



Hospital discharge of liver transplantation patient: an integrative review

Alta hospitalar do paciente transplantado hepático: revisão integrativa
Alta hospitalaria de pacientes con trasplante de hígado: una revisión integradora

Laísa Fischer Wachholz¹

Neide da Silva Knihns¹

Sabrina Regina Martins²

Aline Lima Pestana Magalhães¹

Laura Cavalcanti de Farias Brehmer¹

Marisa da Silva Martins³

1. Universidade Federal de Santa Catarina, Curso de Enfermagem. Florianópolis, SC, Brasil.

2. Universidade Federal de Santa Catarina, Programa de Pós-Graduação em Enfermagem. Florianópolis, SC, Brasil.

3. Universidade Federal de Santa Catarina, Hospital Universitário. Florianópolis, SC, Brasil.

ABSTRACT

Objective: To analyze evidence available in the literature to support the planning of hospital discharge of the patient who has undergone liver transplantation. **Method:** Integrative review from the bases Scopus, LILACS, ScieELO, MEDLINE/PubMed, CINAHL, BDNF, Web of Science. The keywords Liver transplant and Hospital discharge were used in English, Spanish, and Portuguese, being identified 1,152 articles, and the sample consisting of 13 articles. **Results:** Publications are concentrated between 2014 (n = 4; 30.7%) and 2016 (n = 3; 23%), originating in Brazil (n = 5; 38.4%) and the United States (n = 3; 23%). The results were organized into the categories: Warning signs for possible changes that may arise at home; Recommendations for the use of medicines – promoting self-management and adherence to treatment; Daily activities and care at home – support and self-confidence; Changes in body image and daily life – the importance of support network. **Conclusion:** Discharging the patient who has undergone liver transplantation is a challenge, given the complexity of the procedure. The findings show care directed at health education to minimize complications, support the multidisciplinary team and patient in self-care, especially regarding the signs and symptoms of complications, care with the use of medication, and the changes that occur when returning home.

Keywords: Liver Transplantation; Nursing Care; Health Education; Patient Care Team.

RESUMO

Objetivo: Analisar evidências disponíveis na literatura capazes de subsidiar o planejamento da alta hospitalar do paciente submetido ao transplante hepático. **Método:** Revisão integrativa a partir das bases Scopus, LILACS, SciELO, MEDLINE/PubMed, CINAHL, BDNF, Web of Science. Utilizou-se os descritores Transplante hepático e Alta hospitalar, em inglês, espanhol e português, identificando-se 1.152 artigos, sendo que a amostra foi composta por 13 artigos. **Resultados:** As publicações concentram-se entre 2014 (n=4; 30,7%) e 2016 (n=3; 23%), tendo como origem o Brasil (n=5; 38,4%) e os Estados Unidos (n=3; 23%). Os resultados foram organizados nas categorias: Sinais de alerta para possíveis alterações que possam surgir no domicílio; Recomendações para o uso de medicamentos-promoção do autogerenciamento e adesão ao tratamento; Atividades e cuidados diários em domicílio – apoio e autoconfiança; Mudanças na imagem corporal e vida diária – importância da rede de apoio. **Conclusão:** A alta hospitalar do paciente submetido ao transplante hepático é um desafio, visto a complexidade do procedimento. Os achados apresentam cuidados direcionados à educação em saúde no sentido de minimizar complicações, apoiar a equipe multiprofissional e o paciente no autocuidado, em especial quanto aos sinais e sintomas de complicações, cuidados com o uso de medicação e as mudanças que ocorrem no retorno ao domicílio.

Palavras-chave: Transplante Hepático; Assistência de Enfermagem; Educação em Saúde; Equipe de Assistência ao Paciente.

RESUMEN

Objetivo: Analizar evidencias disponibles en la literatura capaces de apoyar la planificación del alta hospitalaria de pacientes sometidos a trasplante hepático. **Método:** Revisión integradora de bases: Scopus, LILACS, SciELO, MEDLINE/PubMed, CINAHL, BDNF, Web of Science. Las palabras clave Trasplante de hígado y Alta hospitalaria fueron utilizadas en inglés, español y portugués. Se identificaron 1.152 artículos, siendo la muestra compuesta de 13. **Resultados:** Las publicaciones se concentran entre 2014 (n=4;30,7%) y 2016 (n=3;23%), originarias de Brasil (n=5;38,4%) y Estados Unidos (n=3;23%). Resultados organizados en categorías: Señales de alerta de posibles cambios que puedan surgir en el hogar; Recomendaciones para el uso de medicamentos de autogestión y adherencia al tratamiento; Actividades diarias y atención en el hogar – apoyo y autoconfianza; Cambios en imagen corporal y vida diaria – importancia de la red de apoyo. **Conclusión:** El alta al paciente sometido a un trasplante de hígado es un desafío, dada la complejidad del procedimiento. Los hallazgos presentan una atención dirigida a la educación sanitaria para minimizar las complicaciones, apoyar el equipo multidisciplinario y el paciente en autocuidado, especialmente con respecto a los signos y síntomas de las complicaciones, la atención con el uso de medicamentos y los cambios que ocurren al regresar a casa.

Palabras clave: Trasplante de Hígado; Atención de Enfermería; Educación en Salud; Grupo de Atención al Paciente.

Corresponding author

Laísa Fischer Wachholz

Email: laisafischer@gmail.com

Submitted on 12/04/2019.

Accepted on 04/08/2020.

