate cadaveric organs. The result indicated that, out of the total respondents, about 59.1% said that they are willing because they want to save the lives of patients with end stage organ failure. The respondents who said ‘to avoid unnecessary wastage of organs’ were 24.6%; those who said ‘to facilitate medical

teaching and research' were 8.9% and those who said 'to be lived by other people's life' were 7.4%.

Respondents who were unwilling to donate their cadaveric organs were also asked what their reasons were for their unwillingness. According to the findings of the study, about 22.4% said that they feel psychological anxiety when they think about it, 18.0% said that their families do not like it, 17.3 said that they do not like to be cut into pieces, 12.9% said that they did not have any reason, 9.2% said religious barrier, 8.5% said that organs could be wasted, 8.2% said that organs could be wasted, and 3.4% said that they have their own reason which they do not like to reveal.

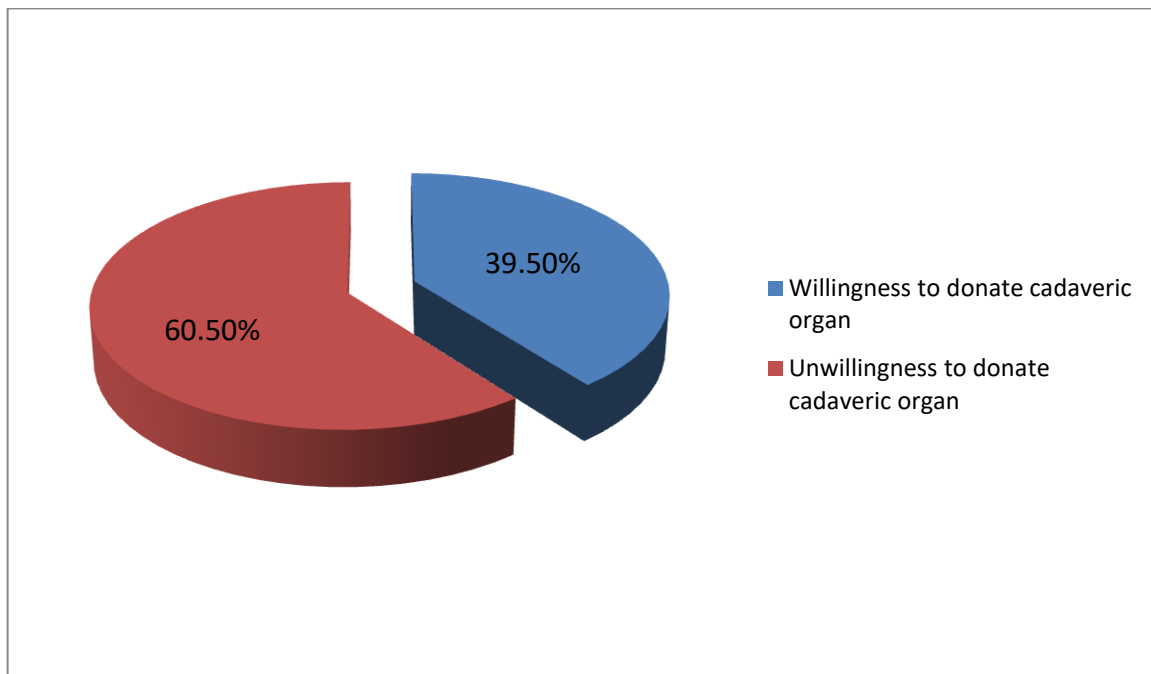


Figure 6: Pie graph indicating the willingness of health care professionals to donate their body; 2018.

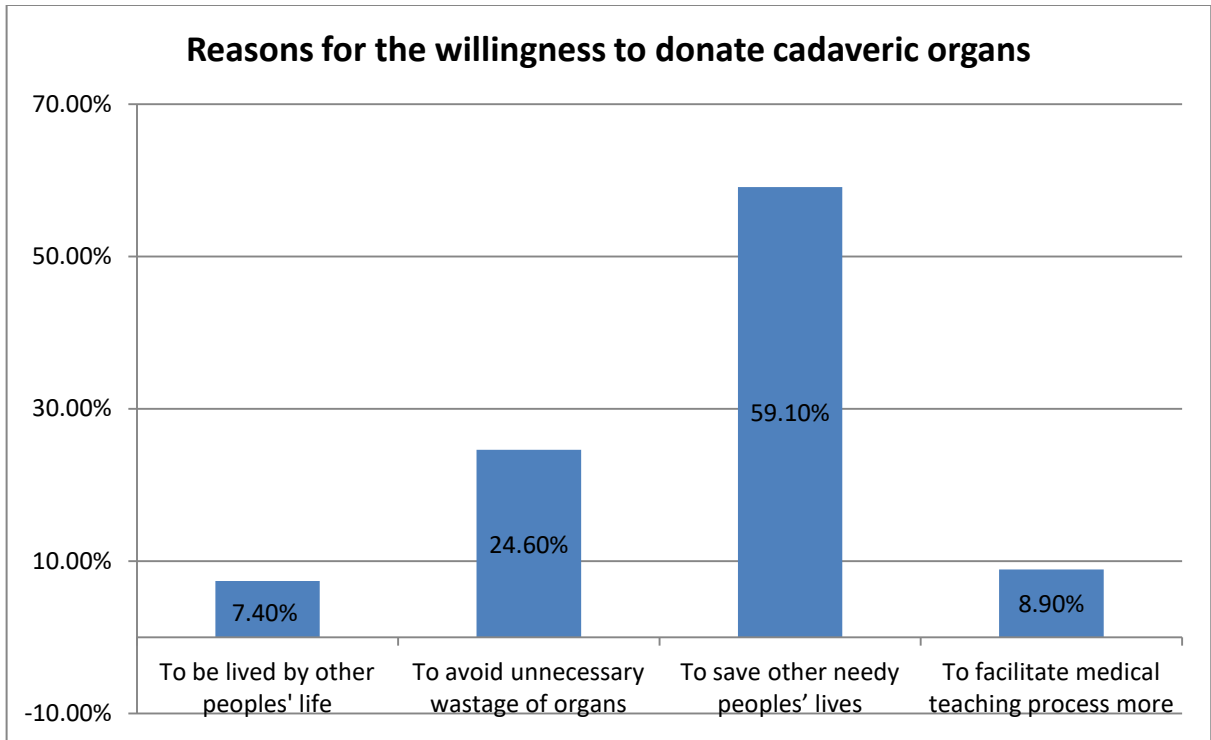


Figure 7: Bar graph indicating the reasons of health care professionals for willingness to donate their organs; 2018.

