

## ORIGINAL ARTICLE

## NURSING DIAGNOSES OF POST-LIVER TRANSPLANTATION PATIENTS IN OUTPATIENT FOLLOW-UP

Natália de Souza Pires Oliveira<sup>1</sup>, Thaís Moreira Oliveira<sup>2</sup>, Allana dos Reis Corrêa<sup>3</sup>, Sabrina Daros Tiensoi<sup>4</sup>, Priscila Lara Vieira Bonisson<sup>5</sup>, Gilberto de Lima Guimarães<sup>6</sup>, Bruna Figueiredo Manzo<sup>7</sup>

### ABSTRACT

**Objective:** identify the nursing diagnoses of post-liver transplantation patients in outpatient follow-up.

**Method:** descriptive study developed between January and May 2015, evaluating 153 consultations in an outpatient clinic in Belo Horizonte, Minas Gerais, Brazil. To elaborate the nursing diagnoses, we followed Risner's proposal, standardized according to NANDA-I 2015-2017. The data were analyzed using Statistical Package for the Social Sciences.

**Results:** 102 patients (66.7%) were male with a median age of 55 years. Cirrhosis due to the hepatitis C virus was the main indication for transplantation. We identified eleven nursing diagnoses, the most frequent being: Risk for infection, Ineffective protection, Risk for unstable blood glucose, Risk for impaired liver function.

**Conclusion:** identifying the nursing diagnoses permits outlining these patients' needs profile and providing differentiated nursing care in the outpatient follow-up of post-liver transplantation patients.

**DESCRIPTORS:** Nursing process; Nursing care; Nursing diagnosis; Office nursing; Liver transplantation.


### HOW TO REFERENCE THIS ARTICLE:


Oliveira NSP, Oliveira TM, Corrêa AR, Tiensoi SD, Bonisson PLV, Guimarães GL, et al. Nursing diagnoses of post-liver transplantation patients in outpatient follow-up. *Cogitare enferm.* [Internet]. 2019 [access "insert day, month and year"]; 24. Available at: <http://dx.doi.org/10.5380/ce.v24i0.59149>.





This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/).


<sup>1</sup>RN. Universidade Federal de Minas Gerais. Belo Horizonte, MG, Brazil. 


<sup>2</sup>RN. Master's student in Nursing. Universidade Federal de Minas Gerais. Belo Horizonte, MG, Brazil. 

<sup>3</sup>RN. Ph.D. in Nursing. Nursing Professor at Universidade Federal de Minas Gerais. Belo Horizonte, MG, Brazil. 

<sup>4</sup>RN. Ph.D. student in Nursing. Universidade Federal de Minas Gerais. Belo Horizonte, MG, Brazil. 

<sup>5</sup>RN. Ph.D. candidate in Nursing. Universidade Federal de Minas Gerais. Belo Horizonte, MG, Brazil. 

<sup>6</sup>RN. Ph.D. in Nursing. Nursing Professor at Universidade Federal de Minas Gerais. Belo Horizonte, MG, Brazil. 

<sup>7</sup>RN. Ph.D. in Nursing. Nursing Professor at Universidade Federal de Minas Gerais. Belo Horizonte, MG, Brazil. 

## DIAGNÓSTICOS DE ENFERMAGEM DE PACIENTES PÓS-TRANSPLANTADOS HEPÁTICOS EM ACOMPANHAMENTO AMBULATORIAL

### RESUMO

*Objetivo:* identificar os diagnósticos de enfermagem de pacientes pós-transplantados hepáticos em acompanhamento ambulatorial.

*Método:* estudo descritivo realizado entre janeiro e maio de 2015 que avaliou 153 consultas em um ambulatório de Belo Horizonte, Minas Gerais. A elaboração dos diagnósticos de enfermagem seguiu a proposta de Risner, uniformizados seguindo o indicado pelo NANDA-I 2015-2017. Os dados foram analisados pelo programa Statistical Package for Social Sciences.

*Resultados:* dos pacientes, 102 (66,7%) eram do sexo masculino com mediana de idade de 55 anos. A cirrose por vírus da hepatite C foi a principal indicação de transplante. Foram identificados 11 diagnósticos de enfermagem, sendo os de maior frequência: Risco de infecção, Proteção ineficaz, Risco de glicemia instável, Risco de função hepática prejudicada.

