

The Role of Nursing in the Multidisciplinary Team Approach to Care of Liver Transplant Patients: A Comprehensive Review

Dalal Mohammed Hussin Mabrok¹, Amnah Mohmmmed Mahnashi², Samar Omar

Abuthiraa³, Mosherh Awadh Afash AL-Rwaili⁴, MOHAMMED SALEAH AL-BEASHI⁵, Latifah Aiyedh Almutairi⁶, Kazmah Mohseen Saif Albashi⁶, Latifa

Mohsen Alharbi⁶, Dalal Rashed Muslet Altowayan⁶, Ahlam Mohammad I

Alkuraidees⁶, Madhwiaabdulazizalsulayli⁶, Jawaher Aiyedh Almutairi⁷,

Mohammed Abdualhadi Mohammed Albishi⁸, AWJOUD MAMDOUH Althafiriy⁹,

Hala Mamdouh Althafiriy¹⁰, Mushaira

Mohammed Mahboub¹¹, Munirah Ali Saadalbishi¹²

¹. Nurse, Taif, Sharqiah

². Nursing, Makkah – Taif, Taif Health Cluster, Eastern Health Center

³. Nursing Specialist, Western region, King Salman bin Abdullaziz Medical City

⁴. Nursing Technician, Suwayr General Hospital, Sakakk - Aljouf

⁵. NURSING SPECIALIST, KING SALMAN HOSPITAL, RIYADH, Saudi Arabia

⁶. Nursing technician, Alashrafiah PHC, Qassim, Unayzah, Saudi Arabia

⁷. Specialist Nurse, Alsafra PHC Qassim, Almithnab, Saudi Arabia

⁸. Nursing Technician Tuberculosis Control Unit, Taif, Saudi Arabia

⁹. Nursing, King Khaled General Hospital,Ministry of Health ,kingdom of Saudi Arabia.

¹⁰. Nursing, King Khalid University Hospital, Saudi Arabia

¹¹. Health Assistant, Health Center 14 affiliated to the hospital The gap, Jeddah, Saudi Arabia

¹². Nursing, Maternity and Children's Hospital, Bisha, Saudi Arabia

Abstract

Liver transplantation is a critical intervention for patients with end-stage liver disease, necessitating a comprehensive and coordinated approach to care. The success of this complex procedure relies not only on the surgical expertise of the transplant team but also on the integral contributions of a multidisciplinary team, with nursing playing a pivotal role. This review explores the multifaceted responsibilities of nurses in the care of liver transplant patients, emphasizing their roles as advocates, educators, and caregivers throughout the transplant process. In the pre-operative phase, nurses conduct thorough assessments to evaluate patients' physical and psychological readiness for surgery, while also providing essential education about the transplant process and addressing any barriers to care. Their involvement is crucial in fostering patient understanding and compliance, which are vital for optimizing outcomes. During the intra-operative phase, nurses ensure patient safety and comfort, closely monitoring vital signs and assisting the surgical team in maintaining a sterile environment. Their vigilance and expertise are essential in recognizing and responding to any changes in the patient's condition. Post-operatively, nurses play a critical role in monitoring for complications, managing pain, and providing education on medication adherence and lifestyle modifications necessary for the health of the transplanted liver. They also facilitate ongoing follow-up care, coordinating with other members of the multidisciplinary team to ensure comprehensive management of the patient's health. This review highlights the essential contributions of nursing in each phase of liver transplantation, underscoring the importance of a collaborative, multidisciplinary approach to patient care. By recognizing and enhancing the role of nursing, healthcare systems can improve patient outcomes and quality of life for liver transplant recipients. Ultimately, this comprehensive review aims to inform best practices and promote the integration of

nursing into the multidisciplinary framework of liver transplantation, ensuring that patients receive holistic and effective care throughout their transplant journey.