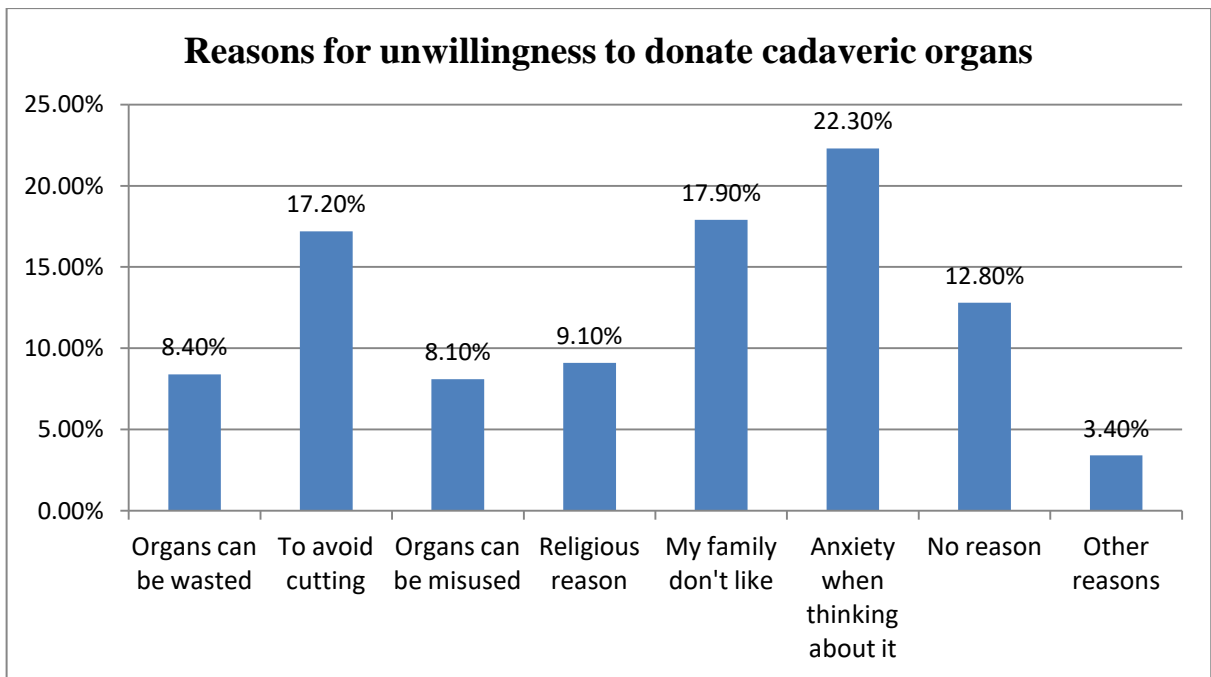


Figure 8: Bar graph indicating the reasons of health care professionals for unwillingness to donate their cadaveric organs; 2018.

The bivariate analysis showed that there are strong positive associations existed between predictors such as sex (female: COR= 0.389; 95% CI=0.21, 0.70; P=0.002), age (26-30 years: COR= 1.72; 95% CI=3.62, 8.61; P= 0.071; 31-35 years: COR= 2.62; 95% CI=4.57, 6.21; P=0.150), level of education they achieved (Bachelor: COR=0.87; 95% CI=1.63, 10.84; P=0.160; medical doctorate: COR=3.67; 95% CI=2.24, 7.02), category of profession (Nurses: COR=2.223; 95% CI=1.71, 6.92; P=0.168; Generic doctors: COR=2.312; 95% CI=2.68, 9.56; P=0.015), and marital status (Married: COR=2.01; 95% CI=1.57, 10.89; P=0.207) are associated with willingness to donate cadaveric organs. However, further analysis using multivariate logistic regression showed that only sex (Female: AOR=2.036; 95% CI=1.22, 3.37; P=0.006), level of education the professionals achieved at the time of the study (Bachelor: AOR=3.163; 95% CI=1.32, 9.59; P=0.002 and medical doctorate: AOR= 2.811; 95% CI=2.42, 6.21 0.015), and category of profession (Generic doctors: AOR=2.069; 95% CI=2.74, 5.77; P=0.025) were found associated with willingness to donate cadaveric organs.

The results of the study also show that generic doctors are about three wise (AOR= 2.811; 95% CI=2.42, 6.21 0.015) willing as compared to the professionals who were categorized in 'other' category. Similarly, the professionals who were bachelor degree holders and medical doctorate degree holders were about three times (AOR=3.163; 95% CI=1.32, 9.59; P=0.002; and AOR= 2.811; 95% CI=2.42, 6.21 0.015; respectively) more willing as compared to diploma holders.

Table 11: Factors Associated With Willingness towards Cadaveric Organ Donation among Health Care Professionals Working In JUMC, Southwest Ethiopia, 2018 (N = 296)

Variable		Willingness		Bivariate Logistic regression		Multivariate logistic regression	
		Agree	Disagree	COR(95%CI)	P value	AOR(95%CI)	P value
Sex	Male	72	81	1.00			
	Female	45	98	0.389[0.21,0.70] *	.002	2.036[1.22,3.37]**	0.006
Age	21–25	31	45	1.00			
	26-30	63	110	1.72[3.62,8.61] *	0.071	1.605[0.17,6.10]	0.102
	31– 35	9	19	2.62[4.57,6.21] *	0.150	1.434[0.32,5.35]	0.635
	36-40	8	5	0.91[0.02,4.34]	0.469		
	41–45	4	-				
	46-50	1	-				
	51–55	-	-				
	56 - 60	1	-				
Level of education you currently achieved	Diploma	26	27	1.00			
	Bachelor	58	126	0.87[1.63,10.84]*	0.160	3.163[1.32,9.59]**	0.002
	Masters	9	9	1.62[0.74,4.11]	0.280		
	MD	24	16	3.67[2.24,7.02]*	0.007	2.811[2.42,6.21]**	0.015
	Specialty certificate	-	1				
Category of profession	Nurses	46	79	2.223[1.71,6.92]*	0.168	0.757[0.31,1.79]	0.528
	Clinical Lab	19	35	1.273[0.41,3.88]	0.671	0.703[0.26,1.85]	0.476
	Pharmacists	7	21	1.960[0.50,7.54]	0.328	0.451[0.14,1.44]	0.280
	Anesthesiol	6	9	0.875[0.20,3.83]*	0.860	0.803[0.21,3.01]	0.745
	Radiologists	3	1	0.269[0.01,3.78]	0.330	3.440[0.31,38.10]	0.314
	Gen doctors	23	15	2.312[2.68,9.56]*	0.015	2.069[2.74,5.77]**	0.025
	Sp. doctors	-	1				
	Others	13	16	1.00			
Year of service as healthcare professional	1-5	79	113	1.00			
	6-10	26	59	1.44[0.34,4.91]	0.339		
	11-15	4	5	1.98[0.45,2.89]	0.407		
	16-20	7	2	2.44[0.91,3.09]	0.360		

	21-25	-	-		
	26-30	-	-		
	31-35	-	-		
	36-40	-	-		
	≥41	1	-		
Marital status	Single	51	86	1.00	
	Married	65	93	2.01[1.57,10.89]*	0.207
	Divorced	1	0		
	Widowed	-	-		
	Married but live in separated place	-	-		
Religion	Orthodox	62	91	2.013[0.54,7.50]	0.298
	Muslim	25	37	1.558[0.38,6.35]	0.537
	Protestant	21	40	2.802[0.68,11.45]	0.351
	Catholic	3	3	0.970[0.08,10.81]	0.980
	Others	6	8	1.00	
Ethnicity	Oromo	53	82	1.667[0.82,3.42]	0.263
	Amhara	22	39	1.527[0.66,3.42]	0.316
	Tigre	2	1	0.275[0.02,3.54]	0.323
	Kefa	2	7	1.984[0.31,12.53]	0.466
	Other	38	50	1.00	
Self-perceived health status	Excellent	55	92	2.095[0.58,7.46]	0.254
	Very Good	56	79	1.926[0.55,6.64]	0.299
	Good	6	8	1.00	
	Poor	-	-		

*p-value < =0.25, **p-value < 0.05, CI= confidence interval, COR= crude odds ratio, AOR= adjusted odds ratio.

CHAPTER SIX

DISCUSSION

The potential role of health care professionals in maximizing the limited cadaver supply for medical schools in Ethiopia and organs for patients with end stage organ failure is essential and deserves several studies. Despite the critical importance of health care professional support in this arena, there is no data in the literature regarding the knowledge, attitudes, and willingness of Ethiopian health care professionals toward body and cadaveric organ donation. For this reason, an attempt has been made in the current study to assess the problem.

The knowledge of JUMC health care professionals regarding body donation is 64.5%. Several studies had been conducted regarding body and cadaveric organ donation in Africa and abroad. A study conducted to assess knowledge, attitude, and practice regarding whole body donation among medical doctors in Kasturba Hospital, Manipal, India reported that out of the total participants of the study about 92% are aware of body donation though about 85% of them believed that donated bodies are misused (12). Although this study and our study used similar study designs, the level of knowledge that is found in the study conducted in Kasturba Hospital is highly greater than the level that we found. The difference could be resulted from the difference in the study subjects recruited. The study conducted in Kasturba Hospital recruited medical doctors only but the current study recruited all categories of health care professionals including diploma holders to specialty certificate holders.

