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Competency in Liver Transplant Nursing: A Qualitative Study

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ABSTRACT

Objective: The number of organ transplants is constantly increasing. Nurses have a key role in the achievement of a successful transplant. For this reason, they need to have the competency to manage every stage of the transplantation process. The purpose of this study is to identify the perceptions of nurses regarding their competency as transplant nurses. **Materials and Methods:** This descriptive qualitative study was carried out between October and December 2023. The purposive sampling method was used to select participants. Semi-structured interviews were conducted to collect data. The data collection process was completed when data saturation was reached. Thematic analyses were carried out. The Guba and Lincoln criteria were followed to ensure reliability. **Results:** The study was completed with 12 nurses. As a result of the analyses, a total of 4 themes consisting of 12 categories were obtained. The themes were “competency in transplant nursing”, “problem-solving skills”, “research and development”, and “team collaboration”. **Conclusion:** Nursing competencies are very important for a successful transplantation process. A transplant nurse should have knowledge, skills, experience, and competency in problem-solving and crisis management. Nurses should also be more adaptive, hardworking, attentive, and empathetic. Transplant units require profound coordination and team collaboration. Nurses should follow new transplant-related diagnosis and treatment methods, as well as scientific and technological developments, closely.

Keywords: Clinical competence, Qualitative study, Surgical nursing, Transplantation.

Karaciğer Transplantasyon Hemşireliğinde Yetkinlik: Nitel Bir Çalışma

ÖZ

Amaç: Organ nakillerinin sayısı sürekli artmaktadır. Hemşireler başarılı bir nakil elde etmede kilit bir role sahiptir. Bu nedenle, nakil sürecinin her aşamasını yönetebilecek yetkinliğe sahip olmaları gerekir. Bu çalışmanın amacı, hemşirelerin nakil hemşireliği yetkinliklerine ilişkin algılarını belirlemektir. **Gereç ve Yöntem:** Bu tanımlayıcı nitel çalışma Ekim-Aralık 2023 tarihleri arasında gerçekleştirilmiştir. Katılımcıları seçmek için amaçlı örnekleme yöntemi kullanılmıştır. Veri toplamak için yarı yapılandırılmış görüşmeler yapılmıştır. Veri doygunluğuna ulaşıldığında veri toplama süreci tamamlanmıştır. Tematik analizler yapılmıştır. Güvenilirliği sağlamak için Guba ve Lincoln kriterleri takip edilmiştir. **Bulgular:** Çalışma 12 hemşire ile tamamlanmıştır. Analizler sonucunda 12 kategoriden oluşan toplam 4 tema elde edilmiştir. Temalar “nakil hemşireliğinde yetkinlik”, “problem çözme becerileri”, “araştırma ve geliştirme” ve “takım iş birliği”dir. **Sonuç:** Başarılı bir nakil süreci için hemşirelik yetkinliği çok önemlidir. Bir nakil hemşiresi sorun çözme ve kriz yönetimi konusunda bilgi, beceri, deneyim ve yetkinliğe sahip olmalıdır. Hemşireler ayrıca daha uyumlu, çalışkan, dikkatli ve empatik olmalıdır. Nakil üniteleri derin koordinasyon ve ekip iş birliği gerektirir. Hemşireler nakil ile ilgili yeni tanı ve tedavi yöntemlerini ve bilimsel ve teknolojik gelişmeleri yakından takip etmelidir.

Anahtar Kelimeler: Klinik yetkinlik, Nitel çalışma, Cerrahi hemşireliği, Organ nakli.

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INTRODUCTION

Organ transplantation involves the transplantation of a part of an organ, or an entire organ, collected from a live or cadaveric donor to a recipient in cases where the organ functions of the recipient are not adequate to meet their vital requirements (International Transplant Nurses Society, 2011). According to the Global Observatory on Donation and Transplantation (GODT) data, 144,302 organ transplants were performed in 2021 (GODT, 2021). In Turkey, a total of 5,277 organ transplantations were performed in 2023, including 1,768 liver transplantations (GODT, 2021). Liver transplantation is a complex procedure in modern surgery. The successful outcome of this intricate liver transplantation process depends on the collaboration of a multidisciplinary team (Negreiros et al., 2017). Nurses play a vital role within the multidisciplinary team. Accordingly, they need to reach a certain level of competency to manage different stages of the perioperative period (Negreiros et al., 2017; Fernández-Alonso et al., 2020).

