Exploring and describing the knowledge and attitudes of undergraduate nursing students towards organ donation at a selected university in KwaZulu-Natal, South Africa – a mixed methods study

By

Lennon Moodley

2023

EXPLORING AND DESCRIBING THE KNOWLEDGE AND ATTITUDES OF UNDERGRADUATE NURSING STUDENTS TOWARDS ORGAN DONATION AT A SELECTED UNIVERSITY IN KWAZULU-NATAL, SOUTH AFRICA – A MIXED METHODS STUDY

A dissertation submitted to the School of Nursing and Public Health, College of Health Sciences, University of KwaZulu-Natal in fulfilment of the requirement for the Master's Degree in Nursing

By

Lennon Moodley

Student number: 204008022

2023

DECLARATION

I declare that this research entitled exploring and describing the knowledge and attitudes of undergraduate nursing students towards organ donation at a selected university in KwaZulu-Natal, South Africa is my own work.

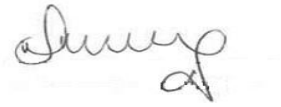
It is submitted in fulfilment of a Master's Degree in Nursing by dissertation at the University of KwaZulu-Natal South Africa. It has never been submitted for any other purpose.

All sources of information that have been used or quoted have been acknowledged with complete references.

STUDENT: Lennon Moodley

Signature:

SUPERVISOR: Dr Waheedha Emmamally



19.12.23

DEDICATION

This dissertation is dedicated to my late father Mr Jay Moodley, who passed away halfway through my master's degree. Although solid organ donation was not possible, I still managed to fulfil your wish of becoming a tissue donor. You have restored the gift of sight to two patients and your tissue allografts have been used to enhance the lives of adults and children burdened by disease or injury.

You were always so proud of all of my academic achievements and I know this one will also make you smile.

ACKNOWLEDGEMENTS

Firstly, I would like to thank my saviour **Lord Kaal Bhairav** who has helped me detach from the illusions of the material world (Maya) and recognise each soul on earth for its true worth.

My study supervisor, Dr Waheeda Emmamally, you are the true epitome of a research Guru. Thank you for everything, especially for introducing me to mixed methodology research. I will certainly share the passion you have instilled in me with many other research scholars in the future.

My partner Quinton, thank you for your immense support during all my academic endeavours. Your quick technical problem-solving skills and assistance with this dissertation have taught me many shorter ways of doing things.

My sister Melanie, thank you for your constant encouragement and motivation to always go big, do better and achieve more.

My colleagues, Jessica Naidoo and Rhona Naidoo, thank you for always believing in me and making me feel better when things got difficult.

My colleagues, Shanitha Pillay and Neil Williams (PhD Candidates), thank you for your advice, support and our academic research discussions, which gave me insight into my study.

Carol Tonnesen from the KZN Cornea and Eye Association in collaboration with Vitanova and Bone SA. Thank you for all your speedy assistance with my dad's tissue procurement from the funeral home. You managed to maintain an empathetic demeanour while professionally carrying out the actual tissue procurement. I commend your work!

The transplant coordinators from the KZN region Cindy Goldie and Shannon Naidoo. Thank you for your valuable input in my study.

ABSTRACT

Background

There is currently a shortage of donor organs worldwide. Nurses are the custodians who advocate for organ donation; however, there is limited knowledge on the organ donation process. The study established an entry point of introducing education on organ donation to student nurses during their undergraduate nurse training.

Methodology

The study was conducted at a selected University in Kwazulu-Natal, South Africa and utilized a mixed methods approach with an explanatory sequential design. ***Phase One***, the quantitative phase involved data collection from third year undergraduate nursing student's ($N = 75$) using a self-administered questionnaire. ***Phase Two***, the qualitative phase focused on nine individual interviews via Microsoft Teams with a subset of the Phase One sample population. In ***Phase Three*** of the study, the data from the two sequential phases were mixed and triangulated with current literature on organ donation where a pamphlet was developed consisting of information on organ donation. The pamphlet was refined through the Modified Delphi Approach which consisted of an expert panel group. Two ($n = 2$) transplant coordinators within the KZN region and ($n = 5$) undergraduate nursing students were selected to participate where a dichotomous survey tool was used to rate the information in the pamphlet.

Results

Phase One revealed only 4.0% ($n = 3$) of participants had adequate knowledge of organ donation however, 84.0% ($n = 63$) of participants had a positive attitude towards organ donation. The themes *strategies to increase knowledge*; *information preference*; *future benefits of the strategy* and *barriers to understanding organ donation*, emerged as themes in the

qualitative second phase. The review of the pamphlet by the panel of experts in Phase Three yielded a 100% consensus on the content in the first round.

Recommendations

The researcher recommends further studies in exploring the perceptions of nursing students at different levels of their study on the concept of organ donation. Furthermore the data emanating from the studies can be used to develop specific content on organ donation that is identified by nursing students as relevant to their roles in advocating for organ donation.

Conclusion

Only a small percentage (4.0%) of the third year undergraduate nursing students were found to have adequate knowledge on organ donation, while a high percentage (84.0%) of the participants had positive attitudes toward organ donation. In response to the results and findings of the study an electronic information pamphlet was developed to increase undergraduate nurses' knowledge on organ donation. The pamphlet is the first of a series of strategies developed exclusively for undergraduate nurses to increase their receptiveness towards organ donation.

Keywords: Attitudes, Bachelor of nursing programme, explanatory sequential, knowledge, mixed methods research, organ donation, transplant coordinator, undergraduate nursing students.

LIST OF ABBREVIATIONS

cART	Combination Antiretroviral Therapy
CPD	Continuous Professional Development
DDR	Dead Donor Rule
HPCSA	Health Professionals Council of South Africa
ICU	Intensive Care Unit
NHI	National Health Insurance
ODF	Organ Donor Foundation
OPS	Organ Procurement Skills
PMP	Per Million Population
SANC	South African Nursing Council
SATS	South African Transplant Society
SATSA	South African Transplant Sports Association
TELL	Transplant Education for Living Legacies
UKZN	University of KwaZulu-Natal
USA	United States of America

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CHAPTER ONE: STUDY OVERVIEW

1.1 Introduction and Background

According to the World Health Organisation (2021), organ donation is the removal of a solid organ from a deceased or living person for transplantation into an individual who has a dysfunctional/diseased organ. The main supply of organs for transplantation is from cadaveric donors (Randhawa *et al.*, 2010). There is an increased popularity of deceased or cadaveric donors owing to the skepticism of living individuals having to donate their solid organs to others, as well as the vast discrepancies in blood type and tissue matching (Johnson *et al.*, 2014). Cadaveric solid organ harvesting, which is defined as the removal of an organ from an organ donor after death, can only occur in a hospital after the patient has suffered a *brain death* or after *circulatory death* has been determined. The body systems are kept perfused, and the patient is mechanically ventilated to sustain tissue oxygenation until transplantation can occur (University of Cape Town, 2017). Brain death occurs due to a fatal illness or injury that results in irreversible brain damage, while circulatory death occurs as a result of a fatal or irreversible condition that does not result in brain death and the patient may or may not die after all treatment is withdrawn (New Zealand Health Ministry, 2017). However, organ donation by circulatory death has a very short period in which organ harvesting and transplantation can take place as compared to donation by brain death. Organs and tissues that can be harvested and transplanted include the heart, lungs, kidney, liver, pancreas, small bowel, cornea, tissue and bones and bone marrow (Gerbi *et al.*, 2020).

Organ donation allows a recipient to lead a longer and better quality of life while at the same time decreasing the burden on a nation's healthcare by reversing chronic illness and body system malfunction, which would otherwise require closer and more intense health monitoring

and a more extended hospital stay (Job & Antony, 2018). Organ donation also allows healthcare institutions that provide secondary and tertiary treatment to focus on patients whose disease or dysfunction cannot be reversed, resulting in higher-quality patient care (Job & Antony, 2018).

In the future settings of National Health Insurance, organ donation in South Africa may become one method that offers optimum end-of-life care and mechanisms to increase organ donation rates (Thomson, 2019a). Despite the documented power of organ donation in saving lives and alleviating suffering, the reality is that an ongoing crisis exists in the shortage of available organs (Parsa et al., 2019).

The Global Observatory on Donation and Transplantation (2019) reports that 153,863 solid organ transplants took place within 82 member-states worldwide, of which 37.3% were living kidney transplants and 21.3% were living liver transplants. The remaining 41.4% of organs were harvested from 40,608 deceased donors (31 366 donors by brain death and 9,242 donors by circulatory death). Spain reported the highest number of deceased donors (nearly 50 donors per million population) and 2,302 organs harvested, while the United States of America reported the second highest number of deceased donors (nearly 36 donors per million population) and 11,870 organs were harvested for transplantation. South Africa recorded 356 solid organ transplants in 2019, and currently, there are 5000 adults and children awaiting life-saving organs or corneal transplants (Isilow, 2021). This equates to an organ donation rate of 1.8 donors per million population in the country per year, indicating that organ donors are in very short supply compared to Spain and the USA. Etheredge (2019) states that religious and cultural beliefs play a role in the organ donor shortage in South Africa at the societal level, accompanied by suspicion of the biomedical system in the country as a result of previous transplant tourism of kidneys in 2001. The researcher expands that the public has a negative

perception of organ donation and finds it easier to deny consent to organ donation due to the fear of what will happen to their loved one's organs.

The South African National Health Act 61 of 2003 has partly contributed to the organ donation shortages. According to the Act, written or verbal consent can be given by a mentally competent donor in the presence of two witnesses before the person's death (Government Gazette, 2003; South African Health Products Regulatory Authority, 2023). On the other hand, the family (spouse, partner, major child, parent, guardian, major brother or major sister in the specific order mentioned) share common law rights to determine the fate of the remains of their next of kin. Under these circumstances, written consent from the family to deem a person an organ donor is required, although it is not a legal necessity in South Africa (Du Toit *et al.*, 2020; McQuoid-Mason, 2012; Slabbert & Venter, 2019; The University of the Witwatersrand, 2019). Another law regarding organ donation in cadaveric donors is that a donor may have been registered on the organ donor registry in South Africa. Still, under the current system, the family may overturn the decision after his/her death. These are conditions that limit a family's willingness to donate organs of their deceased relatives and have two implications. Firstly, registered organ donors must disclose their final wishes to their family/next of kin before their demise to ensure a favourable decision from the family with regard to donating their loved one's organs after their demise. The second implication is that families must be approached for decisions on organ donation by healthcare staff who are knowledgeable and receptive to organ donation themselves (Slabbert & Venter, 2019).

It is well documented that healthcare staff's knowledge and attitudes on organ donation are factors that have a huge impact on organ donation rates (Fontana *et al.*, 2017; Ju *et al.*, 2018; Shields-Pirri & Carly, 2016). The nurse has been singled out as the healthcare professional who plays a vital role in the family's decision-making process on organ donation because the nurse is in direct and prolonged contact with family members (Ju *et al.*, 2018).

Fontana *et al.,* (2017) explain that nurses with positive attitudes toward organ donation appear to facilitate the organ donation process better. Prins and Human (2019) clarify that because of the lack of knowledge and non-receptive attitudes from nurses, patient's relatives may be reluctant to give consent for organ donation. For these reasons, the importance of education programmes (undergraduate and postgraduate) for nurses regarding organ transplantation and the nurse's role in the process of organ transplantation are emphasised (Kasim & Shohor, 2021; McGlade & Pierscionek, 2013). To buttress this, studies have alluded that university students studying healthcare programmes are creative and active members of society and can be a good source of information to the community about organ donation (Parsa *et al.,* 2019). The authors explained that since attitude is one of the determinants of behaviour, students with a higher level of awareness will form positive attitudes and increased social trust in the concept of organ donation. This statement is corroborated in a study conducted by Ponnayyan and Visalakshi (2015) in India, which revealed a proportional relationship between the level of knowledge of organ donation amongst undergraduate nursing students and their positive attitude towards it. The researchers concluded that as undergraduate nursing students' knowledge of organ donation increases, there will be a concomitant increase in positive attitudes amongst these students toward organ donation. The increased receptiveness can translate to qualified nurses championing organ donation by speaking to families and patients from an informed stance on organ donation.

Although the studies discussed above and other studies have recommended education programmes on organ donation for nursing students, current nursing curricula either lack or are without specific content on organ donation and the nurses' roles in the process (Blaauw *et al.,* 2014). In South Africa, university undergraduate nursing qualifications fall under regulation R425 (a legacy qualification) and the current R174. These regulations (R425 and R174) detail the conditions for registration with the South African Nursing Council as a professional nurse

(General Nursing, Community, Psychiatry and Midwifery) and professional nurse and midwife, respectively. Curriculum details for the legacy nursing R425 programme, which has been phased out, did not include organ donation at any of the levels in the four-year programme (SANC, 1985). Although the R425 programme has been phased out, many nurses within South Africa hold that qualification and are currently practicing as nurses. The R174 programme, which is the new nursing degree programme offered to students at the university where the study took place has incorporated questions in a case study on organ donation in the first year of study and another short lecture in the third year of study. The entire program has limited content on organ donation to equip a nursing graduate with knowledge and skill on organ donation. Furthermore, a study conducted in the Gauteng Province, South Africa, revealed an ambiguous role of nurses in the organ donor referral process with a lack of formal education in organ donation (Crymble *et al.*, 2017). The study also summarised the insufficiency of content on organ donation present in the nursing curriculum, which is one 45-minute lecture to undergraduate nurses in their fourth year of the Nursing Degree programme. Another study conducted in a college in Eastern Cape, South Africa, revealed that undergraduate nursing students demonstrated positive attitudes toward organ donation (Gidimisana, 2016). The researcher explained that once nursing students are given the correct information, fears regarding the organ donation process will be dispelled and they may become more aware of the benefits of organ donation for both the donor and recipient. Vincent *et al.*, (2019) recommend that undergraduate nursing students' level of knowledge, positive attitude and increased receptiveness of organ donation can be accentuated by including the concept in the educational curriculum and conducting awareness campaigns at tertiary educational institutions. It is evident that there is an urgent need to develop nurse education and training in the concept of organ donation at tertiary educational institutions, to produce nurses who are well-equipped to facilitate the process of organ donation in clinical areas (Mysliwiec, 2017).

1.2 Problem Statement

In South Africa, the organ donation and transplantation rate will need to increase drastically to reach the organ donation level in other countries, which barely meets the demand versus supply of organs (Du Toit *et al.*, 2020; Etheredge, 2021). Currently, 30% of nurses in South African healthcare institutions are optimistic about donor referral in the organ procurement process (Chambers, 2017). Various reasons have been cited for the absence of nurses in the organ donation process, including high patient turnover, staff shortages and lack of adequate resources and equipment, which play a role in their reluctance to consider organ donation as a treatment method of choice for patients or the community (Moraes *et al.*, 2014). The lack of knowledge of the organ donation process, role confusion of nurses during the organ donor referral process, and personal beliefs on organ donation are also significant inhibitors to nurses playing active roles in the process (Crymble *et al.*, 2017; Etheredge, 2019). The inclusion of content on organ donation in undergraduate nursing programmes has been recommended to increase nurses' knowledge of organ donation and positively influence their attitudes toward organ donation (Kassim & Shohor, 2021; Shields-Pirri & Carly, 2016). It is on these recommendations that the researcher positioned this study. The researcher has focused the study on third-year undergraduate nurses as this is the exit point of medical and surgical nursing in the degree programme. The rationale was to ascertain what had been offered to undergraduate nurses on organ donation and what still needs to be offered for them to exit with sufficient knowledge and a positive attitude to advocate effectively for organ donation.

1.3 Study Aim

The study aimed to explore and describe the knowledge and attitudes of third-year undergraduate nursing students towards organ donation at a selected university in Durban,

KwaZulu-Natal, South Africa, in order to develop a relevant strategy/ies that will increase their receptiveness towards organ donation.

1.4 Research Objectives and Research Questions

The research objectives and questions of the study are presented so that the objectives aligned with the questions that addressed the objectives (Table 1.1).

Table 1.1

Research Objectives and Corresponding Research Questions of the Study

Research Objective	Research Question
1. To determine the third-year undergraduate nursing students' levels of knowledge about organ donation.	1. What are the third-year undergraduate nursing students' levels of knowledge about organ donation?
2. To explore and describe the third-year undergraduate nursing students' attitudes towards organ donation.	2. What are the attitudes of third-year undergraduate nursing students towards organ donation?
3. To design a strategy (ies) in line with the undergraduate nursing students' levels of knowledge and attitudes toward organ donation in order to increase their knowledge and receptiveness towards organ donation.	3. How can the knowledge levels of undergraduate nursing students be increased? 4. How can undergraduate nursing students' receptiveness towards organ donation be increased?

1.5 Operational Definitions

1.5.1 Knowledge

Knowledge refers to the information, understanding or skills related to a concept that one may gain through education or experience (Denning, 2021). In this study, knowledge refers to the level of understanding of organ donation amongst undergraduate nursing students.

1.5.2 Attitudes

Attitudes are defined as feelings or ways of thinking towards a concept that influences a person's behaviour, which can be positive, negative or neutral (Jain, 2014). In this study, attitudes refer to undergraduate nursing students' feelings and ways of thinking toward organ donation.

1.5.3 Student Nurse

A student nurse is a student enrolled in a nursing programme at a college or university (Law Insider, 2023). In this study, student nurse refers to third-year undergraduate student nurses registered for a Bachelor of Nursing degree programme at a selected university and registered with the SANC as a learner.

1.5.4 Organ Donation

Organ donation is defined as the donation of an organ of the human body from a dead (cadaveric) or living person to a recipient in need of transplantation of that organ (Al-Bar & Chamsi-Pasha, 2015). In this study, the term organ donation refers to cadaveric donation and is used as a broad theoretical concept to determine knowledge and attitudes as well as increase receptiveness towards it.

1.6 Study Significance

The significance of the study may be seen in the following areas:

1.6.1 Nursing Education

The study's findings may be used to develop strategies such as orientation programmes and in-service training for nursing students during their undergraduate training. These programmes would correct any misinformation and false ideas about organ donation that student nurses may have, increasing their receptiveness towards it. The study's findings may also be used as a foundation by established academics in nursing education for further studies that wish to test the feasibility of incorporating a short course or module about organ donation in the undergraduate nursing curricula at nurse training institutions. Nurse training institutions may be able to offer sufficient teaching methods/training and adequate clinical experience to equip the future Nurses of South Africa with coping skills to deal with organ donor referral, procurement, transplant and recovery, as well as support and guidance to family/staff at healthcare institutions.

1.6.2 Nursing Research

The study results may assist future nurse researchers in theorizing, hypothesizing and creating evidence for organ donation in Kwazulu-Natal, South Africa. This will ultimately lead to better care standards for both donor and recipient patients in the organ donation process. The study can be built on and expanded by including qualified and practicing healthcare professionals in the study's target population in Kwazulu-Natal. It may also reveal further deficits in knowledge/skills during the coordination of the organ donation process, which may spark a different angle of knowledge generation on the subject of organ donation.

1.6.3 Nursing Practice

The proposed study is highly significant in South Africa currently due to the high death toll of patients who are on the organ recipient waiting list. The current worldwide literature suggests that healthcare workers are the backbone of successful organ transplantations, with nurses at the forefront. Gidimisana (2016) describes the role of nurses in organ donation as having a gatekeeping function whereby nurses have the highest patient contact times and are in frequent contact with family members, which makes them instrumental in initiating the organ donation process and increasing the number of organ donations per million population. Therefore, the study could inform novice nurses about the importance of organ donation in South Africa. Educational courses may be developed by nursing institutions to equip nurses in practice with knowledge and skills to assist families during the process of organ donation. By using the scaffolding method during learning for role-taking, informed students may become professional champions of organ donation and advocates where students can alert registered nurses of potential organ donors (University of San Diego, 2023).

1.6.4 Nursing Policy & Management

The study findings may highlight the need for policy review regarding allocating staff to champion organ donation as well as the need to cater to the educational needs of staff on organ donation. Nursing management will be able to allocate more nursing personnel to assist organ transplant coordinators with the organ donation process at both secondary and tertiary healthcare institutions. This may lead to prompt organ donor referral at base hospitals in KwaZulu-Natal to tertiary hospitals where organ transplantation takes place.

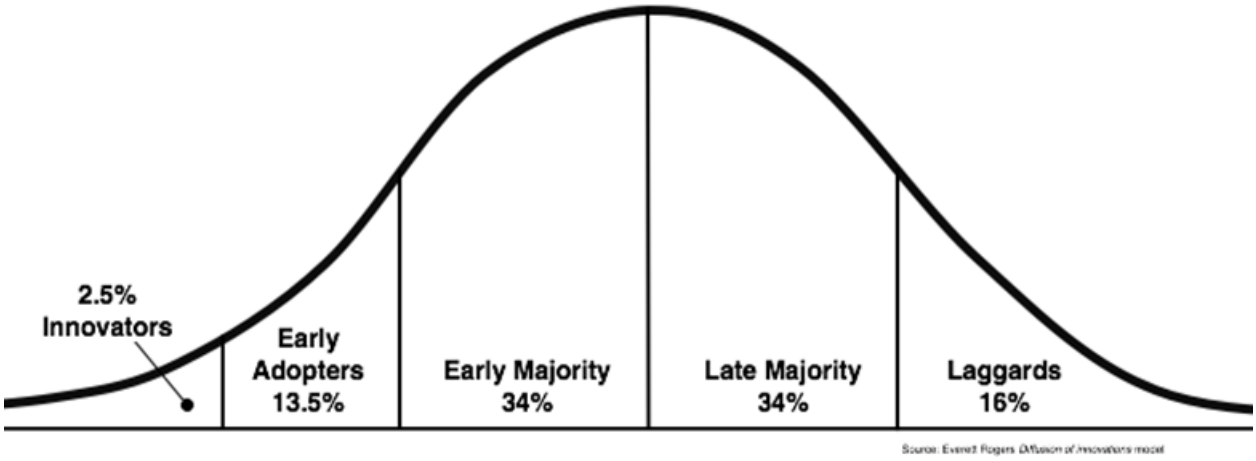
1.7 Theoretical Framework

1.7.1 Roger's Diffusion of Innovation Theory

The theoretical framework adopted for this study is the Diffusion of Innovation Theory developed by Everett Mitchell Rogers in 1962 (see Figure 1.1). The Diffusion of Innovation Theory is one of the oldest social science theories that originated within the broad discipline of communication in the social sciences to explain how an idea/innovation gains momentum and diffuses through a specific population or social system (LaMorte, 2019).

Figure 1.1

Roger's Diffusion of Innovation Theory



Note. Theoretical Framework Model as adapted from EM Rogers 1962. (Boston University, 2019)

The theory refers to the process that occurs as a population adopts a new idea, product, practice or philosophy, which moves through the population group in a significant sequence mapped out by EM Rogers, who distinguished five categories of adopters of an innovation.

These categories are *(i) innovators, (ii) early adopters, (iii) early majority, (iv) late majority and (v) laggards.*

Roger estimated the percentage of each category, which is proportional to the percentages found in a "Bell Curve" (Kaminski, 2011). The new idea/innovation moves through the social system by a process called diffusion with the use of a change agent. The diffusion of innovation is largely influenced by the consequences of the innovation once it has been adopted, which may either initiate positive or negative change. Researchers have noted that according to the Diffusion of Innovation Theory, members of a population do not base their decisions solely on scientific research/measures when deciding to adopt an innovation; instead, members rely on subjective evaluations through interpersonal communication from those who have already adopted it (Gaftoneanu, 2015).

The five categories are described in the context of innovation adoption and their influence on the innovation-adoption process:

(i) Innovators (2.5%)

Innovators require the shortest adoption period of all the categories and are known as risk-takers who are intrinsically motivated by seeing themselves as change agents. They serve as gatekeepers for the next group of adopters.

(ii) Early adopters (13.5%)

Early adopters serve as opinion leaders and role models who desire to be trend setters. They are adventurous and want to be the first to try out the innovation and, therefore, serve as trial agents of the innovation.

(iii) Early majority (34%)

The early majority serves as opinion leaders later in the process who deliberately interact frequently with peers so that they may be informed of new ideas. They require researched and proven applications or reliable service, with minimal complexity and trusted recommendations from their colleagues in the same industry.

(iv) Late majority (34%)

Members of the late majority are very cautious and skeptical, responding to peer pressure and economic necessity. They are very cost-sensitive and technologically-shy; therefore, their adoption of the new innovation occurs after others have adopted it first.

(v) Laggards (16%)

Laggards are isolated from opinion leaders, more traditional in their actions and suspicious of new innovations. Their point of reference is how they have always done things and made lengthy decisions about the innovation adoption process before they finally succumb to adopting the idea/innovation.

Roger further describes the Diffusion of Innovation Theory in terms of characteristics of the innovation by five user-perceived qualities, which are observability, relative advantage, compatibility, trialability, and complexity, as well as four main determinants of the success of an innovation, which are: communication channels, the attributes of the innovation, the characteristics of the adopters, and the social system (Zhang *et al.,* 2015). These characteristics and determinants of the success of an innovation play a role in determining the rate of adoption and the overall success of the idea/innovation.

Lien and Jiang (2016) proposed ways in which the Diffusion of Innovation Theory can be integrated into diabetes care. They emphasized that healthcare professionals should

implement innovative strategies, in addition to conventional educational strategies. The authors advocate for the use of mass media and news events to increase the prominence and visibility of innovations within the social target population.

Mohammadi *et al.,* (2017) successfully used Roger's diffusion of innovation theory to evaluate the adoption of evidence-based practice (EBP) in nursing in Iran. The study used the Diffusion of Innovation Theory to identify the factors that increase the adoption of EBP, determine the process of EBP adoption and develop an appropriate model to increase EBP adoption in nursing (Mohammadi *et al.,* 2017). In a study by Putteeraj *et al.,* (2021), the characteristics of the Diffusion of Innovation Theory were used to assess the E-health readiness of health workers at a specialized hospital in Mauritius. The study was the first of its kind where the Diffusion of Innovation Theory was used to successfully characterize each adopter's profile and demonstrate the applicability of the Diffusion of Innovation framework, predicting the diffusion rate of E-health platforms within the Mauritian health sector.

The above research studies indicate that the Diffusion of Innovation Theory has gained much importance in recent years and is widely used for assessing and predicting behaviour among members of a social system. Much is known about how the theory works, its effectiveness in healthcare research predictions and its reliability in determining the success of an idea/innovation.

1.7.2 Roger's Diffusion of Innovation Model Relevance to Current Study

It is assumed that the undergraduate nursing student population at a university campus in Kwazulu-Natal has adopted the idea of organ donation as described in the Diffusion of Innovation Theory and the population will display similar characteristics to a social system. The researcher identified himself as a professional change agent in the organ donation process, and the third-year undergraduate nursing students at the selected university served as the

population in which the change process was initiated. The researcher has explored and described the intercorrelations of knowledge and attitudes, as well as innovation adoption among the social study population, using Roger's diffusion of innovation model.

The concept of organ donation was introduced to third-year undergraduate nursing students during their university lecture, face to face at Howard College Campus where the title and purpose of the study was explained. A detailed information sheet was also given to participants with all the information required about the study and it's phases. On completion of the study and after the strategy was developed, the information pamphlet was reintroduced to undergraduate nursing students during a Modified Delphi Approach where undergraduate nursing students were asked to rate the strategy being the end users. The idea was initially adopted by the *innovators* who were intrinsically motivated and dared to adopt a new idea. The idea was passed on to the early adopters, who served as opinion leaders within the undergraduate nursing student population through daily social networking and interpersonal communication. University students also used many social networking platforms where mass media messages were passed to one another. As the early adopters continued interacting with others and exchanging information, the concept of organ donation was passed onto the *early majority,* who easily assimilated trusted recommendations from their colleagues/peers within the same campus. This group of adopters carried the idea and concept of organ donation until the peak of the curve was reached. The concept was adopted by the *late majority*, a more cautious, suspicious and conservative group of students. At this stage, after the undergraduate nursing students' level of knowledge towards organ donation had been determined and their attitudes toward it had been explored and described, a strategy that was in line with their level of knowledge and attitudes was designed by the researcher to increase the adoption rate of the new idea. Finally, the idea was adopted by the *laggards*, the most conservative students, who had fewer resources and were isolated from the social group. The previously designed strategy

that was used to increase receptiveness towards organ donation among the late majority will be used on an ongoing basis to ensure continuity of adopters among future third-year undergraduate students, thereby promoting the concept of organ donation and increasing the number of nurse-advocated organ donor referrals and successful organ transplantations in the country.

1.8 Chapter Summary

Chapter One provided an introduction and background into the current status of organ donation globally and in South Africa with relevant statistics. A problem statement, research objectives and research questions were formulated and operational definitions for the study were highlighted. The researcher discussed the significance of the study in nursing education, nursing research, nursing practice, nursing policy, and management. The theoretical framework adopted for the study was introduced and its relevance to the study was outlined.

Chapter Two discusses literature related to organ donation from a multi-contextual perspective.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter discusses the literature available on the topic. A literature review, as defined by Maggio *et al.,* (2016), is a study of what is known and unknown about a topic of a scholarly body of work and the position of the current work's place within existing knowledge.

The literature search included electronic strategies using keywords/phrases that yielded journal articles, e-books, online news articles, webpages, dissertations and theses, policy statements, reports and information from supporting organisations, namely, Organ Donor Foundation [ODF]). The following computer assistance data-based bibliographies were used: Google Scholar, ScienceDirect, Research Gate, PubMed Central, Medscape, Wiley Online Library, EBSCO-Cumulated Index in Nursing and Allied Health Literature (CINAHL) and Directory of Open Access Journals. In addition, the reference lists of journal articles used were sifted through to find further literature appropriate to the study. The literature search revealed that the broad topic of organ donation has been widely researched globally, with many academic experts in the field having published research articles, dissertations, policy statements, reports and statistics. However, there was a scarcity of literature published on organ donation education in nursing compared to organ donation education for medical doctors, where most authors focused on organ donation education as a duality (Nursing and Medicine) in one programme.