Another study which was undertaken to assess the general population's awareness of body donation and willingness to donate in the State of Maharashtra, India found that about 32.1% of the general population and about 95.83% of health care professionals were aware of body donation (92). Despite the fact that the level of knowledge among health care professionals of this study was higher than the level of knowledge among the health care professionals of our study, it is by half lower among the general population in Maharashtra state study as compared to our study. As it can easily be noticed from above findings, the difference in the socio-demographic characteristics is a factor to determine the level of knowledge about body donation.

On the other hand, a study which was conducted among first-year medical (undergraduate) students and surgical residents at the University of Nairobi (UoN) in Kenya reported that the level of knowledge about body donation among the participants of the study was 24.8% (43). In comparison to this finding, our finding is more than two-fold higher. The difference may be resulted from the difference in the study design and the types of study subjects enrolled. The study conducted in UoN enrolled 150 first year medical students out of 205 total participants of the study. This may reduce the level of knowledge as compared to experienced health care professionals.

Regardless of the difference in the findings of the above studies and our study, there are some studies that reported a similar finding to our study. For instance, a study conducted in Kolkata, India reported that the level of knowledge about body donation among its study participants was 66.6% which is relatively similar to the finding of the current study (86). The present study found that level of education the professionals achieved at the time of the study and ethnicity were the factors associated with knowledge of body donation. In contrary to this, other studies reported that gender and teaching experience were the factors associated with knowledge of body donation (19, 78, 93). The difference may be resulted to the difference in peoples' exposure to educational and practical activities of body donation. In our country; for instance, medical students only learn and practice on cadavers so that they may get information about donation of cadavers. But diploma level educated students could not have accessibility to cadavers. In the contrary, in developed countries, body donation is a common practice.

According to the findings of the present study, about 46.6% of the participants have good attitude towards body donation and about 49% encourage it to be done in Ethiopia. This finding is similar to a study conducted among medical professionals in Vincent University Hospital, Dublin, Ireland. According to this study, about 41% had good attitude and about 48.4% encouraged it to be done in that country (22). In contrast to the present study, a study conducted in Southern Odisha, India, reported that about 36.6% of its study participants had good attitude towards body donation (19). This result is a bit lower than the finding of the present study. The difference in the findings may be because the study conducted in Southern Odisha enrolled science students from public schools in the district in addition to health care professionals. Despite this, a study conducted among medical and engineering students and

doctors in Kolkata reported that the proportion of the participants who had good attitude towards body donation was 82% (86). This finding is highly greater than the finding of the present study. The differences in the findings may be resulted from the difference in the sampling technique. The study from Kolkata used purposive sampling technique where as the present study used systematic sampling technique.

Level of education the professionals achieved, category of profession, and year of service were the most important factors associated with attitude towards body donation in the present study. Conversely, in other study gender and year of service were found as the factors associated with the attitude to donate body (78). Concerning the willingness to donate body, the present study found that about 21% of the participants were willing to donate their body. A similar finding was reported from other studies from India and Iran (6, 12 and 86). A study conducted among Indian physicians found 22%; another study from a similar country found 18.66%; and a study from Iran found 25.4%. These findings are in line with the finding of the present study. Despite this, the study conducted in India (86) reported that the willingness to donate body among its participants was varied based on the purposes of donation. The study reported that out of its total participants only 5.66% were willing to donate body if the purpose was for dissection. But, about 37.66% were willing if it was for organ transplantation and 18.66% were willing if the donation was for both. From this finding we can infer that body donation for organ transplantation is preferred to body donation for dissection of anatomical studies.

Despite the findings of the present study and the above three studies, a study conducted by John Hopkins University Medical Institution, Maryland, USA reported that the proportion of study participants who were willing to donate their body was found to be 49% (85). This is more than two fold of the finding of the present study. The difference with regard to willingness to donate body might be resulted from the higher awareness that had been seen among study population of John Hopkins study and the social practice in that country. Studies confirmed that a lack of awareness about body donation might be the main factor responsible for unwillingness towards body donation (4); therefore, improving the public's awareness and addressing the willingness of students regarding body donation may help overcome the current lack of donated cadavers.

According to the findings of the present study level of education, category of profession and marital status are factors associated with willingness to donate body. In contrast to this, the study conducted by John Hopkins Medical Institution indicated that demographic and attitudinal factors are strongly related to willingness to consider whole body donation. The study reported that younger age, African-American race/ethnicity, less education and income, greater number of dependents, marital status, and attitudes about religion/spirituality, trust in hospitals, and income, gender, and racial/ethnic discrimination in hospitals were statistically significantly associated with 40–70% less odds of willingness to consider donation. After adjustment of odds ratio, the investigators found that persons of African-American race/ethnicity, less education, and those agreeing with the statements, “Rich patients receive better care at hospitals than poor patients,” and “White patients receive better care at hospitals than other racial or ethnic groups,” had 40–60% less odds of willingness to consider donation when compared to their counterparts. Respondents' race/ethnicity and education contributed most to willingness to consider donation (85). The difference in the findings may be attributed to the fact that the professionals in our country who learned at low level (e.g. Diploma) have no exposure to cadaver dissection based anatomy education which may affect

The finding of the present study has showed that the level of knowledge about cadaveric organ donation among JUMC health care workers is 78.7%. This finding is lower than the finding of a study conducted among medical specialty students in St John medical college hospital in South India which reported which reported 97% (94). The differences in the findings might be resulted from the differences in the study subjects recruited by the studies. In contrast to the finding of our study, a study conducted among medical students in Faculty of Medicine, Mansoura University, Egypt found a prevalence of 11.7% (95). Another study from Southern Odisha, India reported 63.7% level of knowledge about cadaveric organ donation.

Regarding the factors associated with the knowledge of cadaveric organ donation, variables such as level of education, category of profession, year of service, and ethnicity are the important factors associated with knowledge about cadaveric organ donation. However, a studies from USA and Nigeria reported that being female, having higher education, earning higher income and believing in the effectiveness of organ transplantation positively promote

desirable knowledge of organ donation are factors associated with awareness of organ donation (81, 96-98).

The findings of the present study regarding the attitude towards cadaveric organ donation indicate that about (55.4%) of the professionals had good attitude towards cadaveric organ donation. A better level of good attitude has been reported in many studies around the world. For instance, in a study conducted among 263 health care professionals who had been participating in transplantation activity it was found that about 68% of the professionals had good attitude towards deceased organ donation (99). The finding of this study also indicates that the attitude towards deceased organ donation among the general population is 63% which is slightly lower than the data for health care professionals. Even a higher level of good attitude was seen in a study conducted in Ahwaz, Egypt. According to this study, out of the whole participants, 75% were pro organ donation, while 22% were against it and the remaining 3% had no specific idea (100).

With regard to the factors associated with attitude towards cadaveric organ donation, our finding indicate that gender, level of education, category of profession and year of service are the important factors that have shown association with the attitude to donate cadaveric organs. In contrast to our finding, another study from Spain found age (most in favor are younger; $P = .021$); nonmedical surgical staff (50% against donation; $P = .0001$); resident physicians (94% in favor; $P = .001$); discussion and prior consideration of donation ($P = .016$); knowledge of the concept of brain death (an important factor in non-health staff; $P = .010$); attitude toward manipulation of the deceased ($P = .011$) and concerns about mutilation ($P = .026$); partner's opinion toward organ donation ($P = .0001$); and existence of frequent medical errors ($P = .003$) as the main factors associated with the attitude to donate cadaveric organs (99). Likewise, a comparative study conducted to assess the factors determining the attitude of Japanese and Chinese college students toward cadaveric organ donation reported that Japanese students' attitude towards deceased organ donation was more favorable than that of Chinese students (43.6% versus 35.9%, $P = .001$) and the factors contributed to positive attitude by students from both countries were: family perspective on organ donation and transplantation; decision to donate to family members; prior blood donation; living liver or kidney donation; possibility of needing a transplant; and willingness to receive a deceased or a living donor organ (101).

