Sociodemographic and clinical characteristics of candidates for liver transplantation

Caracterização sociodemográfica e clínica de candidatos a transplante de fígado

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Abstract

Objective: In order to generate evidence to contribute to the clinical practice of nurses in implementing interventions to improve care, this study aimed to analyze sociodemographic and clinical data of candidates for liver transplantation.

Methods: cross-sectional, prospective study conducted at a tertiary hospital in a city of São Paulo state. At the beginning of data collection, 77 patients were registered on the waiting list, however, the registry is dynamic. Thus, the sample size was by convenience with the participation of 85 candidates.

Results: Most of the sample was male, married and studied up to elementary school. The average Model for End-stage Liver Disease was 15.75 points, 70.60% of the candidates were overweight, with a viral cause as the main cause of chronic liver disease. The main clinical manifestations presented by the participants were esophageal varices, fatigue and gynecomastia in men.

Conclusion: Knowledge of the characteristics of candidates for liver transplantation can support the direction of nursing actions with a view to the adoption of individualized decisions enabling the improvement of health care.

Resumo

Objetivo: Com o propósito de gerar evidências que contribuam para a prática clínica do enfermeiro na implementação de intervenções direcionadas para a melhoria do cuidado, o presente estudo teve como objetivo analisar dados sociodemográficos e clínicos de candidatos ao transplante de fígado.

Métodos: Estudo transversal, prospectivo, conduzido em hospital terciário do interior paulista. No início da coleta de dados, 77 pacientes estavam registrados na lista de espera, entretanto o cadastro é dinâmico. Assim, o tipo de amostra foi de conveniência com a participação de 85 candidatos.

Resultados: A maioria da amostra era do sexo masculino, casada e cursou até o ensino fundamental. O valor médio do *Model for End-stage Liver Disease* foi de 15,75 pontos, 70,60% dos candidatos estavam acima do peso, sendo a causa viral a principal etiologia da doença hepática crônica. As principais manifestações clínicas apresentadas pelos participantes foram varizes esofágicas, fadiga e ginecomastia nos homens.

Conclusão: O conhecimento das características de candidatos a transplante de fígado poderá subsidiar o direcionamento de ações de enfermagem com vistas à adoção de condutas individualizadas possibilitando a melhoria da atenção à saúde.

Introduction

The liver is the largest solid organ of the human body and one of the most complex. This organ performs more than 500 functions each day to maintain homeostasis.[1] Liver disease can occur suddenly (acute), such as fulminant hepatic failure, or slowly, leading to liver failure by liver damage in a long period (chronic). The damage is usually irreversible.[2]

The complications of liver disease indicate when the organ transplantation is necessary. In adults, the most common indication for liver transplantation are chronic hepatitis B or C, alcoholic liver disease, primary biliary cirrhosis, sclerosing cholangitis and autoimmune hepatitis.[3]

Liver transplantation is considered the treatment of choice in cases of progressive, irreversible and terminal liver disease, when no other type of treatment is possible.[1] It is considered the most complex modern surgical procedure, since it interferes with various functions of the organism.[3]

The number of patients requiring liver transplantation is still increasing each year, but due to the disproportional number of organ donors available, criteria are used to perform surgery, such as assessing the severity of liver disease and ABO compatibility. Absolute contraindications to surgery include multisystem organ failure, the presence of extrahepatic malignant tumors, advanced heart or lung disease, severe or uncontrolled extrahepatic infection and active use of substances such as drugs and alcohol.[1,4]

To assess the severity of the clinical status of transplant candidates, the Model for End-stage Liver Disease (MELD) is used, which through the results of laboratory tests of bilirubin, creatinine, and International Normalized Ratio (INR), the numerical values are calculated, which may vary from 6 to 40 points, quantifying the urgency for transplantation. The higher the score, the higher the severity of the patient.[3]

Because of the serious complications of chronic liver disease, the candidate has a high risk of dying while waiting for the completion of liver transplant. These complications are the result of portal hypertension and reduction of the hepatic parenchyma, especially gastrointestinal bleeding, ascites, coagulopathy, jaundice, reduced metabolism of drugs and encephalopathy.[5] Thus, organ candidates need to be prepared for diagnostic tests and should understand treatment and learn how to handle the necessary care for a long period until the surgery.[6]

Knowledge of sociodemographic and clinical characteristics of a population or sample are useful for nurses in an attempt to plan and introduce effective interventions that address the identified health/disease needs, especially in relation to changes in lifestyle and disease prevention. Often patients with chronic liver disease can behave impairing their health condition. The problems related to their health condition control and prevention of disease progression may help in performing the transplant with lower risk of developing complications. Additionally, the interference of social and demographic factors on adherence to immunosuppressive therapy in the postoperative period.