The keywords/phrases used in the literature search were: organ donation, organ procurement process, organ shortage, organ donation statistics, nurse's perception of organ transplantation, organ donation nursing education, transplantation crimes, organ donor policies.

The following areas are discussed: the definition and types of organ donation, professional organisations supporting organ donation in South Africa, global and South African statistics and the importance of organ donation, contemporary aspects related to organ donation, ethical principles involved in organ donation, nurse's perception of, competencies and challenges with organ donation and it's processes, training programmes for health-care professionals in South Africa and abroad as well as the significance of organ donation in emerging nursing education.

2.2 Defining Organ Donation

An 'organ' is defined as a differentiated vital part of the human body that is formed by tissues while maintaining its structure and functionality with a certain degree of autonomy and 'donation' is defined as donating human cells, tissues or organs for the purpose of human transplantation (World Health Organisation, 2021). Multiple authors describe organ donation as a medical procedure where one patient donates an organ to another patient in need of that organ (Job & Antony, 2018; Tamuli *et al.*, 2019; Western Cape Government, 2022).

Molllaoglu and Yanmis (2021) define organ donation as the use of an individual's autonomy as permission to use his/her organs after the medical termination of one's life to restore the health of others. Similarly, Al-Bar and Chamsi-Pasha (2015) elaborate on the definition of organ donation as the donation of an organ of the human body from a dead (cadaveric) or living person to a recipient in need of organ transplantation. The donated organ serves as a life-saving treatment modality for patients with acute or chronic organ failure by improving the patient's quality of life.

In an effort to raise organ donation awareness and encourage young donors, Cambridge University spells out organ donation as an act of a person that gives permission to donate a part of their body while they are alive or after they have died to be placed into someone else's body

to replace an organ that does not work efficiently (Cambridge University Press & Assessment, 2023).

2.3 Types of Organ Donation

2.3.1 Living Donation

Living organ donation occurs when a living person donates an organ or a part of an organ to another person (Palevsky, 2020). The donor may or may not have an emotional relationship with the recipient; however, familial living organ donation may be preferred due to tissue matching and a decreased chance of organ rejection after transplantation. A living organ donor may donate a whole kidney and part of the liver, intestine, pancreas or lung (Watson, 2022). In South Africa, living donors play a crucial role in Living Donor Liver Transplantation in areas where there is a decreased supply of deceased donors and for paediatric liver failure recipients (Botha *et al.,* 2019). Living organ donation allows for the transplant procedure to become elective, which allows time for the appropriate tissue matching tests to be done and can be scheduled to the time that the recipient requires the donation (Rudge *et al.,* 2012).

2.3.2 Deceased Donation

Organs are recovered for transplantation after a person has been declared dead. According to Nair-Collins *et al.,* (2014, p. 297), this standard practice encompasses the “dead donor rule’’, which is a constraint that prohibits causing death by harvesting organs and has guided deceased organ donation from the time it began. There are two types of deceased organ donation, which are discussed below:

2.3.2.1 Donation after Brain Death

In research from Girlanda (2016), Labuschagne and Carstens (2014), Starr *et al.,* (2023) and Biel and Durrant (2020), brain death is known as the declaration of death by neurological criteria and is a legally-accepted form of death, which is determined after the irreversible cessation of brainstem activity has been declared. A series of neurological tests are performed at the patient's bedside, known as brain death testing. In 1959, the concept of brain death was first theorized by Molaret and Goulon as "le coma depassè'' which was described as an apneic patient in a coma with no brainstem reflexes or electroencephalographic activity (Kondziella, 2020; Spears *et al.,* 2022). Thereafter, the Harvard Brain Death Criteria set out in 1968 were as follows: (i) unreceptivity and unresponsivity, (ii) no spontaneous breathing as documented by the apnea test, (iii) no spontaneous muscle movements, (iv) flat encephalogram (Barnes & Greer, 2020; Nguyen, 2019; O'Keeffe & Mendz, 2021). In South Africa, brain death testing consists of testing for ***coma***, ***brain-stem reflexes*** and an ***apnea test,*** which is performed by two doctors, one of which has more than five years of experience as a medical doctor. Neither of the two doctors should be a part of the organ transplantation team (Thomson *et al.,* 2021). After brain death has been declared, the patient's family is counselled on the diagnosis of death and the option for organ donation is explored by the transplant team.

2.3.2.2 Donation after Circulatory Death

A donor after circulatory or cardiac death is a patient who has suffered a reversible and devastating brain injury and may be near a diagnosis of death; however, does not satisfy the criteria for brain death (Manara *et al.,* 2012; UC Davis Health, 2022). In donation after circulatory death, the patient's family is aware of the poor prognosis and is agreeable to withdrawal of end-of-life care and organ donation. The patient is prepared and taken to an

operating theatre where mechanical ventilation is withdrawn and the patient is observed for a minimum of 5 minutes by the medical doctors who will certify the patient dead. The patient is certified by two doctors after cardiac arrest occurs, neither of whom is a part of the transplantation team. Certification of circulatory death is confirmed with the absence of a central pulse on palpation and the absence of heart sounds on auscultation (Academy of Medical Royal Colleges, 2008; Rajab & Singh, 2018; Thomson *et al.,* 2021). The transplant team remains on standby and awaits death certification in order to proceed with organ harvesting surgery (Manara *et al.,* 2012). Organ donation and transplantation do not take place if circulatory death does not occur.

2.4 Professional Organisations in South Africa that Support Organ Donation

South Africa has responded positively in supporting organ donation by establishing various organisations. These are:

2.4.1 Organ Donor Foundation (ODF)

The ODF is a non-profit organization in South Africa that, together with the National Health Act 61 of 2003, has the following objectives:

•A **primary** objective of promoting awareness of life-saving solid organ transplants and

•A **secondary** objective of promoting awareness of tissue and life-enhancing transplants.

The ODF is involved with constant awareness of the public of South Africa about the life-saving action of organ donation and has created a donor database where members of the public can register as potential organ donors, giving voluntary contact details of their next of kin in the event that they become brain dead and are now potential organ donors.

2.4.2 The South African Transplantation Society (SATS)

The South African Transplantation Society is a professional organisation that was established to advance the science of organ transplantation (South African Transplantation Society [SATS], 2022). The society consists of executive committee members who are experts in organ procurement and transplantation, whose mission is to eradicate boundaries and promote equal access to transplantation and promote organ donation by acting as a link between the national department of health, transplant centres and regulatory legal partners.

2.4.3 South African Transplant Sports Association (SATSA)

SATSA was established in 1993 with a vision of optimising the quality of life of organ transplant recipients by coordinating the professional training of surviving donor recipients who wish to participate in sporting activities, which include: badminton, cycling, darts, golf, road running, squash, tennis, table tennis and swimming (SATSA, 2019). Participants compete in both local and international events such as the South African National Transplant Games and the annual World Transplant Games.

2.4.4 Transplant Education for Living Legacies (TELL)

TELL is a South African organisation that promotes organ donation by providing education opportunities for healthcare professionals and students, which includes: Continuous Professional Development (CPD) events, motivational speaking and presentations, as well as providing a forum for transplant recipients or living donors/deceased donor families to share their stories and find support (TELL, 2023).

2.5 Organ Donation Statistics

2.5.1 Global Statistics of Organ Donation

Globally, Spain has been cited as the country with the highest organ donation rate in the world for 26 years due to a well-established donor referral system, broadening eligibility of organ use, increased donations by circulatory death, training of health professionals in communication with family/relatives of the deceased and most of all an opt-out system of donor consent (Lewis *et al.,* 2021). According to The Global Observatory on Donation and Transplantation (2019), the United Sates of America **(USA)** surpassed Spain as compared to 2019 statistics by the rate of the actual number of deceased organ donors and reported 38.03% per million population of deceased donors of which 28.29% were donations by brain death and 9.74% were donations by circulatory death. **Spain** reported 37.97% deceased organ donors PMP, of which 24.7% were donations by brain death and 621 13.27% were donations by circulatory death. Spain became the country with the second highest rate of actual deceased organ donations after the USA. **Brazil** was third with a rate of 14.24% PMP, followed by **China, which was** fourth with a rate of 3.61% PMP. The COVID-19 pandemic was seen as the primary reason for the decline in the number of deceased organ donations in Spain in 2020, as the country only considered organ donation on cured COVID-19 cases after a minimum of 21 days following the resolution of symptoms and completion of therapy (Domínguez-Gil *et al.,* 2020). In the USA, the majority of Americans support organ donation (95%); however, only 58% are registered as organ donors (Bly *et al.,* 2022). This is solely due to the limited work on referral, which has demonstrated that although interventions used to increase patient knowledge are effective, they may be insufficient to impact referral rates (Park *et al.,* 2022). Despite these challenges, the USA has surpassed Spain and now remains the country with the highest number of deceased organ donations globally. The average donor rate in the **United**

Kingdom fluctuated between 13 donors PMP and rose steadily to 19 donors PMP in 2013 (Willis & Quigley, 2013). Current UK statistics reveal that successful organ donations have risen to 22 donors PMP in 2020 (Lacobucci, 2020).

Within **Africa,** 413 (0.86% PMP) living kidney transplants and two living liver transplants were performed. The continent is divided into Central, West, East and Southern Africa. Central Africa was reported to have no organ donation or transplantations. At the same time, West Africa: Ghana, Ivory Coast and Nigeria commenced organ donation and transplantation in the early 2000s and East Africa: Ethiopia, Kenya and Tanzania commenced organ donation and transplantation in the late 2000s (Ulasi *et al.,* 2021). The reason for this is the weak regulatory frameworks observed in these countries, which make them unable to implement quality standards for organ donation and transplantation (Loua *et al.,* 2020). In a systematic review and meta-analysis, Kaze *et al.,* (2018) concluded that many African countries are undergoing a burden of chronic non-communicable diseases (with chronic kidney disease being a substantial portion) and minimal resources to consider organ donation and transplantation for these patients. Based on the empirical evidence presented above, the researcher concludes that East and West Africa's late adoption of the concept of organ donation and transplantation may be a way to end their chronic non-communicable disease burden.

2.5.2 South African Organ Donation Statistics

An article by Fabian and Crymble (2017) states that South Africa has failed to achieve the goal of national self-sufficiency, which encompasses providing organ donors to address the organ shortage faced by citizens of the country as compared to the global front, where international governments assume responsibility for the organ donation shortage and transplantation needs of their societies. The authors explained that all citizens need culturally appropriate information regarding organ donation while still obeying human rights to assist in

decision-making toward donor consent. South Africa has the most advanced organ donation and transplantation programme on the continent of Africa; however, when compared to other countries with a similar economic capacity, the rate of organ donation in South Africa remains significantly lower (Etheredge, 2021; Ulasi *et al.*, 2021).

Labuschagne and Carstens (2014) highlight that the South African state did not consider alternative organ procurement methods when passing new legislation, namely *The National Health Act* 61 of 2003. This is explained as the supply of transplantable organs that does not meet the demand of the opt-in system of donor consent, which denies a patient with end-stage organ failure their dignity and right to life. The authors indicate that just as human dignity, equality and freedom are respected as human rights, the South African Constitution and Bill of Rights should consider the right to lifesaving treatment (organ donation) as a right to life. Hawkins (2017) concludes that a hybrid system of organ donor consent that encompasses opt-in and mandated choice is practically and ethically suitable for South Africa.

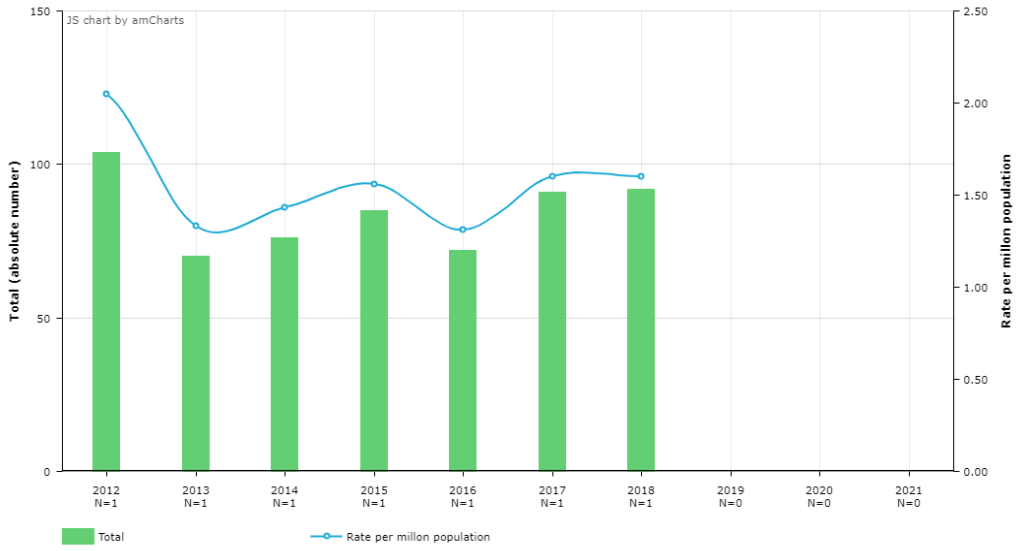
According to the South African Health Department (2022), citizens are urged to save lives through organ donation by giving the ‘’gift of life’’ after the country joined the global community in commemorating organ donation and raising awareness. The South African Health Department disclosed that 2780 people are currently on the organ recipient waiting list and 189 people have lost their lives while waiting for a lifesaving organ. South African healthcare workers are urged to form part of the network to reduce the backlog in organ donation within the country. However, there is still a lack of nationally-endorsed protocol to guide healthcare staff in this regard (Crymble *et al.*, 2017; Etheredge, 2019; Fabian & Crymble, 2017). The South African Transplantation Society periodically sends basic data to the World Health Organisation – Global Observatory on donation and transplantation on the status of organ donation and transplantation in the country, with the year 2018 being the last submission to date (Bookholane *et al.*, 2022; Molina-Pérez *et al.*, 2022a). From this, it can be deduced that

South Africa actively contributes to global data on organ donation.. The World Health Organisation uses this periodic submission of data to assess donation/transplantation trends, plan, advise and evaluate domestic health systems and formulate internationally agreed health development goals.

Muller (2013) states that South Africa has the highest incidence of renal failure in Africa, with over 5000 patients diagnosed with end-stage renal failure and 2500 patients awaiting transplantation. Green *et al.*, (2023) agree that kidney donation in South Africa is of paramount importance. Horwitz (2021) reveals the evolution of kidney transplant nurses in South Africa from the 1980s onwards. The author shows how nurses have gained confidence and knowledge, which has allowed them to improve medical care procedures that were initially established by medical doctors. A study by Moosa (2019) concluded the reasons for the decline in kidney transplants in South Africa, these include structural issues, policy issues and attitudes of the public. The author summarised strategies for increasing organ donation in South Africa, including: encouraging government involvement to reprioritise transplantation and promulgate relevant legislation, as well as improve resources and optimise their use by increasing health facilities that care for brain-dead donors. The final strategy was nurse empowerment to participate in the organ donor referral process and changing the attitudes of the public and healthcare practitioners.

Figure 2.1

The Total Number of Actual Deceased Organ Donors and the Rate per Million Population in South Africa over a 9-Year Period from the year 2012 to 2021



Note. From Global Observatory on Donation and Transplantation (2022).

The decreased number of actual deceased organ donors in South Africa from 2012 to 2021 are indincative of professionals needed to increase the donor referral rate. The number of actual deceased organ donors in 2012 was 104, with a rate of 2.05% PMP and fell sharply to 70, with a rate of 1.33% PMP in 2013. The number of actual deceased organ donors from 2014 to 2018 was less than 100 or a rate of above 2% PMP. Data on the number of actual deceased organ donations in South Africa from 2019 to 2021 is unavailable.

A study by du Toit *et al.*, (2020) revealed that only 20.3% of referred donors in South Africa became actual donors due to the lack of medical suitability as a donor, lack of next of kin details and organ donation consent refusal by the next of kin. The study encompassed a 10-year analysis of organ donor referrals, which took place at the Groote Schuur Hospital, Cape

Town, South Africa, from January 2007 to December 2016. The study recommended further research to address the phenomenon of the decreased percentage of referred donors becoming actual donors and requested support from the South African Government to ensure appropriate monitoring and coordination of organ donation in the country.

2.6 Importance of Organ Donation

Donated organs have been shown to have multiple benefits for both patients and the healthcare system, which are:

2.6.1 Decreasing the Disease Burden

Organ donation decreases the disease burden caused by chronic illness management in the healthcare system. A study by Chen *et al.,* (2021), which simulated an open cohort of end-stage renal disease patients awaiting kidney transplantation over 20 years in the United States, revealed that increased organ donation could lead to decreased healthcare costs, which will inevitably decrease the disease burden on healthcare facilities. Chen *et al.,* (2021) state that increasing organ donations could marginally improve healthcare expenditure as costs associated with patients on end-stage organ support will now be eliminated. The researcher expands that by decreasing the disease burden on the health care system in South Africa, organ donation may eliminate costs associated with expensive end-stage organ therapeutic regimens and long-term hospitalisation.

2.6.2 Lifesaving Treatment Option

In a study published by Mishra (2022), organ transplantation is seen as the treatment of choice for patients with chronic end-organ failure associated with high rates of morbidity and mortality. The author states that the disparity in the distribution of organ donors globally is of great magnitude, especially in countries having the greatest disease burden with their organ donation and transplantation infrastructure being stuck in the stage of infancy. Patients who are

diagnosed with end-stage renal disease, grade IV heart failure, cystic fibrosis, congenital liver defects and chronic liver infections turn to organ transplantation as their lifesaving cure (Moscalu *et al.,* 2015). In South Africa, the kidney is the most widely needed organ for transplantation as dialysis costs have been estimated to be approximately R250 000 per patient per year, excluding any drug or hospitalisation costs which the national health budget has to fund (Discovery Health, 2018). Similarly, Mashaba (2023) mentions that there is a high number of South Africans currently suffering from end-stage renal disease and there is a limited number of dialysis machines. Therefore, without an increased number of kidneys being donated, these patients will eventually die. The researcher agrees that an increased number of successful organ donations will be the only solution to decrease morbidity and mortality within the country.

2.6.3 Enhanced Quality of Life

Organ donation provides a life-enhancing opportunity for those patients with debilitating chronic illnesses who have lost all hope (Moritsugu, 2013). Grinyo (2013) states that the clinical importance of organ donation should be evaluated in terms of its impact on improving the global quality of life of the transplanted population. The success stories of patients within the transplanted population can be seen by transplant ambassadors who participate in the yearly World Transplant Games. Participants in the event consist of patients who have had a successful allograft transplant for a period of one year with stable graft function, are fit medically and have trained adequately for the event they are participating in (World Transplant Games Federation, 2022).

In research from Slabbert & Venter (2021), South Africa has an increasingly high number of burn victims per annum who require skin grafting by transplanting skin from another part of the patient's body to the affected areas (autograft). However, with severe paediatric

burns due to their decreased body surface area, this cannot occur; therefore, skin from deceased donors may be used (allograft). Ali *et al*., (2021) and the Scottish Government (2020) affirm that donated bones by deceased donors are stored in a bone/tissue bank and are used for facial reconstruction surgery. They are also used to restore skeletal integrity to long bones of limbs with congenital birth defects, replace bone segments after traumatic injury or tumour invasion from malignancies, correcting spinal deformities in children and fractures with bone grafts that have failed to heal.

2.7 Contemporary Aspects Related to Organ Donation

There are many contemporary aspects that may increase or decrease successful organ donation rates in developing countries. These are discussed below:

2.7.1 Donor Consent

The next of kin of the donor share common law rights to determine the fate of the remains of their loved one; therefore, although citizens are registered as organ donors, the family may overturn the decision of the donor after they have become brain dead (Government Gazette, 2003). Although a living will or testament has no legal status in terms of organ donation in South Africa, the National Health Act 61 0f 2003 has stipulated that the donor give a written statement in the presence of two witnesses before his demise, which will count as consent to organ donation after one has passed on; however, the Organ Donor Foundation (ODF) in South Africa does not make provision for this type of written document upon registering as an organ donor (Slabbert & Venter, 2019). Therefore, the act of registration with the ODF as an organ donor is undertaken merely to create awareness of organ donation within the nation, while family consent is the only consent that counts in an attempt to increase the conversion rate from a potential deceased organ donor to an actual deceased organ donor. The

researcher concludes that this has been one of the challenges with successful organ donations in South Africa. Awareness is created by the ODF, but it does not progress to successful organ donation once the donor has demised due to the reasons stated above, which leads to a decreased organ donation rate.

2.7.1.1 Opt-out System of Donor Consent

An opt-out system of donor consent presumes that every citizen within a country is presumed to be a deceased organ donor after their demise unless it is contested in a written statement before their death (Etheredge, 2021). This type of donor consent is automatic, which makes the process of organ donation easier by increasing the pool of available donor organs for transplantation. Presumed consent legislation was introduced in Singapore in 1987, with the four main organs/tissues for organ donation from deceased donors being the kidneys, liver, corneas and heart (Muthiah *et al.*, 2021). According to Tumin *et al.*, (2019), evidence suggests that the opt-out system produces more organ donors than the opt-in system, as everyone is presumed to be an organ donor unless one objects to being one during their lifetime. Aust (2017) supports the introduction of the opt-out system of organ donation in Canada as the author predicts that it could streamline the registration process and boost organ donation numbers, as seen in many other countries. The country with a well-known reputation for maintaining the highest number of actual organ donors per million population, Spain, currently has the opt-out system in place. The opt-out system in Spain is a catalyst for the well-organised and centralised organ distribution system that guarantees countrywide access to lifesaving organs (Díaz-Cobacho *et al.,* 2022). Saab *et al.,* (2018) advise that it should not be tempting to generalise the opt-out system of donor consent use in every country, since the increase in organ donation rates depends on a myriad of factors in each country that cannot be replicated equally in others.

2.7.1.2 Opt-in System of Donor Consent

According to Dopelt *et al.*, (2022), an opt-in system of organ donation involves informed consent, where organs are procured from deceased people who carry donor cards, belong to a national registry or state a wish to donate their organs after death in their last will or testament. A study by Shepherd *et al.,* (2014) assessed international organ donation rates by comparing the opt-out and opt-in systems of organ donor consent. Countries included in the study where the opt-in system of organ donor consent is adopted were Australia, New Zealand, Canada, USA, Mexico, United Kingdom, Denmark, Romania, Japan, China, Malaysia, Brazil, Puerto Rico, Guatemala, Cuba, Germany, Netherlands, Israel, Lebanon and Lithuania. The authors concluded that the opt-out system of donor consent significantly increases the number of actual organs donated and transplanted. All Arab countries follow the opt-in system of donor consent, except Tunisia, where the opt-out system was instated in 1991 (Al-Bar & Chamsi-Pasha, 2015). South Africa currently follows the Opt-in system of donor consent (Hawkins, 2017); however, the next of kin of the organ donor has the final legal right to give consent to donating their loved one's organs after their death (Government Gazette, 2003; South African Health Products Regulatory Authority, 2023).

2.7.2 Religion and Culture

All world religions advocate for a 'golden rule, that "one should treat others as one would like others to treat oneself" (Baumard & Chevallier, 2015). Similarly, just as a patient with an end-stage organ failure would receive an organ, the patient and family should also consider deceased organ donation. The five major religions in the world, which are Christianity, Islam, Judaism, Buddhism and Hinduism, condone organ donation and see it as an act of altruism, love and respect for fellow human beings (Doerry *et al.,* 2022). A

controversial view by Ali (2021) compares modern literature from Muslim scholars and jurists who provide conflicting views about the stance of Islam on organ donation. It is for this reason the author concludes that organ donation and transplantation in Islam remains an unresolved issue and depends on one's individual view as per advice from their Imam. Similarly, a view from Hurst (2016) agrees that the concept of organ donation in Islamic contexts remains a major subject of debate. In a contrasting view, Siraj (2022) states that Muslim scholars who oppose organ donation are in a minority compared to contemporary Muslim scholars and jurists.

In a comparative study of Islamic and South African law on organ donation, Nadvi and Osman-Hyder (2021) found that Islamic law permits the bestowal of organs onto others after death and the act is seen as a purely altruistic commendable gesture for the greater good of the society. The authors convey that the study findings may be used by medical doctors, lawyers and religious leaders in South Africa to increase the rate of organ donation amongst the Muslim community. Tumin *et al.,* (2015) advocate for religious leaders in Islam to propagate the message of organ donation through mosque attendees.

A study in Australia by Ralph *et al.,* (2016) concluded that providing education about the process and benefits of organ donation to Arabic-speaking people in their native language may change their perception and clarify religious and cultural ambiguities regarding organ donor registration. The authors noted that Arabic-speaking people in Australia feared ostracisation by their community if they wished to register as organ donors. Education would motivate them to make a firm decision. In a study by Abdulrazeq *et al.,* (2020) that explored the barriers to knowledge and attitude regarding organ donation in Jordan, the authors found that gender was seen as a barrier to organ donation more than religious or cultural reservations. Men were more reluctant than women to register as organ donors with the Jordan Society for Organ Donation. Hence, the authors recommended appropriate education for the urban public

by health care practitioners and religious leaders to curb men's negative attitude towards organ donation.

An important tenet of Hinduism is to help the suffering and is incorporated in the word *'Daan',* which is an original Sanskrit word meaning donation or selfless giving (Abdeldayem et al., 2016; Farid & Mou, 2021); therefore, Hinduism does not prohibit organ donation. Hindu cultural belief provides a favourable opinion for the donation of organs as the body of the deceased does not need to remain whole for the process of reincarnation once the soul has crossed over (Blake, 2015). Chiramel *et al.,* (2020) further reiterate that whole body or organ donation is considered a great service in Hinduism.

In research among the African-American Christian population by Robinson *et al.,* (2014), the authors found that religious norms have the strongest association with the decision to register as an organ donor, which can be seen by the disconnection between the truth from a religious doctrine and a parishioner's perspective. Christianity is the largest religion in the world (Deshmukh, 2022; Saroha, 2019), therefore, clear communication between parishioners and the religion's stance on organ donation is recommended to bring about positive attitude change globally. Doran (2019) explains the catholic church's stance on organ donation. The author summarises organ donation as the sacrificial love of Jesus Christ, which the church has recognised its benefits.

A paper by Kunle (2018) that critically examined beliefs in African cultures and their relationship with organ donation revealed their reluctance to organ donation and transplantation after death due to traditional beliefs that created a barrier and, therefore, remained a rare occurrence in Africa. Gidimisana (2016) recommends using socially and culturally sensitive strategies when educating the South African Black population on the concept of organ donation. The concept remains a highly misunderstood and sensitive topic among black South

Africans due to poor knowledge of the donation process, socio-cultural aspects and fear of bodily mutilation (Dimo, 2018). South African traditional belief requires a deceased body to remain intact after death so that the ancestors will accept the deceased soul and prevent the spirit from roaming (Zikali, 2018). Mojapelo and Maboe (2021) corroborated this theory after a study was conducted in Limpopo province, South Africa which revealed that religion was not against organ donation, but culture was found to be a barrier as people preferred to have their body parts intact after death. A contrary viewpoint by Muwanga *et al.,* (2019) argue that traditional African belief incorporates the spirit of '*Ubuntu',* which is in keeping with the altruistic act of organ donation and therefore, by culturally integrating African traditional healers into Western medicine, the organ donation rate among black South Africans may improve. Similarly, Li *et al.,* (2019) reveal that cultural and religious differences are barriers to organ donation among the Asian-American (Chinese and Korean) population who believe that the body should remain intact after death. From this, it can be concluded that Asians and Africans share similar cultural beliefs with regard to the body being intact and not mutilated after death.

2.7.3 Dead Donor Rule

The idea of death as a prerequisite for the procurement of human organs has been the cornerstone of medical practice since the beginning of successful transplantation. However, to minimise organ ischaemic time, which enhances organ transplant patient outcomes, the definitions of brain death and circulatory death have been adopted (Skowronski *et al.,* 2021). The dead donor rule (DDR) is an ethical norm in organ donation that protects patients and their rights by mandating that organs may only be removed from a dead person, which may either be donation by brain death or donation by circulatory death (Nikas *et al.,* 2016). The DDR ethical norm is any form of legislation or a rule in medical science but it still postulates two ways of using the DDR, which are: (i) Organ donors should be certified dead before organ

harvesting can occur and (ii) Procurement of the organs should not be the cause of death of the organ donor (Nikas *et al.*, 2016). According to Sade (2014), compliance with the DDR makes the removal of lifesaving organs for transplantation legally and ethically acceptable; therefore, it is used internationally with domestic legislation to provide legally and ethically binding human organ transplantation.

Many transplant surgeons feared prosecution as legal liability was a concern for any physician involved in the withdrawal of life-sustaining measures in brain-dead patients (Schweikart, 2020). The author continued that the DDR solved the dilemma of worried physicians by deeming brain-dead donors as being legally and ethically dead, which meant that any organ procurement process that involves donors could not be seen as the cause of death. This would make any criminal or civil malpractice claims against organ transplantation impossible. The only globally documented instance where the DDR was not followed was in China between 1980 and 2015, where the rules for determining brain death could not have been followed for prisoners who were executed and then became heart and lung donors (Robertson & Lavee, 2022). Sarnaik (2015) states that the DDR encompasses the ethical principle of non-maleficence for the organ donor since, according to the rule, the act of organ procurement should not cause the death of the donor.