*Conclusão:* com os diagnósticos de enfermagem identificados, é possível delimitar o perfil das necessidades desses pacientes e proporcionar assistência de enfermagem diferenciada no acompanhamento ambulatorial de pós-transplantados hepáticos.

*DESCRIPTORIOS:* Processo de enfermagem; Cuidados de Enfermagem; Diagnóstico de enfermagem; Enfermagem no consultório; Transplante de fígado.

## DIAGNÓSTICOS DE ENFERMERÍA DE PACIENTES TRASPLANTADOS HEPÁTICOS EN SEGUIMIENTO AMBULATORIO

### RESUMEN:

*Objetivo:* identificar los diagnósticos de enfermería de pacientes trasplantados hepáticos en seguimiento ambulatorio.

*Método:* estudio descriptivo desarrollado entre enero y mayo de 2015 que evaluó 153 consultas en un ambulatorio de Belo Horizonte, Minas Gerais, Brasil. En la elaboración de los diagnósticos de enfermería seguimos la propuesta de Risner y los uniformizamos según lo indicado por la NANDA-I 2015-2017. Los datos fueron analizados en el programa Statistical Package for the Social Sciences.

*Resultados:* de los pacientes, 102 (66,7%) eran del sexo masculino con edad mediana de 55 años. La cirrosis por el virus de la hepatitis C fue la principal indicación de trasplante. Identificamos 11 diagnósticos de enfermería, siendo los más frecuentes: Riesgo de infección, Protección ineficaz, Riesgo de glicemia inestable, Riesgo de función hepática perjudicada.

*Conclusión:* con los diagnósticos de enfermería identificados, es posible delimitar el perfil de las necesidades de esos pacientes y proveer atención de enfermería diferenciada en el seguimiento ambulatorio de trasplantados hepáticos.

*DESCRIPTORIOS:* Proceso de Enfermería; Atención de Enfermería; Diagnóstico de enfermería; Enfermería de consulta; Trasplante de hígado.

## INTRODUCTION

Transplants are used as a therapeutic resource for several chronic and disabling diseases, aiming to increase patients' survival<sup>(1)</sup>. Liver transplantation is considered a therapeutic resource in cases of advanced liver disease or acute liver failure when no other clinical and surgical treatments are available<sup>(2-3)</sup>. Advances in the surgical technique and the inclusion of immunosuppressive therapy led to a considerable improvement in survival after liver transplantation<sup>(4-5)</sup>. It is the most effective therapeutic alternative in the treatment of severe liver conditions, neoplasms originating in the liver and some metabolic diseases<sup>(6)</sup>.

According to the Brazilian Association of Organ Transplantation, 2017 can be considered as the recovery year for the growth in donation and transplantation rates in Brazil<sup>(7)</sup>. In the year 2016, 1,880 liver transplants occurred. In 2017, 2,109 liver transplants were performed, 133 of which particularly in the state of Minas Gerais<sup>(7-8)</sup>.

In Brazil, the public health system offers free and unrestricted access to services for the entire population that requires organ and tissue transplantation. The country has one of the largest public transplant programs in the world, with a policy based on Laws 9.434/1997 and 10.211/2001, which rest on free donation, beneficence towards recipients and non-maleficence in relation to living donors<sup>(9)</sup>.

In view of the importance of enriching the role of nurses in care for liver transplanted patients, studies are developed to reinforce the reputation of this transplantation therapy, which is based on consolidated public policies, as well as the interest of public health institutions in providing this service to the population<sup>(9-10)</sup>.

In an outpatient setting, according to Federal Nursing Council Resolution 292/2004, the nurse needs to practice the Systematization of Nursing Care (SNC) in the pre- and post-transplant periods and conduct a nursing consultation to plan comprehensive and systematized care based on the Nursing Process<sup>(11)</sup>.

During the nursing consultations, the professional collects the patient's history, analyzes laboratory tests, monitors food maintenance and weight control, gives instructions on proper medication use and its side effects in order to identify signs and symptoms of possible infection/rejection<sup>(12)</sup>.

In obtaining this information, the nurse uses the Nursing Process to identify the individual needs of the human being<sup>(13)</sup> in order to recognize the nursing problems that result in care needs. These problems are analyzed and grouped in order to establish the Nursing Diagnoses (ND). During the consultations, the NDs should be surveyed for the early detection of complications and of the human needs affected<sup>(14)</sup>.