DOI:

<https://doi.org/10.1590/2177-9465-EAN-2019-0346>

INTRODUCTION

The program of hospital discharge, care planning and health education for patients undergoing liver transplantation (LT) have been major challenges for the multidisciplinary team that works on their development. On the one hand, overworked professionals responsible for organizing and preparing patients and families for home care. On the other hand, patient and family anxious about the demand for care to be performed at home.^{1,2}

The demands of the team, patient and family reveal that, despite advances in the thematic of transplants, greater involvement and caution is required of all professionals in the face of hospital discharge, since several complications and unexpected difficulties can arise at home. The main complications may involve neurological, pulmonary, renal issues, opportunistic infections (pulmonary, herpes zoster, among others) and graft loss associated with rejection.¹⁻³

Such problems and complications, when not prevented, identified and treated in a timely manner, can lead the patient to recurrent hospitalizations, other aggravations or even to death.¹ The survival of the patient and of the graft after LT is directly related to the prevention of possible complications in the postoperative period and adherence to treatment.^{1,2}

The possibility of these aggravations awakens in the team, patient and family the importance of monitoring, vigilance and planning of care when returning home. The need to provide information that can help these people to the new reality is an obligation of the multidisciplinary team, which must be managed and supervised by a professional nurse. It is necessary that this professional remains updated and trained to give guidance on the signs and symptoms of rejection and infections, as well as possible complications, drug interactions, among other care. The role of the nursing professional in the management of care for hospital discharge in the reference and counter-reference is highlighted; in education and health promotion, aiming at comprehensive, safe and effective health care. In this way, the nurse also contributes to the promotion of the autonomy of the patient and his family, while enabling self-care and the management of home care by the patient.^{4,5}

The return to home of the patient undergoing LT requires constant adaptation. In particular, regarding hygiene of the environment, healthy eating, weight maintenance, glycemia and temperature control and diuresis, in addition to strict administration of medications at pre-established times, exams and weekly returns with the multidisciplinary team in the first two months. It is considered that this list of care generates too many restrictions (physical, dietary, financial, among others) for these people, in addition to changes in their daily lives, these being the main causes of non-adherence to treatment, complications and frequent hospitalizations, which can lead even to death.^{3,6-9}

Hospital discharge, when developed effectively and clearly, using care tools, increases the capacity for self-care, strengthens adherence to the proposed treatment, reduces the occurrence of postoperative complications, strengthens communication between the institution and care provided to patients in a resolute and

humanized way, in addition to contributing to the systematization of nursing care and of the multidisciplinary team.^{3,8-9}

In view of the reality presented and with the purpose of obtaining evidence that can help the home care plan for LT, changing the reality of the practice and promoting greater patient adherence to treatment, in addition to supporting the health team in effective home care strategies providing quality of life and graft survival, this study raises the following guiding question: What evidence is available in the literature that can support the planning of hospital discharge of patients undergoing liver transplantation? In this sense, the objective was to analyze the evidence available in the literature capable of supporting the planning of hospital discharge of the patient undergoing liver transplantation.

METHOD

The method adopted to present the synthesis of evidence was an integrative literature review, carried out through six steps: (1) Elaboration of the research question; (2) Development of criteria for searching the literature; (3) Data collection; (4) Critical analysis of the material obtained; (5) Careful evaluation and interpretation of the information obtained; and (6) Presentation of the results obtained.¹⁰ The stages of the study will be described below:

1st - Elaboration of the research question: to carry out this step, the health needs of the patients and the demand of the multidisciplinary team were considered through an extension project carried out with this population by the researchers for more than two years. To structure the research question, the PICO strategy was used, being adjusted to PIO, where P refers to the population, formed by patients undergoing LT; I is formed by care related to the health condition and; O is related to information capable of supporting care strategies directed to hospital discharge. In this study, C was not used due to the type of review. Thus, the research question was structured as: What evidence is available in the literature that can support the planning of hospital discharge of patients undergoing liver transplantation?

2nd - Development of criteria for searching the literature: at first, a search was carried out randomly, aiming to identify the databases with the largest number of publications on the subject. After, the following databases were defined: SCOPUS, Latin American and Caribbean Literature in Health Sciences (LILACS), Scientific Electronic Library Online (SciELO), Medical Literature Analysis and Retrieval System Online (MEDLINE), consulted via Pubmed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), BDNF and Web of Science. The chosen keywords were: "Liver transplantation" and "Hospital discharge", in English, Spanish and Portuguese. For each database, search strategies were developed considering the descriptors and keywords with the support of a librarian ("Liver Transplantation" OR "Liver Transplantations" OR "Hepatic Transplantation" OR "Hepatic Transplantations" OR "Liver Grafting" OR "Liver Diseases" OR "Liver Disease" OR "Liver Dysfunction" OR "Liver Dysfunctions") AND ("Nursing Care"

OR "Postoperative Care" OR "Postoperative Procedures" OR "Postoperative Procedure" OR "Patient Discharge" OR "Patient Discharges" OR "Discharge Planning" OR "Discharge Plannings" OR "Discharged from Hospital").

Inclusion criteria: original research, protocols, guides, guidelines and discussion articles. Exclusion criteria: review articles, theses and dissertations, letters, editorials, studies that did not address the topic of interest. Filters used in the search: adult patients; articles in Portuguese, English and Spanish; publication period between August 2013 and December 2018. A search for the material was carried out in the defined databases by one of the researchers in January 2019, with 1152 manuscripts identified. Subsequently, the material obtained was submitted to the Mendeley® bibliographic management tool, with duplicate articles being excluded. Subsequently, two researchers blindly read the title and abstract, and 1099 articles were excluded, according to the criteria already mentioned. Of the 41 remaining articles, all were read in full, remaining 21. However, after consensus of the researchers, eight more were eliminated because they were not related to the issue of hospital discharge, leaving 13 manuscripts for data collection.