2.7.4 Organ Trafficking

Organ trafficking involves the recruitment, transfer and transport of organs from either living or deceased humans by use of threat, force, abduction, coercion, deception or abuse of power to vulnerable groups for the exchange of monetary or material gain (The Declaration of Istanbul on Organ Trafficking and Transplant Tourism, 2008). To curb organ trafficking, relevant authorities must establish and implement legislation in this regard, as well as establish safeguards to detect and report human and organ trafficking activities (Domínguez-Gil *et al.*,

2017). The researcher further explains that the onus lies in the domestic legislation of each nation to detect, report and eventually curb organ trafficking.

Gonzalez *et al.*, (2020) state that due to the shortage of legal organ donations worldwide, the illegal trafficking of human organs generates around 1.5 billion dollars annually from approximately 12000 trafficked organs. Therefore, the researcher concludes that organ trafficking may be the reason for the hesitation of people wanting to register as organ donors worldwide. Allais (2013) outlines the profile of human trafficking of men and boys from East African countries into the borders of South Africa to be used for their organs (organ transplantation) and tissues (hair, skin, nails and body part use) by some practitioners for witchcraft, sacrifices and potions. A report by Interpol outlined the modus operandi of organ traffickers in the North African region, especially Egypt, who targeted international migrants, refugees and asylum seekers for organ trafficking (ENACT, 2021). The trafficked organs would then be transplanted into the bodies of men with a higher socioeconomic level and who have travelled to Africa for the procedure.

2.7.5 Transplant Tourism and Commercialism

The term transplant tourism can be explained as potential recipients who travel abroad to buy kidneys and other organs and thereafter, undergo transplantation across these national borders (Akoh, 2012; Broumand & Saidi, 2017). Transplant tourism results in the sale of organs rather than a donation, which will result in a decrease in the number of donated organs, exploitation of the poor and establishment of human organ brokers (Dalal, 2015).

Any policy or practice in which an organ is either bought, sold or used for material gain as a commodity will fall under transplant commercialism (The Declaration of Istanbul on Organ Trafficking and Transplant Tourism, 2008). In this regard, the idea of legal markets for the sale of organs has been rejected in the past due to ethical and exploitation concerns; however,

altruistic organ donation alone has not been sufficient to meet the global shortage (Fukai, 2019). The shortage in the supply of donated organs has led to unethical practices in poverty-stricken developing countries where people agree to donate due to economic compulsions and have been exploited in this regard (Mishra, 2022). Iran is the only country in the world with a government-controlled transplant commercialism system (Danovitch, 2014). According to Meshelemiah and Lynch (2019), there is currently no published data on organ trafficking except the reported cases; however, the world health organisation believes it to be on a steady rise. The authors describe the monetary gain by organ trafficking brokers who earn around 100, 000 US dollars from wealthy organ recipients and pay impoverished organ donors as little as 1000 US dollars.

Similarly, an organ trafficking transplant scheme called the Israeli transplant scheme took place at Netcare hospitals in Durban, Johannesburg, Pretoria and Cape Town, South Africa, between 2001 and 2003 (Ambagtsheer, 2021; Ambagtsheer & Bugter, 2022; De Jong, 2017). The syndicate involved 224 Israeli recipients who travelled to South Africa for their illegal kidney transplant while donors, predominantly males in their 20s, were recruited from Israel, Romania and Brazil. Sidley (2005) describes how the Israeli transplant scheme was exposed in 2003, which led to the arrest of the five South African doctors involved and the South African hospital group Netcare being charged with organ trafficking. From this, it can be concluded that the general South African public may be reluctant to register as organ donors due to a loss of trust in health care professionals and transplant teams as they may fear exploitation.

2.7.6 The Declaration of Istanbul

In May 2008, the Transplantation Society and the International Society of Nephrology called a summit meeting regarding organ trafficking and transplant tourism in Istanbul, Turkey,

which led to the "Declaration of Istanbul" being published internationally (Dalal, 2015). It was the culmination of the work of more than 150 scientific and medical experts and a representation of 78 countries endorsed by more than 100 professional organisations and thereafter integrated into regulatory bodies of many governments globally (Pullen, 2018). The Declaration of Istanbul on organ trafficking and transplant tourism combined two ethical positions: (i) prohibition of transplant commercialism and (ii) organ market regulation, which resulted in all medical organisations and surgeons agreeing that the unregulated exchange of organs at the global level should be prohibited with each country being self-sufficient to supply their citizens with lifesaving organs (Have & Patrão Neves, 2021). The researchers found that by demarcating organ donation and transplantation with the border of a country, organ trafficking and transplant tourism are curtailed, as well as corresponding human trafficking crimes for the purpose of organ-related theft. Islam *et al.,* (2020) assessed the impact of the declaration of Istanbul on transplant-related crimes and have reported a positive change as many countries have improved their legal framework to combat organ trade, trafficking and tourism. Glazier and Delmonico (2012) report that the declaration of Istanbul has promoted altruistic deceased and living organ donation in countries by removing incentives for living donation. These incentives are usually provided for living donors and consist of providing care through health and life insurance for the donor.

Ten years after the original declaration of Istanbul, an updated version of the declaration was presented at the congress of The Transplantation Society in Spain in 2018 (Martin *et al.,* 2019; Muller *et al.,* 2019). The authors describe that the update was necessary after a decade of work was conducted after the initial declaration to redefine terms and characterise criminalities regarding organ trafficking and transplant tourism. The Congress received 245 individuals, representing more than 68 countries and 65 responses from professional organisations

worldwide who agreed that the new version of the Declaration of Istanbul was more concise with greater clarity of the concepts.

The researcher concludes that since one of the tenets of the Declaration of Istanbul was to prevent transplant tourism and commercialism and to ensure each nation becomes self-sufficient in providing their citizens with lifesaving organs, South Africa requires an injection of novice nurses who have increased knowledge and positive attitudes toward organ donation that will increase the number of donor consent rates in order to solve the country's shortage.

2.8 Ethical Principles Involved in Organ Donation

According to Page (2012), the four ethical principles of Beauchamp and Childress (autonomy, justice, beneficence and non-maleficence) constitute the overall understanding of the fundamentals of medical ethics appropriate for ethical assessments in health care. Similarly, Liverman *et al.,* (2017) explain these ethical principles and their significance in organ donation and transplantation research, which are discussed below:

2.8.1 Respect for Autonomy

Autonomy in healthcare is seen as a critical issue of quality of life and it encompasses the ability to make one's own decisions regarding healthcare, which gives the patient a feeling of self-efficacy (Lulé *et al.*, 2019). It is especially challenging to maintain patient autonomy in organ donation if the patient has not disclosed their wish to be an organ donor to the family before their demise. Liverman *et al.,* (2017) state that respect for autonomy is a centrally complex principle in organ donation and transplantation and, therefore, has several implications, which are respect for dignity, worth and value, respect for an individual's choices

or a competent person's right to decide whether or not to donate one's organs and, avoiding pressure or coercion on those choices.

2.8.1.1 Patient Autonomy

Every individual has the right to autonomy, even after one's death, whether or not their body should be used for organ donation (Kunle, 2018). However, South African law diminishes patient autonomy after death as the patient's next of kin is given the final right to consent to organ donation (Government Gazette, 2003). A contrasting viewpoint from Slabbert and Venter (2019) discuss patient autonomy versus family consent. The authors explain the sensitivity and grief experienced by the family members after a person has passed on but still advocate for balance against a person's wishes to be an organ donor after death and state that family members should honour that wish.

2.8.1.2 Family Autonomy

The wishes of the family may conflict with the patient's decision to be an organ donor after death and the family may object to giving consent to organ donation (Lo *et al.,* 2022; Wilkinson & Savulescu, 2012). This diminishes patient autonomy after a person has died. Shaw *et al.,* (2017) state that family overrule of patient autonomy accounts for 10% or more of organ donor refusals worldwide. To maintain family autonomy after the death of a potential donor, the family should be made aware of the possible scenarios following the death of the patient so that the family can make an informed decision on whether or not to proceed with the organ transplantation process (Gyllström Krekula *et al.,* 2018). Arguments in favour of family overrule include new information given to the family by the donor before death about refusal to donate; accepting the family overrule may decrease their distress; donation cannot proceed without proper health information provided by families; going against family decisions may create doubt in the health care system and may have legal implications and too much of

insistence is being placed on the wish of the deceased person and honouring patient autonomy (Shaw *et al.*, 2017). A study by Rosenblum *et al.,* (2012), which analysed the authority of the next of kin in organ donation consent within 54 nations, concluded that the family has a considerable influence on the organ procurement process. The authors recommended that future studies investigating the relationship between family refusal of consent and successful organ donation rates be warranted. Molina-Pérez *et al.,* (2022b) argue that although patient autonomy can be considered a cornerstone of organ donor ethical decision-making, relational autonomy, which includes patient autonomy and family autonomy cannot be ignored. The notion of relational autonomy accounts for an individual's autonomy, needs and desires that are shaped by a social construct of their relationship with others, which in this case is the deceased organ donor's family (Fovargue & Hogg, 2017). In South Africa, there is an addendum to the last will and testament called "Letter of Wishes," which is not legally binding but may guide the executors and trustees in ensuring one's wishes are carried out after their demise (Spuy, 2021).

The researcher concludes that a last will and testament or a letter of wishes of an organ donor should become legally binding in South Africa so that the wishes of deceased donors may be honored. This also calls for registered organ donors to discuss their wish to donate organs after their demise with their immediate family/next of kin so that the consent process becomes effortless.

2.8.2 Justice

As defined by Aristotle, justice is the first moral virtue with which there is a personal disposition to enhance the well-being of the community or city-state (Have & Patrão Neves, 2021). In a research by Vanholder *et al.,* (2021), the principle of justice in organ donation exists within the coordinates of equality, which requires that all suitable recipients, irrespective of

their race, ethnicity, gender, education, socio-economic status, religion or language barrier, have an equal probability of receiving a lifesaving organ by being treated fairly. Monday and Ogugua (2020) state that for the common good to exist by distributive justice, the allocation of organs should follow a fair waiting list. The authors elaborate further that distributive justice instils equity and distributes the burdens or bestows benefits among all citizens. Lauerer *et al.,* (2016) postulate that justice in organ donation is the justification for excluding a recipient from an organ waiting list and transplantation centres should be obliged to decide whether to include or exclude patients on recipient waiting lists. The researcher expands that these decisions are fundamental to institute fairness in a healthcare system. An example is transplant centres within South Africa that have a set of rules applied in the allocation of organs according to each centre's organ recipient waiting list (Britz & Loveland, 2019). These rules are in place to maintain a moral and equitable way of drawing up a waiting list where patients are presented at a multi-disciplinary panel meeting that decides whether the patient meets the minimum requirements to be listed as a recipient, advises if the patient requires further investigations or be declined (Britz & Loveland, 2019).

2.8.3 Beneficence and Non-Maleficence

Marquardt (2017) states that beneficence in organ donation is a multifaceted topic because the interests of multiple parties have to be considered, namely the deceased donor's wish and the family's decision. For a donated organ to be transplanted, there should be a premise that the recipient's quality of life will show significant improvement after recovery from the procedure (Zhang & Zang, 2021). Similarly, Ladin (2016) states that due to the principle of beneficence, physicians are morally obliged to discuss the possibility of organ donation with their patients. An ideal organ allocation model should support beneficence and non-maleficence by maximising benefits and minimising risks or harm (Keller *et al.,* 2013). Recipient risks associated with the donated organ may stem from infections by the human

immunodeficiency virus, hepatitis B virus and hepatitis C virus (Jones *et al.,* 2020), apart from operating theatre and post-recovery complications. However, in many instances, a donor may choose to accept an organ from a recipient who is HIV positive and would opt to continue with antiretroviral treatment instead of end-stage organ failure and subsequent early death.

Flaherty *et al.,* (2021) state that worldwide transplant tourism has violated the principle of non-maleficence in organ donation, which has caused widespread alarm. The authors elaborate that transplant tourism allows recipients with financial means to bypass transplant lists and widens socioeconomic disparities among countries, causing exploitation and harm to the donors.

In a research conducted by Taylor *et al.,* (2017), the harm associated with an unsuccessful donation by circulatory death experienced by families after the donor had passed on were: the inability of the family to find meaning, failure to fulfil the wishes of the donor and disrupted bereavement by the agony of waiting for their loved one to die. The researcher expands that these are cases where organ donation does not occur due to donation by circulatory death protocol. Nurses and other healthcare personnel should be cognisant of this type of scenario and provide counselling for the dedicated family members who wish for their loved one's organs to be donated.

There is an increasing need to assist families/next of kin of organ donors with sensitivity issues regarding the donation process. A study by Fernandes *et al.*, (2015) revealed that families of deceased organ donors require emotional support in the form of counselling to deal with the sensitivities associated with the organ donation process. The authors recommend actions aimed at humanising care associated with the organ donation process and emphasised the ethical dimension in the relationship between the family and healthcare professionals. Roh (2018) emphasises that organ procurement officers should counsel families on the following topics:

respect for the organ donor's body, wishes to keep the organ donor's body intact and the absence of associated pain sensation, as many families believe that the body will feel pain after brain death. The author further states that the decision to provide consent for donation is forced on families during a difficult time when they may still be shocked or stunned by their loved one's death and now have to make a split-moment decision on whether to give consent or not. Similarly, Xie *et al.,* (2022) confirm that the family of a deceased donor requires emotional support and psychological assistance from a professional counsellor due to the short decision-making period required during traumatic incidents that cause the brain death of the donor.

The researcher agrees that psychological support is required to minimise any harm caused to the organ donor's family from the anxiety and trauma experienced during the death of the loved one, coupled with approaching the family for organ donation consent.

2.8.4 Altruism

The aim of effective altruism is doing good bypromoting wellbeing in a fair manner to all (MacAskill & Pummer, 2020). The greater the number of individuals whose wellbeing is being promoted, the greater the magnitude of the altruistic action. Altruism in organ donation involves donating one's organs voluntarily, without personal gain, to help a recipient in need of that organ (Ferguson *et al.,* 2019). Organ donation allows patients to perform altruistic acts of giving long after their demise and gives families of deceased organ donors a sense of societal solidarity, knowing that their loved one's remains are used for the benefit of others (Dopelt *et al.,* 2022). Strict altruistic transplantation systems are followed globally by all countries except Iran, where the nation's kidney transplant waiting list has been eliminated by allowing non-altruistic transplant commercialism and creating a government-regulated organ market (Fukai, 2019). Moeindarbari and Feizi (2022) confirm that Iran is the world's only legal organ trade

market. The authors describe how an altruistic donation may be much more complicated than a non-altruistic donation, where the organ recipient may feel unworthy of altruistic live donation and responsible for the associated risks to the live donor.

2.9 Nurses' Perceptions of Organ Donation

Globally, nurses collaborate with organ transplant coordinators, donors and recipient families, medical doctors, surgeons and intensivists, while also providing nursing care to patients (Janatolmakan *et al.*, 2020). The donation process begins when an organ donor is identified during mechanical ventilation in an intensive care unit and includes several elements such as diagnosis of brain death, collaboration with the institutional organ transplant coordinator, informed consent and provision of support to relatives throughout the process of harvesting and transplantation (Simonsson *et al.,* 2020). Caring for an organ donor is challenging and nurses have described it as an ordeal which some have viewed as inhumane as nurses have been trained to save lives; therefore, death is seen as a failure (Manzari *et al.*, 2020). In a contrasting view, some nurses have experienced that caring for an organ donor who is brain dead implies a positive feeling of generating new life for the organ recipient as well as an understanding of family/relative decision-making, which has a positive effect on organ donation rates (Miller & Breakwell, 2018). Lo *et al.,* (2022) confirm that nurses in intensive care units have positive attitudes towards organ donation and have an influence on families of potential organ donors who come into contact with them.

According to the New York State Department of Health (2011), a diagnosis of brain death must be made by the physician attending to the patient and one other physician, neither of whom shall participate in the process of organ transplantation. In South Africa, brain death certification should be done by two medical doctors independent of the organ transplant team and one of them must have more than five years of practice experience (Thomson, 2017).

Healthcare workers in South Africa, especially nurses, face demanding situations such as brain death testing being done by medical doctors on mechanically-ventilated patients and therefore, nurses are reluctant to believe that a person is dead after being certified brain dead (Etheredge, 2019). According to the International Council of Nurses (2021) Code of Ethics, nurses are bound by the Nurse's Pledge, which vows to preserve life and alleviate suffering. This brings about an ethical dilemma between promoting the health of the organ recipient and alleviating the suffering/preserving the life of the organ donor. Although it is ultimately the medical doctor's decision to withdraw respiratory and cardiovascular support in the brain-dead patient, nurses are reluctant to assist with the organ procurement process due to the nurse-patient therapeutic relationship that was formed during the potential organ donor's hospital stay (Dong *et al.,* 2020).

Molllaoglu and Yanmis (2021) affirm that there is a relationship between nurses' beliefs about organ donation and their professional values. The authors revealed that nurses with bachelor's degrees in nursing were more positive about organ donation than those nurses with non-university degrees. The researcher expands that the higher the professional values of nurses, the more willing they are to be part of the organ procurement process and that there may be a difference in the curriculum inclusion of organ donation at universities compared to nursing colleges. Similarly, Uwingabiye *et al.*, (2021) and Harbour *et al.,* (2015) conclude that the level of knowledge on organ donation among nursing students is proportional to their attitude towards it, where a decreased level of knowledge on organ donation is linked to a tendency of a negative attitude towards it.

Majchrowicz *et al.,* (2022) and Vincent *et al.,* (2019) examined nurses' attitudes and perceptions towards organ donation showing that most nurses have a positive attitude towards organ donation and nurses themselves have pointed out the need for more educational campaigns for the public as well as training and educational programmes for nurses to enhance

their role in organ donation. Weng *et al.,* (2021) reveal differences in age, cultural and religious beliefs as influencing perceptions of organ donation among nurses. The authors explain that culture and religion are seen as barriers to inculcating a positive attitude towards organ donation among nurses. Hoseini *et al.,* (2015) affirm that older nurses share a more positive attitude toward organ donation than younger nurses. Similarly, Von Ah and Cassara (2013) indicate that emphasis should be placed on cross-cultural education to incorporate cultural competence in future nursing students. This will ensure that nurses are able to care for culturally-diverse populations and provide reassurance and education to patients and families during the organ procurement process.

2.10 Nurse Competencies required during the Organ Donation Process

Nurses are the largest group of healthcare professionals in any institution and are therefore responsible for quality care to a great extent, which includes clinical leadership and governance, updated clinical skills and evidence-based practice, safety improvement and patient satisfaction with the care received (Babaei *et al.,* 2023). In terms of competencies for organ donation, Dong *et al.,* (2020) propose that nurses be trained in the following: organ donation theory, criteria for brain death and cardiac death, criteria to become a potential donor, organ donor policy and procedures, as well as organ allocation principles. Mendes *et al.,* (2012) further highlight the competencies of nurses involved in organ donation and transplantation who need to deliver high-level care to donors and their families in all stages of the process, with the main focus of the activity being quality care with professionalism. The researcher agrees that nurses require the appropriate educational background and appropriate skills to reach a certain level of competence in the organ donation process.

Yazdi Moghaddam *et al.,* (2018a) state that nurses should have a clear understanding of the concept of brain death to be able to nurse brain-dead patients who become organ donors and avoid any associated psychological implications. Nurse education on organ donation and brain death conceptualisation will result in an increased number of consenting patients/relatives and an increase in organ donations (Akbulut *et al.,* 2022; O'Leary, 2018). In order to increase the rate of organ transplants from deceased organ donors, the nurse should be able to clinically identify terminally-ill patients who are at risk of brain death so that the patients/relatives are psychologically prepared to accept the death of their loved one (Karaman & Akyolcu, 2019). Gripewall *et al.,* (2022) affirm that each nurse has a specific professional responsibility to ensure that relatives are offered adequate and appropriate psychological support following their loved one's sudden death. It can be seen that education and training on good practice and family support measures are likely to influence nurse behaviours, care and techniques when supporting families/relatives in this regard in the future. Nurses play a vital role in the care of brain-dead patients and should, therefore, recognise their shortfalls and educate the patient's family/relatives about the patient's condition (Manzari *et al.,* 2020). This can be seen as the first step towards holistic care in maintaining organ perfusion for transplantation. Karaman and Akyolcu (2019) state that nurses should be available during discussions with the physician and the family on diagnosis and prognosis, especially with patients who suffer brain death. The researchers agree that being a patient advocate is part of nursing duties and culture; therefore, nurses involved in organ donation should align themselves with this mission.

From the above competencies, it can be concluded that nurses who engage in the organ donor procurement have a monumental task added to their normal scope of practice and clinical competencies.

2.11 Nurses' Challenges with the Organ Donation Process

Etheredge (2019) agrees that nurses currently do not have the necessary knowledge about brain death but acquire it through experience; therefore, they require training on brain death (knowledge and physician assistance) and organ donation rules. They also face confusion and uncertainties surrounding brain death concerning illegalities and due to this, many are reluctant to attempt to encourage organ donation, as it may enhance psychological implications for the patient's family/relatives (Yazdi Moghaddam *et al.,* 2018b). Most nurses do not give adequate importance to the subject of organ donation, or many ignore it due to the high-intensity working conditions and shortage of material and human resources within the unit (Dong *et al.,* 2020; Karaman & Akyolcu, 2019; Moraes *et al.,* 2014; YazdiMoghaddam *et al.,* 2020).

Those nurses who provide limited care to organ donors during the death and dying stage find it to be high in complexity, specifically with regard to informing relatives about the loss of their loved one and providing support (Prins & Human, 2019). Hvidt *et al.,* (2016) explain how nurses describe the organ donation process as distressing with emotionally-challenging situations that are energy-consuming and result in fatigue in nurses who care for patientswho are organ donors. Caring for a deceased patient implies that care is centered on preserving the organs and not on a patient individually, which is described as difficult (Oczkowski *et al.,* 2019). Similarly, YazdiMoghaddam *et al.,* (2020) affirm that nurses describe a shift of focus from working to save the patient's life to an objective approach being taken whereby the deceased patient's name was no longer used; however, this is experienced to be a difficult but significant part of the donation process in order to understand what has happened and what the next step should be. Nurses with limited experience in advocacy for organ donation show that caring during the organ donation process places heavy demands on one's personal characteristics (Petpichetchian *et al.,* 2015). This demand emanates from the rapid transition

from being an empathetic carer to an executive nurse, balancing supporting the relatives and executing interventions to preserve the organs (Simonsson *et al.*, 2020). The researcher opines that novice nurses require training in organ donation before completing their undergraduate nursing studies to equip them with the knowledge they require when they are placed in similar situations.

It can be seen that knowledge of brain death forms the basis for understanding the organ donation/procurement process after death. Therefore, once nurses become familiar with the term brain death and assist physicians with brain death testing, positive attitudes toward organ donation may culminate despite religious or cultural reservations about the concept.

2.12 Training Programmes on Organ Donation for Health Professionals Globally and within South Africa

Currently, there are many online training programmes that cover organ donation, transplantation, ethical issues and legislation; however, "a one size fits all approach" will not work well for diverse types of health professionals, the general public and medical/nursing students (Steenaart *et al.,* 2019). A certified, comprehensive and highly-rated online course developed by Dr. David Thomson that affords medical professionals 30 continuous professional development (CPD) points with the Health Professionals Council of South Africa (HPCSA) has proved to be very informative and successful and this has changed the opinions of many with regard to considering organ donation (Britz & Loveland, 2019; Thomson *et al*., 2018; Thomson, 2019b).

A study by de Jager *et al.,* (2019) reiterates the shortage of organ donor referrals and conversion to actual deceased donors in South Africa by revealing the lack of a nationally-accredited training programme for transplant coordinators. The authors affirm a lack of national

protocols to guide those healthcare professionals who choose to refer potential deceased organ donors to transplant coordinators. The researchers found that numerous barriers to organ donor referral exist within the South African context at the hospital level. These include healthcare professionals' misunderstanding of the organ donor referral process, the absence of a distinct referral health policy for potential deceased organ donors and healthcare worker avoidance of having difficult conversations with relatives of patients about poor prognosis and death. In response to the study's findings, a handbook was developed by The University of the Witwatersrand, Johannesburg in this regard, titled "The Wits Transplant Procurement Handbook''. The handbook serves as a guide to the novice healthcare practitioner on South African transplant procurement protocols. The intervention is aimed at increasing deceased organ donor referrals and an increase in actual deceased organ donors (Medical Brief, 2019).

The Organ Donor Foundation of South Africa provides an Organ Procurement Skills (OPS) training programme. The training comprises workshops held by experts on organ donation. These workshops consist of theory on transplantation of solid organs and tissues in adults and children, while the practical component focuses on donor detection, diagnosis of brainstem death, donor management, organ viability, family consent and legalities, and organ and tissue harvesting (Van Niekerk, 2022). The researcher expands that these attempts at conducting training on organ donation procurement principles are mainly directed at medical professionals. There is currently no formal education specifically designed for the nursing profession (Hoseini *et al.,* 2015).

A study by Crymble *et al.,* (2017) affirms the lack of adequate organ donation education in nursing curriculums at different tertiary institutions in South Africa. In their explanation, the authors describe existing education covered on organ donation as a 45-minute formal lecture in the fourth year of a B Nursing Programme and ICU post-graduate diploma training at Wits University, Diploma in general nursing having no content on organ donation and a 3-6 hour

session on transplants in the Netcare and Mediclinic nursing education programmes. The researcher of the current study supports the authors' stance that the amount of content on organ donation education in these curriculums is insufficient in preparing nurse professionals for actual patient/family (recipient and donor) experiences in the clinical area.

While describing the insights and challenges to organ donor referral in South Africa, Naidoo *et al.,* (2018) confirm that the inclusion of organ donation in the medical curricula in South Africa is not the norm and settings exist where no formal introduction to organ donation takes place. The researcher concludes that due to a decrease in knowledge of organ donation among medical professionals, the interdependent function of nurses in the organ donation process as part of a multidisciplinary team is hampered. Akbulut *et al.,* (2022) highlight the need to develop well-structured education programmes to enhance nurses' role in organ donation and transplantation. The knowledge gained from these structured education programmes will assist the nurses in their patient advocacy role to become active members in the organ donor referral process, especially when the treating multidisciplinary team displays a lack of knowledge.

2.13 The Significance of Including Organ Donation in the Nursing Curriculum of Emerging Nursing Education

Fernández-Alonso *et al.,* (2020) indicate the need to include curricula that address organ donation in nursing as the job description is unknown to many novice nurses and requires specific training leading to a professional independent function. On a similar stance, Ivonne (2015) declares reasons for organ donation training, with one of them being respectfully and professionally approaching a brain-dead patient's family for the possibility of organ donation. The researcher adds that when the patient's family is approached rightly, the chance of family

refusal to consent is decreased, thus increasing successful organ donation rates. Green *et al.,* (2023) summarise reasons for the inclusion of organ donation in nursing education as a strategic step to scale the availability of organs, thereby meeting the needs of thousands of patients in dire need of organ transplantation to survive.

In the current phase (Phase 3: 2021-2025) of National Health Insurance (NHI) implementation in South Africa, Mukwena and Manyisa (2022) propose that the new bill will bring about equality in healthcare by improving user satisfaction with healthcare delivery and improving health outcomes across all socioeconomic groups. Similarly, the World Health Organisation agrees with universal health for all and has declared its stance on establishing a health system where everyone, regardless of age, gender, race, religion or wealth, will have the means to attain high-quality healthcare which is called universal health coverage (World Health Organisation, 2023). Harris *et al.,* (2019) reveal increased renal transplants in paediatric patients due to a national health care scheme such as the NHI. The researcher agrees that after the successful rollout of the universal health scheme ,commonly known as NHI in South Africa, the establishment of regional and functional organ transplant centres will be accelerated to ensure all patients with end-stage organ failure are treated. A contrasting view by Harhay and Mark (2020) summarises that although the financial burden of organ transplantation is weakened by universal health care, there are still increasing patient and caregiver costs for transplantations in countries with a universal health care system. Webb (2020) agrees that in countries with universal healthcare systems, patients with low socioeconomic status were associated with a lower rate of organ transplantation. However, this stance requires further research to understand the causal pathways between socioeconomic status and transplant waiting list allocation. Webb (2020) suggests investigating the relationship between health literacy and its influence on transplantation access.

Until now, little importance was given to HIV-positive organ donors. Nel *et al.,* (2020) found that South Africa has the highest HIV-positive population in the world, which makes organ donation a definitive cure for those HIV-positive people who suffer end-stage organ failure from antiretroviral therapy, HIV toxicities, chronic systemic inflammation and opportunistic infections. Recent developments have shown that HIV-positive patients who are well-controlled on combination antiretroviral therapy (cART) can become organ donors to other HIV-positive patients as well as willing HIV-negative patients (Botha *et al.,* 2019). HIV-positive to HIV-negative organ donation has become a reality in South Africa, which creates a further need to clarify the role of the nurse in the process of organ donor referral. Therefore, there is an urgent need to explore the knowledge and attitudes toward organ donation among nurses and develop strategies to increase their receptiveness towards it.