For the nursing care planning to be carried out in a qualified manner, it is essential to know the care needs of transplanted patients in outpatient follow-up. This determination can contribute so that the services can evaluate the service process, considering the diversity of the population served there. The objective of this study was to identify the nursing diagnoses of liver transplanted patients in outpatient follow-up.

## METHOD

This descriptive, quantitative study was developed in a referral outpatient clinic of a university hospital in Belo Horizonte, Minas Gerais. The clinic has a multidisciplinary team composed of doctors, nurses, social workers, psychologists, nutritionists, physical educators, and physiotherapists. Visits to the outpatient clinic can be weekly, biweekly or monthly, according to the time since transplantation and the patients' individual evolution.

The sample consisted of liver transplanted patients from January 1<sup>st</sup> to May 30<sup>th</sup>,

2015. Patients aged 18 years and older referred to the outpatient liver transplantation service were selected as inclusion criteria. During the study period, 155 patients attended the outpatient clinic. Of these, two did not meet the inclusion criteria. Patients younger than 18 years of age were considered as an exclusion criterion, so the sample consisted of 153 patients.

To collect the data, the researchers developed a two-part instrument. The first part was related to the clinical and sociodemographic characteristics of the patients, and the second to the anamnesis, addressing the psychobiological, psychosocial and physical examination needs, in accordance with the nursing consultation form used by the institution, which is based on the theory of basic human needs<sup>(13)</sup>.

The patients were taken to one of the offices to answer the questions from the first part of the instrument. To collect the data for the elaboration of ND, the nursing consultations the nurses held at the outpatient clinic were monitored and registered. It is highlighted that, for this monitoring, the nurses gave their consent and signed the Informed Consent Form, authorizing the collection of data during the consultations.

For the patients' sociodemographic characteristics, the following variables were selected: sex, age, marital status, and education. To survey the clinical profile, we collected: baseline diagnosis; blood group (A, B, AB and O); transplant time (less than one year, one to five years, six to 10 years and 11 years or more); Body Mass Index (BMI) (<18.5 lean or underweight, 18.5-24.9 normal or eutrophic, 25.0-29.9 overweight or pre-obese, 30-34.9 grade I obesity; 35.0-39.9 grade II obesity,  $\geq 40$  severe obesity); fluid intake (less than one liter per day, between one and two liters per day and more than three liters per day); sleep quality (sleeps well, insomnia, sleeps poorly, sleeps on medication); bladder elimination (spontaneous diuresis, oliguria); bowel elimination (without changes, nausea, constipation, and diarrhea) and use of sunscreen (yes or no).

To develop the nursing diagnoses, Risner's diagnostic reasoning process was used, composed of two stages. The first, called analysis, consists of two phases: categorization of data, organized in a logical, systematized manner and which can be based on different conceptual models, and identification of data gaps. During this phase, incomplete data are evaluated and the need for new data collection can be identified, which was not necessary for this study. The second step, called synthesis, is composed of three phases: grouping of relevant data; comparison of data grouped with theories, models, and concepts; and identification of health deviations or potentialities (inference or hypothesis)<sup>(15)</sup>.

In the inference phase, the diagnostic hypotheses were elaborated considering the conclusions outlined about the patient's problems. After the application of the diagnostic reasoning process, the nursing diagnoses were developed using the NANDA-I Taxonomy II with its defining characteristics, related factors, and risk factors.

The data were organized and statistically treated using the Statistical Package for Social Sciences (SPSS) version 20.0. To analyze the continuous variables, the Shapiro-Wilk test was applied to verify normality and the mean and median were calculated. Frequencies and proportions were calculated for the categorical variables. The total number of respondents for the variables may vary because the patient can give more than one answer or may not want to answer/not know the answer.

Approval for the research project was obtained from the Research Ethics Committee of the Federal University of Minas Gerais, opinion 925.041. The principles that govern research involving human beings established in National Health Council Resolution 466/12<sup>(16)</sup> were observed.

## RESULTS

Of the 153 patients in the study, 102 (66.7%) were male. Ages ranged from 19 to 80

years with a median of 55 years. As to marital status, 96 (62.7%) were married, 32 (20.9%) were unmarried, 12 (7.9%) were divorced and nine (5.9%) were widowers. Four patients (2.6%) did not report their marital status.

In terms of education, 61 (39.8) reported having concluded secondary education, 49 (32.0%) primary education, 20 (13.1%) elementary education and 13 (8.5%) higher education. Ten patients (6.5%) did not know the level of education.