3rd - Data collection: The information was synthesized in the form of a table with the following data: title; authors; type of publication; goals; conclusions and; strength of evidence / level of evidence, being classified according to level. Namely: Level 1: obtained through meta-analysis of controlled clinical studies with randomization; Level 2: obtained by study with experimental design; Level 3: design of quasi-experimental research; Level 4: emerging from cohort and case-control studies outlined; Level 5: that arise from a systematic review of descriptive and qualitative studies; Level 6: derived from a single descriptive or qualitative study and; Level 7: from opinions of authorities or expert committee report.¹¹

4th - Critical analysis of the material obtained: it was sought to carefully evaluate each information obtained through the

selected articles, identifying the most relevant data that could improve the daily practice of health professionals in the assistance of hospital discharge from LT. This step was carried out by the researchers. It is noteworthy that two of the researchers work directly at hospital discharge, with more than ten years of experience.

5th - Careful evaluation and interpretation of the information obtained: at this moment, the objective was to understand and interpret the relevant information, the best evidence, the most significant aspects, which could subsidize the health team at the time of discharge, in addition to information that would assist the patient and family in adapting to the new reality when they return home.

6th - Presentation of the results obtained: for greater compression and organization of the findings obtained, a table was prepared containing the year of publication, database, level of evidence and recommendations for planning hospital discharge (Chart 1). In addition, in order to present the most relevant contributions to hospital discharge planning, four categories were elaborated by data similarity, which are presented below.

RESULTS

During the material selection process, 1,152 studies were identified, resulting in a total of 13 articles included for analysis (Figure 1).

Publications are concentrated between 2014 (n=4; 30.7%) and 2016 (n=3; 23%), originating in Brazil (n=5; 38.4%) and in the United States (n=3; 23%). The largest number of articles was identified in the PUBMED database (n=7; 53.8%). Regarding the level of evidence, eight studies (61.5%) obtained a level 5 evidence.

Chart 1 shows the year of publication, database, level of evidence and main recommendations for planning hospital discharge (Chart 1).

Presentation of the categories:

Chart 1 - Characteristics of primary studies included in the categories.

Author / Year / Level of evidence: LE	Recommendations for planning hospital discharge
Author: Ordin et al. ¹² Year: 2013 Level of evidence: 5	Understand the health needs individually for each patient, considering their social environment. Use simple, clear and sequential language to guide. As for possible complications, patients should be alerted to increased appetite, diarrhea or constipation, nausea and vomiting, changes in relation to body image, body sensation and sexuality.
Author: Musgrave et al. ¹³ Year: 2013 Level of evidence: 5	The pharmacist's participation in the discharge plan leads to safety by significantly reducing medication errors, especially when it involves the orientation of doses, storage, adverse reactions and other situations.
Author: Garcia et al. ¹⁴ Year: 2014 Level of evidence: 4	Develop an exercise program capable of improving functional capacity, generating positive implications for the control of metabolic diseases, which are common in patients after LT.

Source: The authors, 2019.

Chart 1 - Continued...

Author / Year / Level of evidence: LE	Recommendations for planning hospital discharge
Author: Toh et al. ¹⁵ Year: 2014 Level of evidence: 5	Actions/strategies between the medical and pharmaceutical team in the development of a prudent prescription, with fixed-dose combinations, combination of drugs and vigilance of treatment adherence. The pharmacist must be present at all dose changes and modifications.
Author: Bardet et al. ¹⁶ Year: 2014 Level of evidence: 4	The team should systematize the guidelines in order to adapt and educate the patient for warning signs that represent possible complications, optimizing the care of these clinical situations. Educational strategies for patients undergoing LT comprise three types of intervention: individualized education; behavioral intervention and; psychological support.
Author: Chaney ¹⁷ Year: 2014 Level of evidence: 7	Primary care nurses should be provided with information about the patient's clinical situation by the multi-professional LT team, preparing for possible complications and how to prevent them. To point out the importance of using immunosuppressants. It is necessary to explain the use of these drugs, especially immunosuppressants and corticosteroids.
Author: Wallia et al. ¹⁸ Year: 2015 Level of evidence: 7	Guide, explain and formulate care plans for pre-existing diabetes mellitus, detailing situations of hypoglycemia and hyperglycemia for each patient, considering other associated comorbidities. Emphasize that the use of immunosuppressive drugs can impair renal function and that dose adjustments of diabetes drugs are often necessary to prevent this.
Author: Mendes et al. ¹⁹ Year: 2016; Level of evidence: 5	It is necessary to adopt individualized conducts. Adjust support/attention in relation to clinical and social conditions according to the demand of each patient. As for possible complications, alerting for decreased libido, altered sleep and vigil patterns and lower limbs edema.
Author: Lima et al. ⁸ Year: 2016 Level of evidence: 5	The presence of a clinical pharmacist with the multi-professional team is necessary to guide the use of medications. The strategy of this professional is to prevent negative results associated with pharmacotherapy, ensuring drug combination and patient safety.
Author: Beckmann et al. ²⁰ Year: 2016 Level of evidence: 5	Assist patient and family to become acquainted with, understand and know how to perform health care, proposing that they can dominate the management of activities. Assist the patient and his support network to manage roles through self-care, so that together they can support each other and manage the ups and downs of emotion.
Author: Morais et al. ¹ Year: 2017 Level of evidence: 5	It is necessary to provide a differentiated and individualized assistance offered by the professional nurse, in the sense of a sharp and meticulous look when presenting signs and symptoms that can early identify neurological, renal, infectious and graft loss.
Author: Aguiar et al. ²¹ Year: 2018 Level of evidence: 5	Plan and organize a support network before hospital discharge, which can help prevent stressful situations, in addition to proposing emotional support. Expand the support network so that they can help improve the quality of life.
Author: Moayed et al. ²² Year: 2018 Level of evidence: 5	Promote health education before and during hospital discharge in order to enable them to develop their own care and, thus, face the challenges of adapting to the new reality.