2.14 Chapter Summary

From the literature reviewed in this study, the scholastic definitions of organ donation were summarised to add meaning to the reader. Organ donation and its importance in society were explored, revealing many of its advantages to the healthcare sector, such as decreasing the disease burden and easing suffering with end-stage organ failure. Ethical principles of autonomy, beneficence, non-maleficence and justice were examined in the context of the organ procurement process and its ethical implications for donors, their families and the nurses who provide them with care. Professional organisations in South Africa that support organ donation were discussed due to their contribution in bringing about awareness to assist the national organ shortage. It is clear from the research reviewed on contemporary aspects of organ donation that religion and culture play a vital role in knowledge assimilation and culminating in a positive attitude towards organ donation among nurses and the general population. Other contemporary

issues reviewed were the glooms of organ transplantation that exist globally, such as organ trafficking and transplant tourism, which has touched base within the borders of Southern Africa in the past. It is evident that it may be one of the reasons for the South African public's reluctance to embrace the thought of organ donation. Current literature on investigations of the nurse's role in the organ donor procurement process has indicated that their challenges outweigh their competencies. As summarised by many authors, there is a distinct lack of knowledge of organ donation, resulting in the culmination of negative attitudes and perceptions towards it. This was revealed to be due to underdeveloped organ donation curriculums in nursing education worldwide. Therefore, it can be concluded that there is an intense and urgent need to update and increase nurses' knowledge of the organ donation process. A strong consensus in the literature presented is that positive attitudes towards organ donation may be fostered by developing and integrating organ donation education within present and future nursing curricula.

The subsequent chapter, Chapter Three, explains the research methodology of the study.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

Research methodology describes the research paradigm, method, design and the study setting as well as the study population, sampling technique, data collection and analysis, data management and dissemination of findings.

3.2 The Research Paradigm and its Application to the Study

In educational research, a paradigm is described as a conceptual lens through which the researcher examines the methodological aspects of their research project to determine the research methods that will be used and how the data will be analysed (Johnson & Onwuegbuzie, 2007; King, 2022; Kivunja & Kuyini, 2017). A pragmatic paradigm underpinned the current study. Pragmatism is considered the best fit for mixed-methods research because pragmatism, like mixed-methods research, is concerned with the best approach to answering the research question rather than philosophical expectations (Kelly & Cordeiro, 2020; King, 2022). Unlike the constructivist and positivist approaches, which are rigid in their philosophical assumptions, pragmatism encourages the use of pluralistic research methods and shifts in paradigms so that the different views meet the objectives of the study. The pragmatic paradigm adopts pluralistic research methods and orients itself toward solving practical problems in the real world (Kaushik & Walsh, 2019). The **study's ontological perspective was aligned**with the pragmatist belief that reality is constantly created and ever-changing as individuals act in the world. The process of acquiring knowledge is a continuum rather than two opposing data constructs and therefore, objective and subjective data are both valuable in answering the research questions (Johnson & Onwuegbuzie, 2007; Kaspers, 2022). **Epistemologically**, the pragmatic paradigm focuses on the creation of practical knowledge that

enables understanding of reality. The pragmatic paradigm suggests that knowledge is uniquely created by one's own experiences (Johnson & Onwuegbuzie, 2007; Kaspers, 2022). In the current study, the researcher explored and described the knowledge of organ donation gained by the research participants through social interaction during their nursing clinical placements and subsequent knowledge construction. This was done with a primary purpose of knowledge creation and an intent to improve participant receptiveness towards organ donation. Subedi (2016) states that on an **axiological** ground, pragmatists believe that values are relative and change with culture and the environment. The axiological stance of pragmatism guided the researcher towards co-creating knowledge on organ donation in relation to student nurses' needs with the participants. The use of interviews and expert participation in the Modified Delphi Technique (Third Phase of the study) generated the dialogue relevant to pragmatic axiology.

3.3 The Research Approach of the Study

The study utilised the mixed methods approach. According to Adu *et al.,* (2022), the popularity of mixed-methods research has increased in the social and health sciences since the 1980s and is one of the three major research methodological approaches used today.

The overall goal of mixed-methods research combining quantitative and qualitative approaches is to expand and refine a study's conclusions and contribute to published literature (Schoonenboom & Johnson, 2017). Adopting a mixed-methods approach to a study allows data from both approaches to complement each other but also compensate for each other's weaknesses so that the researcher can see things from a bigger picture and deduce reliable findings (Dawadi *et al.,* 2021). In this way, the strengths of both approaches are used to offer statistical analysis and observation to ensure that the study is more comprehensive in terms of

answering the research questions. The application of a mixed-methods approach enables researchers to build on a study where the conclusion drawn from one method (quantitative or qualitative) informs the selection of the next method of data collection (Subedi, 2016). This results in a robust understanding of a phenomenon.

The defining feature of a mixed-methods approach is the points where the two methods "mix" or "integrate." (Plano Clark, 2019, p.108; Nagpal *et al.*, 2021, p 11). The connection between the quantitative and qualitative components distinguishes a multi-method research approach from a mixed-methods research approach (Plano Clark, 2019). The researcher further elaborates that the points of integration can occur at different stages in a mixed-methods study, namely at designing the study, during the methodology and interpreting and reporting stages. In this study, the researcher explained the points of integration between the quantitative and qualitative components, indicating that the study involved rigorous data mixing.

3.3.1. Application to the Study

Taking the advice of Creswell (2015), the researcher allowed the study's research questions to guide the methodology selection. As such, the researcher concluded that multiple data collection methods offered the best data to answer the study's research questions. The researcher found that a mixed methods approach was suitable for the study as multi-modal data collection and analysis techniques are required to gain an in-depth understanding of undergraduate nursing students' knowledge and attitudes toward organ donation (Dawadi *et al.*, 2021).

The study began with a broad quantitative survey in the first phase so that the data could be generalised to the study population and thereafter, qualitative semi-structured interviews with open-ended questions were conducted to collect detailed participant views and further

explain the quantitative results obtained in the First Phase (Creswell, 2015). The closed-ended questions of the quantitative survey were limited to determining the participants' knowledge and attitudes toward organ donation, while the qualitative open-ended questions provided a more descriptive insight into participants' views on organ donation. The qualitative phase was instrumental in hearing the voices of the participants. Adopting mixed-methods enabled the researcher to combine both methodologies and draw more accurate and reliable conclusions on the phenomenon of organ donation. Furthermore, the triangulation of data collection methods employed in the study (questionnaires, semi-structured interviews and Modified Delphi technique) promoted the validity of the study conclusions (Plano Clark & Ivankova, 2016). Another rationale for choosing the approach was that the quantitative survey would reveal significant results that would benefit from a follow-up exploration through qualitative data collection methods. The use of a quantitative method that informed the need to use a qualitative follow-up fed directly into the researcher's selection of the research design for the study.

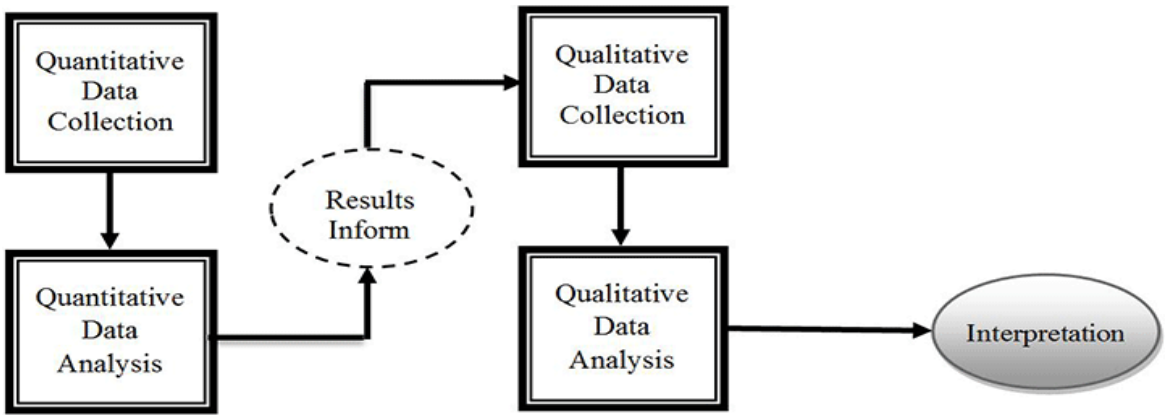
3.4 Research Design

The study adopted an **explanatory sequential** research design. The design encompasses a primary **(Phase One - quantitative)** and a subsequent phase **(Phase Two - qualitative)** approach where data collection and analysis occurred in two separate phases (Refer to Figure 3.1.). In an explanatory sequential design, the collection and analysis of quantitative data provide results that shape the designing of a subsequent qualitative phase to better understand the quantitative results (Creswell & Plano Clark, 2018; Schoonenboom & Johnson, 2017). This leads to the understanding that the quantitative phase provides breadth to understanding a phenomenon, whereas the qualitative phase provides depth to understanding a phenomenon (Shorten & Smith, 2017). The researcher chose the follow-up explanations variant within an explanatory sequential design, as the explanatory power of the qualitative aspect was

used to construct the reality of the results seen from the quantitative phase (Creswell & Plano Clark, 2018).

Figure 3.1

The Explanatory Sequential Design



Note. Adopted from Watkins & Gioia (2015, p. 159).

3.4.1. The Rationale for Choosing the Explanatory Sequential Design

The researcher had initially identified that the variables, namely, nurses' knowledge and attitudes toward organ donation, were best collected and analysed using statistical measures and that the significant quantitative results could be expanded using a qualitative method. This rationale guided the selection of the explanatory sequential design. True to the design, the qualitative phase allowed the researcher to delve further into the concept of organ donation from the participants' perspectives, and the voices of the participants fed into the outcome of the study.

In a more specific description of how the quantitative and qualitative methods were used in the explanatory sequential design of this study, the researcher alludes to the study having a more dominant quantitative phase, which informed the qualitative phase. Consequently, the specific naming of the study design was a quantitatively-driven explanatory sequential design, denoted by the notation [QUAN → Qual] (Johnson & Christensen, 2019). The use of notations in mixed-methods designs speaks specifically to how the quantitative and qualitative methods are used in a particular study in terms of phases that dominate (upper case), lower priority (lower case), while the arrows indicate the sequence of data collection (Schoonenboom & Johnson, 2017).

The use of the explanatory sequential design in the study was also advantageous because of its simplicity and ease of implementation to the researcher who is a novice in mixed-methods research (Creswell & Plano Clark, 2018). In terms of data collection, the study participants from the first phase were easy to follow-up as participants for the second phase. The researcher also found the sequential quantitative and qualitative design steps simple to follow and implement.

The disadvantage noted with the design was the longer time frame required to implement both study phases sequentially and the resources that were needed. The researcher was required to have a more comprehensive reading knowledge and to develop skills in analysing, presenting, discussing and mixing data from both phases.

3.5 Study Setting

The study was conducted at a selected university in Durban, KwaZulu-Natal, in the Discipline of Nursing. The university is accredited by the South African Nursing Council (SANC) and offers the Bachelor of Nursing programme, a four-year degree programme that complies with SANC regulation R174. After completing the BN programme, students will be

registered with SANC as community service practitioners for one year in hospitals within SA. After successful completion of community service, these practitioners will be registered with the SANC as nurses and midwives and will be expected to function as independent nurse practitioners in their institutions. Their knowledge and skill of the organ donation process will be required to advocate for the donation of organs and family consent when they encounter or nurse brain-dead patients at their healthcare institutions.

3.6 Study Population and Target Population of the Study

The study population included all nursing students at the selected universityregistered for the BN programme. The target population included the nursing students in the BN programme in their third year of study (N = 75).

3.7 Phase One of the Study – Quantitative Phase

Phase one was the quantitative phase of the study, which was aligned to objectives one and two of the study, namely to determine the third-year undergraduate nursing students' levels of knowledge towards organ donation and to explore and describe the third-year undergraduate nursing students' attitudes towards organ donation, respectively. In this section, the researcher describes the sampling processsample size of participants data collection instrumentrecruitment of participantsdata collection process and data analysis.

3.7.1 Sampling Process

The purposive, non-probability sampling technique was used to recruit the participants for the quantitative phase of the study. The choice of sampling was to ensure that the researcher recruited participants who were representative of the target population and had the experience and knowledge to provide the best perspective on organ donation. Considering the small size of the target population for the study (N = 75), the researcher purposefully selected all the participants who met the inclusion criteria for participation.

3.7.1.1 Inclusion Criteria and Exclusion Criteria for Participation

The inclusion criteria were (i) students registered for the BN programme at level 3/third year of training at the selected university during data collection and (ii) students who were willing to participate in the study. The students excluded were (i) students registered for the BN programme in the first, second and fourth years of study at the selected university and (ii) students in the study population who were unwilling to participate.

3.7.2 Sample Size of Participants

The sample size was calculated using Stata v17 statistical software with the assistance of a statistician. A sample size of 75 third-year nursing students was required to estimate the proportion of students with adequate knowledge of organ donation to within ±16% with a probability of 95% and assuming a non-informative base of 50%.

3.7.3 Data Collection Instrument

A self-administered survey was used to collect quantitative data from participants (See Annexure A). The researcher developed Sections A and adapted Sections B and C with permission (See Annexures E and F) from Limbu *et al.,* (2019).

Section A included socio-demographic attributes of participants such as age, gender, religion, ethnicity, a question on where the respondent heard or experienced the concept of organ donation, whether the respondent attended any form of training on organ donation, and whether organ donation was discussed with family and friends.

Section B of the survey comprised 11 questions on knowledge relating to organ donation. Although similar to the knowledge questions on organ donation developed by Limbu *et al.,* (2019), the questions in this section focused on general information on organ donation and information pertaining to organ donation in South Africa. The scoring was based on the

classification of knowledge according to Chakradhar *et al.,* (2016), adequate knowledge > 75%, average knowledge 50%-75% and inadequate knowledge < 50%.

Section C of the survey comprises the attitudes on organ donation derived from the questionnaire developed by Limbu *et al.,* (2019). The section includes six positive and five negative statements where responses of each item were measured on a 5-point Likert scale. For positive responses: Strongly Agree = 5, Agree = 4, Uncertain = 3, Disagree = 2 and Strongly Disagree = 1, whereas reverse scoring occurred for negative statements. The scoring was based on Karki *et al.,* (2017) classification of attitudes: positive attitude ≥ 60%, neutral attitude 30-60% and negative attitude < 30%.

3.7.3.1 Validity of the Survey Questionnaire

The accuracy and consistency of a survey questionnaire are significant aspects of a research study and are known as validity and reliability (Taherdoost, 2016). Validity is concerned with whether the measuring instrument can measure the behaviour accurately and how well the instrument performs its function (Sürücü & Maslakçi, 2020). The instrument should measure what it is supposed to measure when it is applied in the correct context. **Face** validity was concluded by the research study supervisor, a clinical nurse specialist, lecturer and active researcher. The items on the instrument were reviewed to ensure that they were in line with the study objectives and research questions. **Content** validity assesses how well the instrument used in the study covers all the content it intended to measure concerning the variables being measured (Heale & Twycross, 2015).The content validity of the questionnaire was established by aligning the research objectives and research questions of the study with the items on the instrument (Table 3.1).

Table 3.1

Content Validity of the Survey Questionnaire

Research Objective	Research Question	Study Framework	Questionnaire Items
1. To determine undergraduate nursing students' levels of knowledge about organ donation	1. What are the undergraduate nursing students' levels of knowledge about organ donation?	▪ Sociodemographic association with knowledge and attitudes ▪ Pre-requisite knowledge of organ donation ▪ Myths and facts about organ donation	▪ **Section A** (1 – 4) ▪ **Section A** (5 – 7) ▪ **Section B** (1 – 11)
2. To explore and describe undergraduate nursing students' attitudes towards organ donation.	2. What are the attitudes of undergraduate nursing students towards organ donation?	▪ Beliefs and behaviour towards organ donation	▪ **Section C** (1 – 11)

3.7.3.2 Reliability of the Questionnaire

Reliability in quantitative data collection refers to the degree to which a data collection instrument produces stable and consistent results that are free from errors (Mohajan, 2017). The instrument should yield similar results when applied in a research study at different times. Instrument reliability is an essential consideration in a research study to ensure that the study's results are credible (Sürücü & Maslakçi, 2020).

Reliability was ensured by determining the internal consistency of the survey using Cronbach's alpha, where a pilot study of five fourth-year undergraduate nursing students was conducted. The reason for piloting the survey tool was for corrective and modification measures of the survey tool. A Cronbach's alpha coefficient of at least 0.70 (range [0 - 1]) has been suggested to indicate adequate internal consistency reliability in a research study (Taber, 2017; Tsang *et al.,* 2017). The questionnaire yielded a Cronbach's alpha of 0.83, which was considered adequate for the current study survey tool. The data was not included in the reporting of the actual study to prevent contamination of the data. There were no deletions/adjustments to the questionnaire before commencing data collection in the main study.

3.7.4 Recruitment of Participants

Data recruitment occurred after ethics committee approval for data collection was granted for the study (HSSREC/00004841/2022) and permission was secured from the Registrar of the university, Dean and Academic leader of the Discipline of Nursing to conduct the study at the university (Annexures G, H and I). The third-year BN students were recruited while registered for a general nursing science module. Lecturers of third-year BN students were approached for permission to introduce the research study to the students face-to-face at a lecture venue before the start of the lecture. The researcher introduced himself as a nurse

practitioner and presented information about the research study, risks and benefits associated with the study and the informed consent process. The researcher explained that the study will take two sequential phases and students were invited to participate in both phases. Emphasis was placed on participation being purely voluntary and the participants could withdraw from the study at any time.

3.7.5 Data Collection Process

Due to electronic survey platforms yielding poor response rates from participants during previous studies at the university, permission was sought from the head of the school of nursing to meet with students before a physical contact class (clinical skills practice session) began. The information sheet (Annexure C) and informed consent form (Annexure D) were handed out for students to read, fill and sign should they wish to participate in the study. At the end of the questionnaire, participants were invited to participate in Phase II of the study voluntarily and were asked to provide their contact details should they wish to do so (email address and contact number). According to the Protection of Personal Information Act (POPI Act), participants were reassured that their contact details would be kept confidential and not shared with anyone except the research supervisor. After the signed informed consent sheets had been collected, copies of the study questionnaire were distributed to participants in a sealed envelope. Participants were allowed between 20-30 minutes to complete the questionnaire. A post box was placed in the clinical skills lab for participants to drop off the completed questionnaire. Data collection for this phase took place over three consecutive days at the same time and venue, as different groups of participants attended the clinical skills lab practice session over the three consecutive days.

3.7.6 Data Analysis

Data analysis of Phase I was done after consultation with the study supervisor and a statistician for guidance on the use of tools to analyse the data. The researcher used the Statistical Package for the Social Sciences IBM version 24 (SPSS). Descriptive statistics were used to summarise the collected data. Frequency distributions of numeric data were examined for normality and measurements of central tendency (mean and standard deviation). Frequencies and percentages were used to summarise categorical data.

The overall scores for section B were dichotomised into adequate, average and inadequate and section C into positive attitude, neutral attitude and negative attitude. The overall scores for both sections B and C were presented in respective pie charts. The associations between sociodemographic variables and the overall knowledge and attitude scores were calculated using a partial correlation, and the results are presented in a table.

3.8 Phase Two of the Study – Qualitative Phase

Phase Two, the qualitative phase of the study, addressed objective two, which was to explore and describe the third-year undergraduate nursing students' attitudes towards organ donation.

In this section, the researcher describes the sampling process, first point of integration in the study, sampling size of participants, data collection instrument, recruitment of participants, data collection, data analysis and the trustworthiness of the qualitative data.

3.8.1 Sampling Process

Phase Two of data collection utilised purposive sampling, which involves identifying and selecting individuals or groups of individuals who were knowledgeable about the

phenomenon of interest (Palinkas *et al.,* 2013). The chosen sampling technique allowed the researcher to better understand the data collected in the quantitative phase. The study followed a sequential sampling model whereby data collected from the first phase was used to shape the selection of participants in the second phase. The participants selected for the second phase were a subset of the population of the first phase and inclusion and exclusion criteria for participation were the same. These participants provided their contact details on the questionnaire in Phase One to indicate their willingness to participate in Phase Two of the study.

3.8.2. First Point of Integration in the Study

The sampling was the first point of integration in the study, where the sample of participants for the second phase was a subset of the sample population of the first phase. This integration is referred to as integration at the methods level, using the connecting approach, where sampling from the quantitative phase has informed sampling of the qualitative phase of the study (Draucker *et al.,* 2020).

3.8.3 Sampling Size of Participants

In qualitative research, sampling is about recruiting information-rich participants rather than calculating specific sample sizes (Palinkas *et al.,* 2015). Interviewing continues until no new data emerges, a point referred to as data redundancy or data saturation. In the current study, data saturation was reached at (n = 7) participants and two more participant interviews were conducted to confirm data saturation, resulting in a total of (N = 9) participants being interviewed.

3.8.4 Data Collection Instrument

Individual, semi-structured interviews were conducted following an interview guide (Annexure B). Open-ended questions were phrased to allow participants to talk freely about

the topics in the guide and answer questions in their own words. Probing questions were asked during the interview to ensure that participants relayed clear explanations of their responses and the researcher was able to clarify any misconceptions during the interview. The probing questions elicited more insight and depth from the participants, providing detailed information that gave the researcher a better understanding.

3.8.5 Recruitment of Participants and Data Collection

Participants who provided their contact details for participation in Phase Two of the study were contacted via email after the data analysis of Phase One was completed. The researcher contacted the participants telephonically and thanked them for their willingness to participate in Phase Two. Their involvement in Phase Two was also delineated and the risks and benefits related to participation and the process of informed consent were explained (Annexure D). The researcher emphasised that participation was purely voluntary and that participants may withdraw from the study at any time. Thereafter, a date and time were scheduled for one-on-one interviews with the study participants via the online platform Microsoft Teams.

A meeting link was sent to each participant for the scheduled time and date of their preference. The researcher occupied a private room with a laptop to prevent disturbances during the online interview and promote researcher and participant engagement so that trustworthy responses were received. The participants were welcomed again and thanked for participating in the study. Participants were reminded that prior consent had been given for the interviews to be audio-recorded and transcribed and that it is a requirement for qualitative research (Annexure D). After that, the study purpose, voluntary participation, confidentiality, benefits and risks of the study, and the right to withdraw from the study at any time, were

reiterated. The in-depth interview guide assisted the researcher in phrasing open-ended questions in a logical sequence, allowing the participants to speak freely at their own pace.

Appropriate probes were used to gain a deeper understanding of the study phenomena where necessary, which were most valuable in producing valid data (Priede *et al.,* 2013; Robinson, 2023). The use of spontaneous probes was kept to a minimum so as to not deviate from the original script of interview questions. Participants were interviewed until no new information or codes emerged and data saturation had been reached.

3.8.6 Data Analysis

Qualitative content analysis was used in the current study to analyse data where the researcher examined and counted the occurrence of a phrase or theme (Mohajan, 2018). According to Graneheim and Lundman (2004), analysing the visible and obvious components of what the text says is referred to as manifest content analysis. Data analysis and data collection occurred simultaneously until no new data emerged during analysis. Every participant interview was transcribed verbatim using the added feature of Microsoft Teams. Content was clarified where needed by the researcher, who listened to the audio recording and read the text on the transcript to ensure that correct data was decoded. The approach to qualitative content analysis by Erlingsson and Brysiewicz (2017) guided the researcher and supervisor during the analysis. The researcher and supervisor independently analysed and coded the data and met frequently to discuss any divergent coding. In analysing the data, each transcript was read line by line to gain an understanding of the collected data. Thereafter, the data were broken into meaningful units, which were merged into codes. Similar codes were grouped into sub-themes, then combined into themes according to their similarities (Annexure J).

3.8.7 Establishing Rigor in Qualitative Data Collection

Criteria set out by Lincoln and Guba (1985) were used to establish the rigor and trustworthiness of Phase Two data collection and analysis.

3.8.7.1 Credibility

According to Korstjens and Moser (2017), credibility in a qualitative study refers to the researcher reflecting on the participants' views and associated conclusions. In the current study, the researcher ensured that the interviews were audio-recorded and transcribed verbatim via the Microsoft Teams online feature to document the correct participant responses. To ensure continued credibility in the study, the researcher introduced himself to study participants face to face at a lecture venue before the start of the lecture before the commencement of Phase One of the study. Both study phases were explained in detail to participants during this time. Before the commencement of Phase Two of the study, the researcher engaged again with the participants to establish trust and rapport. This was done so the participants could position themselves within the broad context of the study and determine their role in the study. Apart from positioning themselves in the study, the researcher wanted the participants to understand what exactly was required of them during the interview so that actual participant views could be captured.

The validity and reliability of qualitative data depend on a researcher's expectations in the interview session (Aung *et al.*, 2021). To increase the quality of the data in the current study, the researcher ensured that the interview guide was developed to prevent data bias by phrasing questions in a neutral form. In addition, the interview guide was assessed by the research supervisor, who concluded that the questions aligned with the objective of Phase Two.

The interviewer/researcher is currently a Master of Nursing Research degree student and a practicing clinical nurse specialist lecturer who is a novice to mixed methodology.

Therefore, the researcher received guidance from the research study supervisor with regard to knowledge and skill in conducting interviews for qualitative data collection.

3.8.7.2 Dependability

Forero *et al.*, (2018), describe dependability in maintaining rigor in qualitative research as the researcher ensuring that the study's findings are repeatable if used within the same participant cohort, interview coders and a similar study context. To ensure the dependability of the qualitative findings in the current study, a detailed protocol was developed before the commencement of the study. The study protocol went through rigorous ethical channels before approval was granted. The Phase Two interviews were audio-recorded and transcribed using MicrosoftTeams. Audio recording during participants' interviews increases dependability by providing access to elements of participants' responses, namely tone, pace, and pauses (Team ATLAS.ti, 2023). Audio recording also allows participants' responses to be transcribed verbatim, where the transcript captures every word from the data compared to interview scripts, which are prone to interviewer bias (Rutakumwa *et al.*, 2019). The data were coded by the researcher and research supervisor and made available to referees as required during peer review only while the researcher and supervisor were present. Data and interpretations were also made available for member checks by participants. According to O'Connor and Joffe (2020), intercoder reliability measures the agreement between different coders regarding how similar data should be coded, which is measured numerically. A coding frame for the study was developed to ensure the qualitative data from Phase Two was captured analytically. According to Kuckartz (2019), a coding frame is a list of codes of data categories accompanied by code definitions and data segments. The researcher and the study supervisor used the coding frame for the current study to code and decode the raw data transcripts during analysis. This increased the reliability of the qualitative data and increased the quality of the research findings.

3.8.7.3 Confirmability

Nowell *et al.,* (2017) describe confirmability in qualitative research as the researcher ensuring that the findings and interpretation are derived from the participant's views only. In order to ensure confirmability in the current study, bias and distortion were prevented by the researcher's analysis of the collected data in collaboration with the research supervisor, which brought different perspectives to data interpretation. This allowed discrepancies to be deliberated until a consensus was reached to establish the true reflection of the data.

3.8.7.4 Transferability

Transferability refers to the researcher providing detailed and conceptualised interview data so that the information may be transferred or generalised to other similar situations (Johnson *et al.,* 2019). To increase the external validity of the data in the current study, an **operational** method was employed to ensure data saturation was reached by ensuring that the number of new codes was quantified per interview as time progressed (Forero *et al.,* 2018). Data saturations were reached when no new codes emerged. A **theoretical** method involved the researcher and research supervisor carrying out an iterative approach to the identification of variations in each of the key concepts. This process continued until no new codes emerged and all the variations from the observed phenomenon had been identified.

A detailed description of the data and research methods used in the current study is provided in the report, allowing for extrapolation of the research findings to other contexts. Transferability increases the descriptive nature of the data so that consumers may evaluate the applicability of the data to other contexts and allow for easy duplication of the study in a different context (Polit & Beck, 2017).

3.9 Phase Three – Modified Delphi Approach

Phase Three of the study consisted of the development of the strategy to increase knowledge and attitudes on organ donation among undergraduate nursing students, which aligned with study objective three, namely to design a strategy (s) in line with the undergraduate nursing students' levels of knowledge and attitudes toward organ donation in order to increase their knowledge and receptiveness towards organ donation. Thereafter, a Modified Delphi Approach was implemented to refine the study's developed strategy.

3.9.1 Target Population of Phase Three and the Sampling Process

The participants of Phase Three who took part in the Modified Delphi Approach consisted of participants from Phase Two of the study (undergraduate nursing students), where purposive sampling was used. The sample was a subset of the sample size of Phase Two, which followed the same inclusion and exclusion criteria for selecting participants. Undergraduate nursing students were identified as end users for the study's information pamphlet and as end users of a developed innovation/strategy, they provide valuable suggestions which are utilised in the refinement of the strategy so that it may be used by a larger population in the future (Infragistics, 2022). Transplant Coordinators within the Kwazulu-Natal region in South Africa were also selected to participate in the Modified Delphi Approach and evaluate the information pamphlet. This is due to their expert knowledge of organ donation, the ethical and legal protocols they follow, as well as the organ procurement and transplantation process (Hagiwara *et al.,* 2018). Therefore, transplant coordinators were identified as key stakeholders in the organ donation process.

3.9.2 Sample Size of Participants

Five undergraduate nursing students and (n = 2) transplant coordinators participated in the Modified Delphi Approach, which resulted in a total sample size of (N = 7) for Phase Three.

3.9.3 Data Collection Instrument

The Modified Delphi Approach utilised a survey tool (Annexure K) created by the researcher. Seven statements relating to the study's information pamphlet and its use for increasing knowledge of organ donation amongst undergraduate nursing students were included in a dichotomous scale. The scale provided "Agree" and "Disagree" options for participants to rate the information pamphlet.

3.9.4 Recruitment of Participants, Data Collection and Timeline

The two participant groups of transplant coordinators and undergraduate nursing students made up the panel of experts and were contacted telephonically by the researcher. The study's background, aim and purpose were reiterated and participants were invited to join a panel of experts to rate the information pamphlet. Once participants agreed to participate, the researcher emailed the study's information pamphlet and the survey tool to the respective participants. The timeframe for completion of the survey tool was five days and the survey tool was returned to the researcher via email.