Concerning the willingness to donate cadaveric organs, the present study found that about 39.5% of the professionals are willing to donate their cadaveric organs. In contrary to the finding of the present study, a study conducted among anatomy department staff at Autonomous University of Nuevo Leon, Monterrey, Mexico reported that the willingness among technical assistants, anatomy research students and professors were 94.7%, 73.9%, and 93.7% (31). In comparison to our study, the level of willingness that is found in this study is very high. The difference could be resulted from the difference in the socio-demographic characteristics of the study subjects and the level of awareness that is seen among the participants of the study conducted in Mexico.

Similarly, in a study conducted in USA it was found that out of 385 participants, 254 (66%) were extremely willing to donate to a sibling but only 179 (47%) had designated themselves a cadaveric donor on their drivers' licenses (88). In another study conducted in China, 60.1% of the participants of the study approved deceased donation; however, only 48.5% approved living donation which indicates deceased donation is preferred to living donation (58). When these two studies are compared to the present study, their findings are higher than our study. The difference might be resulted because the countries have developed live and deceased organ donation programs which create awareness among their communities and collect organs. The awareness that is created is the most responsible factor to increase willingness. This has been confirmed by a study conducted by Shaheen FA (102).

Some studies have come with a low level of willingness as compared to the present study. For example, the finding of a study from Turkey indicates that among the majority of the nurses who study subjects, only 34.4% were showed willingness (80). Similarly, according to the report of a study conducted in Kuala Lumpur, Malaysia, about less than a third of the participants of the study pledged to donate their organs upon death with women (35.6%) showing a higher incidence compared with men (33.2%). The probable reason that made the findings of these studies lower than the present study might be the differences in the study subjects. The study conducted in Turkey was conducted among nurses only whereas the study conducted in Kuala Lumpur was conducted in the general community (103).

According to the finding of the present study, variable such as sex, level of education, and category of profession are the important factors associated with the willingness to donate

cadaveric organs. In contrast to the present study, a study conducted in Maryland, USA reported that older age, employment status, religion/spirituality, and mistrust in hospitals were associated with 50 to 90% less odds of willingness to donate living related organs cadaveric organs (88). Despite this, a study from China reported that factors such as personal factors, conditions of organ request, interpersonal factors, ethical factors, traditional views and the funeral tradition are the most responsible factors associated with the willingness to donate cadaveric organs (104).

Limitation and Strength of the study

This study could not take into consideration of the knowledge and attitude, and willingness of general population. Moreover, the present study could not establish a cause-effect relationship between the explanatory variables and outcome variables because of the cross-sectional nature of the study.

Nevertheless, as the first study of Ethiopian health professional knowledge, attitudes, and willingness toward body and cadaveric organ donation, it provides a somewhat important perspective on body and cadaveric organ donation and it paves a way for further studies in Ethiopia.

CHAPTER SEVEN

CONCLUSION AND RECOMMENDATIONS

7.1. Conclusion

This study has shown that the majority of health care professionals in JUMC are well aware of body and cadaveric organ donation. Their awareness regarding cadaveric organ donation is better than body donation. Despite this, their attitude toward body and cadaveric organ donation is not as much as their knowledge. In addition, their willingness to donate their body and/or cadaveric organs is highly lower than the willingness levels reported by similar studies. Nevertheless, the knowledge, attitude, and willingness of JUMC health care professionals regarding cadaveric organ donation is much better than their knowledge, attitude, and willingness for body donation.

The present study further found that the major factors that influence knowledge, attitude, and willingness of health care professionals towards body donation are level of education they achieved, category of education, year of service, ethnicity and marital status. But, the major factors that influence the knowledge, attitude, and willingness of health care professionals toward cadaveric organ donation are sex, level of education they achieved, category of education, year of service, and ethnicity.

7.2. Recommendations

In spite of all the limitations, the conclusions of this study have drawn the following recommendations:

- Majority of the participants of the present study got the knowledge of body and cadaveric organ donation from anatomy classes. Therefore, anatomy course instructors should be thanked and encouraged to do so in their teaching learning process in the future. Yet, more than two-third of the participants of the present study believe that cadavers are not properly handled. Hence, anatomy staff should think ways to correct in this regard.

- The departments that are under Institute of health should give awareness and motivation to their staff and students about body and cadaveric organ donation.
- Most of the respondents of the present study participants who were unwilling to donate indicated that they are unwilling because of their mistrust on hospitals. Therefore, hospitals staff should be trustful, ethical, and accountable regarding body and organ donation. Moreover, they should set up an independent office for this work.
- Jimma University Institute of Health should develop journal clubs which will form discussions and seminars among its community to increase the awareness, attitude, and willingness of the people towards body and cadaveric organ donation. And this trend should be transmitted to other universities.
- Media and other social organizations (eg NGOs) can play an important role as mediators which could remove the hesitation so that the people would come forward to donate their bodies. The mass of the people should be convinced to accept that it is better to donate their bodies after death either for the organ donation or for the research in medical education.
- The government should establish policies, program and organization that are responsible for mobilization of the community for body and organ donation.
- Last but not least, the researcher recommends concerned bodies to form thanks giving ceremony for donors.

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ANNEXES

QUESTIONNAIRE FOR CADAVER and ORGAN DONATION RESEARCH

INFORMED SHEET

DEAR HEALTHCARE PROFESSIONAL!

My name is Mekdes Bekele. I am working in the research team of Jimma University. This study is proposed to assess the knowledge, attitude, and willingness towards body and organ donation and their associated factors among healthcare professionals working at JUMC. You are randomly chosen to participate in this study. The questions will help the investigators' reach the research goal. In order to attain the goal effectively, we request your willful cooperation. Here under are the questionnaires you to complete. **There is no need of writing your name on the format/questionnaire.** Confidentiality is strictly protected. It is your right to participate or to refuse in the study. If you do not want to participate in the study, you can withdraw. But your honest participation will have contribution to generate valid information that can be used for strengthening quality education and health care. So please take these questions to answer. If there is anything that require clarification please don't hesitate to ask the facilitators.

Do you wish to participate in the study?

Yes I want to participate { }

No I don't want to participate { }

If you want to participate, Please put your signature _____

Date: _____

Thank you!!!

Instruction: Tick or circle your answers.

Part I: Socio demographic characteristics

101. Sex: Male: Female:

102. Age, y: _____

103. Level of education you currently achieved:

- A. Diploma
- B. Bachelor
- C. Master
- D. Doctor (MD)
- E. Specialist doctor
- F. Sub specialist
- G. Other; please specify _____

104. Category of profession

- A. Nurses; please specify (eg. Midwife nurse, ophthalmic nurse, etc) _____
- B. Laboratory
- C. Pharmacist
- D. Anesthetics
- E. Radiology
- F. Generic doctor
- G. Doctor specialist (please write the field of specialization) _____
- H. Others; please specify _____

105. Year of service as healthcare professional (years) _____

106. Marital status

- A. Single
- B. Married
- C. Divorced
- D. Widowed
- E. Married but live in separated place

107. Religion

- A. Orthodox B. Muslim C. Protestant D. Catholic E. Other; specify _____

108. Ethnicity

- A. Oromo B. Amhara C. Tigre D. Kefa E. other, specify _____

109. Self-perceived health status

- A. Excellent
- B. Very good
- C. Good
- D. Poor
- E. No clue

- 110. Monthly income in birr** A. 1000 – 4000 B. 4001 – 8000 C. 8001 – 12000
D. 12001- 16,000 E. 16,001- 20,000 F. Above 20,000

Part II. Knowledge about body donation among healthcare professionals

111. Have you ever heard of the term “body/cadaver donation”?

- A. Yes B. No

112. If yes to 111, from which of the following sources did you hear about body/cadaver donation (you can choose more than one option)?