Source: The authors, 2019.

1^o) *Warning signs for possible changes that may arise at home*, brings the importance of the team developing health education with the patient and their family in a clear and simple way. Thus, avoiding technical terms when pointing out possible physical, clinical and emotional changes. Indicating warning and symptoms signs for neurological, pulmonary, renal and graft-related complications and infections, as well as information that can prevent such injuries. Therefore, patient and family must know how to identify a temperature above 37.4 °C (99.3°F); cough with or without secretion;

pain or difficulty breathing; palpitations (racing heart); pain or burning sensation when urinating; decreased diuresis; edema (swelling); pain at the organ implant area; tremors; chills; mental confusion (signs of disorientation) and jaundice (yellowish pigmentation of the body). Still, they should know that basic hygiene care, food and fluid intake help to prevent these diseases.¹⁻³ The evidence point to the importance of the team making sure that this information is understood, given that, provided with this data, they will have the opportunity to prevent injuries, graft loss and readmissions.^{1,12,16,17,20,21}

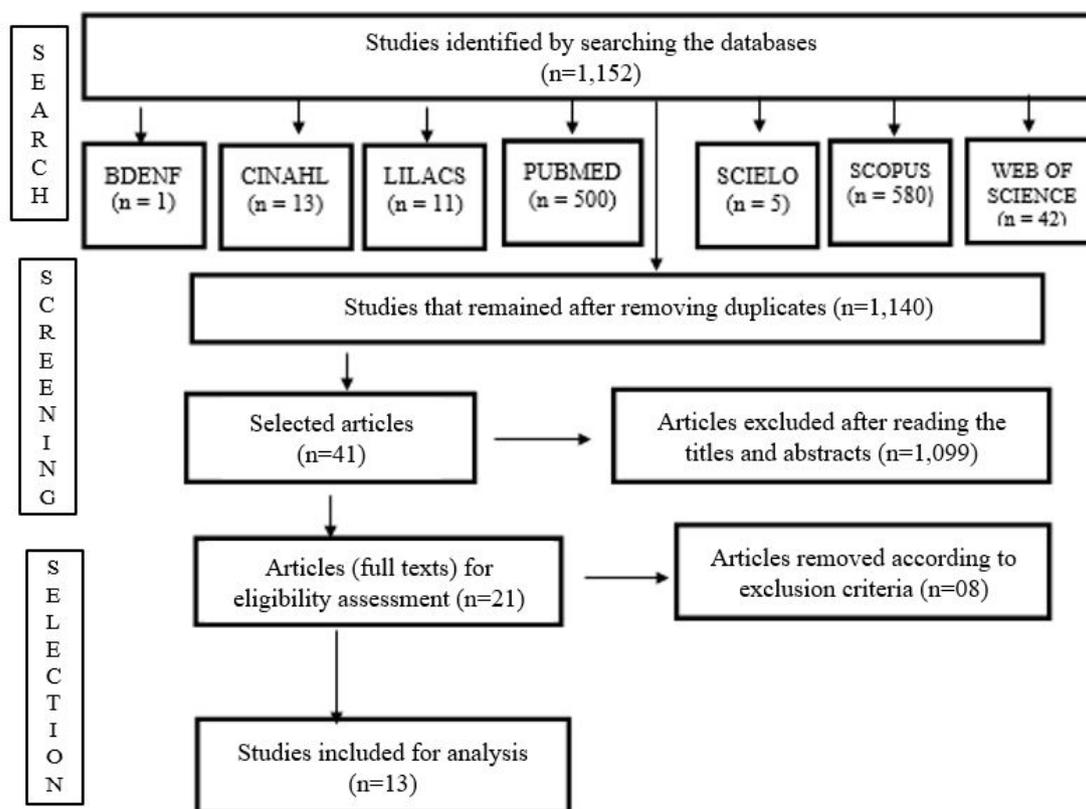


Figure 1 – Flowchart for identifying primary studies, 2019.