There were cases in which one patient presented more than one indication for the transplant. No indication for transplantation could be obtained for a single participant. Therefore, 198 indications for transplantation were obtained from 152 respondents.

Post-C virus cirrhosis was the most frequent indication with 39 (19.7%), followed by ethanolic cirrhosis with 32 patients (16.2%). The category "others" consisted of the diagnoses present in one or two cases: type I and II glycogenolysis, amyloidosis, polycystic disease, hepatocellular cirrhosis, autoimmune hepatitis, autoimmune cholangitis, complicated Caroli's disease and secondary biliary cirrhosis. Data on indications and transplant times are described in Table 1.

Table 1 – Indications for liver transplantation and transplantation time. Belo Horizonte, MG, Brazil, 2015

<b>Variables</b>	<b>N</b>	<b>%</b>
Indications for transplantation	198*	100
Post-C virus cirrhosis	39	19.7
Alcoholic cirrhosis	32	16.2
Cryptogenic cirrhosis	26	13.2
Hepatocellular carcinoma	26	13.2
Autoimmune cirrhosis	11	5.6
Hepatitis C	10	5
Primary sclerosing cholangitis	8	4
Post-B virus cirrhosis	7	3.6
Primary biliary cirrhosis	6	3
Schistosomiasis	6	3
Fulminant hepatitis	4	2
Cirrhosis	4	2
Budd-Chiari syndrome	4	2
Hepatitis B	3	1.5
Others	12	6
Time since transplantation	153	100
Between one and five years	62	40.5
Between six and ten years	36	23.5
Less than one year	34	22.2
11 years or more	21	13.8

\*One patient presented more than one indication for the transplantation.

As regards the blood type, O was the most frequent type with 83 patients (54.2%), followed by 56 patients (36.6%) with type A. Eleven patients (7,2%) had type B and two patients (1.3%) type AB. Only one patient (0.7) did not know the blood type. What the use of immunosuppressant drugs is concerned, 147 (96.1%) patients used Tacrolimus and six (3.9%) used Cyclosporine. The weight and height variables were used to calculate the Body Mass Index (BMI). The patients' distribution according to the BMI and the other data collected during the nursing consultation are displayed in Table 2.

Table 2 – Data collected during the nursing consultation. Belo Horizonte, MG, Brazil, 2015

<b>Variables</b>	<b>N</b>	<b>%</b>
Body Mass Index (BMI)**	153	100
Normal or eutrophic	59	38.6
Overweight or pre-obesity	52	34
Obesity grade I	25	16.3
Lean or underweight	10	6.5
Obesity grade II	6	3.9
Severe obesity	1	0.7
Sleep quality	153	100
Sleeps well	83	54.2
Insomnia	51	33.3
Sleeps little	10	6.6
Sleeps on medication	9	5.9
Bowel elimination	153	100
No alterations	149	97.3
Constipation	2	1.3
Diarrhea	1	0.7
Nausea	1	0.7
Urinary elimination	153	100
Spontaneous	151	98.7
Oliguria	2	1.3
Fluid intake	151*	100
More than three liters	68	45
Between one and two liters per day	61	40.4
Less than one liter per day	22	14.6
Uses sunscreen	153	100
Yes	82	53.6
No	71	46.4

\*valid percentage for the respondents of the variable.

\*\*categories defined according to the World Health Organization.

Eleven ND were identified according to the NANDA-I Taxonomy II, being six real and five risk diagnoses. Table 3 presents the ND identified in the research participants.

Table 3 – Nursing diagnoses according to NANDA I 2015-2017. Belo Horizonte, MG, Brazil, 2015

Domain	Nursing diagnoses	N	%
Domain 11 Safety/Protection	Risk for infection related to immunosuppression	153	100
Domain 2 Nutrition	Risk for unstable blood glucose level related to medication therapy due to immunosuppressant	153	100
	Risk for impaired liver function related to pharmaceutical agent	153	100
Domain 11 Safety/Protection	Ineffective protection related to medication therapy characterized by immunodeficiency	153	100
Domain 2 Nutrition	Obesity related to shortened sleep time characterized by BMI > 30	84	54.9
Domain 11 Safety/Protection	Risk of impaired skin integrity related to immunodeficiency, pharmaceutical agent and hydration	71	46.4
Domain 4 Activity/Rest	Insomnia related to pharmacological agent characterized by compromised health status, altered sleep pattern and insufficient energy	60	39.2
Domain 2 Nutrition	Risk of deficient fluid volume related to fluid intake of less than 2 liters per day	22	14.4
Domain 4 Activity/Rest	Disturbed sleep pattern related to nonrestorative sleep pattern and characterized by alteration in sleep pattern and dissatisfaction with sleep	10	6.5
Domain 3 Elimination and exchange	Constipation related to pharmaceutical agents, insufficient fluid intake characterized by decrease in stool frequency	2	1.3
	Diarrhea related to treatment regimen characterized by intestinal urgency	1	0.7