Introduction

Liver transplantation is a complex and life-saving procedure for patients suffering from end-stage liver disease, a condition that can arise from various etiologies, including chronic hepatitis, alcoholic liver disease, and non-alcoholic fatty liver disease. The procedure involves the surgical removal of a diseased liver and its replacement with a healthy liver from a deceased or living donor. The success of liver transplantation relies not only on the surgical expertise of the transplant team but also on the comprehensive care provided by a multidisciplinary team. This team typically includes surgeons, hepatologists, anesthesiologists, pharmacists, social workers, dietitians, and, importantly, nurses. Each member of this team plays a crucial role in ensuring optimal patient outcomes, but nurses are particularly vital due to their continuous presence and direct interaction with patients throughout the entire transplant. Nurses play a pivotal role in the multidisciplinary team approach, serving as advocates, educators, and caregivers. They are often the first point of contact for patients and their families, providing essential information and support from the initial evaluation through the post-operative recovery and long-term follow-up. Their responsibilities encompass a wide range of activities, including conducting comprehensive assessments, coordinating care, managing medications, and providing emotional support. This multifaceted role is critical, as the journey of a liver transplant patient is fraught with challenges, including the physical and emotional toll of the disease, the complexities of the surgical procedure, and the lifelong commitment to post-transplant care [2].

The importance of nursing interventions in the pre-operative, intra-operative, and post-operative phases cannot be overstated. In the pre-operative phase, nurses assess patients' readiness for surgery, educate them about the transplant process, and address any concerns or barriers to care. During the intra-operative phase, they ensure patient safety and comfort while assisting the surgical team. In the post-operative phase, nurses monitor for complications, manage pain, and provide education on medication adherence and lifestyle modifications. Furthermore, the ongoing care required for long-term success involves regular follow-up appointments, laboratory monitoring, and support for lifestyle changes that promote the health of the transplanted liver [3].

This review aims to explore the multifaceted role of nursing in the care of liver transplant patients, highlighting the critical importance of nursing interventions at each stage of the transplant process. By examining the various responsibilities and contributions of nurses, we can better understand how their involvement enhances patient outcomes and quality of life. Ultimately, this exploration underscores the necessity of a collaborative, multidisciplinary approach to liver transplantation, with nursing as a cornerstone of effective patient care. As the field of transplantation continues to evolve, recognizing and expanding the role of nursing will be essential in meeting the complex needs of liver transplant patients and ensuring their long-term success [4].

The Pre-Operative Phase

The pre-operative phase of liver transplantation is critical for preparing patients for surgery and optimizing their health status. Nurses are often the first point of contact for patients and their families, providing essential education about the transplant process, what to expect, and the importance of adherence to medical recommendations. This education is vital, as it helps alleviate anxiety and empowers patients to take an active role in their care [5].

During this phase, nurses conduct comprehensive assessments to evaluate the patient's physical and psychological readiness for transplantation. This includes obtaining a detailed medical history, performing physical examinations, and assessing laboratory results. Nurses also play a crucial role in identifying potential barriers to transplantation, such as comorbid conditions, psychosocial issues, and substance abuse. By collaborating with other members of the multidisciplinary team, nurses can help develop individualized care plans that address these barriers and optimize the patient's candidacy for transplantation [6].

Patient education is a cornerstone of nursing care in the pre-operative phase. Nurses provide

information about the transplant process, including the surgical procedure, potential complications, and the importance of post-operative care. They also educate patients about the need for lifestyle modifications, such as dietary changes and smoking cessation, which can significantly impact transplant outcomes. By fostering open communication, nurses encourage patients to ask questions and express concerns, thereby enhancing their understanding and preparedness for the upcoming surgery [7].