- 2°) *Recommendations for the use of medicines – promoting self-management and adherence to treatment.* This category points out evidence for health care actions regarding the use of drugs. The information shows the pharmacist's responsibility and commitment to be present at all stages of the postoperative period.^{8,13} This professional can assist the medical team in adjusting doses, medication associations and supervising treatment adherence, minimizing health risks or even nephrotoxicity, neurotoxicity, graft loss, skin cancer and decreased libido.^{1,16,17,19,21}
- 3°) *Activities and daily care at home – support and self-confidence,* shows effective strategies to promote care, such as: elaborating a physical activity plan to be performed at home, with the objective of improving physical conditioning, preventing injuries and minimizing comorbidities, prevent hypertension and lung diseases.¹⁴ It is recommended that patients do glycemic control three times a day, in addition to the controlling of foods that favor hyperglycemia.¹⁸ The team must promote the learning of such tasks during hospitalization under the supervision of professionals.^{21,22}
- 4°) *Changes in body image and daily life – importance of the support network,* indicates how difficult it is for the patient to adapt to the new health reality imposed by the transplant. The difficulty in accepting and dealing with changes in body image, often caused by edema and side effects of medications.^{12,16,19} It is necessary to strengthen the support

network before hospital discharge. It is important that this network is expanded to friends, other family members and primary care, and that these people, progressively, can empower and encourage the patient to face the challenges imposed in this new stage of life.^{12,19,21,22}

DISCUSSION

The present study had as its central proposal to seek information in the literature that could provide opportunities for improvements in the clinical practice scenario of the patient care team for the planning of hospital discharge of people who underwent liver transplantation. During the development of the reading of the primary articles in full and, after the consensus of the authors, there was a lack of strong evidence that could support and back the health team, given that in 61.5% of the articles the level of evidence was 5. Still, it is noteworthy that the largest number of publications was in 2014, of articles from Brazil and the United States. These data point to the need for current research with well-defined methods, clinical studies, control cases and systematic reviews that can change the reality of health to be presented to the patient and his/her family at hospital discharge, giving these people and staff security in the continuity of home care.

Even so, despite the fragility of the level of evidence in the primary studies, there is relevant information, which is feasible

to be implemented by the team in order to plan home care by proposing adherence to treatment, in addition to providing the patient with independence, self-care and self-management. The main findings made clear that health education by the multi-professional team is a care strategy in hospital discharge planning in order to propose knowledge to the patient, safety and freedom for self-care. Health education enables the sharing of knowledge that grants patients and families strategies for behavior change in order to improve quality of life.^{17,23,24}

In the first category, studies indicate that changes may or may not occur, or may be transient and common, and should be monitored, but without arousing stressful situations for the patient and his/her family. Such information must be passed on as a need for monitoring.^{1,12,16,17} The team's alert must be linked to the number of episodes, frequency, situations, signs and symptoms that may trigger the events, so that they identify as soon as possible. In addition, it is necessary for the team to guide these people to prevent intercurrent illnesses and complications, as well as to monitor and communicate such events to the team immediately when they arise.

The findings indicate that, when knowing their health conditions and possible changes, the patient becomes autonomous, safe and with expertise to act as an agent of transformation in their lifestyle, in addition to helping to reduce anxiety when they are acquainted with and know how to deal with their own care and promote self-management.^{21-23,25}

Regarding the planning of educational strategies for the prevention of intercurrent illnesses and complications, the first category proposes that the patient knows how to identify clinical signs of rejection, infection, neurological and renal complications. In addition to knowing the importance of health care such as personal and environmental hygiene, care related to the preservation of kidney function through fluid intake and, mainly, with the adjustment of medication doses, so that nephrotoxicity does not occur.^{1,5,16,17,26}

Due to home care, knowledge for self-care and disease prevention presented in the first category, it is understood that the team must establish a simple, fast and effective mean of communication to provide a flow in the logistics of the care of this patient, in case any problem arises. In consonance with this support, the role of the nurse as a professional of direct assistance in outpatient clinics, advanced health units and highly complex institutions is highlighted, enabling a quick, concrete and safe evaluation in face of any clinical event presented by these patients. The nurse must present knowledge and ability to assist these people in times of illness, as well as guide and enable the patient to identify early changes that may arise at home.²⁵⁻²⁸ Such support is cited as a key point for hospital discharge planning, where the multi-professional team of health institutions can develop the counter reference and contribute to home care.

Another finding of extreme relevance in the study presented in the second category, refers to the care of the pharmaceutical professional in planning hospital discharge. The presence of this

professional is extremely relevant and important. This professional must be present in all stages of LT hospitalization, being one of those responsible for registering information regarding the correct use of medication doses at home.^{8,13,15} Considering the mandatory consumption of medications after LT, in addition to the different and varied side effects, the primary studies show that it is essential that this professional develops with the other team members, actions and strategies to support the patient and family in relation to doses, schedules, drug interactions, storage and other care.^{8,15,16}

The transition from the use of medicines at the hospital to the home is considered a moment of vulnerability. The little or total lack of information and unpreparedness of the patient and family for use can lead to several health problems, low adherence to treatment or even giving up its use.^{3,28} Considering that the patient undergoing LT cannot, in any scenario, stop using immunosuppressants, the participation of the pharmacist is a unique strategy in hospital discharge. This professional must guide and clarify doubts in a simple and clear way, so that there is no overdose or forgetfulness, in addition to awakening and ensuring total confidence to the patient for self-management of the use of these drugs.²²

The second category brings the understanding of the need for the insertion of the pharmaceutical professional in patient guidelines, contributing to the increase in the quality of care, safety and graft survival. The following are the duties of this professional: the dispensing of medications – when the professional interacts with the patient and his/her family – and guidance on the correct use (schedule, dose, associations with other medications, side effects, possible health problems). The findings point out that the pharmacist should not only assume administrative activities, but also be part of clinical assignments and have direct contact with the patient. Thus, contributing to the quality and survival of the graft, reducing risks and damages to the patient's life.^{29,30}