3.9.5 Data Analysis and Final Consensus

The final consensus for the Modified Delphi Approach was set according to Santaguida *et al.,* (2018) at 75% or greater. The analysis and results of Phase Three are presented in detail in Chapter Six of the study.

3.10 Ethical Considerations

Ethical approval for data collection from participants was obtained from the Human and Social Science Research Ethics Committee (HSSREC) at the selected university (HSSREC/00004841/2022). Gatekeeper permission to conduct the study was obtained from the Academic registrar of the College of Health Sciences and the Dean of the School of Nursing

and Public Health. The study adopted the following guiding principles for participant interaction and data collection:

3.10.1 Ethical and Legal Guidelines for the Study

The ethical considerations for this study followed guidelines by the World Medical Association, Declaration of Helsinki (2013) and Oates *et al.*, (2021). New research topics and methods constantly give rise to new ethical challenges; therefore, the Code of Human Research Ethics seeks to generate a mode of thinking that allows researchers to carry out their investigations in ethically sound ways which are within the clear moral and societal imperatives for ethical behaviour (Oates *et al.*, 2021). In the current study, the researcher ensured ethical compliance was maintained in the following ways:

3.10.1.1 Fair Selection of Participants

The principle of justice is applied to ensure that all participants have an equal chance of selection and to avoid any unfair, prejudiced or discriminatory practice (World Medical Association, 2013). In the current study, the researcher respected the undergraduate nursing students' knowledge, insight and experience. The nature of the research study and their duty in the study were clearly stated. The samples of participants selected for the study was without bias.

3.10.1.2 Informed Consent

Consent in a research study is taken from an informed perspective by giving research participants sufficient and necessary information about the research study in an understandable form so that they can decide whether to participate or not (Oates et al., 2021). In the current study, the researcher explained the purpose of the study to the participants. Copies of the detailed consent and information sheet were handed out to all prospective participants at the selected university during pre-arranged free time at a lecture venue on campus. Participants

were made aware of the voluntary nature of participation, the right to withdraw from the study at any time with no adverse consequences and that the study will maintain anonymity, privacy and confidentiality of the research participants at all times. Participants were given time to absorb and consider the information about the research and what was required during their participation in the study before they could decide on their participation. Participants were allowed to ask questions and the researcher answered those questions to clarify any misunderstandings about the research aim/purpose or nature of the study.

3.10.1.3 Voluntary Participation

Kaye (2020) states that researchers are obligated to seek voluntary informed consent from participants, which culminates in the ethical principle of autonomy. In the current study, autonomy was respected by the researcher, ensuring that participants were oriented to the voluntary nature of participating. Participants were made aware that there was no reward for participation and no participant was coerced into signing consent. Participants were also informed that their university studies will not be affected in any way should they wish to withdraw from the study at any stage.

3.10.1.4 Confidentiality and Anonymity

Research participants were not personally identifiable. This was ensured in the current study by using codes. For example, during Phase One of data collection, the participant survey questionnaires were allocated codes P1P1, P1P2 and so forth. During Phase Two of data collection, the participant interview transcripts were allocated codes P2P1, P2P2 and so forth. The collected information could not be linked back to the participants by other parties as the list of electronic mail addresses, participant names and codes to Phase One and Phase Two data were kept locked in a separate file.

3.10.1.5 Scientific Integrity

According to Diaba-Nuhoho and Amponsah-Offeh (2021), the scientific validity of a research study should be maintained to ensure the reproducibility of the study results and promote scientific integrity. In the current study, the researcher followed the scientific research process during each step while the study was conducted, which aimed to explore and describe the knowledge and attitudes of undergraduate nursing students toward organ donation. Thereafter, a strategy aimed to increase their knowledge and receptiveness towards organ donation was developed. Therefore, generalisability of the study results and the study's developed strategy may add value to the scientific body of nursing knowledge due to the scientific research process that was followed. This entails increasing knowledge and skills of the organ donation process in future nursing practice.

3.10.1.6 Social Responsibility and Value

The study is in line with promoting the best interests of society by taking into account the shared welfare of human beings. The increased knowledge and skills in the organ donation process in nursing practice may increase the rate of successful organ donations and transplantations in South Africa, which could decrease the disease burden caused by multiple end-stage organ failures.

3.10.1.7 Participant Risk-Benefit Ratio

The benefits of the study were maximised and the risks minimised, from initiation to the implementation and dissemination of findings. The difference in power between the researcher and the participants was minimised when the researcher clearly stated his role in the study as well as a clear indication of the role of the participants. The researcher did not use any coercion by use of power, seeing that the researcher is a registered nurse educator with the SANC and the study participants were nursing students yet to qualify as registered nurses. The researcher was aware of his interaction with research participants and the possibility of

unwittingly causing distress or self-doubt to the participants. No tension or unavoidable risks arose during the study; therefore, there was no need for the researcher or the research study supervisor to adopt any risk management measures.

3.10.2 Data Management and Protection

Electronic data collected from study participants were password-protected and known only to the researcher and supervisor. The hard copies of the data were stored in a safe, locked place known to the researcher and research supervisor. The data were made available for referees as required during peer review only while the researcher and research supervisor were present. The data will be retained for a period of five years and if no publications have appeared from the data set within those five years, the data will be destroyed as per the university's policy (University of Kwazulu-Natal, 2014). All electronic data will be permanently deleted from flash drives, hard drives and electronic clouds. Hard copy data will be destroyed by shredding.

3.10.3 Dissemination of Findings

A report with the research findings will be sent to the School of Nursing and Public Health at the selected university. The researcher hopes to publish a research paper with the supervisor in a peer-reviewed journal.

3.11 Chapter Summary

This chapter described the research methodology used in the study. The researcher chose a mixed methodology to achieve the study objectives and answer the research questions. A pragmatic paradigm provided the philosophical basis for the study, which set the tone of the study to one of problem-solving by finding practical solutions to the research problem. The ontological, epistemological and axiological perspectives relating to the broad study context

were described in detail. The researcher selected an explanatory sequential design of two phases to provide breadth and depth to understanding the phenomenon of knowledge and attitudes toward organ donation among undergraduate nursing students. The methodology of Phase One was described, which commenced with quantitative data collection and analysis (questionnaires) and was followed by the description of Phase Two - qualitative data collection and analysis (semi-structured interviews). Thereafter, Phase Three of the study was described, where the results from Phase One and the findings of Phase Two were triangulated together with current literature findings on organ donation. A pamphlet titled *"An Introduction to the Concept of Solid Organ Donation"* was developed by the researcher, with the target audience being undergraduate nursing students. Thereafter, the researcher utilised a Modified Delphi Technique to gain expert panel knowledge from two groups, namely transplant coordinators and end users (undergraduate nursing students), in order to refine the developed pamphlet. This method took place over two rounds until the panel of experts reached a consensus. The study population, inclusion and exclusion criteria, study setting, data collection and analysis of Phase One, Phase Two and Phase Three of the study were described in detail. The study's ethical considerations and dissemination of findings were also explained.

Chapter Four focuses on study Phase One - quantitative data presentation, analysis and discussion.

CHAPTER FOUR: QUANTITATIVE DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter presents the results of Phase One of the study, where quantitative data were collected from third-year undergraduate nursing students. Thereafter, the results are discussed in relation to studies that are both similar and dissimilar to the context of the current study. The chapter aligns with objectives one and two of the study, namely to determine undergraduate nursing students' levels of knowledge about organ donation and to explore and describe undergraduate nursing students' attitudes towards organ donation.

A total of 75 survey questionnaires were distributed to participants and 75 completed questionnaires were received. This yielded a survey response rate of 100% (75/75). Each questionnaire received was coded from P1 to P75 and responses were captured. The researcher used the IBM SPSS statistics version 26 (SPSSv26) package to analyse the captured data. Descriptive statistics (frequency, percentage, mean, median, standard deviation, minimum and maximum values) were calculated and inferential statistics (partial correlation coefficient) was used to calculate associations between variables. Significance was set at $p \leq .05$.

4.2. Description of the Participants' Socio-Demographic Attributes

This section corresponds to Section A of the quantitative survey (Annexure A). Socio-demographic data obtained from participants were age, gender, religion, cultural/ethnic group, how have participants heard or experienced organ donation (exposure to organ donation), if participants attended any previous training/module or short course on organ donation and whether organ donation was ever discussed with their family or friend's circle.

4.2.1. Age, Gender, Religion and Cultural/Ethnic Group

The results in Table 4.1 show that the majority of the participants (74.7%; *n* = 56) belonged to the age group 18-21 years and the minority (2.7%; *n* = 2) were older than 25 years. Regarding gender, females dominated the sample, at 77.3% (*n* = 58), while the remaining 22.7% (*n* = 17) were male.

With regards to religion, the largest group of participants (78.7%; *n* = 59) belonged to the Christian religion, 12% (*n* = 9) participants followed the Traditional African Beliefs and 5.3% (*n* = 4) were followers of Hinduism. Two (*2.7%*) participants belonged to other religions not listed in the survey tool and only 1.3% (*n* = 1) participants belonged to the Islamic religion.

The results for ethnic groups revealed the majority of participants (86.7%; *n* = 65) were Africans; (8%; *n* = 6) were Indian; (4%; *n* = 3) were Coloured and (1.3%; *n* = 1) was a white participant.

Table 4.1

Frequency Distribution of Participants' Socio-demographic Attributes (N = 75)

	Frequency (*n*)	Percentage ($\frac{n}{N}$)%
Age In Years		
18-21	56	74.7
22-25	17	22.7
>25	2	2.6
Gender		
Female	58	77.3
Male	17	22.7
Religion		
Christianity	59	78.7
Islam	1	1.3
Hinduism	4	5.3
African Traditional Beliefs	9	12.0
Others	2	2.7

Table 4.1 Continued

	Frequency (*n*)	Percentage ($\frac{n}{N}$)%
Cultural/Ethnic Group		
African	65	86.7
Indian	6	8.0
Coloured	3	4.0
White	1	1.3

4.2.2 Participant's Exposure to Organ Donation, Previous Training on Organ Donation and Discussion of Organ Donation with Family/Friends

Concerning the question ***"How have you heard or experienced the concept of organ donation?" (exposure to organ donation)***, Table 4.2 shows that 26.7% (*n* = 20) participants cited that their source of information was a university lecture. Fourteen (18.7%) of the participants had heard of the concept on either TV/Radio/Social media, while those who only heard about organ donation in a clinical area/healthcare institution were (5.3%; *n* = 4). Many participants responded to a combination of the alternatives and hence responses were computed as such. Thirty-five (46.7%) of the participants heard about the concept of organ donation from multiple sources, while (2.7%; *n* = 2) participants did not hear/experience organ donation from any of the listed sources. With regards to the question, ***"Have you attended any training such as a lecture/module or short course on organ donation previously?"*** a majority of the participants (84%; *n* = 63) had no training on organ donation, 14.7% (*n* = 11) had attended a lecture on organ donation and 1.3% (*n* = 1) participants had attended a short course on organ donation. No participant had attended a module on organ donation. With regards to the question ***"Has organ donation ever been discussed within your family/friend's circle?"*** a majority of the participants (58.7%; *n* = 44) responded ***'No'*** to discussing organ donation within their family/friend's circle while the remaining (41.3%; *n* = 31) responded **'Yes.'**

Table 4.2

Participant's Exposure to Organ Donation, Previous Training on Organ Donation and Discussion of Organ Donation with Family/Friends (N = 75)

	Frequency (n)	Percentage ($\frac{n}{N}$)%
Where have you heard or experienced the concept of organ donation?		
University lecture	20	26.7
TV/Radio/Social media	14	18.7
Clinical area/Health care institution	4	5.3
Combination of alternatives 1, 2, 3 and 4	35	46.6
Have you attended any training, such as a lecture/module or short course on organ donation previously?		
A Lecture	11	14.7
Module on organ donation	0	0
Short course	1	1.3
No training	63	84.0
Has organ donation ever been discussed within your family/friend's circle?		
Yes	31	41.3
No	44	58.7

4.3 Participants' Knowledge of Organ Donation

This section presents the results of section B of the survey questionnaire, which determines the participants' level of knowledge of organ donation. Question one begins with the participants' understanding of the term brain death, followed by Questions 2 – 11 (10 statements), which required participants to respond with either **"Yes"** or **"No."** Each question with a correct response carries **one point** with a total score of 11.

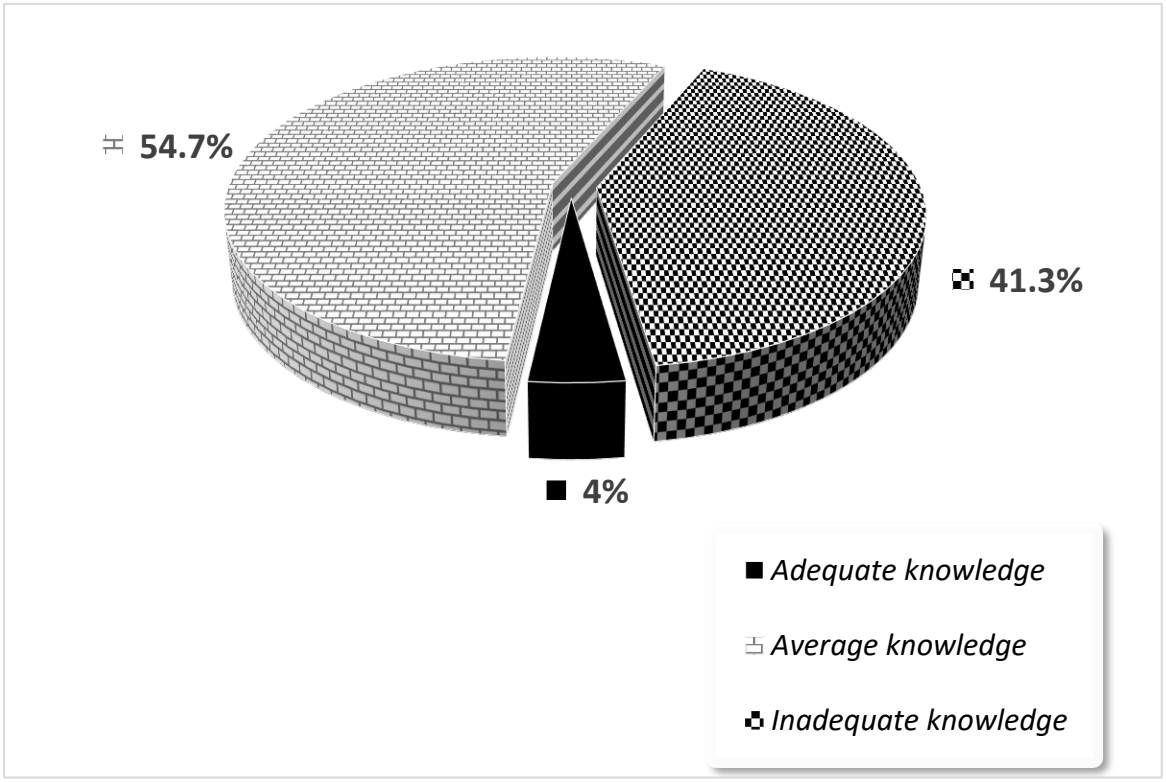
4.3.1. Participants' Overall Knowledge Scores

The overall knowledge scores of participants were based on the sum of the individual participant's responses to the 11 questions. The scoring of this section followed that of Limbu

et al., (2019), where each question relating to knowledge carries one mark. The scoring is based on the classification of knowledge according to adequate knowledge **75%**, average knowledge **50%-75%** and inadequate knowledge < 50% (Chakradhar *et al.,* 2016). Figure 4.1 indicates that only 4.0% (*n* = 3) of the participants had adequate knowledge of organ donation. More than half of the participants (54.7%; *n* = 41) had average knowledge of organ donation and the remaining (41.3%; *n* = 31) participants had inadequate knowledge of organ donation.

Figure 4.1

Participants' Overall Scores of Knowledge of Organ Donation (N = 75)



4.3.2. Participants Responses to Question One (Understanding of the Term Brain Death)

Participants were given six options for this question, with option number three, *"there is no chance of recovery once a patient is certified brain dead,"* being the correct response (see Table 4.3). The majority of the participants (57.3%; *n* = 43) answered **incorrectly,** while

(42.7%; *n* = 32) answered **correctly** by responding with option 3. The mean response from participants was 2.27 (standard deviation ± 1.43).

Table 4.3

Frequency Distribution of Responses to Question One (N = 75)

	Frequency (*n*)	Percentage ($\frac{n}{N}$)%
1. What do you understand by the term "brain death"?		
A patient is alive, but only the brain is non-functional	35	46.7
Brain death is not a certified form of death	2	2.6
There is no chance of recovery once a patient is certified brain dead	32	42.7
None of the above	1	1.3
I am unsure of what the term means	5	6.7

4.3.3 Participants' Responses to Knowledge Statements (Questions two to 11)

Participants were asked to respond with "**Yes"** or **"No**" to ten statements that tested their knowledge of organ donation. The correct response for statement number seven is "**Yes,"** and the correct response for statements two, three, four, five, six, eight, nine, 10 and 11 are "**No**."

Statement number 10*, "Once a patient registers as an organ donor, he/she cannot change their mind,"* had the highest number of correct responses (93.3%, *n* = 70), *mean* = 1.93, (*SD* = 0.25) while statement number 8, *"Most religions do not condone organ donation after brain death,"* had the highest number of incorrect responses (85.3%, *n* = 64), mean = 1.14 (*SD* = 0.36). Table 4.4 indicates a detailed report of the frequency, percentages, means and standard deviations of the participants' responses to statements 2 to 11.

Table 4.4

Frequency Distribution of Responses to Questions 2-11 (N = 75)

	Knowledge statements	Yes (*n*)	No (*n*)	Mean	SD
2	If you are a registered organ donor, the medical staff in a hospital will be reluctant to save your life during a resuscitation	14 (18.7%)	61 [a] (81.3%)	1.81	0.39
3	There is an age limit in order to qualify as an organ donor	46 (61.3%)	29 [a] (38.7%)	1.37	0.49
4	South African law on organ donation is clear and concise	54 (72.0%)	21 [a] (28.0%)	1.28	0.45
5	Patients who have chronic conditions such as diabetes mellitus cannot register as organ donors	45 (60.0%)	30 [a] (40.0%)	1.40	0.49
6	Patients who smoke or consume alcohol cannot register as organ donors	42 (56.0%)	33 [a] (44.0%)	1.44	0.50
7	Although a patient is a registered organ donor, informed consent is required from their next of kin after brain death	60 [a] (80.0%)	15 (20.0%)	1.20	0.40
8	Most religions do not condone organ donation after brain death	64 (85.3%)	11 [a] (14.7%)	1.14	0.36
9	A patient's organs can be sold to the highest bidder after brain death	15 (20.0%)	60 [a] (80.0%)	1.80	0.40
10	Once a patient registers as an organ donor, he/she cannot change their mind	5 (6.7%)	70 [a] (93.3%)	1.93	0.25

	Knowledge statements	Yes (*n*)	No (*n*)	Mean	SD
11	Organ donation may delay a patient's funeral arrangements	53 (70.7%)	22 [a] (29.3%)	1.29	0.46

Note. [a] Correct responses, % = $\frac{n}{N}$

4.3.4 Cross Tabulation of the Participants' Sociodemographic Variables and their Overall Knowledge Scores on Organ Donation

According to Table 4.5, with regard to age, the one participant with the highest score of 10.00 belonged to the 18-21 age group and those with the lowest score of 3.00 were from the 18-21 (*n* = 3) and 22-25 (*n* = 3) age groups.

The majority of the female participants (*n* = 19) scored 6.00 and the one participant with the highest score of 10.00 was also female, while one male participant had the lowest score of 3.00.

The highest number of the Christian participants (*n* = 15) scored 6.00. Also, the one participant with the highest score of 10.00 and the number of participants (n = 6) with the lowest score of 3.00 belonged to the Christian religion.

African participants (*n* = 18) were the highest number who scored 6.00, and the one participant who had the highest score of 10.00 as well as the number of participants (*n* = 6) who had the lowest score of 3.00 were Africans.

Table 4.5

Cross Tabulation of Sociodemographic Variables and Knowledge Scores on Organ Donation

Sociodemographic variable		Knowledge scores							
		3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
Age In Years	18-21	3	11	7	19	9	4	2	1
	22-25	3	2	5	3	2	2	0	0
	>25	0	0	0	1	0	1	0	0
Gender	Female	5	10	8	19	9	4	2	1
	Male	1	3	4	4	2	3	0	0
Religion	Christianity	6	13	10	15	8	5	1	1
	Islam	0	0	0	0	0	0	1	0
	Hinduism	0	0	0	3	1	0	0	0
	African Traditional Beliefs	0	0	1	4	2	2	0	0
	Others	0	0	1	1	0	0	0	0
Cultural or Ethnic Group	African	6	13	11	18	7	7	2	1
	Indian	0	0	0	4	2	0	0	0
	Coloured	0	0	1	1	1	0	0	0
	White	0	0	0	0	1	0	0	0

Note. All scores are out of a total maximum score of 11. Minimum participant score = 3/11 (27.3%) and Maximum participant score = 10/11 (90.9%).

4.4 Participants' Attitudes Toward Organ Donation

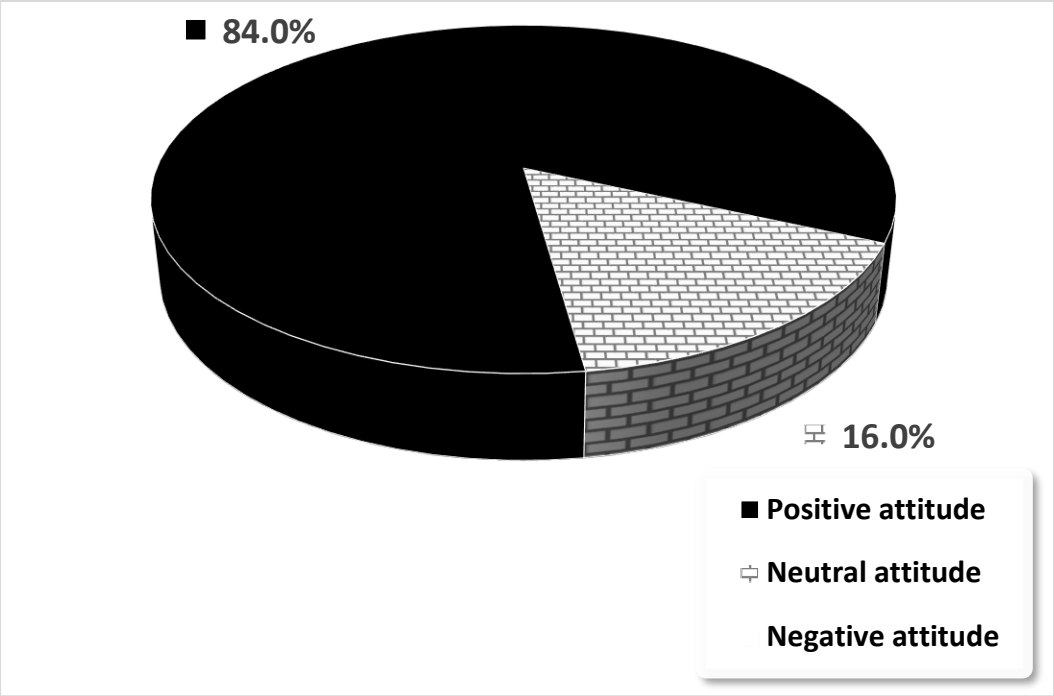
This section presents the results of section C of the survey questionnaire, which consists of 11 statements regarding the participants' attitudes towards organ donation. There are six positive statements and five negative statements. The responses to each statement are measured on a 5-point Likert scale. Scoring for responses to positive statements are as follows: Strongly Agree = **5**, Agree = **4**, Uncertain = **3**, Disagree = **2** and Strongly Disagree = **1**, whereas reverse scoring occurs for negative statements as follows: Strongly Agree = **1**, Agree = **2**, Uncertain = **3**, Disagree = **4** and Strongly Disagree = **5**. A high score denotes a positive attitude towards organ donation, while a low score denotes a negative attitude toward organ donation.

4.4.1. Participants' Overall Attitude Scores

The overall attitude scores of participants were based on the sum of the individual participant's responses to the statements on the Likert scale. Scoring of this section followed that of Limbu *et al.,* (2019), where each participant's score per statement was added to make up an overall score out of a possible maximum of 55 (11 statements x 5 maximum points per statement). The total scoring per participant was grouped in percentages according to a classification of attitude where positive attitude: **≥ 60%**, neutral attitude: **30-60%** and negative attitude: **<30%** (Karki et al., 2017). As illustrated in Figure 4.5, 84.0% (n = 63) of the participants had a positive attitude towards organ donation, while the remaining 16.0% (n =12) had a neutral attitude towards organ donation.

Figure 4.2

Participants' Overall Scores of Attitude towards Organ Donation (N = 75)



4.4.2 Participant's Responses to Positive Attitude Statements on Organ Donation (*N* = 75)

Table 4.6 illustrates the participants' responses to attitude statements on organ donation using a five-point Likert scale. The majority of the participants (40.0%; *n* = 30) strongly agreed to support organ donation (*m* = 4.02, *SD* = 0.97). Almost half of the participants (44.0%; *n* = 33) agreed that donating an organ added meaning to one's life (*m* = 4.16, *SD* = 0.94). Almost half of the participants (44.0%; *n* = 33) remained neutral regarding their will to donate their organs after death (*m* = 2.79, *SD* = 1.04).

The majority of the participants (36.0%; *n* = 27) disagreed with donating their family member's organs (*m* = 2.79, *SD* = 1.04) and the majority of participants (30.7%; *n* = 23) also remained neutral with regard to living donation being better than dead donation in solving the problems

of organ shortage (*m* = 3.10, *SD* = 1.08). Similarly, the majority of the participants (25.3%; *n* = 19) remained neutral regarding whether deceased organs are not being wasted and whether everyone should sign up as an organ donor (*m* = 2.80, *SD* = 1.28).

4.4.3 Participants' Responses to Negative Attitude Statements on Organ Donation (*N* = 75)

Less than half of the participants (46.7%; *n* = 35) disagreed that organ donation insults human dignity (*m* = 4.07, *SD* = 0.99) and a majority of the participants (37.4%, *n* = 28) disagreed that the body will be left disfigured when organs are removed (*m* = 3.53, *SD* = 1.13). A substantial number of participants (32.1%; *n* = 24 disagreed that they found organ donation unacceptable because of their religion (*m* = 3.50, *SD* = 1.00) and nearly half of the participants (46.7%; *n* = 35) disagreed that they felt uncomfortable to think or talk about organ donation (*m* = 3.87, *SD* = 1.08). In contrast, the majority of the participants (30.7%; *n* = 23) agreed that wealthy people and celebrities are given a higher preference for organ donation (*m* = 2.70, *SD* = 1.35).

Table 4.6

Frequency Distribution of Participant's Response to Attitude Statements on Organ Donation (N = 75)

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Std. Deviation
1	I support organ donation [a]	30 (40.0%)	23 (30.7%)	16 (21.3)	6 (8.0%)	0 (0.0%)	4.02	0.97
2	Donating organ add meaning to one's life [a]	31 (41.3%)	33 (44.0%)	4 (5.4%)	6 (8.0%)	1 (1.3%)	4.16	0.94
3	I am willing to donate organs after death [a]	6 (8.0%)	8 (10.7%)	33 (44.0)	20 (26.6%)	8 (10.7%)	2.79	1.04
4	I agree to donate a family member's organ [a]	3 (4.0%)	21 (28.0%)	20 (26.6)	27 (36.0%)	4 (5.4%)	2.89	1.00
5	Organ donation insults human dignity [b]	3 (4.0%)	3 (4.0%)	7 (9.3%)	35 (46.7%)	27 (36.0%)	4.07	0.99
6	The body will be left disfigured when organs are removed [b]	2 (2.7%)	16 (21.3%)	13 (17.3)	28 37.4%)	16 (21.3%)	3.53	1.13
7	Live donation is better than dead donation in solving the problems of organ shortage [a]	8 (10.7%)	20 (26.6%)	23 (30.7)	20 (26.6%)	4 (5.4%)	3.10	1.08
8	I find organ donation unacceptable because of religious beliefs [b]	0 (0.0%)	14 (18.6%)	23 (30.7)	24 (32.1%)	14 (18.6%)	3.50	1.00
9	I feel uncomfortable to think or talk about organ donation [b]	3 (4.0%)	8 (10.7%)	7 (9.3%)	35 (46.7%)	22 (29.3%)	3.87	1.08
10	Wealthy people and celebrities are given more preference for organ donation [b]	16 (21.3%)	23 (30.7%)	14 (18.6)	11 (14.7%)	11 (14.7%)	2.70	1.35
11	A deceased useful organ should not be wasted; everyone should sign up for organ donation [a]	8 (10.7%)	16 (21.3%)	19 (25.3)	17 (22.7%	15 (20.0%	2.80	1.28

***** ***Note***. [a] = positive attitude statements, [b] = negative attitude statements, % = $\frac{n}{N}$

4.4.4 Association between Socio-demographic Attributes of Participants and Their Overall Scores of Knowledge and Attitudes To Organ Donation

A partial correlation was used to determine associations between participants' sociodemographic attributes and their overall scores in Section B and Section C. Table 4.7 shows significance values for the partial correlation calculations. Significance was set at $p \leq 0.05$. The results indicate that no association was found between participants' socio-demographic attributes and their overall scores of knowledge and attitude on organ donation.