Defined as the integration of knowledge, skills, and attitudes that enable individuals to perform their duties effectively, competency is fundamental to the delivery of high-quality nursing care (Negreiros et al., 2017). In transplant nursing, achieving competency is particularly critical due to the complexity and sensitivity of the perioperative care process. Competent transplant nurses are expected to manage intricate clinical situations, educate patients and their families, and ensure continuity of care both in hospital and home settings. Competency in transplant nursing not only enhances patient care outcomes but also contributes significantly to the overall success of transplantation procedures (Fernández-Alonso et al., 2020; Ariburnu et al., 2022).

In transplant nursing, the complexity of the care process increases. Thus, nurses are required to provide both patients and their families with excellent care by ensuring the continuation of care in the hospital and at home (Negreiros et al., 2017). Nurses have an extremely important role in caring for pre-operative and post-operative transplant patients. They take part at the bedside as case managers, discharge planners, clinic support staff, and coordinators. They are responsible for education, transplant patients, and their families. But their scope of practice is limited by education and licensure. They need more education, practice, and competency (Fernández-Alonso et al., 2020). The growing number of transplant patients and advanced care requirements create the need for competent transplant nursing (Chambers et al., 2021). The characteristics sought in a competent transplantation nurse are defined as knowledge, skills, management, critical decision-making, ethics, complication management, wound care, discharge, and home care (Chaney & Yataco, 2019). The American Association of Critical Care Nursing suggests that the best patient outcomes are achieved

when transplant nurses' competencies align with their patients' needs (Swickard et al., 2014).

Transplantation requires high-level nursing care involving the monitoring of graft vascularization, rejection, and infection, the initiation and follow-up of immunosuppressive treatment, pain management, the monitoring of bleeding, complication management, and psychosocial care. In transplantation procedures, it is important to not only transplant the organ but also provide the best care to both the donor and the recipient and educate their families to optimize their quality of life in the following period. (Negreiros et al., 2017; Barnard et al., 2016). However, research studies on transplant nurses' clinical competency and individualized care are limited. Therefore, assessing the perceived competency level and individualized care provided by transplant nurses is essential for an effective transplantation process.

Organ transplantation involves a complex process that requires a multidisciplinary approach, and nurses have important roles and responsibilities in this process. In order to increase the quality of patient care at every stage of the transplantation process, prevent complications, and improve patient outcomes, nurses need to have certain competencies. However, the scope of competencies for transplantation nursing and nurses' perceptions on this issue have not been sufficiently investigated.

By looking at how competent liver transplantation nurses think they are, this study will help figure out what professional development transplantation nurses need and how to come up with solutions in this area. In conclusion, this study is an important source of information that will contribute to the development of nurse education programs to increase competency in transplant nursing and improve the quality of health services.

MATERIALS AND METHODS

Design

This study was carried out with a descriptive qualitative design (Vaismoradi et al., 2014). The most suitable research method to determine the experiences and views of nurses who provide care for organ transplant patients is the qualitative method (Creswell & Poth, 2018). In this study, the Consolidated Criteria for Reporting Qualitative Research (COREQ), a 32-item checklist, was used for reporting.

Sample selection and participants

The study was carried out with the voluntary participation of nurses who had been working at the Liver Transplant Institute of a University Hospital in Türkiye for at least a year. The Institute employs a total of 110 nurses. Its total patient capacity is 116. By 1 September 2023, the Institute had performed 3550 liver transplantation procedures, including 506 transplants from cadaveric donors and 3044 transplants from live donors. The purposive sampling method was used in this study to represent the population sufficiently.

Data collection

The data were collected between October and December 2023 using a 'Sociodemographic Information Form' that was prepared by the researchers to obtain information on the sociodemographic characteristics of the participants and a 'Semi-Structured Interview Form' to obtain information about their competencies regarding the transplantation process (Table 1). The questions on the Semi-Structured Interview Form were developed based on the review of the literature (American Nurses Association (ANA), 2013; Chang et al., 2011; Köse Tosunöz et al., 2021).

Table 1. Semi-structured interview form.

What is competency, being competency, and competency in clinical nursing? How would you describe competency in the transplantation process?
Do you think you have the knowledge to provide the optimum care to a transplant patient?
Do you find yourself competent in terms of the care of transplant patients, your problem-solving skills regarding potential problems in care, and your nursing interventions?
What do you think about team collaboration and your communication during the transplant process?
Would you define yourself as a leader?
Do you do research and read up-to-date information about transplant nursing?