The third category points out as fundamental the patient's support and self-confidence regarding the daily controls to be developed at home (checking vital signs, blood glucose, diuresis, weight, water consumption, among others). This category implied the need for the team to use care tools where the patient can record daily schedules and results in a sequential manner and, concomitantly, they can manage this data. Currently, these tools are already available through tables, guides, home visits, counter-reference and the use of applications.^{31,32}

Still on this subject, the findings point out to daily physical activities as daily care for health promotion, being necessary to explain what are the restrictions and which exercises can and should be performed by the patient, such as walking, exercising in a gym and routine activities at home that require little effort. One of the studies shows an increase in exercise capacity and metabolic improvement with the use of a daily physical activity plan (pre = 194.2 kcal / 812.53 kJ; post = 258.6 kcal / 1,081.98 kJ). The improvement in physical conditions promotes the patient's self-care and self-esteem.¹⁸ Activities that promote self-care

trigger behavioral and lifestyle changes, consequently improving food intake, physical exercise, use of correct medication and improvement in treatment adherence.^{24,25,33,34}

Another important finding in category 3 refers to glycemic control due to this metabolic disorder, as it is mainly associated with immunosuppressive therapy, with the involvement of the patient in this care being fundamental.¹⁸ It is highlighted that the deficit in glycemic control can result in hypoglycemia and hyperglycemia conditions. The control of glycemia is a challenge for the patient and family, given that many of these patients until LT had no change in glycemia.²⁴ However, after LT, this is a fundamental care, since episodes of hyperglycemia, throughout the years, result in micro and macro vascular pathologies and neuropathies.²⁴

Thus, it is prudent for the nursing team, especially the nurse, to gradually guide and show how this care should be performed, as well as to show altered values and warning signs for changes in blood glucose. It is recommended that this same team gives the patient the opportunity to develop this care during hospitalization, where these professionals have a duty to manage it, ensuring the patient's self-confidence and promoting self-care. It is important to note that self-care activities, as well as health education, promote improvements and changes in the daily lives of these people.

As for the fourth category, it is considered relevant that the patient is encouraged to take care of him/herself. The findings show as elementary that the patient gradually tries to re-develop all the activities that were performed before the LT. Even if there is resistance from the patient, family and co-workers, it is essential that the transplanted person resume the professional activities performed previously. Therefore, it is crucial that the team prepare the patient and the support network for the limitations imposed by the LT, especially in the first months and years. It is also important that they understand that in the first months there are greater limitations and care. However, over time, little by little the patient needs to resume his/her life routine, especially with regard to work. A primary study points out that most of these are unable to return to work, being referred to the assessment of an expert and retirement. Others return, but due to limitations they end up fired.^{12,14,18}

The difficulty in adapting to the new routine of life, as well as the change in body image and the change in the quality of life of these patients in post-LT, is directly related to the complexity of the treatment.³⁵ Therefore, it is essential that information is shared adequately, enabling the insertion of the patient, family and support network into this reality. In this perspective, it is interesting that the team, especially the nurse, for acting directly in the care of these people throughout the perioperative period of LT, gradually go on informing and presenting audiovisual materials to family members, friends and other close people, so that they can understand how will be the patient's life after LT, especially in the first six months, where there is greater care and clinical changes. Primary studies make clear the importance of health education.

Study limitation – significant number of primary studies with levels of evidence 5 and 7. Few recommendations regarding daily care involving the frequency of carrying out such care and referrals when clinical changes are identified. Still, it is pointed out that no guides, protocols and guidelines were identified that pointed out consolidated and validated strategies for the discharge plan of LT.

CONCLUSIONS AND IMPLICATIONS FOR PRACTICE

The study proposed the identification of evidence in the literature to support care planning at hospital discharge. In this perspective, the identified information points to effective strategies capable of providing changes in the daily practice of the patient care team, in addition to assisting treatment adherence, improving quality of life and graft survival.

Among the main evidences identified, the following stand out: health education in order to provide the patient with information regarding the signs that indicate changes in the organic system; the presence of the pharmacist in all stages of the discharge plan, providing effective communication with the patient and the medical team. Another strategy pointed out in the study was the development of self-care, self-confidence and self-management. The promotion of self-awareness by the health team during the hospitalization period regarding glycemic control, use of insulin, verification of vital signs, weight control, diuresis, and others supports and empowers the patient for home care.

The present study contributed to the knowledge and awareness of the importance of multi-professional assistance at the time of transition from the hospital to the home, including the care plan for physical activities; personal hygiene; psychological support for changes in body image and daily life; in addition to the importance of organizing the support network for returning to work.

Finally, it is possible to improve the planning of hospital discharge in the scenario of liver transplantation with the findings in the literature. However, there is a need for further studies with a satisfactory level of evidence in order to strengthen evidence-based practice.

FINANCIAL SUPPORT

To the University Extension Office for granting extension scholarships, Programa Probolsas (Proscholarship Program, in free translation) at the Universidade Federal de Santa Catarina, with registration number: SIGPEX N.201711127.

AUTHOR'S CONTRIBUTIONS

Review study design. Acquisition, data analysis and interpretation of results. Writing and critical review of the manuscript. Approval of the final version of the article. Responsibility for all aspects of the content and the integrity of the published article. Laísa Fischer Wachholz. Neide da Silva Knihs. Acquisition, data

analysis and interpretation of results. Writing and critical review of the manuscript. Approval of the final version of the article. Responsibility for all aspects of the content and the integrity of the published article. Sabrina Regina Martins. Marisa da Silva Martins. Data analysis and interpretation of results. Writing and critical review of the manuscript. Approval of the final version of the article. Responsibility for all aspects of the content and the integrity of the published article. Laura Cavalcanti de Farias Brehmer. Interpretation of results. Writing and critical review of the manuscript. Approval of the final version of the article. Responsibility for all aspects of the content and the integrity of the published article. Aline Lima Pestana Magalhães.