Table 4.7

Association between Socio-demographic Attributes of Participants and Their Overall Scores of Knowledge and Attitudes To Organ Donation

Participant Sociodemographic Attribute	Knowledge of Organ Donation	Attitudes to Organ Donation
	Sigma (2 Tailed)	Sigma (2 Tailed)
Age	.955	.136
Gender	.927	.001
Religion	.064	.506
Cultural or Ethnic Group	.250	.028

4.5. Discussion of Quantitative Results

Significant quantitative results of the study are discussed relative to current literature that are both similar and dissimilar to the study and in the broad context of organ donation. The discussion was guided by the three sections of the questionnaire, namely Section A: Sociodemographic attributes of participants; Section B: Knowledge on organ donation and Section C: Attitudes toward organ donation.

4.5.1 Socio-demographic Characteristics of Participants

The results showed that the age group that dominated the sample was 18-21 years (74.7%; *n* = 56). Many authors have echoed a similar age group to the current study among nursing students (Bublitz *et al.,* 2015; Ponnayyan & Visalakshi, 2015; Senturk & Dogan, 2018). Mthimunye and Daniels (2019) yielded a mean age of 23 years in a study describing perceptions of the study environment among undergraduate nursing students at the University of the Western Cape, South Africa. This sounds promising as more school leavers in South Africa are considering nursing as a first career choice by undertaking nursing studies at tertiary educational institutions. Another study by Taylor and Marsh (2021) highlighted that young adults between the ages of 18 and 21 have a higher episodic memory, which contributes to their assimilation of knowledge. Therefore, the concept of organ donation being introduced to the undergraduate nursing student population in the current study is synonymous with the introduction of a new innovation/idea according to the study framework: Roger's Diffusion of Innovation Theory, which will aid knowledge generation on the concept in Phase Two of the study.

The majority of participants in the study (77.3%; *n* = 58) were females. Many studies with nursing students echoed similar results where female nursing students dominated the study sample (Bublitz *et al.,* 2015; Saho *et al.,* 2021; Vitale *et al.,* 2020). Naidoo (2017) states that nursing is predominantly a female profession and the recruitment of males in South Africa remains steady but slow. Currently, the gender profile of South African nurses is 71% female and 29% male (SANC, 2022). This is in keeping with the gender ratio of female to male participants in the current study, as females tend to be recruited in larger numbers than males. In contrast, the attrition rate of male student nurses is higher than their female counterparts (Gauci *et al.,* 2023; Mao *et al.,* 2021; Zhang & Tu, 2020). This contributes to a decrease in the number of practicing male bedside nurses. A study by Babaei and Taleghani (2019) found

gender to be a barrier in rendering compassionate nursing care. The authors stated that female nurses are more compassionate than male nurses due to their femininity and they display characteristic delicate feelings that allow them to establish a therapeutic bond with patients. Knowledge and understanding, as well as attitudes toward the concept of organ donation, requires nurses who are passionate about the caring ethic and who value decreasing the morbidity and mortality rate as well as ending suffering. Therefore, the profession of nursing may be ideal for organ donation knowledge sharing and generating a positive attitude toward the concept among the nursing population of the future.

The largest religious group in the study sample belonged to the Christian faith (78.7%; n = 59). Similar studies by Ponnayyan and Visalakshi (2015) and Amankwaa *et al.,* (2015) echoed the same faith dominating the study sample of undergraduate nursing students. Their study showed that participants of the Christian faith tend to have a more positive attitude towards organ donation; hence, it is a point worth noting in this study. Another study by Timar *et al.,* (2021) showed that religious minority groups should also be considered when developing strategies to create organ donation awareness. Doerry *et al.,* (2022) stated that considering religious views at the time of approaching a family for donor consent is important; however, religion should not be viewed as a barrier but as a "negotiable perspective" since families who belong to the major religions worldwide agree to consent after consulting their respective religious leaders who explain the value of organ donation. A contrasting study by Guo *et al.,* (2022) revealed that 90.9% of the undergraduate nursing student population were atheists however, they were still able to deliver spiritually-competent care to patients who belong to a religious domination. Therefore, it can be noted that religion does not affect the type of care a nurse will provide to a patient, as the nursing profession has its own philosophical belief system that does not focus on any religion. The current study population reflected religious minorities from Traditional African Beliefs, Islam and Hinduism, which were taken into consideration

when the strategy to increase awareness among nursing students was developed to provide a multi-religious perspective to the concept of organ donation and cater to the vast religious beliefs of the undergraduate nursing student population.

African undergraduate nursing students comprise(86.7% (*n* = 65) of the study population. Since the study found that participants (84.0%; n = 63) showed a positive attitude towards organ donation, it can be deduced that the African undergraduate nursing students contributed significantly to this result. In contrast, a study conducted by Gidimisana (2016) at a nursing college in South Africa revealed that African undergraduate nursing students showed a poor attitude toward organ donation. The author stated that it may be traditional beliefs that influence these students and recommends strategies to increase awareness of organ donation among African nursing students. Muwanga *et al.,* (2019) describe the importance of the spirit of "Ubuntu" in African culture, relating to how the sensitive issue of organ donation should be considered when approaching or influencing African people. In the current study, seeing that the majority of undergraduate students belonged to the African ethnic group and were willing to voluntarily participate in the study, it is reassuring that the perspectives of the upcoming generation are changing from the more conventional belief to a contemporary belief regarding the concept of organ donation.

4.5.2 Knowledge of Organ Donation

The study results show that only (4.0%; *n* = 3) of the participants had adequate knowledge of organ donation and (41.3%; *n* = 31) had inadequate knowledge of organ donation. Naçar *et al.,* (2015) reflected similar results of a low percentage of university students having adequate knowledge of organ donation. Many authors have attributed inadequate knowledge of organ donation among undergraduate nursing students to a lack of formal

education in their nursing curriculum and have recommended further development of the curriculum and innovative strategies to increase their knowledge of the concept (Lei *et al.,* 2018; Limbu *et al.,* 2019; McGlade & Pierscionek, 2013; Uwingabiye *et al.,* 2021; Vincent *et al.,* 2019). A contrasting study finding from Gidimisana (2016) revealed that 62.8% of the undergraduate nursing student population had adequate knowledge of organ donation despite having no formal training in their nursing curriculum. Kaur *et al.,* (2015) affirm the main reasons for finding adequate knowledge of organ donation among nursing students were from television/radio and newspaper/magazines as well as physicians in the clinical area. The authors reiterated the lack of organ donation content in undergraduate nursing curriculums, which may increase these students' knowledge of organ donation from adequate to good/excellent.

With regard to the question on brain death in the current study, more than half (57.3%; $n = 43$) of the participants answered incorrectly, which shows a lack of a basic understanding of the concept of brain death. Sampaio *et al.,* (2015) found that undergraduate nursing students are unprepared to face clinical situations of death and dying. The authors state that this may be due to insufficient academic preparation to achieve excellence in nursing care in death and dying. Similarly, the results of a study by Da Silva Pimentel *et al.,* (2022) showed that most professional nursing staff also did not understand the concept of brain death. The authors did not include any critical care-trained nurses in their study population and reinforced the need to professionally train general nurses in understanding the concept of brain death. Matlakala (2023) affirms the current shortage of critical care-trained nurses in intensive care units in South Africa, which has led to the employment of general nurses who function in these specialist roles. Most brain-dead patients are encountered in intensive care and emergency units where, currently, general nurses are responsible for their care due to the current shortage of critical care/emergency nurse specialists. This point echoes the current study's broad aim of

developing a strategy to increase the receptiveness of undergraduate student nurses towards organ donation, as it is without doubt that understanding the concepts of brain death and organ donation go hand in hand. The lack of understanding of brain death may be due to a lack of knowledge of the concept. Similarly, De Menezes Ferreira *et al.,* (2013) and Ju *et al.,* (2018) found that undergraduate nursing students did not understand the concepts of brain death and organ donation. Flores *et al.,* (2023) found that lack of knowledge of brain death was common among emergency-trained speciality nurses and general nurses. The authors recommended professional education to curb the lack of knowledge. In contrast, De La Longuiniere *et al.,* (2016) explored the knowledge of critical care nurses on brain death diagnosis and found that these nurses were well informed about brain death, physician assistance during brain death testing, nursing care of a patient with brain death as well as associated potential organ donor patient referral to the transplant coordinator. The researcher expands that the understanding of brain death should not be limited to critical care nurse specialists, as general nurses are also involved in the nursing care of these patients in intensive care units and emergency departments; therefore, a basic understanding of the concept would assist them in gaining the confidence to provide nursing care to these patients.

4.5.2.1 Participant's Responses to Knowledge Statements

The knowledge statement with the highest correct responses (93.3%) related to a person not being able to change their mind once registered as an organ donor. In countries such as South Africa, the family or next of kin of persons registered as organ donors can refuse to give consent for donating their deceased family member's organs (Slabbert & Venter, 2019). This finding is echoed in a study by Toews and Caulfield (2016), which found that even if a patient registers as an organ donor, the family still has the final say after their demise. The authors

recommended that there should be a legally-endorsed protocol whereby a deceased donor's living will on organ donation cannot be overturned by family members.

The statement with the lowest number of correct responses (85.3%) was*"that most religions do not condone organ donation after brain death"*. Literature by many authors on the five major religions globally and their beliefs toward organ donation conclude that most of them do condone organ donation (Abdeldayem *et al.,* 2016; Blake, 2015; Doerry *et al.,* 2022; Muwanga *et al.,* 2019).

4.5.3 Attitudes Towards Organ Donation

Eighty-four percent (*n* = 63) of the current study population showed an overall positive attitude towards organ donation. This result is reassuring as undergraduate nursing students who are yet to graduate as registered nurses are enthusiastic about promoting organ donation. Various other studies revealed similar results regarding undergraduate students' positive attitude toward organ donation (Kaur *et al.,* 2015; Limbu *et al.,* 2019; Mohamed *et al.,* 2022; Parsa *et al.,* 2019; Vincent *et al.,* 2019). Generally, increased information and knowledge about a concept fosters a more positive attitude toward that concept, resulting in behaviour change (Fabrigar *et al.,* 2006; Liu *et al.,* 2016). The current study found contrasting results where only (4.0%; n = 3) of the participants had adequate knowledge of organ donation and yet (84.0%; *n* = 63) showed a positive attitude toward organ donation. A pretest-posttest study by McGlade and Pierscionek (2013) proved that education on organ donation improves the attitudes of undergraduate nursing students toward the concept.

4.5.3.1 Participants' Responses to Attitude Statements on Organ Donation

In the current study, a larger percentage of participants strongly disagreed with the negative statements on organ donation. A larger percentage of participants strongly agreed with positive statements supporting organ donation and that donating organs adds meaning to life.

These results indicate a positive attitude towards organ donation. A study by Limbu *et al.,* (2019) echoed similar results of study participants disagreeing with negative statements and agreeing with positive statements regarding the concept. Kose *et al.,* (2015) stated that among the study participants, (17.1%) had negative attitudes toward organ donation, and the main reason was that it would mean bodily mutilation due to the organ procurement process. The current study produced contrasting results, with (37.4%) of participants disagreeing and (21.3%) participants strongly disagreeing with a similar negative statement: *"The body will be left disfigured when organs are removed"*. Many authors have identified the fear of bodily mutilation as a barrier to fostering a positive attitude toward organ donation (Cantarovich, 2018; Dimo, 2018; Li *et al.,* 2019; Miller *et al.,* 2018; RíOs *et al.,* 2014). Therefore, it is encouraging that the current study's participant population may have overcome the barrier related to fear of bodily mutilation regarding organ donation.

4.5.4 Association between Socio-demographic Attributes of Participants and Their Overall Scores of Knowledge and Attitudes Towards Organ Donation

The current study utilised a partial correlation which found no significant associations between participants' socio-demographic attributes and their overall scores of knowledge on organ donation, as well as their overall scores of attitudes toward organ donation. Therefore, the participants' socio-demographic attributes, such as age, gender, religion and cultural/ethnic group, did not influence their overall scores of knowledge and attitudes toward organ donation.

A study by Huern *et al.,* (2016) found significant associations between the participants' socio-demographic attributes of ethnicity and religion and their knowledge scores on organ donation, as well as a significant association between the participants' religion and attitude towards organ donation. The authors stated that the reasons for the significant associations were

the different levels of interest towards organ donation from the different religious and ethnic groups. Another study by Limbu *et al.,* (2019) also found a significant association between ethnicity and level of knowledge of organ donation and attributed the finding to a similar causal factor as the study by Huern *et al.,* (2016).

4.6 Chapter Summary

This chapter presented the results of Phase One – quantitative phase of the study, where data were collected from undergraduate nursing students (N = 75) through a survey questionnaire. The data were analysed for descriptive and inferential statistics using the IBM SPSS statistics version 26 (SPSSv26) package. Results were grouped according to sections of the survey questionnaire: Section A: Socio-demographic attributes of participants, Section B: Knowledge of organ donation and Section C: Attitude towards organ donation. The overall scores for knowledge of organ donation showed that only (4.0%; n = 3) of the participants had adequate knowledge of organ donation, while more than half of the participants (54.7%; n = 41) had average knowledge and the remaining (41.3%; n = 31) participants had inadequate knowledge of organ donation. The overall scores for attitudes toward organ donation indicated that (84.0%; n = 63) of the participants had a positive attitude towards organ donation, while the remaining (16.0%; n = 12) had a neutral attitude towards organ donation and none of the participants had a negative attitude towards organ donation. A partial correlation was calculated to determine the association between participants' socio-demographic attributes and their overall scores on knowledge and attitudes toward organ donation, which revealed no significant correlation.

The results of Phase One of the study were discussed in relation to other studies with similar and contrasting results within the broad context of knowledge and attitudes on organ

donation. Various studies were found to have similar results to the current study regarding knowledge and attitudes on organ donation within many different population groups, such as undergraduate nursing students, undergraduate university students from different professions, qualified general nurses and critical care/emergency nurse specialists. Other studies produced contrasting results where religion and cultural/ethnic group majorities were dissimilar to the current study. However, the common recommendation from these similar and contrasting studies was to enhance existing or develop further educational material regarding knowledge of organ donation, which will spark a behaviour change and increased receptiveness towards the concept.

Chapter Five focuses on the presentation of Phase Two: Qualitative findings, analysis and study discussion.

CHAPTER FIVE: QUALITATIVE DATA PRESENTATION, ANALYSIS AND DISCUSSION

5.1 Introduction

This chapter presents the findings of Phase Two of the study, where qualitative data were collected from undergraduate nursing students. The chapteraligns with chapter two of the study, to explore and describe the third-year undergraduate nursing students' attitudes toward organ donation. The qualitative data collection took place after the quantitative data analysis of Phase One was completed. Individual semi-structured interviews were conducted using an interview guide developed by the researcher (Annexure B). The interview guide consisted of three questions, namely, question one: *Describe what you believe are some of the ways/strategies in which knowledge of organ donation amongst undergraduate nursing students can be increased?*; **Probe:** *What type of information and what type of detail do you think is necessary?*; question two: *How do you think that this strategy will be beneficial to you as a Registered Nurse in order to participate in encouraging patients and families?* and question three: *What are some of the barriers you have encountered, in trying to understand the concept of organ donation?*

Data saturation was reached at (n = 7) participants and a further two more participant interviews were conducted to confirm data saturation, resulting in a total of (N = 9) participants being interviewed. Data saturation is defined as no new data or themes emerging during qualitative data collection (Saunders *et al.,* 2017). Each participant was given a pseudonym of Participant One (P1) to P9 in order to label the participant interview transcripts for analysis and further reference. Qualitative, manifest content analysis was used to analyse the data from the interview transcripts. A hands-on guide by Erlingsson and Brysiewicz (2017) assisted the researcher in qualitative content analysis. As a novice in research, the researcher first engaged with literature on qualitative data analysis and various online workshops on qualitative data

analysis. Thereafter, the researcher and the research supervisor independently coded and categorised the data, often meeting to discuss the emerging themes and talk through discrepancies in coding (Annexure J).

5.2 Second Point of Integration in the Study

The third question in the interview guide emanated from the analysis of the data obtained in Phase One (Quantitative) of the current study and highlighted the Second Point of Integration between data in Phase One of the study and data collection in Phase Two. Quantitative data analysis revealed that only (4.0%; $n = 3$) of the participants had adequate knowledge of organ donation. The low score needed further probing, resulting in the question ***"What are some of the barriers you have encountered in trying to understand the concept of organ donation?"*** being added to the interview guide, which signifies a building approach to the collected data in Phase One being followed up by data collection in Phase Two.

5.3 Presentation of Findings

Participants' socio-demographic attributes and research findings according to Themes and Sub-themes are presented below:

5.3.1. Description of participants

The student participants' ages ranged between 21 and 25 years, with a mean age of 22. All of the nine participants belonged to the female gender and were in their third year of study.

5.3.2. The Research Findings According to the Themes and Sub-Themes

This section presents the qualitative findings of Phase Two of the study. Data were grouped into themes and subthemes according to each question in the interview guide. These are presented systematically with direct quotes from participants' responses.

The findings gathered from individual semi-structured interviews are presented according to themes and sub-themes that emerged from the words of the participants in response to the questions posed by the researcher. Applicable quotes, given in italics, are the exact words of the participants and are provided to substantiate the relevant findings. Four main themes emerged from the questions: strategies to increase knowledge, information preference, future benefits of the strategy and barriers to understanding organ donation.

Table 5.1 summarises the themes and subthemes that emerged from the participants' responses.

Table 5.1

A Summary of Themes and Sub-themes that Emerged from the Data in relation to the Interview Questions

Question 1. Describe what you believe are some of the ways/strategies in which knowledge of organ donation among undergraduate nursing students can be increased?	
Theme	**Sub-theme**
1. Strategies to Increase Knowledge	1.1 Curriculum Integration
	1.2 Lecture method
	1.3 E-Learning
	1.4 Collaboration with organisations
	1.5 Media
Question 1.1 [Probe] What type of information and at what type of detail do you think is necessary?	

Theme	Sub-theme
2. Information Preference	2.1 Introduction to Organ Donation
	2.2 Legislation
	2.3 Comprehensive Information
Question 2. How do you think that the strategy/ies you mentioned benefits you as an advocate for organ donation in your position as a registered nurse	
Theme	**Sub-theme**
3. Future Benefits of the Strategy	3.1 Increased Insight
	3.2 Patient Advocacy
Question 3. What are some of the barriers you have encountered in trying to understand the concept of organ donation?	
Theme	**Sub-theme**
4. Barriers to Understanding Organ Donation	4.1 Information Deficit
	4.2 Socio-demographic Factors

5.3.2.1 Theme 1: Strategies to Increase Knowledge

Five sub-themes consistently emerged as participants described some of the ways/strategies in which knowledge of organ donation could be increased. The sub-themes were *(i) curriculum integration, (ii) lecture method, (iii) E-learning, (iv) collaboration with organisations and (v) media.*

Sub-theme 1.1: Curriculum Integration. The participants in this study mentioned that a way to increase their knowledge of organ donation would be to integrate the concept of organ donation into their programme curriculum. They specified that information on organ donation be integrated into the curriculum as part of content taught in general nursing. Participants also identified that the curriculum currently lacked information on organ donation. The following statements speak to the sub–theme.

"Okay, I think the 1st way would be to integrate it into our curriculum, into our general nursing curriculum" [P8].

"To apply to be an organ donor, how does it work when, like an underage person, then their parents decide or the next of kin decides to donate the organs? Things like that. Because I think we don't have that information currently in our curriculum" [P3].

Other participants spoke of a stand-alone module on organ donation, specifying that the module should be part of the theory in semesters, but did not share a preference for whether it should be in semester one or semester two of the third year. The following direct quotations reflect this:

"And also by having modules in the Bachelor of Nursing curriculum that are going to open donation so that they will know more about it because it's not something that we know about as students" [P5].

"With that, I think if we can have like a module in-between or in-between the semesters, whether it's semester one or semester two, we have a module that will like teach us more on organ donation, give us more information about organ donation, maybe that will help us to increase knowledge" [P7].

Sub-theme 1.2: Lecture method. Participants explained that the concept of organ donation was introduced to them previously as part of a case study which did not cover the

topic in sufficient depth. However, various other teaching strategies were identified by participants as a way forward to increase their knowledge of organ donation. The first of them is a formal lecture by their module coordinator. The discussions they believed would allow an exchange of views by their student peers, further adding to their knowledge. The following extracts explain these views.

> *"Honestly, I would think a regular lecture like where our lecturers would come and present us the information and maybe within the lecture……" [P3].*

> *"Okay, one of the most important strategies, it can be a lecture. Yeah. When we are attending our blocks"[P4].*

Participants also requested that a lecture on organ donation be presented by a guest speaker like an individual involved in organ donation societies. Interestingly, the guest speaker was not identified as a transplant coordinator. Participants showed enthusiasm for inviting persons who had substantial knowledge specific to the topic of organ donation. The following selected participants' extracts highlight this sub-theme:

> *"And I think that's all and invite during the lectures, invite guest speakers to discuss organ donation" [P7].*

> *"I think you could do maybe like a guest speaker or someone who has a lot of knowledge about organ donation or someone who's done it themselves. I think it would really give a better understanding to students just to have like a real-life example" [P2].*

The need for a real-life example was emphasised by other participants who felt that they could learn from a speaker who would give them a better understanding. Some participants specified the type of guest speaker as a recipient who received or donated an organ so that they may give a testimony and relate the whole process from illness to recovery, which they would find motivating to become advocates for organ donation.

> *"You know the other organs and how it has changed their lives, and also maybe if we also have a testimony of someone saying that I was going through 1234 and then I needed it, maybe they had, for example, a motor vehicle accident and they had a kidney punctured or something and then they needed a new organ. And how that organ has changed their lives, you see, when indirectly be like, oh, shame, man, since I have taken this, let me just give one to save someone else's life" [P9].*

Participants also alluded to holding a campaign, which would mean more exciting information-sharing activities they may actively engage in. Other participants requested a five-day workshop, which is similar to a five-day HIV/AIDS campaign that they presently attend as part of their training. Participants expressed their need to be integrated into the world of organ donation by people who deal with it daily and are very knowledgeable about the concept.

> *"Okay, I think it can be increased by raising awareness by having campaigns that are going to educate the students about organ donation so they'll know more about it" [P5].*

"I think amongst nursing students it would be nice if we had like a workshop……specifically on organ donation, so we could have the necessary information to pass on to patients" [P3]

"So in the past, we had a workshop on, for example, HIV and it was, I think, a week-long, five days long. And each day we had like. Speakers… guest speakers come in and educate us, and I think that would be really helpful because we don't really see organ donation that much. So to be like integrated into that world with people who are already in with their knowledge would be very helpful." [P3]

Sub-theme 1.3: E-Learning. In discussing their preference for electronic information over written information, participants reported that an informative pamphlet/brochure on organ donation should suffice as an appropriate e-Learning strategy. The participants submitted that millennial university students are familiar with online or electronic information instead of paper-based information. Participants further iterated that electronic information is a better option when providing information to patients as they may electronically share the information as needed and reach a greater audience. Other participants spoke about colourful electronic posters that can appeal to the reader's eye, which should be displayed on university electronic platforms to capture the attention of a large number of university students. The following excerpts illustrate this:

"I think just a pamphlet and then if they're really interested in it, then give them a booklet giving them a lot more information about it…… I think so because people are on their phones a lot more and I just know from when I

get given a piece of paper, I'm more likely to throw it away than if I'm seeing something on my phone……I think it would be helpful because I could sort of refer to patients as well because if I don't know if I forget details about this information, I can just refer this to them and like send them a copy of what you've sent to us or something" [P2].

"….just distribute the knowledge in brochures or pamphlets to us, which we can read at our own leisure for more information"[P8].

"Then you can also have like a fun fact of information on the UKZN website, like just a small information and it must be like really colourful cause usually there's black and white and we really love attractive things" [P9].

Sub-theme 1.4: Collaboration with Organisations. Participants mentioned an innovative method of dissipating knowledge of organ donation to the undergraduate nursing student population at the university.– Infact, the participants believed this method would reach all students within the university. This could be done through collaboration with student contact services and peer group organisations such as the university campus wellness centre and campus Student Representative Council (SRC). Participants described how information on organ donation could be disseminated from student contact services to their mentees and then to the students at the campus. Participants mentioned other student hotspots, such as the library and student residence services, for hanging up posters and disseminating information on organ donation. This is indicated in the following extract:

"You can also maybe collaborate with the School of Health Science; I know here at our campus, we have the PR Wellness mentors. You can collaborate with them and teach them about organ donation. And they can, in their small meetings with their mentees, disseminate that information that they've learnt. And other people that you can collaborate with include the SRC members; they can help you with that. And here at our residence, there's the residence assistance. So you can design perhaps like pamphlets again, it needs to be colourful." [P9].

Sub-theme 1.5: Media. Many participants constantly spoke about media, which included *"TV/radio," "social media,"* and other *"mobile phone"* applications as being ways of disseminating information to students. The following are selected extracts of participants who highlighted this further:

"I think so because people are on their phones a lot more and I just know from when I get given a piece of paper, I'm more likely to throw it away than if I'm seeing something on my phone" [P2].

"Social media being one of the biggest ones because, amongst nursing students, which is generally into social media these days, it'll be a good idea, a good strategy to make everyone aware about organ donation even the news and the radio are good platforms, yeah" [P8].

5.3.2.2 Theme 2: Information Preference

The theme of *information preference* arose from participants' responses to *what type of information on (organ donation) and what type of detail do you think is necessary?* The question was a probing question into the type of information and detail required to be able to gain knowledge on organ donation. Three sub-themes emerged as participants described their preferences regarding the actual concept of organ donation and the volume of information they should receive. The sub-themes were: (i) *introduction to organ donation,* (ii) *legislation* and (iii) *comprehensive information*.

Sub-theme 2.1: Introduction to Organ Donation. Most participants requested that elementary information be included in the developed strategy to increase knowledge of organ donation. Participants specified that they require the definition of organ donation, followed by the different types of organ donation and which types of patients can become potential donors. The following extracts illustrate this:

> *"I think it should include. Like, first explain what organ donation is and then who qualifies for organ donation, and then the different types….. how you would get those organs and consent from someone and then transfer it to the other person that needs the organs" [P1].*

> *"I would think. Maybe who? What qualifies you to donate an organ and what? How old do you have to be? What lifestyle do you have to live to be able to donate an organ? And also how it works after you've. Died because I know that from what I've heard, the family has to pay for the organ to be like harvested but taken from the organ donor. So just more information about how that would all work, I think, would be quite helpful" [P2].*

Sub-theme 2.2: Legislation. Participants indicated that they required information on the current legislation surrounding organ donation, consent and procurement. This entailed the Acts surrounding organ donation and whether a donor's last will and testament would stand as consent for organ donation after their demise. The importance of legal protocols was further emphasised by participants to prevent any misunderstandings during the organ donation referral and procurement process. These included any misunderstandings about the process of brain death testing and whether medical personnel will be reluctant to resuscitate during an emergency, knowing that one is an organ donor. The following are excerpts from the participants which highlight this further:

> *"Let's say you have a brain-dead patient here. I read somewhere where it was written that if a patient has a will. It will serve as evidence that the patient was keen to become an organ donor, so we would also like to get more information" [P4].*

> *".....legal protocol must be stated clearly on the pamphlet, so there's no misunderstanding that can like happen there……..You know when you're in an accident and then if you applied for organ donation and then they'll be like you gonna be helped last, or they just take your organs like they must clarify" [P7].*

Sub-theme 2.3: Comprehensive Information. In contrast to some participants indicating that information should be brief, some participants expressed the need for more *comprehensive information* on the subject of organ donation. Participants explained that they require this information for the clinical area, especially when a patient is taken to an operating theatre for a transplant procedure. Many participants mentioned a guest speaker who would

provide them with more insight into the concept of organ donation. The following exact participant excerpts illustrate this:

> *"I think you could do maybe like a guest speaker or someone who has a lot of knowledge about organ donation" [P2].*

> *"Speakers, guest speakers come in and educate us, and I think that would be really helpful because we don't really see organ donation that much"[P3].*

> *"Yeah. And I think that's all and invite during the lectures, invite guest speakers to discuss organ donation"[P7].*

They explained that once they qualified as registered nurses, they would be expected to accompany the patient and provide information on the organ donation process. They indicated that as student nurses, they were assisted by professional nurses who provided education to patients undergoing transplant surgery. The extracts below affirm this:

> *"So I think it should be long. Maybe it's gonna be like, you know, it just should bring more than enough information that whenever you go to a clinical area and they say this patient is going to go for organ donation and you can't be able to take them by yourself, not requiring assistance all the time because generally, you don't know the information" [P6].*

> *" I think it should be a detailed pamphlet or brochure describing the pre-, during and after the procedure, important information like side effects, or what do you qualify for? What information you need to know prior to being*

an organ donor? It needs to be comprehensive, so the individual fully understands….." [P8].

The statements below explain this further:

"I'd also be able to advocate for the whole cause. And give them support before, during and after the procedure. With detailed information, I'll be more aware and more knowledgeable" [P7].

"Just tell my siblings and friends about it and encourage them to go out there and do it because now I will not have just information from any Internet source and stuff" [P9].