After obtaining ethics committee approval and the hospital's institutional permission, the first author contacted the head nurses of the liver transplant clinic, intensive care units, and operating room. The time and place of the interviews were planned with nurses who agreed to make appointments after being provided information about the purpose of the study. The data were collected by the first author in the meeting room of the Liver Transplant Institute in face-to-face semi-structured interviews held with each participant. Each participant was interviewed only once. Audio recordings were taken with the permission of the participants. Each interview lasted 17 to 42 minutes. To protect the anonymity of the participants, each participant was given an alphanumeric code (e.g., P1). To confirm the accuracy of the representation of their views, each participant was allowed to listen to the audio recording of their interview at the end of the interview. The researcher informed the participants that their data would be kept confidential. In qualitative studies, data collection takes place until data saturation is reached, that is, when no new themes or categories can be reached during thematic analyses (Hennink et al., 2017). The collected information started to repeat after the interviews held with 11 participants. Therefore, it was decided that data saturation was reached in the interview held with the 12th participant, and no more interviews were conducted.

Data analysis

The first and second authors listened to the audio recordings of the interviews within 24 hours after the interviews, and they transcribed the content verbatim. The interview transcripts and field notes were stored in the electronic environment. The noteworthy observations and experiences of the participants were written down word by word. Both researchers read the interview transcripts three times and confirmed their accuracy.

The thematic analysis method was used to analyze the collected data (Braun & Clarke, 2021). Within the scope of thematic analysis, to familiarize themselves with the data, both researchers read the individual transcripts a few times and took short notes. The transcripts were then transferred to the NVivo software. This way, coding was performed, direct quotes were obtained from the statements of the participants, and the source of each view was specified. Using the obtained codes, potential themes were identified, and the compatibility of the themes with the entire dataset was checked. Codes with similar meanings were gathered to create categories and themes. Finally, the themes and categories were named and defined. After the completion of all steps, the dataset was reported based on the model outputs of the NVivo software (Braun & Clarke, 2021). The report was translated into English by a translator with linguistics education, and the translated text was individually read and confirmed by the researchers.

Reliability

To define different aspects of reliability in the study, the concepts of credibility, transferability, trustworthiness, and confirmability were used (Lincoln & Guba, 1985). For credibility, the data were independently analyzed by the two researchers, and their findings were compared. The participants were asked to confirm the data obtained during the data collection process. For transferability, in-depth information is given in the text about the details of the study, researchers, participants, sampling method, and data collection and analysis procedures. For trustworthiness, two researchers who were not involved in the study evaluated the research protocol by focusing on issues about the methods that were implemented and the design of the study. For confirmability, the views of the participants are presented in the results section.

Ethical approval

The study was carried out in line with the principles of the Declaration of Helsinki. Before the study, ethical committee approval and written permission were obtained from the Noninvasive Clinical Research Ethics Committee of the XXX University (31.08.2023, E-23430505-050.01.04-20482) and the hospital administration, respectively. Participants were informed about the purpose of the study. They were then asked for their verbal and written consent based

on the principle of voluntariness. Consent from each participant was obtained.

RESULTS

The 12 nurses who participated in the study (until data saturation was achieved) had been working at the

Liver Transplant Institute of a University Hospital in Türkiye for at least a year. Ten of the participants were women. The mean age of the participants was 32.08 ± 4.64 . All participants had at least Bachelor's degrees. The sociodemographic characteristics of the participants are shown in Table 2.

Table 2. Participants characteristic.

	N (%)	Mean±SD
Mean age		32.08±4.64
Gender		
Female	10 (83.3%)	
Male	2 (16.7%)	
Service		
Operating room service	2 (16.7%)	
Intensive care service	3 (25.0%)	
Transplantation service	7 (58.3%)	
Experience as a nurse in general (year)		9.50±4.68
Experience as a nurse in the field of organ transplantation (year)		6.66±4.31
Education level		
Bachelor's degree	10 (83.3%)	
Master's degree	2 (16.7%)	
PhD degree	-	

In the analyses of the data, 4 themes consisting of 12 categories were obtained. The themes were “competency in transplant nursing”, “problem-

solving skills”, “research and development”, and “team collaboration” (Table 3).

Table 3. Themes and Categories.