In addition to patient education, nurses are instrumental in coordinating pre-operative evaluations and consultations with other members of the transplant team. This may involve scheduling appointments with hepatologists, nutritionists, and social workers, ensuring that all aspects of the patient's care are addressed before surgery. Effective communication among team members is essential for developing a comprehensive care plan that meets the unique needs of each patient [8]. Nurses also play a vital role in assessing the patient's psychosocial status. This includes evaluating the patient's mental health, support systems, and coping mechanisms. Understanding the psychological readiness of the patient is crucial, as emotional stability can significantly influence post-operative recovery. Nurses may utilize standardized assessment tools to gauge anxiety, depression, and overall mental well-being, allowing for timely referrals to mental health professionals if needed [9].

Furthermore, the pre-operative phase often involves discussions about the importance of adherence to medical regimens, including vaccinations and management of comorbid conditions. Nurses educate patients about the need for vaccinations to prevent infections that could jeopardize the transplant. They also emphasize the importance of managing conditions such as diabetes or hypertension, which can complicate the transplant process. By addressing these factors, nurses help ensure that patients are in the best possible health before undergoing surgery [10].

The Intra-Operative Phase

During the intra-operative phase, the role of nursing shifts to providing direct patient care in the operating room. Nurses work closely with the surgical team to ensure a safe and efficient surgical procedure. They are responsible for monitoring the patient's vital signs, administering medications, and managing anesthesia, all while maintaining a sterile environment. Intra-operative nurses play a critical role in patient safety. They are trained to recognize and respond to any changes in the patient's condition, such as fluctuations in blood pressure, heart rate, or oxygen saturation. By closely monitoring these parameters, nurses can alert the surgical team to potential complications, allowing for timely interventions that can prevent adverse outcomes [11].

Additionally, nurses are responsible for managing the surgical instruments and supplies needed during the procedure. This includes preparing the operating room, ensuring that all necessary equipment is available, and maintaining a sterile field. Effective communication and teamwork among the surgical staff are essential during this phase, and nurses play a vital role in facilitating this collaboration [5].

Intra-operative nurses also provide emotional support to patients and their families during the surgical process. While patients are under anesthesia, families often experience anxiety and uncertainty. Nurses can offer reassurance to family members, explaining the surgical process and providing updates as needed. This support helps alleviate some of the stress associated with the surgery and fosters a sense of trust in the healthcare team [12].

Moreover, nurses are involved in the documentation of the surgical procedure, ensuring that all relevant information is accurately recorded. This documentation is crucial for maintaining a comprehensive medical record and for facilitating communication among team members. Intra-operative nurses must be detail-oriented and organized, as accurate documentation can impact post-operative care and outcomes [13].

The Post-Operative Phase

The post-operative phase is a critical period for liver transplant patients, as they are at increased risk for complications such as infection, bleeding, and organ rejection. Nurses are essential in monitoring patients during this time, providing vigilant assessments and interventions to ensure a

smooth recovery [7].

Post-operative nursing care begins immediately after surgery, as patients are transferred to the recovery unit. Nurses closely monitor vital signs, fluid balance, and laboratory values, assessing for any signs of complications. They are trained to recognize early indicators of rejection or infection, allowing for prompt intervention. This vigilant monitoring is crucial, as timely identification of complications can significantly impact patient outcomes [14].

In addition to physical assessments, nurses provide emotional support to patients and their families during the recovery process. The experience of undergoing a liver transplant can be overwhelming, and patients may experience a range of emotions, including anxiety, fear, and uncertainty. Nurses play a vital role in providing reassurance, answering questions, and facilitating communication between patients and the healthcare team. By fostering a supportive environment, nurses can help patients cope with the emotional challenges of recovery [15].

Patient education continues in the post-operative phase, as nurses provide information about medication management, lifestyle modifications, and follow-up care. Patients are typically prescribed immunosuppressive medications to prevent organ rejection, and understanding the importance of adherence to these medications is critical for long-term success. Nurses educate patients about potential side effects, the importance of regular laboratory monitoring, and the need for ongoing follow-up appointments with the transplant team [16].