- A. Anatomy classes
- B. Newspaper
- C. Television
- D. Friends
- E. Internet
- F. Radio
- G. Others, please specify: _____

113. Had you taken part in some training courses or lectures about body donation in Ethiopia or abroad?

- A. Yes B. No

114. If yes to 113, the term “body donation” means

- A. The act of giving one’s own body after death for medical education and research **with** consent of the person before death.

- B. The act of giving one's own body after death for medical education and research **without** consent of the person before death.
- C. The act of taking an unclaimed body to medical education and research.
- D. The act of taking an unclaimed body to transplantation of organs to patients with organ failure.

115. Do you know the various ways from which bodies are obtained for the purpose of anatomical dissection?

- A. Yes
- B. No
- C. Not sure

116. How did you learn anatomy when you were studying the course at University/college level?

- A. Theory **with** dissection of a cadaver or watching the instructor dissecting the cadaver.
- B. Only theory **without** dissecting a cadaver or watching the instructor dissecting the cadaver
- C. I do not know whether or not anatomy education is given with cadaveric dissection.

117. Do you know the purpose of body donation?

- A. For medical study and research
- B. For organ transplant into a patient with organ failure
- C. Both
- D. No idea
- E. Others (please specify) _____

118. Which department/s handle/s body supply for anatomical dissection in school of medicine in Jimma University? (you can choose more than one option)

- A. Anatomy
- B. Surgery
- C. Internal medicine
- D. Pathology
- E. Not sure

119. Who, in your knowledge, makes a decision about supplying donated bodies to the department of anatomy? (you can choose more than one option)

- A. College/doctor
- B. Police
- C. Judge

- D. NGO
- E. Not sure

120. What are the factors that exclude a body from donation/ criteria for accepting donated bodies? (you can choose more than one option)

- A. Decomposed body
- B. Autopsied body
- C. Suicide/Homicide body
- D. Emaciated body
- E. Obese body

121. Which diseases are donated bodies should be screened for? (you can choose more than one option)

- A. HIV/AIDS
- B. Hepatitis B and C
- C. Active tuberculosis
- D. Syphilis
- E. Spore bearing organisms
- F. Fungal infections
- G. Typhoid
- H. Malaria

Part III. Attitude towards body donation among healthcare professionals

122. Bodies are donated for medical science and research in developed countries. Should it be encouraged in Ethiopia (belief in the usefulness of body donation)?

- A. Strongly agree
- B. agree
- C. Not sure
- D. Disagree
- E. strongly disagree

123. As a medical professional, what is your attitude towards the possibility of your own body being used for donation for the advancement of medical science?

- A. Strongly agree
- B. agree
- C. Not sure
- D. Disagree
- E. strongly disagree

124. Do your religion values restrict you from donating your body?

- A. Strongly agree
- B. agree
- C. Not sure
- D. Disagree
- E. strongly disagree

125. Would your personal decision be in favor of body donation if hear/see that a known person had donated his/her body?

A. Yes B. No C. Not sure

126. Is the thought of your body being dissected, following donation, affecting your decision regarding donating your body?

A. Yes B. No C. Not sure

127. Do you feel that if you donate your body, you would help medical progress and the future generation?

A. Yes B. No C. Not sure

128. If you will donate your body for medical science, do you accept/agree it to be dissected for medical students' education (Acceptance of dissection on their donated bodies)?

A. Strongly agree B. agree C. Not sure D. Disagree E. strongly disagree

129. As a health professional, do you believe that donated bodies are misused (treated with disrespect at the anatomy table/not properly disposed after use for teaching purpose/sold for profit)?

- A. Never
- B. Sometimes
- C. Often
- D. Most of the times
- E. All the time

130. Should the general public donate their bodies for medical education (expectations with regards to the general public's duty to donate bodies)?

A. Strongly agree B. agree C. Not sure D. Disagree E. strongly disagree

131. Is it good to give incentives for people who are willing to donate their bodies after death (o pinions on incentive based body donation)?

A. Strongly agree B. agree C. Not sure D. Disagree E. strongly disagree

132. If you knew someone you know has donated his/her body, would it affect your decision?

A. Strongly agree B. agree C. Not sure D. Disagree E. strongly disagree

133. Following the death of the donor, who do you think has the authority to give consent for his/her body donation? (you can choose more than one option)

- A. No one
- B. Donor's family
- C. Donor's spouse

- D. Doctor
- E. Others
- F. Don't know

Part IV. Willingness towards body donation among healthcare professionals

134. Would you donate your body for use in medical education?

- A. Yes
- B. No
- C. Not sure

135. Opinion regarding willingness towards body donation

- A. To be lived by other peoples' life
- B. To avoid unnecessary wastage of body by cremation
- C. To save other needy peoples' live
- D. To facilitate medical teaching process more

➤ For those willing to donate

136. Who do you think has the authority to give consent for body donation?

- A. Donor only
- B. Donor's family
- C. Donor's spouse
- D. Doctor
- E. Others

➤ For those unwilling to donate

137. Opinion regarding the reasons behind unwillingness for body donation

- A. Organ could be wasted
- B. Don't want to cut body into pieces
- C. Organ/ body could be Misused /abused
- D. Religious barrier
- E. Prevented by family Members
- F. Psychological anxiety
- G. No reason
- H. No knowledge about this
- I. Any other reasons

Part V. Knowledge about cadaveric/deceased organ donation among healthcare professionals

138. Have you ever heard of the term “cadaveric/deceased organ donation”?

- A. Yes B. No

139. Organ donation can be done in which way

- A. When the person is living
B. Immediately after death of the person
C. Both cases
D. Not sure

140. If yes to 138, from which of the following sources did you hear about cadaveric organ donation (you can choose more than one option)?

- A. heard from a doctor
B. Internet/online sources
C. TV
D. Radio
E. Newspaper or magazine
F. Friends/ colleagues
G. Other (specify)_____

141. Had you taken part in some training courses or lectures about cadaveric/deceased organ donation in Ethiopia or abroad?

- B. Yes B. No

142. Know the shortage status of organ

- A. Yes B. No

143. Do you know the purpose of cadaveric organ donation?

- A. For medical study and research
B. For organ transplant into a patient with organ failure
C. Both
D. No idea
E. Others (please specify)_____

144. Which one is the correct meaning of the term “cadaveric organ donation”? (you can choose more than one option).

- A. The removal of an organ of the human body from a living donor for the purpose of transplantation to a patient with organ failure.
- B. The removal of an organ of the human body from a cadaver for the purpose of transplantation to a patient with organ failure.
- C. The removal of an organ of the human body from a cadaver for the purpose of medical study and research
- D. Don't Know

145. The reason for organ shortage

- A. Traditional view
- B. Economic level
- C. No effective system for organ donation and allocation
- D. Cope with the aftermath
- E. Mistrust to hospital
- F. No reasonable compensation
- G. Scarce knowledge about organ donation
- H. Indifference and lack of humanity

146. Which diseases are donated organs screened for? (you can choose more than one option)

- A. HIV/AIDS
- B. Hepatitis B and C
- C. Active tuberculosis
- D. Syphilis
- E. Spore bearing organisms
- F. Fungal infections
- G. Typhoid
- H. Malaria

147. What is the clinical reasonable criteria to judge death

- A. Cardiopulmonary death
- B. Brain death
- C. Not sure

148. Who should determine whether the patient in your hospital is brain-dead?

- A. Anesthesiology
- B. Neurology
- C. Neurosurgery
- D. Cardiology experts
- E. Not sure

Part VI. Attitude towards cadaveric/deceased organ donation among healthcare professionals

149. Cadaveric organs are donated for medical science, research and transplantation in developed countries. Should it be encouraged in Ethiopia (belief in the usefulness of body donation)?

- A. Strongly agree B. agree C. Not sure D. Disagree E. strongly disagree

150. As a medical professional, what is your attitude towards the possibility of your organs being used for donation after you die?