Theme	Category
Competency in Transplant Nursing	Competency in decision-making
	Competency in patient care
	Experience
	Information
Problem-Solving Skills	Calculating possible risk
	Crisis management
	Interpreting patient findings
Research and Development	Scientific activity
	Technological development
Team Collaboration	Communication
	Coordination
	Characteristics of nurses

Competency in transplant nursing

This theme included competency in decision-making, competency in patient care, experience, and information subthemes. This theme highlights the necessity for competent transplant nurses to possess critical decision-making skills, deliver optimal patient care, and demonstrate sufficient knowledge, expertise, and experience.

Competency in decision-making

In this study, the theme of transplantation competency emerged as a significant finding, with most participants expressing confidence in their skills and knowledge within this specialized field. Participants described feeling proficient in handling

complex aspects of transplantation, including patient assessment, surgical procedures, and postoperative care management.

In my opinion, competency means making decisions about things and being able to make suggestions. (P4)

Competency in patient care

Almost all participants stated that transplant patients are special patients and that they provided them with the optimum care.

We, of course, provide the optimum care in the intensive care unit. From clipping their nails to washing their hair... We administer narcotics, and of course, the patient's creatinine values are important. We start immunosuppressive agents. Mobilization is

very important to us. We perform pressure sore care. (P3)

... we do everything perfectly. We're knowledgeable about self-care, administering drugs, mobilization, complication management, and laboratory findings. (P4)

The participants reported that home care is very important, as immunosuppressive drugs are used in the treatment of these patients.

We provide education about diet and drug usage. I've made a table about drug usage at home, and I educate them [the patients]. We need an educator nurse. They [an educator nurse] could teach drug side effects, eating, and mobilization better. (P1)

Experience

The participants highlighted the importance of experience in transplant-related competency.

I think I have competency because I've worked in transplantation for a long time; there are always new things. Various cases are encountered. (P6)

Information

They said there is no limit to what can be learned, and the transplant unit is a suitable place for encountering new diagnoses.

There is always something new. We research. We sometimes discuss [things] with our friends, like 'what was this? You researched it...' (P6)

Some participants thought in-service training was necessary.

The clinic itself should have an education program. This [transplant unit] is a more specialized place. (P10)

Problem-solving skills

This theme included calculating possible risks, crisis management, and interpreting patient findings as subthemes. Problem-solving skills are essential in transplant nursing, where complex and unexpected clinical scenarios often arise.

Calculating possible risks

According to the participant, transplant nurses should be able to foresee potential risks.

When the person arrives [at the unit] in the postoperative period, we check all, including ammonia, biochemistry, and hemogram. After this, if there's any problem, if there's any bleeding, that is, when the output of their drain is high, we check their blood values again. If there's no problem, we draw blood in the morning for an examination that we call 'complete results'. (P2)

Crisis management

Risks in transplant patients, such as rejection and bleeding were emphasized by the participants.

Before a patient shows rejection, their clinical, biochemical, and tomographic findings provide information for us. We immediately let the physician know. We then make a decision and move fast with everything needed: biopsy, imaging... We can't [do not want to] lose patience. (P1)

Interpreting patient findings

The laboratory test results, vital signs, and drain output values of transplant patients are highly important for diagnosis and treatment.

Someone who can't interpret laboratory test results can't manage treatment anyway. We start a drug and monitor its effects accordingly. Drug doses and albumin values are important. (P5)

...we closely monitor everything including vital signs, hemogram, drain outputs... (P2)

Nurses are active in the management of patient resources as they have roles in patient care throughout the entire day. Pharmaceutical services, medical devices and equipment, and surgical materials are managed by nurses.

I want everything next to me during surgery. My table [equipment on the table] should be complete, my suture materials should be complete, and my sponge should be near. I want to have control and not manage lacking materials. (P8)

The participants complained about the insufficiency of human resources. They said they experienced many challenges, especially because there were no on-call doctors in clinics. They were racing against time in the management of acute situations. In addition to these issues, they stated that there was no educator nurse, and the number of clinic nurses was not enough.

I think we have problems, like there are not enough nurses. The level of experience is substantial, but some things turn out to be inadequate as our numbers are low. (P6)

Research and development

The research and development theme comprised the subthemes of scientific activity and technological development. It highlights the importance of transplant nurses staying up to date with evolving practices, contributing to evidence-based care, and fostering innovation in patient management.

Scientific activity

While some of the participants had bachelor's degrees, others were taking part in master's or doctoral studies. This is why they were participating in scientific activities and performing scientific research.