Nurses also play a significant role in pain management during the post-operative phase. They assess patients' pain levels using standardized pain scales and implement appropriate interventions to manage discomfort. This may include administering prescribed analgesics, utilizing non-pharmacological pain relief methods, and educating patients about pain management strategies. Effective pain control is essential for promoting recovery and enhancing the patient's overall experience [17].

Furthermore, nurses are responsible for monitoring the surgical site for signs of infection or complications. They assess the integrity of the incision, observe for any drainage or unusual changes, and educate patients on proper wound care. By providing clear instructions and support, nurses empower patients to take an active role in their recovery and promote healing [18].

Long-Term Care and Follow-Up

Long-term care and follow-up are essential components of the nursing role in the management of liver transplant patients. After discharge from the hospital, patients require ongoing monitoring to ensure the health of the transplanted liver and to manage any potential complications. Nurses play a crucial role in coordinating follow-up care, which includes regular clinic visits, laboratory tests, and assessments of liver function.

During follow-up appointments, nurses conduct comprehensive evaluations of the patient's physical and emotional well-being. They assess liver function through laboratory tests, monitor for signs of rejection or infection, and evaluate the patient's adherence to medication regimens. This ongoing assessment is vital for identifying any issues early and implementing appropriate interventions to prevent complications [19].

Nurses also provide education and support to help patients navigate the challenges of life after transplantation. This includes guidance on lifestyle modifications, such as dietary changes, exercise, and avoiding substances that could harm the liver. Nurses encourage patients to adopt healthy habits that promote overall well-being and reduce the risk of complications. They also address psychosocial aspects of recovery, helping patients cope with the emotional and social adjustments that come with living with a transplanted organ [20].

Collaboration with other members of the multidisciplinary team remains essential in long-term care. Nurses facilitate communication between patients and various specialists, ensuring that all aspects of the patient's health are addressed. This collaborative approach enhances the quality of care and supports the patient's journey toward optimal health [21].

In addition to direct patient care, nurses contribute to quality improvement initiatives within the transplant program. They participate in data collection and analysis to monitor outcomes, identify trends, and implement evidence-based practices that enhance patient care. By engaging in

continuous professional development and staying informed about advancements in liver transplantation, nurses ensure that they provide the highest standard of care to their patients [22]. Nurses also play a vital role in addressing the financial and logistical challenges that patients may face after transplantation. They assist patients in navigating insurance coverage, medication costs, and transportation to follow-up appointments. By providing resources and support, nurses help alleviate some of the burdens associated with post-transplant care, allowing patients to focus on their recovery [23].

Conclusion

The role of nursing in the multidisciplinary team approach to the care of liver transplant patients is multifaceted and integral to the success of the transplant process. From the pre-operative phase through long-term follow-up, nurses serve as advocates, educators, and caregivers, ensuring that patients receive comprehensive and compassionate care. Their contributions significantly impact patient outcomes, enhancing the quality of life for individuals who have undergone liver transplantation. As the field of transplantation continues to evolve, the nursing profession must adapt and expand its role, embracing new challenges and opportunities to improve the care of liver transplant patients.

References:

1. Baker "Time-since-transplant quality of life for liver recipients" Journal of nursing and healthcare of chronic illness (2010) doi:10.1111/j.1752-9824.2010.01046.x
2. Kothari et al. "Inpatient Rehabilitation after Liver Transplantation Decreases Risk and Severity of 30- Day Readmissions" Journal of the american college of surgeons (2016) doi:10.1016/j.jamcollsurg.2016.01.061
3. Oliveira "Nursing Care in Liver Transplantation" Journal of quality in health care & economics (2023) doi:10.23880/jqhe-16000327
4. Ibrahim and Qalawa "Nutritional indicators among patients with liver transplantation: A cross sectional study" Journal of nursing education and practice (2021) doi:10.5430/jnep.v11n1p78
5. Koc et al. "Telemedicine based remote monitoring after liver transplantation: Feasible in a select group and a more stringent control of immunosuppression" Clinical transplantation (2021) doi:10.1111/ctr.14494
6. Rudow et al. "Quality Improvement in the Care of Live Liver Donors: Implementation of the Designated Donor Nurse Program" Progress in transplantation (2010) doi:10.1177/152692481002000411
7. Giusto et al. "Changes in nutritional status after liver transplantation" World journal of gastroenterology (2014) doi:10.3748/wjg.v20.i31.10682
8. C et al. "Longitudinal Changes in BMD and Fracture Risk in Orthotopic Liver Transplant Recipients Not Using Bone-Modifying Treatment" Journal of bone and mineral research (2014) doi:10.1002/jbmr.2214
9. Mahmud et al. "An Advanced Practice Practitioner-Based Program to Reduce 30- and 90-Day Readmissions After Liver Transplantation" Liver transplantation (2019) doi:10.1002/lt.25466
10. Beck et al. "Use of Palliative Care Consultation for Patients with End-Stage Liver Disease: Survey of Liver Transplant Service Providers" Journal of palliative medicine (2016) doi:10.1089/jpm.2016.0002
11. Mikolajczyk et al. "Novel educational interventions in residency increase knowledge of chronic liver disease and career interest in hepatology" Hepatology (2016) doi:10.1002/hep.28741
12. Taher et al. "Patients' Experiences of Life Challenges After Liver Transplantation: A Qualitative Study" Journal of patient experience (2021) doi:10.1177/2374373521996956
13. Masih and Sharma "Nursing care of patients undergoing live donor liver transplantation: A review" International journal of advance research in nursing (2019) doi:10.33545/nursing.2019.v2.i1b.34

14. Goldberg et al. "Changes in the Prevalence of Hepatitis C Virus Infection, Nonalcoholic Steatohepatitis, and Alcoholic Liver Disease Among Patients With Cirrhosis or Liver Failure on the Waitlist for Liver Transplantation" *Gastroenterology* (2017) doi:10.1053/j.gastro.2017.01.003
15. Dols et al. "Relationship of Nurse-Led Education Interventions to Liver Transplant Early Readmission" *Progress in transplantation* (2020) doi:10.1177/1526924820913511
16. Aiyebusi et al. "Patient and clinician opinions of patient reported outcome measures (PROMs) in the management of patients with rare diseases: a qualitative study" *Health and quality of life outcomes* (2020) doi:10.1186/s12955-020-01438-5
17. Chaney et al. "Role Development of Nurse Practitioners and Physician Assistants in Liver Transplantation" *Progress in transplantation* (2016) doi:10.1177/1526924816632116
18. Dare et al. "Additive effect of pretransplant obesity, diabetes, and cardiovascular risk factors on outcomes after liver transplantation" *Liver transplantation* (2014) doi:10.1002/lt.23818
19. Barroso et al. "Effect of exercise training in heart rate variability, anxiety, depression, and sleep quality in kidney recipients: A preliminary study" *Journal of health psychology* (2016) doi:10.1177/1359105316676329
20. Adam et al. "Evolution of indications and results of liver transplantation in Europe. A report from the European Liver Transplant Registry (ELTR)" *Journal of hepatology* (2012) doi:10.1016/j.jhep.2012.04.015
21. He and Huang "Nursing Experience After the Third Complex Liver Transplantation: A Case Report" (2023) doi:10.57237/j.nhres.2023.02.002
22. Ordin and Wellard "Investigation of adaptation after liver transplantation using
<scp>R</scp>oy's<scp>A</scp>daptation<scp>M</scp>odel" *Nursing and health sciences* (2012) doi:10.1111/j.1442-2018.2012.00715.x
23. Chaney and Yataco "The Emerging Role of Nurse Practitioners and Physician Assistants in Liver Transplantation" *Liver transplantation* (2019) doi:10.1002/lt.25474