- B. Strongly agree B. agree C. Not sure D. Disagree E. strongly disagree

151. Is cadaveric organ donation acceptable from a religious point of view in Ethiopia.

- A. Yes B. No C. Not sure

152. Would your personal decision be in favor of cadaveric organ donation if you hear/see that a known person had donated his/her organs?

- A. Yes B. No C. Not sure

153. If you knew someone you know has donated his/her cadaveric organ, would it affect your decision?

- A. Strongly agree B. agree C. Not sure D. Disagree E. strongly disagree

154. Is the thought of your body being cut, following donation, affecting your decision regarding donating your cadaveric organs?

- A. Yes B. No C. Not sure

155. If you donate cadaveric organs, do you feel that you are helping patients with organ failure and the medical profession?

- A. Yes B. No C. Not sure

156. As a health professional, do you believe that donated organs are misused?

- A. Strongly agree
- B. agree
- C. Not sure
- D. Disagree
- E. Strongly disagree

157. Do you recommend the general public to donate cadaveric organs for patients suffering from organ failure and medical science education (expectations with regards to the general public's duty to donate cadaveric organs)?

- A. Strongly agree
- B. agree
- C. Not sure
- D. Disagree
- E. strongly disagree

158. Is it good to give incentives for people who are willing to donate their organs after death (opinions on incentive based organ donation)?

- B. Strongly agree
- B. agree
- C. Not sure
- D. Disagree
- E. strongly disagree

159. Following the death of the donor, who do you think has the authority to give consent for cadaveric organ donation? (you can choose more than one option)

- A. No one
- B. Donor's family
- C. Donor's spouse
- D. Doctor
- E. Others
- F. Don't know

Part VII. Willingness towards cadaveric/deceased organ donation among healthcare professionals

160. Are you willing to donate your cadaveric organs after you die?

- A. Yes
- B. No
- C. Not sure

161. What is your reason behind for your willingness (Opinion regarding willingness towards body donation)?

- A. To be lived by other peoples' life
- B. To avoid unnecessary wastage of organs by cremation
- C. To save other needy peoples' live

D. To facilitate medical teaching process more

162. Who do you think has the authority to give consent for cadaveric organ donation?

- A.** Donor only
- B.** Donor's family
- C.** Donor's spouse
- D.** Doctor
- E.** Others

➤ **For those unwilling to donate**

163. Opinion regarding the reasons behind unwillingness for cadaveric organ donation

- A.** Organ could be wasted
- B.** Don't want to cut body into pieces
- C.** Organ/ body could be Misused /abused
- D.** Religious barrier: Resurrection: ; incarnation:
- E.** Prevented by family Members
- F.** Psychological anxiety
- G.** No reason
- H.** No knowledge about this
- I.** Any other reasons

Thank you for your cooperation

Amharic version of the questionnaire

መጠይቅ

ስምምነት መፈረሚያ ወረቀት

ስሜ መቅደስ በቀለ ይባላ። በጅም ዩኒቨርሲቲ ውስጥ በለ አንድ የምርምር ቡድን ውስጥ በመስራት ላይ እንገኛለሁ። ይህ ምርምር በጅም ዩኒቨርሲቲ ሆስቴታክ ውስጥ የሚሰራ የጠየና ባለሙያዎች ለሞት አካል ወይም በድንና ለበድን ክፍል ስጦታ ያላቸው እውቀት ፣ አመለካከት እና እነርሱ ከሞቱ በኋላ ለመስጠት ያላቸው ፍቃደኝነት እና ከዚህ ጋር ተያያዥነት ስላላቸው ውስን ነገሮች የመሟያጠና ጥናት ነው ። ከጠየና ባለሙያዎች መሀል አንተ/ቺ የተመረጠክው /ሺው እንዲህ በዕጣ/ነው ።

ይህ መጠይቅ ተመራረማሪዎቹ ጥናቱን ግብ ላይ እንዲያደርሱ ይደረጋል። የጥናቱ ግብ ላይ እንድንደርስ ሙሉ ትብብር እጠይቃለሁ ። ከዚህ በታች የሚሞሉ ጥያቄዎች አሉ ። ስምህን/ ሽን መፃፍ ይጠበቅብህም ምስጢራዊነቱ የተጠበቀ ነው። በዚህ ጥናት ውስጥ መሳተፍም ሆነ አለመሳተፍ መብትህ ነው ። መሳተፍ ካልፈለግህ አቋርጠህ መውጣት ትችላለህ። ሆኖም መሳተፍህ ጥራት ላለው የትምህርትና የጠየና ስርዐት ከፍተኛ አስተዋፅኦ አለው ። ስለዚህ እንድትሳተፍ በ ትህትና እንጠይለን ። መጠይን ስትሞላ ጥያቄ ሆነ ያስቸገረህ ነ ገር ካለ ለማብራራት ዝግጁ ነን።

ለመሳተፍ ፍቃደኛ ነህ

ሰዎ መሳተፍ እፈልጋለሁ

አይደለም መሳተፍ አልፈልግም

ለመሳተፍ ፍቃደኛ ከሆን ፊርማ ----- ቀን -----

እና መሰግናለን

116. አናቶሚ ትምህርት እንዴት ነው የተማርከው በኮሌጅ ወይ በዩኒቨርሲቲ ውስጥ እያለክ ?

ሀ. በፅሁፍ (Theory) እ ተግባር በአንድነት ለ. በፅሁፍ ባቻ

ሐ. የዐናቶሚ ትምህርት በተግባር ተደግፎ እንደሚሰጥ አላውቅም

117. ለምን አላማ ለማዋል ነው ሙት አካልን (በድን) የሚለገሰው

ሀ. ለትምህር ለምርምር ሐ. ለሁለቱም (ሀ እና ለ)

ለ. ለአካል ንቅለ ተካላ ለማድረግ መ. ምንም አላውቅም ሠ. ሌላ አላማ (ጥቀስ)

118. የትኛው ት/ት ክፍል ነው የበድነን አቅርቦትን የሚቆጣጠረው

ሀ. አናቶሚ ለ. ሰርጀሪ ሐ. የውስጥ ደዌ

መ/ ፓቶሎጂ ሠ. እርግጠኛ አይደለሁም

119. በአንተ አመለካከት (መረዳት) ማነው አቅርቦትን ለአናቶሚ ት/ት (የሚወስነው)

ሀ. ት/ት ክፍሉ ሜዲካል ዶክተር ለ. ፓሊስ ሐ. NGO (ግብረ ሰናይ ድርጅት)

መ. እርግጠኛ አይደለሁም

120. በም መስፈርት ነው ነበድኑን ለአናቶሚ ትምህት ከመስጠት (ከመጠቀም)

የሚቆጠበው (የሚለየው)

ሀ. የበሰበሰ የሞተ አካል ለ. የቅርብ የሞተ አካል ሐ. ራሱን የጠፋ ሰው የሞተ አካል

መ. የቀጨጨ በድን ሠ. ከልክ በላይ የወፈረ በድን

121. ለየትኛው በሽታ የሞተ አካል ነው ለአናቶሚ ት/ት የማይለው

ሀ. ኤች አይ ቫ/ኤድስ

ለ. የጉበት በሽታ እና

ሐ. ቲቢ

መ. የቂጥኝ በሽታ

ሠ. ስፓር የያዙ ህዋሳት ያሉበት በድን

ረ. በፈንገስ የተጠቃ በድን

ሰ. በታይፎይድ የተጠቃ በድን

ሸ. የወባ የተጠቃ በድን

ክፍል ሶስት :- የሞተ አካል (በድንን) ስለመስጠት የተመለከተ የጤና ባለሙያዎች አመለካከት

122. በአደጉት አገራት ለሜዲካል ት/ት እና ሪሰርች/ መርምሮ በድንን መስጠት የተለመደ ነው :: ይህ ነገር በኢትዮጵያ እንዲደረግ ትደግፋለህ