## DISCUSSION

The predominance of males in liver transplanted patients was also found in other studies performed in Brazil, like in the states of Ceará and Rio de Janeiro, with frequencies of 80.0% and 61.0%, respectively<sup>(17-18)</sup>. Research performed in Portugal also found that the majority of liver transplanted patients were male<sup>(2)</sup>.

The age of the transplanted patients found in this study was also reported in the abovementioned studies and, in Ceará, 47% of the patients were in the age group 40-59 years old. In Porto, the mean age was 51 years<sup>(2,17)</sup>. The most frequent marital status was married, similar to that found in another study, in which 76.7% of the patients were married or lived with a fixed partner<sup>(19)</sup>.

The predominant mean time of study in the sample was 9 to 11 years, which may contribute to the patient's treatment compliance. A study carried out with liver transplanted patients found 10-12 years of education (37.3%)<sup>(19)</sup>, in line with our study. On the other hand, a study carried out at the Porto transplant center in Portugal, which investigated the

management style of the therapeutic regimen of people undergoing liver transplantation, found five years of study in 77.3% of the sample<sup>(2)</sup>.

The main indications for liver transplantation, post-C virus cirrhosis, ethanolic cirrhosis, and cryptogenic cirrhosis are also identified as the main causes of liver transplantation in Brazil<sup>(19-20)</sup>. According to recommendations of the American Association for the Study of Liver Diseases, liver transplantation is an effective therapy for cryptogenic cirrhosis. In the United States, hepatitis C cirrhosis is also the most common indication for liver transplantation<sup>(6)</sup>.

When comparing the blood typing of the study sample with that of the liver donors in Minas Gerais in 2017, it was found that the transplant index in patients with blood types A and O exceeds that of types B and AB<sup>(8)</sup>, which corroborates what was found in this study and makes it a concern for patients queuing for a compatible organ.

Tacrolimus is the drug of choice in almost 90% of patients undergoing liver transplantation, resulting in a considerable increase in its use since 1990<sup>(6)</sup>. Tacrolimus has a better graft survival rate, a lower incidence of acute cellular rejection and lower renal toxicity compared to cyclosporin in the first two years after transplantation<sup>(3,10)</sup>.

Eleven nursing diagnoses were identified: six real and five at risk. The diagnoses Risk for Infection and Ineffective Protection are defined, respectively, as vulnerability to invasion and multiplication of pathogenic organisms, which may compromise health and diminish the ability to protect against internal or external threats such as diseases or injuries<sup>(14)</sup>. Infectious complications are one of the main causes of morbidity and mortality in transplanted patients. It is estimated that two-thirds of transplanted recipients will develop an infection after their transplantation<sup>(21)</sup>.

The risk of unstable glycemia was related to the use of immunosuppressants, which is a risk factor for the development of post-transplant Diabetes Mellitus. Tacrolimus reveals a lower incidence of hyperlipidemia, hypertension, and aesthetic problems, but it is more likely than cyclosporin to induce post-transplant diabetes and neurotoxicity<sup>(3,10,21)</sup>.

Some factors contribute to liver transplanted patients' above-normal weight gain, associated with the use of immunosuppressive drugs, such as dyslipidemia and hyperglycemia or post-transplant diabetes<sup>(10)</sup>. Therefore, the multiprofessional team should promote programs to prevent excessive weight gain during the follow-up of these patients<sup>(22)</sup>.

The risk for impaired liver function is defined as the vulnerability to impaired liver function<sup>(14)</sup>. Although Tacrolimus-based immunosuppression is currently accepted as the main therapy, in several transplant centers worldwide, side effects associated with its use are sometimes found after solid organ transplantation, such as neurotoxicity, nephrotoxicity, and hypertension<sup>(10)</sup>, which may compromise the liver function of transplanted patients.