5.3.2.3 Theme 3: Future Benefits of the Strategy

Theme Three emerged from participants' responses to their thoughts on how the strategy/ies they mentioned in question one would benefit them in advocating for organ donation. Two sub-themes evolved: (i) *increased insight* and (ii) *patient advocacy.*

Sub-theme 3.1: Increased Insight. The sub-theme of *increased insight* was the most prominent sub-theme that emerged from the participants' responses. Many participants articulated that the strategy will benefit them by giving them insight into matters concerning organ donation and equip them with the necessary skills required for advocating for organ donation. Again, *increased insight* was associated with being more credible when discussing organ donation and when caring for patients and families involved in the organ donation process. Other participants referred again to the fact that their knowledge of organ donation

was currently limited; therefore, the strategies they had mentioned would build on this limited knowledge. The participant views are expressed in the following excerpts:

> *"Umm, I think it [the strategies I mentioned] will be beneficial to us because, like at the moment, I think our knowledge on organ donation is not that wide and we don't actually know much about it" [P1].*

> *"Oh yeah, so the skills that we would learn……families rely on the nurses for health education and for counselling. And they ask us our opinions and things. So I feel like if we are educated using proper strategies on these matters, we would be able to convey that knowledge properly to our patients and their families" [P3].*

Sub-theme 3.2: Patient Advocacy. In addition to *increased insight*, *patient advocacy* emerged consistently in participants' interviews as a response to how would the strategy suggested benefit them as advocates for organ donation in their position as registered nurses. Participants mentioned being able to identify any legal transgressions should they be involved in the organ donation process. Other participants added that they require information on the concept in order to advocate for organ donation in the future. The participants also recognised that the information given to them should not be general information from the internet but rather information on organ donation that stems from the current research study, which they could share with friends and family. They referred to this as having information that made them credible advocates of organ donation to patients and the public. The narratives below confirm the information presented in this sub-theme:

"...when we are in the clinical areas, then we would be able to explain more to the people who are willing to donate and to educate those who are a bit hesitant..." [P1].

"I think it would be helpful because I could sort of refer patients as well, because if I don't know, if I forget details about this information" [P2].

"I'd also be able to advocate for the whole cause. And give them support before, during and after the procedure" [P8].

"I am the patient's advocate in addition to my other responsibilities. So if things are being done in the wrong way, I can say no, what you're doing is not right and stuff from an informed position, and even in the communities" [P9].

5.3.2.4 Theme 4: Barriers to Understanding Organ Donation

Theme 4 emanated from the second point of integration in the study, which further evolved into the sub-themes of *(i) information deficit* and *(ii) socio-demographic factors* presented below:

Sub-theme 4.1: Information Deficit. The participants consistently mentioned an *information deficit* on organ donation throughout the interview; however, it was highlighted again in detail during their responses to the question on barriers to understanding organ donation. Participants explained how their limited or absence of information on organ donation was coupled with misconceptions about the concept of organ donation. The participants elaborated that these factors resulted in them being afraid of the idea of organ donation and they failed to speak

about the topic to patients. Other participants confirmed that the *information deficit* on organ donation knowledge was a barrier to their understanding of the concept, which had a ripple effect on their negative attitude toward organ donation. Others spoke of their limited knowledge preventing them from engaging in any conversations about organ donation. The participants evidenced these views in the extracts below:

> *"I think fear, like I've said before, like I've said in the beginning, that it is not clear that when anything happens to you, you'll be resuscitated or they will just take your organs away. So we have like fear. Fear is one of the barriers and yeah" [P7].*

> *"……as well as the lack of knowledge throughout our degree, we in our third year, we haven't ever come across organ donation. So that lack of knowledge is a barrier. Yeah" [P8].*

Sub-theme 4.2: Socio-demographic Factors. Participants mentioned that the socio-demographic factor of religion stipulated and contained strict rules regarding the care of the body after death. In this way, participants explained that if an individual's religion specifies that organs should not be donated, then religious beliefs becomes a barrier to individuals not being interested in the concept of organ donation. Participants also specified cultural beliefs that forbade donation of organs after death, referring to the Traditional African Culture. They highlighted that within the African Culture, the body should be buried whole after death to allow your soul to be accepted by the ancestors; therefore, in doing so, organ donation is not allowed or unheard of.

The following direct quotations support the participants' experiences of religion and culture as barriers to understanding the concept of organ donation:

> *"And I know that in my religion [Islam], as soon as a person passes away, even with the layout, you don't take them to the mortuary or anything like that. The family will come and fetch them immediately at that time, you see. So my religion is quite strict in a way, and I think that might have been a barrier in me not really being that interested in organ donation because I don't really see myself giving an organ in a way, you see" [P9].*

> *"In African cultures, it is believed that when one dies, he has to go to God. God receives them as they were born, born as a whole. So, if one body part is missing, you're not counted as one. You're not welcome in your family. You're not counted as an ancestor" [P4].*

> *"You know, us as Africans, we believe that a person must be buried as she or he is. No parts must be missing or taken away from them. So culture is one of the barriers" [P7].*

5.4 Discussion of Findings

The significant qualitative findings of the study are discussed relative to current literature that are both similar and dissimilar to the study and in the broad context of organ donation. The discussion aligns with the four themes that emerged during data analysis namely, *strategies to increase knowledge*, *information preference*, *future benefits of the strategy* and *barriers to understanding organ donation*, which are discussed below.

5.4.1 Theme 1: Strategies to Increase Knowledge

In sharing their views on strategies to increase their knowledge of organ donation, participants spoke of multimodal strategies that align with millennial students' preference for information sharing methods. These preferential strategies were: *curriculum integration, lecture method, E-learning,* and *collaboration with student organisations* and *media*. Similarly, Ghasemi *et al.,* (2020) described strategies used in nursing education to increase knowledge of a specific topic among nursing students as a multimodal concept. The authors stated that any strategy that may increase student engagement or student investment of time and effort may prove beneficial in increasing their knowledge. Participants in the current study mentioned an information brochure or pamphlet as one of the strategies to increase knowledge and receptiveness of organ donation amongst undergraduate nursing students. Gidimisana (2016) and Mohamed *et al.,* (2022) echo a similar sentiment by recommending the use of seminars and booklets or pamphlets to provide nursing students with information on organ donation. Alwahaibi *et al.,* (2023) also recommended incorporating organ donation information into undergraduate nursing curricula through campaigns and booklets/pamphlets. Participants in the current study lacked knowledge of the presence of a transplant coordinator in the clinical area as they requested a lecture from a guest speaker who is an expert on organ donation as a strategy to increase their knowledge. This is in keeping with the researcher's intent to develop a series of strategies to increase knowledge of organ donation among undergraduate nursing students.

Various authors have recommended that the concept of organ donation be formally integrated into undergraduate nursing curricula as a way to increase nursing students' knowledge and receptiveness towards the concept (Lei *et al.,* 2018; Limbu *et al.,* 2019; Mysliwiec, 2017; Uwingabiye *et al.,* 2021; Vincent *et al.,* 2019). Likewise, participants in the current study suggested that the concept of organ donation be formally integrated into their

undergraduate nursing curriculum, which currently has very minimal information. Most participants expressed their need for a module on organ donation. Green *et al.,* (2023) affirm that a module on organ donation in a nursing curriculum may prove beneficial in increasing nurses' knowledge during the referral and procurement process. Conclusively, it is obvious that undergraduate nursing students may benefit from the inclusion of organ donation in undergraduate nursing curricula.

5.3.2 Theme 2: Information Preference

With regard to the theme of *information preference* in a strategy designed to increase their knowledge of organ donation, some participants indicated that they preferred elementary information on organ donation, while others spoke of comprehensive information on organ donation in the undergraduate nursing curriculum. Participants also referred to specific information they would want relayed to them. This is summarised as, definitions of brain death, definitions of organ donation, types of organ donation, patient groups that qualify for organ donation, legislations surrounding organ donation and a summary of the organ procurement process at hospitals.

The findings emerging from this study are similar to a study by Kaur *et al.,* (2015), who recommended that brain death and donor eligibility be included in the information developed for undergraduate nursing students to improve their knowledge of organ donation. A study by Marván *et al.,* (2020) also highlighted the need for integration of organ donation into the undergraduate nursing curriculum and suggested information such as brain death understanding, general information on organ donation, protocols, responsibilities of the nurse during the process, ethical and legal issues, how to maximize organ donation rates and role-play scenarios that involve students during the learning and teaching process. McGlade and Pierscionek (2013) affirm that knowledge of organ donation among undergraduate nursing

students improved after introducing a strategy to increase their knowledge. The authors stated that nursing student's level of knowledge improved in the post-test phase of the study in aspects such as the fundamentals of medico-legal issues, the different types of consent systems and understanding that brain stem death is a certified form of death. Therefore, in the current study, the researcher expands that teaching and learning systems can benefit from empirical evidence and the preferential information topics identified by the participants may lead to the aspects that should be included in the study's developed strategy.

5.3.3 Theme 3: Future Benefits of the Strategy

The current study participants expressed that *increased insight* was one of the main advantages associated with the strategies mentioned for increasing knowledge on organ donation. A study by Reena (2021) concluded that interventional strategies in nursing education to increase knowledge of organ donation had a positive effect on patient health education and potential organ donor referral rates in specialised units. Seelan and Sharma (2016) echo a similar sentiment that increased knowledge will ultimately translate into more potential organ donor referrals and successful organ donations. A Turkish pretest-posttest study by Allahverdi et al. (2020) also found that nursing students acquired more knowledge after implementing a strategy to increase their knowledge. In the current study, the researcher deduces that knowledge acquisition in organ donation is undeniably one of the main advantages of any intervention used to increase knowledge amongst undergraduate nursing students, where the acquired knowledge is assimilated and converted into a positive change in behaviour.

In the current study, participants explained how the mentioned strategies to increase knowledge of organ donation amongst undergraduate nursing students would assist them in their *patient advocacy* role in the organ donation referral/procurement process. They also recognised the need for health education of the general public about the concept of organ

donation, registering as an organ donor and the benefit of the strategy once they become registered nurses. Nsiah *et al.,* (2019) describe patient advocacy in nursing as a concept that culminates in patient safety, quality care, being the patient's voice and forming an interpersonal therapeutic relationship. The authors argue that these characteristics of patient advocacy assist patients in making the best healthcare decisions for themselves. In the current study, participants realised the inherent benefit of improved patient advocacy after assimilating the knowledge from the mentioned strategy. These realisations by study participants display emotional maturity in terms of critical thinking skills in nursing which sounds promising. The knowledge dissemination from the developed strategy may strengthen the nursing students' advocacy role in the future organ donation referral/procurement process.

Yazici (2022) states that once undergraduate nursing students are informed about organ donation, it may cause them to seek further knowledge in the field after graduation. The author expressed how nursing education regarding organ donation may motivate and elicit behaviour change in future nurses which may increase the organ donation rate. In similar studies by Bas-Sarmiento *et al.,* (2023) and Bozzetti *et al.,* (2023), the authors affirm that adequate knowledge of organ donation amongst future nurses will enhance their patient advocacy role during the donor recruitment/referral process, which may influence patient relatives/next of kin to express their willingness to agree to donor consent.

5.3.4 Theme 4: Barriers to Understanding Organ Donation

The most common barrier that emerged from participant responses in the current study was an *information deficit.* Nearly all participants indicated having a lack of knowledge regarding organ donation and identified it as a barrier to their understanding of the concept. A study by Hasan *et al.,* (2019) found an information deficit to be one of the barriers to understanding organ donation among undergraduate nursing students and recommended that

future educational campaigns focus on eliminating this barrier. Similarly, Kose *et al.,* (2015) also found a lack of knowledge of organ donation among university students to be a barrier to understanding the concept and fostering positive attitudes. Cebeci et al. (2015) reiterate undergraduate nursing curriculum inclusion of organ donation to correct misinformation and ease barriers to understanding the concept. In the current study, the researcher expands that the study's strategy may assist undergraduate nursing students in overcoming the barrier of information deficit regarding organ donation, which may increase their understanding and willingness to learn more about the concept.

Although the correlation between participants' socio-demographic attributes and overall knowledge scores on organ donation in Phase One of the study revealed no significant association, participants' religion and culture/ethnic group were the most recurring socio-demographic attributes that posed as a barrier to understanding the concept of organ donation during the interviews in Phase Two of the study. Participants revealed significant barriers to participating in organ donation, such as culture and religion. Nearly half of the participants explained that Traditional African Culture may be one of the reasons for nursing students not considering organ donation as one of the solutions to end-stage organ failure. A study by Gidimisana (2016) resonates with similar findings where Traditional African Culture was seen as a barrier to understanding organ donation among undergraduate nursing students. The author highlighted that misconceptions about organ donation were related to isiZulu life patterns, where people have no authority to donate organs due to the relationship between the living and the souls that have departed. Kunle (2018) also iterates the reservations of the Traditional African Culture in South Africa, which has been identified as the main barrier to the understanding and receptiveness to organ donation.

A participant in the current study identified the religion of Islam as being a barrier to the receptiveness of organ donation. The participant explained the rituals followed after the

patient has been certified dead, which leaves no room for considering organ donation or approaching a family for consent. In contrast, a study by Doerry *et al.,* (2022) revealed that the religion of Islam considers organ donation a praiseworthy act; however, the deceased body should be buried as soon as possible after death and organ procurement should be prompt. Various other studies echo a similar viewpoint where the religion of Islam condones organ donation; however, the authors advise families/next of kin of patients to seek advice from their religious leaders (Imam) should they be placed in a situation of considering altruistic organ donation of their brain dead relative in the future (Ali, 2021; Hurst, 2016; Nadvi & Osman-Hyder, 2021; Siraj, 2022; Tumin *et al.,* 2015). The participant's view of Islam as a barrier to understanding organ donation is a point worth noting, as Islam is identified as the second-largest religion in the world (Piwko, 2021). The finding necessitates nursing lecturers and transplant coordinators sharing Muslim scholarly work regarding organ donation with undergraduate nursing students as students will relay the learned information to Muslim patients.

5.5 Chapter Summary

This chapter presented the findings of Phase Two (qualitative phase) of the study, where data were collected from undergraduate nursing students (N = 9) during semi-structured interviews. The raw data from the interview transcripts were analysed using qualitative, manifest content analysis, where a hands-on guide by Erlingsson and Brysiewicz (2017). During data analysis, the following themes and sub-themes emerged namely: **Theme 1:** strategies to increase knowledge *[sub-themes (i) curriculum integration (ii) lecture method (iii) E-learning (iv) collaboration with organisations and (v) media];* **Theme 2:** information preference [*sub-themes (i) introduction to organ donation (ii) legislation and (iii) comprehensive information];* **Theme 3:** future benefits of the strategy [*sub-themes (i)*

increased insight and (ii) patient advocacy] and **Theme 4:** barriers to understanding organ donation [*sub-themes (i) information deficit and (ii) socio-demographic factors*].

The findings of Phase Two were discussed in relation to other similar studies and in contrast within the broad context of knowledge and attitudes toward organ donation. Various studies were found to echo similar findings of the current study, where authors recommended curriculum integration of organ donation into nursing curricula and information booklets/pamphlets being distributed to undergraduate nursing students to increase their knowledge and receptiveness towards the concept. Other studies highlighted common barriers such as information deficit, and religious and cultural barriers among undergraduate nursing students that lead to a lack of understanding of organ donation. The common recommendation that resonated throughout all studies was developing strategies to increase knowledge and receptiveness towards the concept of organ donation amongst nursing students. The chapter also presented the second point of integration in the study between the quantitative and qualitative phases, where the researcher used a building approach and the question, *"What are some of the barriers you have encountered in trying to understand the concept of organ donation?"* was added to the interview guide.

Chapter Six focuses on Phase Three of the study, which is developing the strategy to increase the knowledge and receptiveness of undergraduate nursing students towards organ donation.

CHAPTER SIX: STRATEGY DEVELOPMENT

6.1 Introduction

This chapter presents Phase Three of the study which aligns with study objective three, namely to design a strategy (ies) in line with the undergraduate nursing students' levels of knowledge and attitudes toward organ donation in order to increase their knowledge and receptiveness. A detailed description on the development of the strategy and its refinement through the Modified Delphi Approach is presented below.

6.2 Development of the Strategy

Data from the two preceding phases and the literature review fed into the development of the strategy by the researcher.

6.2.1 Phase One (Quantitative Phase)

Phase One aligned with study objectives one and two, namely (i) to determine third-year undergraduate nursing students' levels of knowledge towards organ donation and (ii) to explore and describe third-year undergraduate nursing students' attitudes towards organ donation. Survey questionnaires were distributed to participants ($N = 75$) and the captured data was analysed using the IBM SPSS statistics version 26 (SPSSv26) package. It was found that only 4.0% ($n = 3$) of the participants had adequate knowledge of organ donation; however, 84.0% ($n = 63$) of the participants had a positive attitude towards organ donation. A partial correlation was used to determine associations between participants' socio-demographic attributes and overall scores of knowledge and attitude on organ donation which yielded no significant association.

6.2.2 Phase Two (Qualitative Phase)

In Phase Two of the study, qualitative data were collected from nine participants. Individual semi-structured interviews were conducted via the electronic platform Microsoft Teams. Phase Two aligned with study objective two, namely to explore third-year undergraduate nursing students' attitudes toward organ donation. The data from the interview transcripts were analysed using qualitative manifest content analysis. Four main themes emerged from the analysed data: strategies to increase knowledge, information preference, future benefits of the strategy and barriers to understanding organ donation.

6.2.3 Phase Three: Integration of Data

This phase marks the third point of integration in the study, as discussed below:

6.2.3.1 Third Point of Integration in the Study

Phase Three of the study began with the integration of the quantitative results and qualitative findings. Integrating the quantitative results and qualitative findings marked the **third point of integration** in this mixed methods study. This is referred to as the merging approach, whereby the researcher creates a table of the quantitative and qualitative findings to identify points of data convergence or divergence (Draucker *et al.*, 2020; Fetters et al., 2013). Table 6.1 shows the integration of the quantitative results and qualitative findings in relation to the study's research questions. The coming together of the quantitative and qualitative data informed the strategy's design and content.

Table 6.1

Integration of Quantitative Results and Qualitative Findings of the Study

Research Questions	Quantitative Results	Qualitative Findings		Statement of Integration
		Theme	***Subtheme***	
1. What are the undergraduate nursing students' levels of knowledge about organ donation?	Only 4.0% (*n* =3) of the participants had adequate knowledge of organ donation.	*4. Barriers to Understanding Organ Donation*	4.1 Information Deficit	Findings from both Phases **converge** →give a clear explanation of the causes of the low percentage of participants with adequate knowledge of organ donation.
			4.2 Socio-demographic Factors	
2. What are the attitudes of undergraduate nursing students towards organ donation?	84.0% (*n* = 63) of the participants had a positive attitude towards organ donation.	*3. Future Benefits of the Strategy*	3.1 Increased Insight	Findings from both phases **converge** → participants explained how a developed strategy will benefit them in the future, which indicates a positive attitude toward organ donation.
			3.2 Patient Advocacy	
3. How can the knowledge levels of undergraduate nursing students be increased?	Less than half (41.3%; *n* = 31) of participants had inadequate knowledge of organ donation.	*1. Strategies to Increase Knowledge*	1.1 Curriculum Integration	Findings from both phases **converge** → participants described what strategies may be
			1.2 Lecture Method	
			1.3 E-Learning	

Research Questions	Quantitative Results	Qualitative Findings		Statement of Integration
		Theme	***Subtheme***	
			1.4 Collaboration with Organisations	used to increase their knowledge on organ donation.
			1.5 Media	
4. How can undergraduate nursing students' receptiveness towards organ donation be increased?	16.0% (*n* =12) had a neutral attitude towards organ donation. Less than half (41.3%; n = 31) of participants had inadequate knowledge of organ donation.	*1. Strategies to Increase Knowledge*	1.1 Curriculum Integration	Findings from both phases **converge** → participants described the beneficial strategies that may be used to increase their receptiveness to organ donation. Participants described the type of information they preferred to be included in the strategy.
			1.2 Lecture Method	
			1.3 E-Learning	
			1.4 Collaboration with organisations	
			1.5 Media	
		2. Information Preference	2.1 Introduction to Organ Donation	
			2.2 Legislation	
			2.3 Comprehensive Information	

6.2.3.2 Strategy Design

Phase Two, Theme 1: *strategies to increase knowledge* (sub-theme 1.3 *E-learning)* led the researcher to develop an information pamphlet as a strategy to increase knowledge of organ donation. This can be seen by the following direct quotes from participants:

> *"I think just a pamphlet and then if they're really interested in it, then give them a booklet giving them a lot more information about it…… I think so because people are on their phones a lot more and I just know from when I get given a piece of paper, I'm more likely to throw it away than if I'm seeing something on my phone……I think it would be helpful because I could sort of refer to patients as well, because if I don't know, if I forget details about this information, I can just refer this to them and like send them a copy of what you've sent to us or something" [P2].*

> *"….just distribute the knowledge in brochures or pamphlets to us, which we can read at our own leisure for more information"[P8].*

The information included in the pamphlet's design was pulled from the results of Phase One of the study and Phase Two of the study. In Phase One, participants gave incorrect responses to items in Section B (knowledge of organ donation); namely, more than half (57.3%; n = 43) of the participants answered incorrectly with regard to the question on brain death, which shows a lack of a basic understanding of the concept of brain death. Another statement in Section B (knowledge of organ donation) with the highest number of incorrect responses from participants(85.3%; *n* = 64) was *"most religions do not condone organ donation after brain death"*. In Section C (attitudes toward organ donation), the majority of the participants

(30.7%; n = 23) agreed that wealthy people and celebrities are given a higher preference for organ donation.

In Phase Two, data were pulled from within *Theme Two*: information preference (sub-themes: *(i) introduction to organ donation* and *(ii) legislation and Theme Four*: barriers to understanding organ donation (sub-theme: *(i) information deficit*). The integrated data from both sequential phases resulted in the following topics being included in the information pamphlet, namely South African legislation on organ donation, a brief process of organ donation within hospitals, contact numbers of transplant centres in Kwazulu-Natal, organisations in South Africa that support organ donation as well as how a person can register as an organ donor with the ODF.

Many studies have found that educational material on organ donation, such as pamphlets, brochures and training workshops amongst undergraduate nursing students, have increased their attitudes toward organ donation positively (Alwahaibi *et al.,* 2023; Cebeci *et al.,* 2015; Mohamed *et al.,* 2022; Xie *et al.,* 2013). The authors recommended these strategies to increase both knowledge and attitudes, eventually leading to increased awareness. These strategies will encourage students to apply the assimilated knowledge by reiterating it to their families and promote discussions and awareness of the concept.

The integrated data were thereafter triangulated with the findings of these studies that recommended an information pamphlet as a strategy to increase knowledge and receptiveness of organ donation among undergraduate nursing students. The information pamphlet was entitled ***"An Introduction to the Concept of Solid Organ Donation."*** Information from referenced literature regarding the definitions of cadaver donation, brain death, brain death testing, and organ procurement were included, as well as general information on the types of organs that can be donated and misconceptions regarding the concept of organ donation. The

inclusion of these misconceptions stemmed from the associated participants' responses to knowledge and attitude statements in Section B and Section C of the survey questionnaire in Phase One (quantitative) of the study.

A sample of the information pamphlet is shown in Figure 6.1 and Figure 6.2.

URL link to pamphlet:

https://drive.google.com/file/d/1lgTT0VQaALatH4BgHVcIKKUzz2NjSIs3/view?usp=sharing

Figure 6.1

Page One of the Information Pamphlet entitled "An Introduction to the Concept of Solid Organ Donation"

Figure 6.2

Page Two of the Information Pamphlet entitled "An Introduction to the Concept of Solid Organ Donation"

Definitions

Cadaveric donation: Occurs when organs are procured from a patient who has been certified brain dead. These organs are distributed to patients who have end stage organ failure (Pretorius, 2023).

Brain death: The irreversible loss of the capacity for consciousness, combined with an irreversible loss of the capacity to breathe.

Brain death testing: Clinical testing that occurs at the patient's bedside. The test is carried out by two doctors and follow criteria which tests for: coma, absence of brainstem reflexes and the presence of apnea. (Slabbert & Venter, 2019)

Organ procurement: The removal of viable organs for the purpose of transplantation.

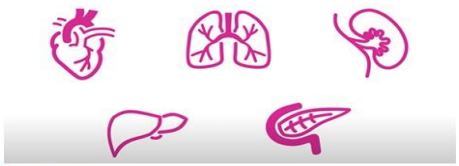
General Information

When and where does organ procurement take place?

It is done by a transplant surgeon in an operating theatre when a patient has been declared brain dead and the patient's next of kin has given consent for organ donation (Schweikart, 2020).

Which organs can be donated?

Organs that can be donated include the heart, lungs, kidneys, liver, pancreas and intestines.



Is there an age limit for organ donation?

There is no age limit to sign up for organ donation.

Can patients with chronic illnesses and those who smoke or drink alcohol become organ donors?

Patients with chronic illnesses or those who smoke or drink alcohol can become organ donors. The target organ damage caused by smoking and alcohol consumption will be assessed and the decision about which organs can be procured will be decided at the time the patient becomes brain dead (Van Niekerk, 2022).

Wealthy people and celebrities are given a preference as organ recipients?

There is an organ transplant waiting list in South Africa where recipients are allocated organs according to a point system which includes the patient's age, time on the waiting list as well as their prognosis. Every region has their own waiting list with which the procured organs are shared between patients in the private and public sector (Pretorius, 2023).

Medical staff in a hospital will be reluctant to save a patient's life if he/she is a registered organ donor?

Medical staff are bound by the Hippocratic oath (Doctors) and Nurse's Pledge of Service (Nurses) where both pledge to save lives. The hospital staff will perform emergency resuscitation according to legal hospital protocols. A patient who is a registered organ donor does not affect this process.

What should I do if a patient asks for more information or would like to register as an organ donor?

- You may provide the patient with information to dispel myths and clarify misconceptions surrounding organ donation.
- You can ask the patient to visit **www.odf.org.za** or call **0800 22 66 11** for more information on how to register as an organ donor.
- Once a patient has registered with the Organ Donor Foundation, they should inform their family/next of kin of their wish to donate their organs.

Organ Donation and the Law

According to the National Health Act 61 of 2003, informed consent is required from the patient's next of kin for organ donation to proceed (Slabbert & Venter, 2019).

- Although an organ donor may indicate their wish to become an organ donor after their death in their last will and testament, informed consent is still required from the next of kin for organ donation.
- Registering as an organ donor with the Organ Donor Foundation still requires next of kin consent after the patient has demised.

References

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6.3. Strategy Refinement through the Modified Delphi Approach

The final step in Phase Three of the study entailed refining the information pamphlet prototype using the Modified Delphi Approach. The protocol for the Delphi approach in the current study was adapted from Santaguida *et al.,* (2018) and Zhang *et al.,* (2019), which incorporated two rounds of questionnaire distribution. The researcher sent email invitations to participants of *Group One,* namely transplant coordinators in the Kwazulu-Natal region and to participants of *Group Two,* namely undergraduate nursing students who volunteered during Phase Two of the study, to be part of the Modified Delphi Approach in Phase Three. The email consisted of an invitation to participate in Phase Three of the study, an explanatory statement with study details, the information pamphlet design file (Figures 6.1 and 6.2) and the Modified Delphi Approach survey tool for this phase (Annexure K).

The questionnaire consisted of seven statements covering the information pamphlet's design and content. The statements were ranked using a dichotomous scale with Agree or Disagree. An additional free text field was included for any participant suggestions/comments regarding the refinement of the information pamphlet. Feedback from participant groups, which indicated a score of 75% or greater, was set for consensus to be reached.

6.3.4 Results and Feedback from Round One of the Modified Delphi Approach

Results from the preliminary round of participant questionnaires in the Modified Delphi Approach showed that each statement within both participant groups achieved 100%, which reached consensus (Table 6.2), eliminating the necessity of Round Two.

Table 6.2

Consensus Results from the Modified Delphi Approach

Statement	Round	Consensus	Percentage
The pamphlet is clear and easy to understand	1	Agree	100%
	2	-	
The pamphlet provides information needed for us to understand the process of organ donation	1	Agree	100%
	2	-	
There is a benefit to conveying information on organ donation in a pamphlet	1	Agree	100%
	2	-	
Presenting information in the form of pamphlet is a more user-friendly educational resource than conventional methods of lectures and books	1	Agree	100%
	2	-	
The pamphlet provides easy access to the contact details of transplant coordinators	1	Agree	100%
	2	-	
It is possible to identify potential pivot-points of care using journey maps and the information given	1	Agree	100%
	2	-	
I recommend that the pamphlet be distributed to other levels in the nursing programme	1	Agree	100%
	2	-	

Note. Round One achieved a consensus of 100% agreement, eliminating the necessity for Round Two.

6.4 Chapter Summary

This chapter focused on objective three of the study, namely to design a strategy (ies) in line with the undergraduate nursing students' levels of knowledge and attitudes toward organ donation in order to increase their knowledge and receptiveness. Data from Phase One and Phase Two of the study were extracted and mixed with current literature, resulting in the development of an information pamphlet entitled "*An Introduction to the Concept of Solid Organ Donation"*. The information in the pamphlet included elementary definitions and information regarding organ donation, legislation surrounding organ donation in South Africa, a brief process of organ procurement at hospitals, organisations in South Africa that support organ donation as well and contact information for transplant centres in Kwazulu-Natal.

The information pamphlet was refined using a Modified Delphi Approach where a panel of experts was asked to provide feedback on the Pamphlet using a dichotomous scale. A consensus of a 100% agreement was reached in round one of the Modified Delphi Approach, which eliminated the necessity for round two.

Chapter Seven discusses the strengths, limitations, recommendations and conclusion of the study.