I follow it [scientific developments] and, I attend conferences. I submit manuscripts, write articles... I'm already interested. I do this because I like it. (P1)

Some participants had a consensus that transplantation is a field that is suitable for researching and learning up-to-date information.

We see new diagnoses and learn novel things here. For example, there was once a case of antibody-mediated rejection. I saw it for the first time. We prepared a chemotherapeutic drug suitable for it to prevent rejection. We can encounter different treatment and care [procedures]. (P5)

Technological development

Technological developments are effective in transplant surgery. Some participants thought following technological developments would

strengthen their team. Some stated that technology is effective for cross-transplantation surgeries.

... we are never complete. ...because technology advances. We need to improve ourselves. I believe the more we improve and gain knowledge, the stronger we'll become. (P2)

Science and technology resulted in the development of cross-transplantation. Fellows [surgeons] favor performing cross-transplantation surgeries. (P11)

Team collaboration

This theme included the sub-themes of communication, coordination and characteristics of nurses. Successful transplantation undoubtedly relies on effective communication and coordination among multidisciplinary teams.

Communication

Team communication is important for the conduct of patient care processes with the appropriate steps. An interruption in communication in the team risks the patient. Nurses who cannot adapt to the team in specialized units like transplant units are transferred to other units.

Team collaboration is important. My team is selfless, and this is important. This is a special place; we can't manage it without team collaboration. (P7)

I think the communication here is very good. We haven't experienced any problems since I started working here. (P12)

Coordination

Head nurses in transplant centers have roles and responsibilities in coordination with the patient, within the team, and with other units. The participants stated that head nurses displayed leadership qualities, and they were effective in the coordination of the clinic.

We are a team here. I'm only one link in the chain. It's important to be a good member of the team. (P6)

I think this is good, you know: we can cover for each other only by collaborating as a team. We already have a heavy workload, and our head nurse is working as if he/she is an assistant doctor. He/she follows referrals, supervises blood collection procedures, monitors orders, CVs... He/she can do this through team collaboration. (P10)

Characteristics of nurses

The characteristics of the nurses who work in transplant clinics are also highly important. According to the participants, the team members with whom they work in the transplant clinic should be hardworking, attentive, experienced, and adaptive.

The team is very important. There is a hardworking and helpful team [here]. It's very difficult to work with people who don't do their jobs. (P3)

Team collaboration is a phenomenon in the profession of nursing. ...because we can't do half a job. There's no stalling, slacking off, neglecting the tasks here. (P11)

DISCUSSION

Competency in nursing requires the knowledge, skills, and analytical mindset to perform nursing responsibilities (Ribeiro et al., 2024). Nursing is considered a complex combination of professional capacity, professional reasoning in general, skills, values, attitudes, and knowledge (Meyer et al., 2011). The transplant nurses who participated in this study defined competency as the capacity to make decisions, qualification in patient care, experience, and knowledge. The themes of a similar qualitative study are consistent with our study (Ribeiro et al., 2024).

Competency in transplantation nursing requires advanced clinical skills, specialized knowledge, and the ability to make decisions in critical moments (Meyer et al., 2011). In our study, nurses emphasized the significance of experience in decision-making, analytical thinking, and coordination. They highlighted that intensive care nurses, in particular, deliver care to transplant patients using advanced knowledge and skill. It was also noted that there is a rotation between clinics, ensuring that transplantation nurses gain essential experience in intensive care settings. In a previous study, which provided results that supported the statements of the participants of this study, transplant intensive care unit nurses had the highest nursing competency scale scores (Meyer et al., 2011). Intensive care nurses provide holistic care, they make decisions in the interests of their patients, and they have sufficient levels of medical knowledge in terms of interpreting patient findings (Taşkıran & Türk, 2023). Moreover, transplant intensive care units are known as specialized units where nursing interventions involving early complications, monitoring, immunosuppressive drugs, fluid-electrolyte balance, infection, and rejection cases are coordinated (Negreiros et al., 2017; Aued et al., 2016). In a study comparable to ours, knowledge was identified as the cornerstone of nursing competency. Specifically, a comprehensive understanding of medical and technical information was highlighted as essential for preventing complications (Henriksen et al., 2021). The other study stated that nursing assistants identified previous clinical experience as one of the ways to acquire competencies (Aued et al., 2016).