We believe that the Risk for deficient fluid volume was related to the low water intake, which can cause consequences such as dry mouth, fatigue, dizziness, indisposition, and inattention<sup>(23)</sup>. In a study on kidney transplantation<sup>(24)</sup>, hydration also figured as an altered basic human need in transplanted patients. The recommended water intake should be individual, with appropriate daily intake, in order to minimize the health risks<sup>(23)</sup>.

As for the ND insomnia and impaired sleep pattern, according to a systematic review<sup>(25)</sup>, sleep is a physical need for good health and healthy living, in which there is physical restoration that protects the being from the natural wear and tear of the hours spent awake. Sleep is as important for maintaining health as eating healthily and exercising regularly<sup>(25)</sup>.

The risk of impaired skin integrity is defined as vulnerability to alteration in the epidermis and/or dermis, which may compromise health<sup>(14)</sup>. In one study<sup>(26)</sup>, it is argued that the skin is the organ in which neoplasms most often develop in transplanted individuals.



The increased risk comes from the combination of reduced immune surveillance, which facilitates the survival and proliferation of abnormal cells, and the direct carcinogenic effects of immunosuppressive agents. Therefore, the nurse should encourage the use of sunscreen<sup>(26)</sup> during the nursing consultations.

Regarding the ND Constipation and Diarrhea, a study concluded that the use of drugs from the class of calcineurin inhibitors, Ciclosporin and Tacrolimus, can cause, among other effects, diarrhea<sup>(10)</sup>. Research has shown that these gastrointestinal changes may occur in liver transplantation candidates<sup>(27)</sup> as well as patients in the immediate post-transplant period<sup>(28)</sup>.

We believe that the identification of ND during outpatient follow-up of liver transplanted patients is able to optimize care and strengthen knowledge construction and information sharing to promote a better post-transplant quality of life. The work of the multiprofessional team makes it possible to provide guidelines on how to adapt to the new organ, diet, glycemic control, blood pressure, weight, new lifestyle, and continuous medication use<sup>(9)</sup>.

One limitation in this study is the discontinuity of the follow-up of the other nursing consultations the patients included in the study attended. In addition, the results are related to the local attendance and, therefore, the possibility of conclusive analysis is restricted to the population attended at the outpatient clinic under analysis.

## CONCLUSION

Eleven nursing diagnoses were identified, six of which were real and five were risk diagnoses. The most frequent nursing diagnoses were: risk for infection, ineffective protection, risk for unstable blood glucose, risk for impaired liver function, obesity, and risk for deficient fluid volume.

We consider that this study reached the proposed objective, as it identified the nursing diagnoses of liver transplanted patients in outpatient follow-up. The nurse is also an actor in the patients' health education and, through the identified NDs, strategies can be constructed to provide the patient with measures for a healthy lifestyle and control of the adaptive functions related to the new challenges of life post-transplantation.

The survey of the nursing diagnoses and the knowledge of the epidemiological and clinical characteristics of the population served in the post-transplantation phase are fundamental tools so that the nurse can plan and implement targeted, individualized and more specific actions that respond not only to the patients' health/illness needs, but that also prevent the occurrence of injuries and that trigger the change of these patients' habits in order to achieve a better quality of life.

Although the data obtained in this study are considered relevant, it is important to identify some limitations, such as the fact that the NDs are not yet used during all the nursing consultations in the service studied; the data collection form could address other variables that also include the transplanted patients' family and community, with a view to permitting possible comprehensive interventions in reality.

## REFERENCES

1. Barreto BS, Santana RJB, Nogueira EC, Fernandez BO, Brito FPG. Fatores relacionados à não doação de órgãos de potenciais doadores no estado de Sergipe, Brasil. Rev. Bras. Pesqui. Saúde. [Internet]. 2016 [access 22 mar 2018]; 18(3). Available at: <http://periodicos.ufes.br/RBPS/article/view/15741/10888>.
2. Mota L, Bastos FS, Brito MAC. A pessoa submetida a transplante de fígado: caracterização do estilo