CHAPTER SEVEN: STRENGTHS, LIMITATIONS, RECOMMENDATIONS AND CONCLUSION TO THE STUDY

7.1 Introduction

This chapter summarises the study results, findings and data integration of Phase One, Phase Two and Phase Three, respectively. The strengths, limitations, recommendations and a conclusion of the study are also presented. These are discussed below:

7.2 Strengths and Limitations of the Study

The researcher has identified the following strengths and limitations of the study:

7.2.1 Strengths

7.2.1.1 Methodology Used in the Study

The use of a mixed methodology in the study is seen as one of its strengths as it provided the researcher with a dual method of data collection, analysis, presentation of findings and interpretation, which were underpinned by a paradigm of pragmatism. This allowed the researcher to find a practical solution to the research problem, answer the research questions and achieve the research objectives. The researcher gained more depth and breadth in understanding the research problem in the attempt to generate knowledge and achieve the overall research aim, which could follow the chosen Theoretical Framework of the study, namely *Roger's Diffusion of Innovation Theory*. The concept of organ donation will be presented to undergraduate nursing students and may spark curiosity. The newly found curiosity among the undergraduate nursing students will keep with the stages of the Theoretical Framework when an innovation is introduced and will eventually increase the knowledge and receptiveness towards organ donation amongst

undergraduate nursing students. This increased knowledge and receptiveness towards organ donation in future nursing graduates will contribute to their practical knowledge and skills in the clinical area, where they may advocate for organ donation.This overall purpose of the study could be achieved by this. Therefore, the current research study created an entry point for the researcher to introduce the study's developed strategy (information pamphlet) to the participants with the aim of increasing the number of solid organ donations within South Africa.

7.2.1.2 Data Triangulation of both Sequential Study Phases, Modified Delphi Approach and Relevant Literature

During Phase Three of the study, data from both sequential phases (quantitative and qualitative) were triangulated together with data from the Modified Delphi Approach and current literature surrounding the broad topic of organ donation. This ensures greater validity and credibility of the results and findings of the study as multiple sources of information were utilized for knowledge creation.

7.2.2 Limitations

The study had the following limitations:

7.2.2.1 Sampling Technique

A limitation is related to a purposive sampling technique which was utilised for Phase One (quantitative phase), where the inclusion criteria were participants in their third year of the Bachelor of Nursing programme. This may not have been representative of the general population.

Thus, the results of the quantitative component of this study cannot be generalised outside the research setting.

7.2.2.2 Study Setting

The study utilised one setting, the University of KwaZulu-Natal (Howard College) in the eThekwini district. Other study settings may have different variables that affect knowledge and attitudes toward organ donation amongst undergraduate nursing students.

7.3 Recommendations of the Study

The recommendations of the study were based on the study findings and targeted the following four areas, namely Nursing Education, Nursing Research, Nursing Practice and Nursing Policy and Management, which are discussed below:

7.3.1 Nursing Education

During Phase One of the study, it was found that a low percentage of participants had adequate knowledge of organ donation. This iterates the need for the development of learning and teaching strategies to improve the knowledge levels of undergraduate nursing students about the concept of organ donation. Furthermore, during Phase Two of the study, participants expressed the need for curriculum inclusion of organ donation in the general nursing science module during the third year of the Bachelor of Nursing programme. Therefore, academicians and nurse educators who belong to curriculum development committees at Nursing Education Institutions in South Africa should ensure that a substantial amount of organ donation content is featured in the undergraduate nursing curriculum. This may be in the form of formal lectures, health education

projects, assignments; quizzes, case studies, campaigns, workshops and brochures. The current study has highlighted the need to develop these learning and teaching strategies regarding organ donation in nursing education, which increase knowledge and receptiveness towards the concept.

7.3.2 Nursing Research

It is recommended that the current study be replicated on a larger scale to increase the validity, reliability and generalisability of the research results. This is due to diverse nursing cultures and organ donation climates experienced at different Nursing Education Institutions within South Africa and Globally.

The participants in the current study indicated that they preferred electronic information on online platforms such as social media, student websites and mobile devices. Therefore, a study that aims to develop a mobile device application with a database of information to increase knowledge on organ donation for undergraduate nursing students/novice nurses to engage and interact with each other is recommended. This may be a collaborative or single effort where action research is done initially, followed by strategy development and thereafter, a cross-sectional pretest/posttest study of the developed strategy.

7.3.3 Nursing Practice

The researcher recommends that practicing nurses in the clinical area who are knowledgeable about organ donation act as mentees/preceptors to novice nurses. Transplant coordinators at transplant centres should include undergraduate nursing students and general nurses in organ donation seminars and campaigns so as to create awareness surrounding the concept. Specialist nurses in the emergency and critical care units should share their knowledge and experiences with novice nurses during learning for role-taking.

7.3.4 Nursing Policy and Management

Allocation of staff by nurse managers at clinical institutions should make provision for organ donation champions within nursing departments. Nursing staff and undergraduate student nurses should be included in in-services and organ procurement skills workshops carried out by the ODF. Clinical institutions should make education on the organ donation process a compulsory requirement during orientation and induction of new employees or student nurses, especially at Tertiary healthcare institutions in Kwazulu-Natal where organ donation and transplantation take place.

7.4 Conclusion to the Study

Nurses were identified as the gatekeepers to organ donation as they often play a role as the patient's advocate and have the most contact with patients compared to the rest of the health care professionals in a multidisciplinary health care team. The study aimed to explore and describe the knowledge and attitudes of undergraduate nursing students towards organ donation at a selected university in Durban, KwaZulu-Natal, South Africa, in order to develop a relevant strategy/ies that will increase their receptiveness towards organ donation. This aim was achieved through a rigorous research process consisting of two sequential phases, namely Phase One –(quantitative) and Phase Two (qualitative), followed up by Phase Three (Data Integration and Strategy Development).

Phase One of the study discovered that a low percentage of third-year undergraduate nursing students have adequate knowledge of organ donation whilst a higher percentage have a positive attitude toward organ donation. Phase Two of the study followed up on the barriers to the adequate knowledge found in Phase One and elicited further information regarding the type of

strategies required by students and the type of information on organ donation that should be included in the strategy. During Phase Three, the data from Phase One and Phase Two were integrated and extracted, resulting in an information pamphlet being developed entitled "*An Introduction to the Concept of Solid Organ Donation"* with undergraduate nursing students as the target audience. The information pamphlet can be shared electronically via a URL link or distributed physically to undergraduate nursing students at NEIs.

In light of the implementation of the National Health Insurance in South Africa, which is currently in the first phase of rollout, it sounds promising that the information pamphlet will be cascaded to future undergraduate nursing students during their general nursing science modules increasing their knowledge and receptiveness towards organ donation. The pamphlet is the first of a series of strategies to be developed exclusively for nurses which emanated from this study. This may spark behaviour change in future nurses and ultimately, in the nursing profession with regard to advocating for organ donation, thereby decreasing the morbidity and mortality rate from end-stage organ failure among patients.

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ANNEXURES

Participant Code	

Annexure A : Quantitative Survey Tool

Study title: Exploring and describing the knowledge and attitudes of undergraduate nursing students towards organ donation at a selected university in Kwazulu-Natal, South Africa – A mixed methods study.

Please indicate your response with an X

SECTION A: SOCIODEMOGRAPHIC ATTRIBUTES OF PARTICIPANTS

1. **Age in years**

18 – 21	
22 – 25	
> 25	

2. **Gender**

1	Female	
2	Male	
3	Non-binary	

3. **Religion**

1	Christianity	
2	Judaism	

3	Islam	
4	Hinduism	
5	African traditional beliefs	
6	Other	

4. Cultural or Ethnic group

1	African	
2	Indian	
3	Coloured	
4	White	

5. How have you heard or experienced the concept of organ donation? Select more than one if appropriate or all that apply.

1	University lecture	
2	Family/friend circle	
3	TV/Radio/Social media	
4	Clinical area/Health care institution	
5	None of the above	
6	I did not know that organs could be donated	

6. **Have you attended any training such as a lecture/module or short course on organ donation previously? Select all that apply.**

1	A Lecture	
2	Modules on organ donation	
3	Short course	
4	No training	

7. **Has organ donation ever been discussed within your family/friends circle?**

1	Yes	
2	No	

SECTION B: KNOWLEDGE OF ORGAN DONATION

Choose the most appropriate option by marking with an X

1. **What do you understand by the term "brain death"?**

A patient is alive but only the brain is non-functional	
Brain death is not a certified form of death	
There is no chance of recovery once a patient is certified brain dead	
A patient can fully recover from brain death	

None of the above	
I am unsure of what the term means	

After you have read each statement, please mark your response with an X

		Yes	No
2.	If you are a registered organ donor, the medical staff in a hospital will be reluctant to save your life during a resuscitation		
3.	There is an age limit in order to qualify as an organ donor		
4.	South African law on organ donation is clear and concise		
5.	Patients who have chronic conditions such as diabetes mellitus cannot register as organ donors		
6.	Patients who smoke or consume alcohol cannot register as organ donors		
7.	Although a patient is a registered organ donor, informed consent is required from their next of kin after brain death		
8.	Most religions do not condone organ donation after brain death		
9.	A patient's organs can be sold to the highest bidder after brain death		
10.	Once a patient registers as an organ donor he/she cannot change their mind		
11.	Organ donation may delay a patient's funeral arrangements		

SECTION C: ATTITUDES TOWARDS ORGAN DONATION

Please respond to the following statements by marking the appropriate box with an X

		STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
1.	I support organ donation					
2.	Donating organ add meaning to one's life					
3.	I am willing to donate organs after death					
4.	I agree to donate family member's organ					
5.	Organ donation insults human dignity					
6.	The body will be left disfigured when organs are removed					
7.	Live donation is better than dead donation in solving the problems of organ shortage					
8.	I find organ donation unacceptable because of religious beliefs					
9.	I feel uncomfortable to think or talk about organ donation					
10.	Wealthy people and celebrities are given more preference for organ donation					
11.	A deceased useful organ should not be wasted, everyone should sign up for organ donation					

Thank you for your participation in Phase One of the study. Should you wish to participate in Phase Two of the study, please provide your contact details below. According to the Protection of Personal Information Act (POPI Act), your contact details will be kept confidential and not shared with anyone.

Email address:

Cell no:

Annexure B: Qualitative Interview Guide

Study title: Exploring and describing the knowledge and attitudes of undergraduate nursing students towards organ donation at a selected university in Kwazulu-Natal, South Africa – A mixed methods study.

- Researcher introduction and welcome to participant
- Participants are informed about the purpose of the discussion; that participation is voluntary and they can withdraw from the interview at any time should they so wish.

Questions

1. Describe what you believe are some of the ways/strategies in which knowledge on organ donation amongst undergraduate nursing students can be increased?

1.1 Probe: What type of information and at what type of detail do you think is necessary?

2. How do you think that this strategy will be beneficial to you as a Registered Nurse in order to participate in encouraging patients and families?
3. What are some of the barriers you have encountered, in trying to understand the concept of organ donation?

Annexure C: Participant Information Sheet

Date: 27 March 2023

Dear Student,

My name is Mr. Lennon Moodley. I am a student registered for a Master's in Nursing Research programme at the University of KwaZulu-Natal. I am undertaking a study entitled **"Exploring and Describing the Knowledge and Attitudes of Undergraduate Nursing Students towards Organ Donation at a selected University in Kwazulu-Natal, South Africa"**.

You are being invited to participate in this study that involves provision of information based on your experiences.

The study aims to determine the knowledge and explore the attitudes of undergraduate nursing students towards organ donation and thereafter, develop strategies to increase knowledge and receptiveness towards organ donation in Kwazulu-Natal.

The study will take place in two sequential phases:

Phase One of the study requires you to complete the attached questionnaire.

Completing the questionnaire will take approximately twenty-five minutes of your time. The questionnaire will be given to you upon your voluntary agreement to participate in this study.

Phase Two of the study which will be conducted at a later stage and expects you to participate in an interview regarding your experience of organ donation. Your participation in Phase two requires your permission to be audio recorded during the interview. If you are willing to participate in Phase Two of the study, you may provide your contact details at the end of the questionnaire of Phase One.

Please note the following:

- Participation in this study is purely voluntary. You are not compelled to participate in this research study and you may discontinue your participation at any time you wish to do so.
- There are no foreseen possible risks associated with participation in this study and there is no direct benefit linked to the participation in this study.
- If you experience any discomfort during the process of completing the questionnaire or during the interview, you may discontinue. In the event of refusal/withdrawal of participation, you will not incur any penalty or loss.
- The study data will be coded and your responses will remain anonymous throughout the study as well as after the results have been reported. Anonymity will be maintained by using a participant code for each participant instead of writing your name on the questionnaire (Phase One) or interview audio recording (Phase Two).
- The information filled in the questionnaire and the transcript from the audio recording will be kept in a safe place under lock and key for 5 years, after which it will be destroyed.

This study has been ethically reviewed and approved by the UKZN humanities and Social Sciences Research Ethics Committee **(Ref No:** HSSREC/00004841/2022**)**. Permission to conduct this study was also granted from the Dean and Registrar (UKZN), College of Health Sciences.

In the event of any problems or concerns/questions you may contact the researcher or the research supervisor as follows:

THE RESEARCHER: Mr. Lennon Moodley (Lecturer), Bluff, Durban, Tel: 0817376177, Email: 204008022@stu.ukzn.ac.za

THE RESEARCH SUPERVISOR: Dr Waheedha Emmamally (Lecturer), School of Nursing

& Public Health, UKZN (Howard campus: 5th floor Desmond Clarence Building), Tel: 031-2601437, Email: Emmamally@ukzn.ac.za

If you have any questions/concerns about your rights as a research participant, the researchers or the study content, then you may contact the UKZN Humanities and Social Sciences Research Ethics Committee (HSSREC) as follows:

HSSREC ADMINISTRATION AND RESEARCH OFFICE: UKZN Westville Campus, Govan Mbeki Building, Durban, KwaZulu-Natal, SOUTH AFRICA, Tel: 031 2604557, Fax: 031 2604609, Email: HSSREC@ukzn.ac.za

Annexure D: Informed Consent Form

I, _____ have been fully informed about the study entitled **"Exploring and Describing the Knowledge and Attitudes of Undergraduate Nursing Students towards Organ Donation at a selected University in Kwazulu-Natal, South Africa"** which is being undertaken by Mr. Lennon Moodley, a Master of Nursing Research student at the University of Kwazulu-Natal, Howard college campus.

I understand the purpose and procedures of the study and that it will occur in two sequential phases. I have read the attached information sheet and I have been given the opportunity to ask questions about the study to my satisfaction.

I am aware that by providing my details at the end of the questionnaire of Phase one, I am consenting to participate in Phase two of the study, where the interview will be audio recorded.

I declare that my participation in this study is entirely voluntary and that I may withdraw at any time without prejudice or it affecting my academic progress in any way.

If I have any further questions/concerns or queries related to the study I understand that I may contact the researcher or the research supervisor as follows:

THE RESEARCHER: Mr. Lennon Moodley (Lecturer), Bluff, Durban, Tel: 0817376177, Email: 204008022@stu.ukzn.ac.za

THE RESEARCH SUPERVISOR: Dr. Waheedha Emmamally (Lecturer), School of Nursing & Public Health, UKZN (Howard campus: 5th floor Desmond Clarence Building), Tel: 031-2601437, Email: Emmamally@ukzn.ac.za

If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study content or the researcher then I may contact the UKZN Humanities and Social Sciences Research Ethics Committee (HSSREC) as follows:

HSSREC ADMINISTRATION AND RESEARCH OFFICE: UKZN Westville Campus, Govan Mbeki Building, Durban, KwaZulu-Natal, SOUTH AFRICA, Tel: 031 2604557, Fax: 031 2604609, Email: HSSREC@ukzn.ac.za

I hereby consent to:

1. Completing a survey questionnaire in Phase One of the study
2. Should I wish to participate in Phase Two, I will provide my contact details at the end of the survey questionnaire
3. Being audio recorded during the Phase Two interview.

Signature of Participant: _____ Date: _____

Witness signature: _____ Date: _____

Annexure E: Permission to use Quantitative Survey Tool Part One

Gmail Lennon Moodley <ronvinp@gmail.com>

Permission to use questionnaie

Waheedha Emmamally <Emmamally@ukzn.ac.za> Wed, Jan 26, 2022 at 5:33 PM
To: "suvusilwal@gmail.com" <suvusilwal@gmail.com>
Cc: Lennon Moodley <ronvinp@gmail.com>

Good Day Mam

I am a lecturer at the Discipline of Nursing, University of KwaZulu Natal- South Africa. I am supervising a Masters by research student who is focusing on the knowledge and attitudes of undergraduate nursing students on organ donation. We are extremely impressed with the questionnaire used by you in the study *Knowledge and Attitude of Organ Donation among Nursing Students of a College in Biratnagar and consider it applicable to our study*

We ask permission from you to use the questionnaire and if agreeable could you also share with us a copy of the questionnaire

Regards

Dr. W Emmamally (PhD) (Critical Care Nursing)(Lecturer)

5th Floor Desmond Clarence Building

School of Nursing and Public Health

University of KwaZulu-Natal

Durban, South Africa

E-mail : Emmmamally@ukzn.ac.za

Tel no : + 27 (0) 31-260 1437

"The Most Complete Gift Of God is Life Based On Knowledge" *(H: AIA Talib)*

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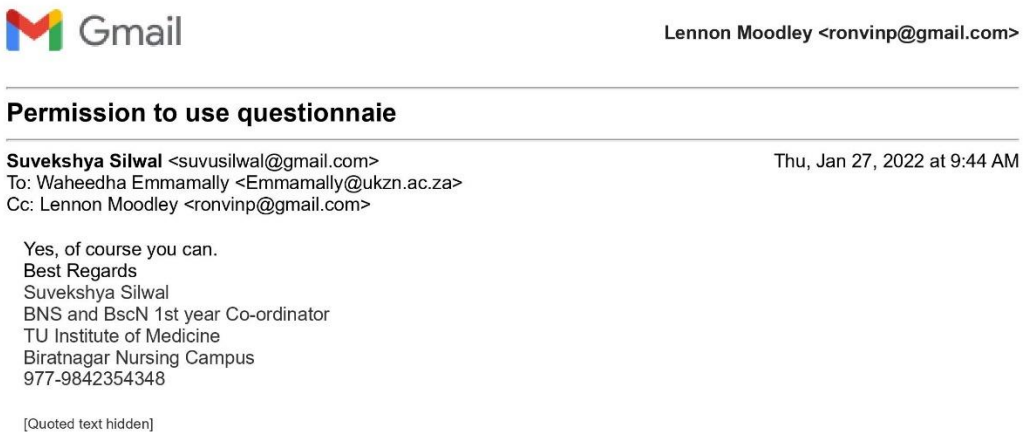
Annexure F: Permission to use Quantitative Survey Tool Part Two



Gmail

Lennon Moodley <ronvinp@gmail.com>

Permission to use questionnaie

Suvekshya Silwal <suvusilwal@gmail.com> Thu, Jan 27, 2022 at 9:44 AM
To: Waheedha Emmamally <Emmamally@ukzn.ac.za>
Cc: Lennon Moodley <ronvinp@gmail.com>

Yes, of course you can.
Best Regards
Suvekshya Silwal
BNS and BscN 1st year Co-ordinator
TU Institute of Medicine
Biratnagar Nursing Campus
977-9842354348

[Quoted text hidden]

Annexure G: Ethical Approval Letter for the Study by HSSREC

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

02 November 2022

Lennon Moodley (204008022)
School of Nurs & Public Health
Howard College

Dear L Moodley,

Protocol reference number: HSSREC/00004841/2022
Project title: Exploring and describing the knowledge and attitudes of undergraduate nursing students towards organ donation at a selected university in KwaZulu-Natal, South Africa – A mixed methods study
Degree: Masters

Approval Notification – Expedited Application

This letter serves to notify you that your application received on 29 September 2022 in connection with the above, was reviewed by the Humanities and Social Sciences Research Ethics Committee (HSSREC) and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

This approval is valid until 02 November 2023.
To ensure uninterrupted approval of this study beyond the approval expiry date, a progress report must be submitted to the Research Office on the appropriate form 2 - 3 months before the expiry date. A close-out report to be submitted when study is finished.

HSSREC is registered with the South African National Research Ethics Council (REC-040414-040).

Yours sincerely,

Professor Dipane Hlalele (Chair)

/dd

Annexure H: Gatekeeper Permission Letter from the Academic Registrar

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

20 July 2022

Mr Lennon Moodley (SN 204008022)
School of Nursing and Public Health
College of Health Sciences
Howard College Campus
UKZN
Email: ronvinp@gmail.com

Dear Mr Moodley

RE: PERMISSION TO CONDUCT RESEARCH

Gatekeeper's permission is hereby granted for you to conduct research at the University of KwaZulu-Natal (UKZN), towards your postgraduate degree, provided Ethical clearance has been obtained. We note the title of your research project is:

"Exploring and describing the knowledge and attitudes of undergraduate nursing students towards organ donation at a selected University in KwaZulu-Natal."

It is noted that you will be constituting your sample by handing out questionnaires and/or interviews with third year bachelor of nursing students (Zoom, Skype or telephone interviews recommended) on the Howard College campus.

Please ensure that the following appears on your notice/questionnaire:

- Ethical clearance number;
- Research title and details of the research, the researcher and the supervisor;
- Consent form is attached to the notice/questionnaire and to be signed by user before he/she fills in questionnaire;
- gatekeepers approval by the Registrar.

You are not authorized to contact staff and students using the 'Microsoft Outlook' address book. Identity numbers and email addresses of individuals are not a matter of public record and are protected according to Section 14 of the South African Constitution, as well as the Protection of Public Information Act. For the release of such information over to yourself for research purposes, the University of KwaZulu-Natal will need express consent from the relevant data subjects. Data collected must be treated with due confidentiality and anonymity.

Yours sincerely

Dr KE CLELAND: REGISTRAR

Annexure I: Gatekeeper Permission Letter from the Dean

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

22 July 2022

Mr Lennon Moodley (SN 204008022)
School of Nursing and Public Health
College of Health Sciences
Howard College Campus
UKZN
Email: ronvinp@gmail.com

Dear Mr Moodley

RE: PERMISSION TO CONDUCT RESEARCH

Gatekeeper's permission is hereby granted for you to conduct research at the University of KwaZulu-Natal (UKZN), towards your postgraduate degree, provided Ethical clearance has been obtained. We note the title of your research project is:

"Exploring and describing the knowledge and attitudes of undergraduate nursing students towards organ donation at a selected University in KwaZulu-Natal."

It is noted that you will be constituting your sample by handing out questionnaires and/or interviews with third year bachelor of nursing students on the Howard College Campus.

Please ensure that the following appears on your notice/questionnaire:

- Ethical clearance number;
- Research title and details of the research, the researcher and the supervisor;
- Consent form is attached to the notice/questionnaire and to be signed by user before he/she fills in questionnaire;
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You are not authorized to contact staff and students using the 'Microsoft Outlook' address book. Identity numbers and email addresses of individuals are not a matter of public record and are protected according to Section 14 of the South African Constitution, as well as the Protection of Public Information Act. For the release of such information over to yourself for research purposes, the University of KwaZulu-Natal will need express consent from the relevant data subjects. Data collected must be treated with due confidentiality and anonymity.

Yours sincerely

Voce.

Professor Anna Voce
Dean/Head (Acting)

Annexure J: Coded Interview Transcript

Phase Two Interview Number: 08

Participant: Phase Two Participant Number: 08 (Participant Code: P2P8)

Researcher: L Moodley

Date: 10 October 2023

Time: 18h30

Platform: Microsoft Teams

Researcher

Welcome to phase two, the qualitative phase of the research study and thank you for your participation. My name is Mr Lennon Moodley and the study is entitled exploring and describing the knowledge and attitudes of undergraduate nursing students towards organ donation at a selected university in KwaZulu- Natal, South Africa. You should remember that your participation in the study is purely voluntary. Should you become uncomfortable during the interview for any reason, you may withdraw at any time by leaving the meeting. Should you not understand any of the questions, you may ask me to repeat the question or provide clarification. The interview will be recorded and transcribed, which is a requirement for qualitative research.

Researcher

So you have been allocated to the clinical area for a few months during your general nursing science module in your third year of the nursing degree and you have seen and nursed patients with chronic diseases such as heart failure and kidney failure etcetera. Is this correct?

Participant

Yeah.

Researcher

Okay, so the overall purpose of the study is to increase nursing students, knowledge of organ donation so that they may assist with increasing the organ donation rate once they have qualified as registered nurses, this will decrease the patient morbidity and mortality rate overall.

Researcher

Do you have any questions that you'd want to ask before we begin the interview?

Participant

Umm, no, not yet.

Researcher

Okay, Can you describe what you believe are some of the ways or strategies in which knowledge and organ donation amongst undergraduate nursing students can be increased?

Participant

Okay, I think the 1st way would be to integrate it into our curriculum our general nursing curriculum MODULE (Theme 1)

One can also, well the lecturers or our facilitators can design pamphlets or not even go to the lengths, but just distribute the knowledge in brochures or pamphlets to us, which we can read at our own leisure for more information. PAMPHLETS/BROCHURES (Theme 1)

There can be workshops that can be held. Community outreach programmes WORKSHOPS (Theme 1)

. Social media being one of the biggest ones because amongst nursing students, which is generally into social media these days MEDIA (Theme 1)

, it'll be a good idea, a good strategy to make everyone aware about organ donation even the news and the radio are good platforms, yeah TV/RADIO (Theme 1)

Researcher

Okay, so you spoke about a pamphlet and or a brochure. So what type of information should be included in this pamphlet or brochure?

Participant

I think it should be a detailed pamphlet or brochure describing the pre during and after the procedure important information like side effects or what do you qualify for? LEGAL PROCEDURE AND PROTOCOLS (Theme 2)

What information you need to know prior to being an organ donor? ELEMENTARY INFORMATION (Theme 2)

It needs to be comprehensive so the individual fully understands before making this decision. COMPREHENSIVE INFORMATION (Theme 2)

Researcher

Okay. And you also spoke about social media being one of the ways that millennial nursing students communicate and learn. So would an electronic pamphlet be beneficial?

Participant

I would say yes, yes.

Researcher

Okay, how do you think the strategy that I develop as a researcher after the results have been analysed, how would it assist you as a future registered nurse in the clinical area?

Participant

It will broaden my knowledge. I will be more knowledgeable to educate my patients INCREASED INSIGHT (Theme 3)

. I'd also be able to advocate for the whole cause PATIENT ADVOCACY (Theme 3)

. And give them support before, during and after the procedure. With detailed information I'll be more aware and more knowledgeable.

HEALTH EDUCATION (Theme 3)

Researcher

Okay, thank you for that. What are some of the barriers you have encountered in trying to understand the concept of organ donation?

Participant

I think one of the most vital one that stands out is basically fear. Just fear around the whole thing. And when one hears about organ donation, it's a bit of a scare. FEAR (Theme 3)

I'd say friends and family that's also big influence how you've been brought up, your values, your morals. SOCIO-DEMOGRAPHIC FACTORS (Theme 3)

The lack of knowledge in like throughout our degree, we in our third year, we haven't ever come across organ donation. So that's lack of knowledge is a barrier. Yeah. KNOWLEDGE DEFICIT (Theme 3)

Researcher

Okay, so we've come to the end of the interview, but before we conclude, I'd like to ask you, is there anything that you would like to add over and above the interview questions?

Participant

Umm, no, just that, except your research made me want to investigate more about it and maybe one day down the line I'd like to actually myself become an organ donor.

Researcher

Okay. Wow, that's great news. So we've come to the end of the interview and I would like to thank you for your participation once again and the interview has really been valuable. You've given me a lot of valuable information. Once the results of phase two has been analysed and the strategy has been developed, it will be made available to you and the third year nursing students by the time you should be in your 4th year. But it will also benefit future nursing students during their general nursing science module.

Participant

Thank you so much.

Researcher

Thank you. Bye.

Participant

Bye.

Annexure K: Modified Delphi Approach Survey Tool

Study title: Exploring and describing the knowledge and attitudes of undergraduate nursing students towards organ donation at a selected university in Kwazulu-Natal, South Africa – A mixed methods study.

Organ donation is the gold standard in providing a solution to the high morbidity and mortality rate caused by end stage organ failure. Phase Three of the current research study entails developing a strategy in order to increase undergraduate nursing student's knowledge and receptiveness towards organ donation.

Thank you for agreeing to provide feedback on the Information Pamphlet developed by the researcher.

The Modified Delphi process will occur in two rounds in order for experts and end users in the field to provide feedback on the pamphlet which will be used in it's refinement. Thereafter, Round two will take place where the refined pamphlet will be resent to both groups of participants to revaluate the strategy.

Below are a few statements that look at the design and content of the pamphlet. You are required to **tick the appropriate column** pertaining to each statement and provide suggestions for refinement should you wish to do so.

Statement	Agree	Disagree	Suggestions
The pamphlet is clear and easy to understand.			
The pamphlet provides information needed for us to understand the process of organ donation.			
There is a benefit to conveying information on organ donation in a pamphlet.			
Presenting information in the form of pamphlet is a more user friendly educational resource than conventional methods of lectures and books.			
The pamphlet provides easy access to the contact details of transplant coordinators.			
It is possible to identify potential pivot-points of care using journey maps and the information given.			
I recommend that the pamphlet be distributed to other levels in the nursing programme.			

Annexure L: Editorial Certificate

EDITORIAL CERTIFICATE

Authors: Lennon Moodley

Document Title: Exploring and Describing the Knowledge and Attitudes of Undergraduate Nursing Students Towards Organ Donation at a Selected University in Kwazulu-Natal, South Africa – A Mixed Methods Study

Date Issued: 16/12/2023

JOYDEDITOR

This document certifies that the above manuscript was proofread and edited by Mrs Joy Joel (Cell number: 078 226 9038; Email: joydeditor@gmail.com).

The document was edited for proper English language, grammar, punctuation, spelling and overall style. The editor endeavoured to ensure that the author's intended meaning was not altered during the review. All amendments were tracked with the Microsoft Word "Track Changes" feature. Therefore, the author had the option of rejecting or accepting each change individually.

Kind regards

JOYDEDITOR