ASSOCIATE EDITOR

Marcelle Miranda da Silva

REFERENCES

- Moras EM, Corand D, Machado GC, Abreu MO, Matos EM, Cruz SAC. Postoperative complications of liver transplant: evidence for the optimization of nursing care. *Rev de Pesquisa: Cuidado é Fundamental Online*. 2017;9(4):999-1007. <http://dx.doi.org/10.9789/2175-5361.2017.v9i4.999-1007>.
- Mcginis CW, Hays SM. Adults with liver failure in the intensive care unit: a transplant primer for nurses. *Crit Care Nurs Clin North Am*. 2018;30(1):137-48. <http://dx.doi.org/10.1016/j.cnc.2017.10.012>. PMID:29413209.
- Oliveira RA, Turrini RNT, Poveda VB. Adherence to immunosuppressive therapy following liver transplantation: an integrative review. *Rev Latinoamericana de Enf*. 2016;1(1):e2778. <http://dx.doi.org/10.1590/1518-8345.1072.2778>. PMID:27579933.
- Ribas ED, Bernardino E, Larocca LM, Poli P No, Aued GK, Silva CPC. Nurse liaison: a strategy for counter-referral. *Rev Lat Am Enfermagem*. 2018;71(1, suppl 1):546-53. <http://dx.doi.org/10.1590/0034-7167-2017-0490>. PMID:29562010.
- Silva SS, Assis MMA, Santos A. The nurse as the protagonist of care management in the Estratégia Saúde da Família: diferente analysis perspectives. *Texto Contexto Enferm*. 2017;26(3):1-9. <http://dx.doi.org/10.1590/0104-07072017001090016>.
- Ferrazzo S, Vargas MAO, Gomes DC, Gelbcke FL, Hammerschmidt KSA, Lodeyro CF. Specialist service in liver transplant in a University Hospital: a case study. *Texto Contexto Enferm*. 2017;26(2):e2630015. <http://dx.doi.org/10.1590/0104-07072017002630015>.
- Mota L, Bastos F, Brito M. The liver transplant patient: characterization of the therapeutic regimen management style. *Rev de Enf Referência*. 2017;4(13):19-30. <http://dx.doi.org/10.12707/RIV17006>.
- Lima LF, Martins BCC, Oliveira FRP, Cavalcante RMA, Magalhães VP, Firmino PYM, et al. Pharmaceutical orientation at hospital discharge of transplant patients: strategy for patient safety. *Einstein*. 2016;14(3):359-65. <http://dx.doi.org/10.1590/S1679-45082016AO3481>.
- Negreiros FDS, Pequeno AMC, Garcia JHP, Aguiar MIF, Moreira TR, Flor MJN. Multi-professional team's perception of nurses' competences in liver transplantations. *Rev Bras de Enf*. 2017;70(2):242-48. <http://dx.doi.org/10.1590/0034-7167-2016-0>.
- Sousa LMMS, Marques-Vieira CMA, Severino SS, Antunes AV. The methodology of integrative review of literature in nursing. *Rev Investigação em Enferm*. 2017;17(26):17-26.
- Melnik BM, Finout-Overholt E. Evidence-based practice in nursing & healthcare: a guide to best practice. *Crit Care Nurse*. 2014;34(3):174-178.
- Ordin YS, Karayurt Ö, Wellard S. Investigation of adaptation after liver transplantation using Roy's Adaptation Model. *Nurs Health Sci*. 2012;1(15):31-8. <http://dx.doi.org/10.1111/j.1442-2018.2012.00715.x>. PMID:23094933.
- Musgrave CR, Pilch NA, Taber DJ, Meadows HB, Mcgilicuddy JM, Chavin KD et al. Improving transplant patient safety through pharmacist discharge medication reconciliation. *Am J Transplant*. 2013;13(3):796-801. <http://dx.doi.org/10.1111/ajt.12070>. PMID:23332093.
- Garcia AMC, Veneroso CE, Soares DD, Lima AS, Correia MI. Effect of a physical exercise program on the functional capacity of liver transplant patients. *Transplant Proc*. 2014;46(6):1807-8. <http://dx.doi.org/10.1016/j.transproceed.2014.05.023>. PMID:25131042.
- Toh MR, Teo V, Kwan YH, Raaj S, Tan SYD, Tan JZY. Association between number of doses per day, number of medications and patient's non-compliance, and frequency of readmissions in a multi-ethnic Asian population. *Prev Med Rep*. 2014;1:43-7. <http://dx.doi.org/10.1016/j.pmedr.2014.10.001>. PMID:26844038.
- Bardet JD, Charpiat B, Bedouch P, Rebillon M, Ducerf C, Gauchet A, et al. Illness representation and treatment beliefs in liver transplantation: an exploratory qualitative study. *Ann Pharm Fr*. 2014;72(5):375-87. <http://dx.doi.org/10.1016/j.pharma.2014.05.005>.
- Chaney A. Primary care management of the liver transplant patient. *Nurse Pract*. 2014;39(12):26-33, quiz 33-4. <http://dx.doi.org/10.1097/01.NPR.0000456392.75876.63>. PMID:25397746.
- Wallia A, Illuri V, Molitch M. Diabetes care after transplant. *Med Clin North Am*. 2016;100(3):535-50. <http://dx.doi.org/10.1016/j.mcna.2016.01.005>. PMID:27095644.
- Mendes KDS, Lopes NLC, Fabbris MA, Castro-e-Silva Júnior O, Galvão CM. Sociodemographic and clinical characteristics of candidates for liver transplantation. *Acta Paul Enferm*. 2016 abr;29(2):128-35. <http://dx.doi.org/10.1590/1982-0194201600019>.
- Beckmann S, Künzler-Heule P, Biotti B, Spirig R. Mastering together the highs and lows: patients' and caregivers' perceptions of self-management in the course of liver transplantation. *Prog Transplant*. 2016;26(3):215-23. <http://dx.doi.org/10.1177/1526924816654769>. PMID:27297233.
- Aguiar MIF, Alves NP, Braga VAB, Souza AMA, Araújo MAM, Almeida PC. Psychosocial aspects of quality of life of hepatic transplant receivers. *Texto Contexto Enferm*. 2018;27(2):1-11. <http://dx.doi.org/10.1590/0104-070720180003730016>.
- Moayed MS, Ebadi A, Khodaveisi M, Nassiri Toosi M, Soltanian AR, Khatiban M. Factors influencing health self-management in adherence to care and treatment among the recipients of liver transplantation. *Patient Prefer Adherence*. 2018;12:2425-36. <http://dx.doi.org/10.2147/PPA.S180341>. PMID:30510406.
- Bottan ER, Campos L, Verwebe APS. Health education: concepts and practices of surgeons dentists of family health strategy. *Unimontes Científica*. 2016;2(18):25-35.
- Bertonhi LG, Dias JCR. Type 2 Diabetes mellitus: clinical aspects, treatment and dietary management. *Rev Ciências Nutricionais Online*. 2018 [citado 2019 dez 4];2(2):1-10. Disponível em: http://repositorio.unifafibe.com.br:8080/xmlui/bitstream/handle/123456789/104/2018_LGB.pdf?sequence=1&isAllowed=y
- Pio FSCG, Azevedo DM, Marques LF, Santiago LC. Nursing care in heart transplantation: integrative review. *Rev Enferm (Lisboa)*. 2016;5(10):1857-65. <http://dx.doi.org/10.5205/reuol.9003-78704-1-SM.1005201635>.
- Sá AS, Ziviani LC, Castro-e-Silva O, Galvão CM, Mendes KDS. Information needs of family caregivers regarding liver transplant candidates. *Rev Gaúcha Enferm*. 2016 mar;37(1):e54650. <http://dx.doi.org/10.1590/1983-1447.2016.01.54650>. PMID:26982683.
- Oliveira PC, Deta FP, Paglione HB, Mucci S, Schirmer J, Roza BA. Adherence to liver transplantation treatment: an integrative review. *Cogitare enferm*. 2019;24:e58326. <http://dx.doi.org/10.5380/ce.v24i0.58326>.