- de gestão do regime terapêutico. Rev Enferm Ref. [Internet]. 2017 [access 01 abr 2018]; (13). Available at: <https://doi.org/10.12707/RIV17006>.
3. Moini M, Schilsky ML, Tichy EM. Review on immunosuppression in liver transplantation. World J. Hepatol. [Internet]. 2015 [access 25 mar 2018]; 7(10). Available at: <https://doi.org/10.4254/wjh.v7.i10.1355>.
  4. Meirelles Júnior RF, Salvalaggio P, Rezende MB, Evangelista AS, Guardia BD, Matielo CEL, et al. Liver transplantation: history, outcomes and perspectives. Einstein. [Internet]. 2015 [access 13 abr 2018]; 13(1). Available at: <https://doi.org/10.1590/S1679-45082015RW3164>.
  5. Yang LS, Shan LL, Saxena A, Morris DL. Liver transplantation: a systematic review of long-term quality of life. Liver Int. [Internet]. 2014 [access 22 mar 2018]; 34(9). Available at: <https://doi.org/10.1111/liv.12553>.
  6. Martin P, Dimartini A, Feng S, Brown R, Fallon M. Evaluation for liver transplantation in adults: 2013 practice guideline by the American Association for the Study of Liver Diseases and the American Society of Transplantation. Hepatology [Internet]. 2014 [access 02 abr 2018]; 59(3). Available at: [https://www.aasld.org/sites/default/files/guideline\\_documents/Evaluation\\_for%20LT\\_in\\_Adults\\_hep26972\\_0.pdf](https://www.aasld.org/sites/default/files/guideline_documents/Evaluation_for%20LT_in_Adults_hep26972_0.pdf).
  7. Associação Brasileira de Transplante de Órgãos (ABTO). Dimensionamento dos Transplantes no Brasil e em cada estado (2009-2016). Reg. Bras. Transp [Internet]. 2016. [Access 20 mar 2018]; 22(4). Available at: [www.abto.org.br/abtov03/Upload/file/RBT/2016/RBT2016-leitura.pdf](http://www.abto.org.br/abtov03/Upload/file/RBT/2016/RBT2016-leitura.pdf).
  8. Associação Brasileira de Transplante de Órgãos (ABTO). Dimensionamento dos Transplantes no Brasil e em cada estado (2010-2017). Reg. Bras. Transp [Internet]. 2017. [Access 20 mar 2018]; 23(4). Available at: <http://www.abto.org.br/abtov03/Upload/file/RBT/2017/rbt-imprensa-leitura-compressed.pdf>.
  9. Ferrazzo S, Vargas MAO, Gomes DC, Gelbcke FL, Hammerschmidt KSA, Lodeyro CF. Serviço especializado em transplante hepático em um hospital universitário: um estudo de caso. Texto contexto – enferm. [Internet]. 2017 [access 21 mar 2018]; 26(2). Available at: <http://dx.doi.org/10.1590/0104-07072017002630015>.
  10. Sá RC, Soares CRS. Terapia imunossupressora no transplante de fígado: contribuição para a enfermagem. Rev. Aten. Saúde [Internet]. 2016 [access 13 abr 2018]; 14(50). Available at: [http://seer.uscs.edu.br/index.php/revista\\_ciencias\\_saude/article/view/3992/0](http://seer.uscs.edu.br/index.php/revista_ciencias_saude/article/view/3992/0).
  11. Conselho Federal de Enfermagem. Resolução n. 292, de 07 junho 2004. Normatiza a atuação do Enfermeiro na Captação e Transplante de Órgãos e Tecidos. Rio de Janeiro: COFEN; 2004.
  12. Silva AES, Pontes UO, Genzini T, Prado PR, Amaral TLM. Revisão integrativa sobre o papel do enfermeiro no pós-transplante renal. Cogitare enferm. [Internet]. 2014 [access 20 fev 2018]; 19(3) Available at: <http://dx.doi.org/10.5380/ce.v19i3.34414>.
  13. Horta WA. Processo de Enfermagem. São Paulo; EPU; 1979.
  14. NANDA I. Diagnósticos de enfermagem da NANDA: definições e classificação – 2015 – 2017. Porto Alegre: Artmed; 2015.
  15. Bertoncillo KCG, Sávio B, Ferreira LN, do Nascimento ERP. Diagnósticos e propostas de intervenções de enfermagem aos pacientes em pós operatório imediato de cirurgia eletiva. Cogitare enferm. [Internet]. 2014 [access 02 abr 2018]; 19(3). Available at: <http://dx.doi.org/10.5380/ce.v19i3.33676>.
  16. Ministério da Saúde (BR). Conselho Nacional de Saúde. Diretrizes e normas regulamentadoras de pesquisa envolvendo seres humanos. Resolução n. 466, de 12 de dezembro de 2012. Brasília; 2012.
  17. Aguiar MIF, Braga VAB, Garcia JHP, Lima CA, Almeida PC, Souza AMA, et al. Quality of life in liver transplant recipients and the influence of sociodemographic factors. Rev. Esc. Enferm. USP. [Internet]. 2016 [access 03 abr 2018]; 50(3) Available at: <http://dx.doi.org/10.1590/S0080-62342016000040006>.
  18. Moraes EN, Conrad D, Machado GC, Abreu MO, Mattos EM, da Cruz SAC. Complicações pós-