Problem-solving skills are fundamental to patient care as; they enable nurses to effectively address complex situations. Anticipating potential complications, making decisions, and taking risks are critical, especially for transplant nursing (Barnard et al., 2016; Ying et al., 2020). In this study, nurses stated that patient findings in transplant units differ from findings in other surgical units. They require transplantation-specific treatment and care procedures, including initiation of immunosuppressive drug therapy, laboratory tests, rejection, susceptibility to infection, and metabolic problems.

Nurses explained that complications such as bleeding, biochemical parameters, rejection, graft failure, and obstruction are situations that nurses should carefully interpret and intervene in. A study developed a protocol to identify and prevent early signs and symptoms of urinary tract infection in patients following kidney transplantation. With this protocol, nurses' ability to diagnose and intervene in urinary tract infections positively affects patient outcomes. This context highlights the nurses' competency in interpreting patient findings (Ma et al., 2021). A competent transplant nurse can interpret patient findings carefully, calculate potential risks preemptively, and manage crises (Henriksen et al., 2021). A study on the organ donation process explained the importance of crisis management by nurses for optimum performance in the organ donation process (Negreiros et al., 2017).

As in every field, technology and scientific research in transplantation are rapidly advancing. These developments affect transplant nursing, increasing patient outcomes and clinical efficiency. Hezer et al. (2024) discuss innovations in immunosuppressive therapy and telemedicine to reduce complications and provide optimal care (Hezer et al., 2024). Another systematic review study states that health information technologies support clinical decision-making systems in complex transplantation care (Niazkhani et al., 2017). These developments emphasize the importance of continuing education, and technological adaptation in transplant nursing, ensuring that healthcare professionals remain at the forefront of innovation in providing high-quality patient care. Similar to the literature, nurses emphasized the importance of education in transplantation, scientific research and close monitoring of developments. Nurses continue their master's and doctoral education, participate in congresses and contribute to the current literature. In addition to this, approximately 3,500 liver transplantation procedures have been performed at the Liver Transplant Institute, where the study was conducted. Additionally, as a first in the world, a 6-cross liver transplant was achieved (Republic of Türkiye Ministry of Health, 2024). The participants specified that novel diagnoses, information, and practices were contributed to the literature as a consequence of the research conducted at the clinic in question. Indeed, such research and transplant surgeries are possible thanks to technological developments (Akbulut & Yilmaz, 2015).

Organ transplantation procedures that are the first examples of their category in the world require successful team collaboration, coordination, and communication. Nurses are seen as linkage points among healthcare professionals and in the communication and coordination between healthcare professionals and patients (Arıburnu et al., 2022). They are at the center of communication and play a very significant role in the facilitation of professional

communication (Hoy et al., 2017). On the other hand, inadequate professional communication may jeopardize the quality of care (Etheredge et al., 2017; Negreiros et al., 2017). The participants of this study emphasized that personnel with advanced communication skills who can adapt to the transplantation process will have a permanent place in the field. Additionally, administrators need to employ nurses with suitable characteristics at transplant units (Fernández-Alonso et al., 2020). The participants revealed that nurses who were unable to adapt to the clinic left the clinic by their own accord or were let go with the advice of head nurses. Head nurses are leaders in the coordination of the clinic, and they are competent in decision-making roles. The participants also reported that their head nurses were experienced and competent in transplantation procedures.

Study Limitations and Strengths

The study was conducted in a single center. It is recommended that similar studies be conducted as multicenter research. Also, the responses of the participants to the semi-structured questions evaluating their perceived competency may have limited generalizability. However, the results of this study are important in that they present the optimum outcomes

CONCLUSION

The literature contains a limited number of studies addressing the competency of transplant nursing. As consistent with the literature, competencies such as advanced problem-solving skills, effective crisis management, and adaptability are crucial for ensuring positive patient outcomes. Furthermore, the results underscore the importance of continuous professional development, including staying updated on advancements in medical science and technology. Team collaboration and interdisciplinary coordination continue to be crucial for the optimum functioning of the transplant unit. The increase in the number of transplants in recent years and the implementation of crossover transplants highlight the need for competent nurses. Transplant nurses have important roles and responsibilities in successful transplantation processes in our country. Therefore, it is important to highlight the competency of nurses.

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Conflict of Interest

The author declare no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Author Contributions

Plan, design: SM, PH; **Material, methods and data collection:** SM, PH; **Data analysis and comments:** SM, PH; **Writing and corrections:** SM, PH.

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Ethical Approval

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