ሀ. በጣም እማማለሁ ለ. እስማማለሁ ሐ. እርግጠኛ አይደለሁም
መ. አልስማማም ሠ. በጣም አልማም

123. እንደ ጤና ባለሙያነትህ በድንህን ለመስጥ ያለህ አመለካከት እንዴት ነው

ሀ. በጣም እስማማለሁ ለ. እስማማለሁ ሐ. እርግጠኛ አይደለሁም መ.
አልስማማም

124. የምትከተለው ሀይማኖት በድንን መስጠት ይከለክላል ብለህ ታምናለህ

ሀ. በጣም እስማማለሁ ለ. እስማማለሁ ሐ. እርግጠኛ አይደለሁም
መ. አልስማማም ሠ. በጣም አልስማማም

125. ታዋቂ ሰው በድኑን ቢሰጥ የአንተ አመለካከት ሊቀየር ይችላል

ሀ. አዎ ለ. አይደለም ሐ. እርግጠኛ አይደለሁም

126. በአናቶሚ ት/ት ጊዜ በድኑን እየ ቆራረጡ / እየከፈቱ ስለሚጣ ለመስጠት ያለህን ውሳኔ ሊጎዳው ይችላል

ሀ. አዎ ለ. አይደለም ሐ. እርግጠኛ አይደለሁም

127. በድንህን ለመስጠትህ/ሽ የህክምና ሙያ እንዲቀጥል እንዲረዳህ ይስማማል

ሀ. አዎ ለ. አይደለም ሐ. እርግጠኛ አይደለሁም

128. በድን አካልህን ከሰጠህ በህክምና ተማሪዎች መቆረጡን ወይ መከፈቱን ትቀበላለህ

ሀ. በጣም እስማማለሁ ለ. እስማማለሁ ሐ. እርግጠኛ አይደለሁም
መ. አልስማማም ሠ. በጣም አልስማማም

129. እንደ ጠየና ባሙያነትህ በአናቶሚ ት/ት ክፍል ውስጥ በድን በአግባቡ አይያዝም ብለህ ታምናለህ

ሀ. በጭራሽ ለ. አልፎ አልፎ ሐ. አንዳንድ ጊዜ

መ. አብኛው ጊዜ ሠ. ሁልጊዜ

130. ህብረተሰባችን በድን አካሉን ለአናቶሚ ት/ት መስጠት አለበት ብለህ ታምናለህ

ሀ. በጣም እስማማሁ ለ. እስማማለሁ ሐ. እርግጠኛ አይደለሁም

መ. አልስማማም ሠ. በጣም አልስማማም

131. በድን አካላቸውን ለመስጠት ፍቃደኛ ለሆኑት ገንዘብ ቢሰጣቸው ጥሩ ነው ብለህ ታምናለህ

ሀ. በጣም እስማማለሁ ለ. እስማማለሁ ሐ. እርግጠኛ አይደለሁም

መ. አልስማማም ሠ. በጣም አልስማማም

132. በቅርበትህ ያለ ሰው ወይም ንደኛህ በድኑን ቢሰጥ ያንተን/ችን ውሳኔ ሊቀይር ይችላል

ሀ. በጣም እስማማለሁ ለ. እስማማለሁ ሐ. እርግጠኛ አይደለሁም

መ. አልስማማም ሠ. በጣም አልስማማም

133. ለጋሱ ከሞተ በኋላ በድ አካሉ ለትምህት ፎርም የመፍቀድ ስልጣን ያለው ማነው

ሀ. ማንም ለ. ዶክተር ሐ. የሊጋሹ ቤተሰብ መ. የሊጋሹ ሚስት /ባል

ሠ. ሌላ ረ. አላውቅም

ክፍል 4 በድን አካልን ለመስጠት ያለው/ላት ፍቃደኝነት በተመለከተ

134. ከሞትክ በላ በድን አካልህን መህክምና ት/ት ለመለገስ ፍቃደባ ነህ

ሀ. አዎ ለ. አይደለሁም ሐ. እርግጠኛ አይደለሁም

135. በ 134ኛው ጥያቄ መልስህ አዎ ከሆነ ምክያህ ምንድነው

ሀ. የህክምና ትምህርት ይበልጥ ለማሳካት ለ. የበድን ብክለትን ለመከላከል

ሐ. የቀብር ስነ ስርአትን ለማስቀረት መ. አዲስ መንገድን ለመደገፍ

136. ለ 134ኛው ጥያቄ መልስህ አይደለም ከሆነ ምክንያትዎ ምንድነው

ሀ. በድን ሊሞክን ይችላል ለ. በድነ እዲቆረጥ ስለማልፈልግ

ሐ. በድነ እንዲቆረጥ ስለማልፈልግ መ ሀይማኖት አይፈቅድም

ሠ. ቤተሰቦቼ አይፈቅዱም ሠ. ጭንቀት ያመጣብኛል

ረ. ምንም ምንም የለኝም ሰ. ስለዚህ ነገር እውቀት የለኝም ሸ. ሌላ ምክንያት

ክፍል 4 የጠየና ባለሙያዎች ሰው ከሞተ ቧላ ስለሚሰጥ የሰውነት ክፍል ስጦታ ያቸው ዕውቀት

137. ሰው ከሞተ በኋላ የሚሰጥ የሰውነት አካል ስጦታ ታውቃለህ

ሀ. አዎ ለ. አይደለም

138. የሰውነት ክል ስጦታ የሚደረገው በየትኛው መንገድ ነው

ሀ. ሰውየው በህይወት ሳለ ብቻ ለ. ሰውየው እንደሞተ

ሐ. በሁለቱም መንገዶች መ. እርግጠኛ አይደለሁም

139. ለጥያ ቁ 138 መልስህ አዎ ከሆነ ፣ ስለ ሰው ከሞተ በኋላ ስለሚሰጥ የሰውነት ክፍል ስጦታ ከየት ሰሙ

ሀ. ከዶክተር ለ. ኢንተርኔት ሐ. ቲቪ መ. ሬዲዮ

ሠ. ጋዜጣ ረ. ሌላ (ጥቀስ) -----

140. ስለ ሰው ከሞተ በኋላ ስለሚሰጥ የሰውነት አካል ስጦታ ስልጠና በኢትዮጵያ ውስጥ ወይም ከዚትጵጵያ ውጭ ስልጠና ወስደህ ታውቃለህ

ሀ. አዎ ለ. አይደለም

141. የሰውነት አካል እጥረት እንዳለ ታውቃለህ

ሀ. አዎ ለ. አይደለም

142. ከሞተ በኋላ የሰውነት ክፍል ስጦታ ለምን ጉዳይ እብደሚደረግ ታውቃለህ

ሀ. ለመ ዲካል ትምህርትና ስልጠና ለ. ለሰውነት ንቅለ ተከላ ሐ. ለሁሉም

መ. ስለዚህ ጉዳይ እውቀቱ የለኝም ሠ. ሌላ (ጥሰቅ) -----

143. የሰውነት ክፍል ከሞተ ሰው በቀዶ ጥገና ከ ተወሰደ በኋላ ለሌላ በሽተኛ ንቅለ ተከላ የሚደረግ የሚዘጋጀውን ጊዜ ታውቃለህ

ሀ. አዎ ለ. አይደለም

144. ከሚከተሉት ትርጉሞች መካከል ከሞተ በኋላ የሞተ አካል ስጦታ ትክለኛ ትርጉም የሆነው የጡ ነው

ሀ. የሰውነት አካል ህይወት ካለው ሰው በስጦታ መውሰድ :: ለ ንቅለ ተከላ ጉዳይ

ለ. ለንቅለ ተተካላ ጉዳይ የሰውነትን ክፍል ከሞተ ሰው በስጦታ መውሰድ

ሐ. ለሜዲካ ትምህት እና ሪሰርች ጉዳይ ከሞተ ሰው የሰውነትን ክፍል በስጦታ መውሰድ

መ. አላውቀውም

145. የሰውነት አካል ክፍል እጥረት ምክንያት ምንድ ነው

ሀ. ባህላዊ አመለካከት ለ. የዲኮኖሚ ሁኔታ

ሐ. የሰውነት አካል ስጦታ ስርአት አለመኖር

መ. ከስጦታ በኋላ ስላለው ከበድ ጊዜ በማሰብ ሠ. ሆስፒታሎችን አላምንም

ረ. ተመጣጣኝ የገንዘብ ስጦታ ስለሌለ

ሰ. የእውቀት ማነስ ሸ. የሠባአዊ አመለካከት ማነስ

146. በስጦታ የጠገኙ የሰውነት ክፍሎች ከሚከተሉት የበሽታ አምጪ ህዋሳት መካከል የትኛው ይመረመራል ::