28. Costa JM, Martins JM, Pedroso LA, Braz CL, Reis AMM. Pharmaceutical orientation at hospital discharge of transplant patients: strategy for patient safety. *Rev Bras de Farmácia Hospitalar e Serviços de Saúde*. 2014;1(5):28-41. <http://dx.doi.org/10.1590/S1679-45082016AO3481>.
29. Carvalho CCA, Campos OH No. Papel do profissional farmacêutico no Sistema Único De Saúde (SUS) em um município de Minas Gerais. *Rev Bras de Ciências da Vida*. 2018 [citado 2019 dez 4];6(3):1-26. Disponível em: <http://jornal.faculdadecienciasdavidia.com.br/index.php/RBCV/article/view/641>
30. Alencar TOS, Nascimento MAA, Alencar R. Pharmaceutical assistance in family health strategy: an analysis of access. *Rev Bras Farm*. 2013 [citado 2019 dez 4];3(94):219-26. Disponível em: <http://rbfarma.org.br/files/rbf-v94n3-04.pdf>
31. Oliveira ARF, Alencar MSM. The use of health applications for mobile devices as sources of information and education in healthcare. *Rev Digit Bibliotecon Cienc Inf*. 2017 jan-abr;15(1):243-5. <http://dx.doi.org/10.20396/rdbci.v0i0.8648137>.
32. Fernandes MP, Marin HF. The mobile applications use for diet control in adults: an Integrative Systematic Review. *J Health Inform*. 2018 out-dez; [citado 2019 dez 4];10(4):119-24. Disponível em: <http://www.jhi-sbis.saude.ws/ojs-jhi/index.php/jhi-sbis/article/view/562/343>
33. Ferraz EF, Sales CA, Marcon SS. Perspectivas de indivíduos com diabetes sobre autocuidado: contribuições para assistência. *Esc Anna Nery*. 2017;21(2);e20170043. <http://dx.doi.org/10.5935/1414-8145.20170043>.
34. Marathe PH, Gao HX, Close KL. American diabetes association standards of medical care in diabetes 2017. *J Diabetes*. 2017;9(4):320-4. <http://dx.doi.org/10.1111/1753-0407.12524>. PMID:28070960.
35. Razia JM, Lazzaretti CT. Diagnoses of Disease and Narrative: Ethnographical Studies With Liver Transplanted Patients. *Rev Lat Am de Estudios sobre Cuerpos, Emociones y Sociedad*. 2015; 7(17):32-41.