operatórias do transplante hepático: evidências para otimização da assistência de enfermagem. Rev. pesqui. cuid. fundam. [Internet]. 2017 [acesso em 29 mar]; 9(4) Disponível em: <http://dx.doi.org/10.9789/2175-5361.2017.v9i4.999-1007>.

19. Aguiar MIF, Braga VAB, Almeida PC, Garcia JHP, Lima CA. Gravidade da doença hepática e qualidade de vida no transplante de fígado. Acta paul. enferm. [Internet]. 2016 [acesso 15 abr 2018]; 29(1). Disponível em: <http://dx.doi.org/10.1590/1982-0194201600015>.

20. Oliveira PC, Paglione HB, Mucci S, Silva e Silva V, Schirmer J, Roza B de A. Avaliação do conhecimento dos candidatos a transplante de fígado. Rev enferm UFSM [Internet]. 2016 [acesso em 20 abr 2018]; 6(4). Disponível em: <http://dx.doi.org/10.5902/2179769223175>.

21. European Association for the Study of the Liver. EASL Clinical Practice Guidelines: Liver transplantation. J Hepatol. [Internet]. 2016 [acesso em 22 de abr 2018]; 64(2). Disponível em: <http://dx.doi.org/10.1016/j.jhep.2015.10.006>.

22. Anastácio LR, Pereira MCA, Vilela EG, Lima AS, Correia MITD. Excesso de peso em pacientes submetidos ao transplante hepático. Rev Col Bras Cir. [Internet]. 2013 [acesso em 13 mar 2018]; 40(6). Disponível em: <http://dx.doi.org/10.1590/S0100-69912013000600014>.

23. Azevedo PS, Pereira FWL, Paiva SAR. Água, Hidratação e Saúde. Soc Bras Aliment e Nutr. 2016; 1–16.

24. Souza TL, Trindade TRO, Mendonça AEO, Silva RAR. Necessidades humanas básicas alteradas em pacientes pós- transplante renal : estudo transversal. Online Braz. j. nurs. [Internet]. 2014 [acesso em 20 abr 2018]; 15(2). Disponível em: <http://dx.doi.org/10.17665/1676-4285.20165253>.

25. Certo, A, Gomes, MJ, Nascimento, CEP. Qualidade do sono do doente em contexto médico cirúrgico. 2º Congresso Internacional "Novos Olhares na Saúde"; 2014 Jun. p. 465-72; Chaves, Portugal. Chaves: Escola Superior de Enfermagem; 2014.

26. Sanches MM, Travassos AR, Soares-de-almeida L. The relationship between immunodepression and the development of skin cancer. Acta Med. Port. [Internet]. 2017 [acesso em 11 mar 2018]; 30(1). Disponível em: <http://dx.doi.org/10.20344/amp.7997>.

27. Mendes KDS, Lopes NLC, Fabbris MA, Castro-e-Silva Júnior O, Galvão CM. Caracterização sociodemográfica e clínica de candidatos a transplante de fígado. Acta paul. enferm. [Internet]. 2016 [acesso em 17 mar 2018]; 29(2). Disponível em: <http://dx.doi.org/10.1590/1982-0194201600019>.

28. Barbosa AS, Studart RMB. Nursing diagnostics in patients hospitalized in a high complexity postoperative unit. Rev enferm UFPI. [Internet]. 2017 [acesso em 24 mar 2018]; 6(3). Disponível em: <https://doi.org/10.26694/reufpi.v6i3.5893>.

Received: 26/04/2018

Finalized: 28/01/2019

Corresponding author:

Thaís Moreira Oliveira

Universidade Federal de Minas Gerais

R. Ressurreição, 356 - 30820-170 - Belo Horizonte, MG, Brasil

E-mail: thaismo18@gmail.com

Role of Authors:

Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work - SDT

Drafting the work or revising it critically for important intellectual content - SDT, PLVB, GLG, BFM

Final approval of the version to be published - NSPO, TMO, ARC, SDT, PLVB, GLG, BFM

Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved - NSPO, TMO, ARC