ሀ. ኤች አይ ቫ ለ. B እና C የ ተባለው የጉበት በሽታ ሐ. ቲቢ መ. ቂጢኝ

ሠ. ስፓር ህዋሳት ረ. ፈንገስ ሰ. ታይይድ ሸ. ወባ

147. አንድ ሰው ሞቶዋል ለማለት የህክምና ሳይንስ ምክንያታ ውሳኔ የቱ ነው

ሀ. የልብና የመተንፈሻ ሁኔታ አለመስራት/መሞት

ለ. የአፅንፎ ነመሞት

ሐ. እርግጠኛ አይደለሁም

148. አንድ ሆስፒታል ውስጥ ያሉ በሽተባ « ሞቷል » በማለት የሚወሰነው ማነው (ከአንድ ምርጫ በላይ መምረጫ በላይ መምረጥ ይቻላል)

- ሀ. የሰመመን ባለሙያ
- ለ. የነርቭ ሀኪም
- ሐ. የነርቭ ቀዶ ጥገና ሀኪም
- መ. የልብ ሀኪም
- ሠ. እርግጠኛ አይደለም
- ረ. ሌላ (ጥቀስ). -----

ክፍል 6 ሰለ ከሞተ በኋላ የአካል ክፍል ስጦታ » የጠየና ባለሙያዎቹ ያላቸው አመለካከት

149. ሰው ከሞተ በኋላ የሚደረግ የሰውነት (የአካል ክፍል ስጦታ በአደጉት አገራት ይደረጋል :: ይህ በኢትዮጵያ እንዲደረግ ትደግፋለህ/ትመክራለህ

- ሀ. አዎ
- ለ. አይደለም

150. እንደ ጠየና ባለሙያነትህ ከሞትክ በኋላ የአካል ክፍልህ በስጦታ መልክ ተወስዶ ጥቅም ላይ ቢውል ምን ይመስልህል

- ሀ. በጣም እስማማለሁ
- ለ. እስማማለሁ
- ሐ. እርግጠኛ አይደለም
- መ. አልስማማም
- ሠ. በጣ አልስማማም

151. በኢትዮጵያ ውስጥ ያሉ ሀይማኖቶች ሰው መከሞተ በኋላ የሚደረግ የሰውነት አካል ክፍል ስጦታ ይቀበሉታል

- ሀ. አዎ
- ለ. አይደለም
- ሐ. እርግጠኛ አይደለም

152. እንደ ታዋቂ ሰው ከሞተ በኋላ የመ ደረክ የ አካል ክፍል ስጦታ ሲያደርግ ብታይ አንተም ይህንን ለማረግ ፍቃደኛ ትሆናለህ

- ሀ. አዎ
- ለ. አይደለም
- ሐ. እርግጠኛ አይደለም

153. በቅርብህ ያለ ሰው (ወይም ንደኛህ) ይህን ቢያደርግ አንተም ፤ለማድረግ /ለመስጠት ፍቃደኛ ትሆናህ

- ሀ. በጣም እስማማለሁ
- ለ. እስማማለሁ
- ሐ. እርግጠኛ አይደለም
- መ. አልስማማም
- ሠ. በጣም አልስማማም

154. ከሞትክ በኋላ የሰውነት/የዐካል ክፍልህን ለመውሰድ ሰውነትህ መቆረጡ ከሞተ አካልህ ላይ የአካል ክፍልህን ለመስጠት ያለህን ውሳኔህን አዛብቶታል

ሀ. አዎ ለ. አይደለም ሐ. እርግጠኛ አይደለሁም

155. ከሞተ አካልህ የሰውነት/የአካል ክፍልህን ብትሰጥ የአካል ክፍል ስራ ማቆም ችግር /በሽታ ያለባቸውን በሽተኞች ወይም የህክምና ሳይንስን የረዳህ ይመስልህል

ሀ. አዎ ለ. አይደለም ሐ. እርግጠኛ አይደለሁም

156. እንደ ጠየና ባለሙያነትህ በስጦታ የተገኙ የአካል ክፍሎች ትክክለኛ ባልነ መንገድ ጥቅም ላይ ይውላሉ ታምናለህ

ሀ. በጣም እስማማለሁ ለ. እስማማለሁ ሐ. እርግጠኛ አይደለሁም

መ. አልስማማም ሠ. በጣም አልስማማም

157. ሀብረተሰባችን የሞተ አካሉ የአካል ክፍሉን የአካል ክፍል ችግር ላለባቸው በሽተኞች እንዲሰጥ ትመክራለህ

ሀ. በጣም እስማማለሁ ለ. እስማማለሁ ሐ. እርግጠኛ አይደለሁም

መ. አልስማማም ሠ. በጣም አልስማማም

158. ከሞተ አካላቸው የአካል ክፍል ለመስጠት ፍቃደኛ ለ ሆኑ ሰዎች ጥቅማ ጥም መስጠት ጥሩ ነው ብለህ ታስባለህ

ሀ. በጣም እስማማለሁ ለ. እስማማለሁ ሐ. እርግጠኛ አይደለሁም

መ. አልስማማም ሠ. በጣም አልስማማም

159. ከሞተ አካሉ የአካል ክፍል ለመስጠት ቃል ገብ የሞተ ሰው የአካል ክፍሉ እንዲወሰድ/እንዲሰጥ የስምምነቱን ፊርማ መስጠት ያለበት ማነው

ሀ. ማንም ለ. የሟች ቤተሰብ ሐ. የሟቹ/ቿ ባለቤት መ. ዶክተር

ሠ. ሌላ ረ. አላውቅም

ክፍል 7 ከሞተ አካል የአካል ክፍል ለመስጠት የጠየና ባለሙያዎች ያላቸው ፍቃደኝነት ::

160. ከሞትህ በኋላ የአካል ክፍል ለመስጠት ፍቃደኛ ነህ

ሀ. አዎ ለ. አይደለም ሐ. እርግጠኛ አይደለሁም

161. ለመስጠት ፍቃደኛ ከሆንክ ፍቃደኛ እንድትሆኑ ያደረገክ ምክንያት ምንድነው

ሀ. በሌላ ሰው አካል ውስጥ ለመኖር ለ. የአካል ክፍል ብክነትን ለመከላከል

ሐ. የአካል ክፍል አለመስራት ችግር/በሽታ ያለባቸውን ሰዎች ህይወት ለማዳን መ. የህክምና ትምህትን አሰጣጥ ይበልጥ ለመረዳት

162. ለመስጠት ፍቃደኛ ካልሆንክ ፍቃደኛ እንድትሆን ያደረገህ ምንድነው

ሀ. የአካል ክፍሉ ሊባክን ይችላል ለ. የሞተ አካሌ እንዲቆረጥ አልፏልግም

ሐ. የአካል ክፍሉ በተገቢው መንገድ ጥቅም ላይ ላይውል ይችላል

መ. ሀይማኖታዊ ጉዳይ

ሠ. ቤተሰቦቼ አይፈቅዱም ረ. ስለሱ ሳሱብ ጭንቀት ይሰማኛል

ሰ. ምክንያድ የለኝም ሸ. ስለዚህ ምክንያድ አላቅም .

ቀ. ሌላ ምክንያት ካላ ይገለፅ

DECLARATION

I, the undersigned, declare that this thesis is my original work, has not been presented for a degree in this or any other university and that all sources of materials used for the thesis have been fully acknowledged.

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