In order to generate evidence to contribute to the clinical practice of nurses in implementing interventions to improve care, this study aimed to analyze sociodemographic and clinical data of candidates for liver transplantation.

Methods

Prospective cross-sectional study conducted in a tertiary hospital in a city of the state of São Paulo (Brazil), registered in the National Transplant System of the Ministry of Health. At the beginning of data collection, 77 patients were registered in the Transplant Center of the selected hospital for the development of research, but as registry is dynamic, that is, new patients are introduced or removed from the waiting list due to different reasons such as: performing a transplant, patients without clinical conditions, recovering liver function or death, all who attended the clinic in those dates were invited to participate, and the procedure lasted for

nine months. Thus, a convenience sample was used, with participation of 85 candidates for liver transplantation, with deceased donor, in clinical conditions to answer the data collection instrument and aged equal or over 18 years. Patients with hepatic encephalopathy at the time of data collection were excluded from the study.

Data were obtained through a developed instrument submitted for face and content validation by scholars, who are specialists on the subject, based on the literature and clinical experience of the researchers. The instrument consists of two parts; in the first part, data was addressed to the characterization of patients awaiting liver transplantation and in the second, the data related to their sociodemographic and clinical profile. The variables collected were: gender, age, education, marital status, occupation, income and religion (sociodemographic data), blood type, MELD score, body mass index (BMI), etiology of chronic liver disease, signs and symptoms of the disease, drugs used and lifestyle (clinical data).

Data collection was carried out during nine months, from November 2009 to July 2010, in the ambulatory of the selected hospital to conduct the study, which attends candidates weekly for liver transplantation. The interview took place in a private environment, through the application of the instrument during their waiting time to meet with the multidisciplinary team. Their medical records were also used as a secondary source for information registration.

Data were entered into Microsoft Excel®. software. Data analysis was performed in descriptive form and we used GraphPad Instat® 3.05 software. For qualitative variables we adopted absolute (n) and relative (%) frequencies. For quantitative variables, the following were used as measures: mean, median and standard deviation (minimum and maximum) to represent data variability.

The study was approved by the Ethics of Clinical Hospital of Ribeirão Preto Medical School, University of São Paulo 02/02/2009 Committee, Informed Consent and Informed process HCRP no. 12953/2008.

Results

Out of the 85 candidates for liver transplantation, most were male (74.12%) with birth in urban areas (71.76%). The mean age of the investigated sample was 49.33 years, ranging from 19 and 68 years. The mean education years was 8.76 (SD=3.89), there was only one patient who had never attended school despite being able to read and write (Table 1).

Regarding marital status, most participants were married or in a stable relationship (72.94%), with

Table 1. Distribution of patients according to sociodemographic data (n=85)

Variables	n(%)
Gender	
Male	63(74.12)
Female	22(25.88)
Age in years (mean, SD*)	49.33 ± 10.57
Education (years of study)	
Mean, SD	8.76 ± 3.89
Did not Study	1(1.18)
Up to elementary	46(54.12)
Up to high school	20(23.53)
Up to college	16(18.82)
Graduate studies	2(2.35)
Marital status	
Single	9(10.59)
Married or stable union	62(72.94)
Divorced	10(11.76)
Widowed	4(4.71)
Number of children	
Mean, SD	2.26 ± 1.54
No children	13(15.29)
1 to 2	41(48.24)
3 to 4	24(28.24)
Over 4	7(8.24)
Place of birth	
Urban area	61(71.76)
Rural area	24(28.24)
Occupation	
Work	46(54.12)
Retired	30(35.29)
Do not work	9(10.59)
Income (minimum wage**)	
No income	6(7.06)
Up to 1 minimum wage	24(28.24)
From 2 to 4 minimum wages	38(44.71)
From 5 to 7 minimum wages	13(15.29)
Over 7 minimum wages	4(4.71)
Religion	
Catholic	61(71.76)
Protestant	14(16.47)
Spirit	7(8.24)
Others	3(3.53)

*SD- Standard deviation; ** minimum wage during data collection = R$ 510.00

mean 2.26 children. In this sample, 54.12% (n=46) of transplant candidates had jobs, 44.71% (n=38) received two to four minimum wages and 71.76% (n=61) were Catholics.

The most common blood type of the sample was type O (47.06%), and only two (2.35%) patients had type AB. Regarding the classification of MELD, the mean was 15.75 points (SD=3.88), ranging between six and 29 points. The mean BMI of patients was 28.58 kg/m² (SD=6.17), ranging between 17.03 kg/m² and 47.48 kg/m², it is noteworthy that only 25.88% of the participants were considered eutrophic (Table 2).

The median time of onset of chronic liver disease in the investigated sample was 85.45 months (SD=82.23), ranging from six to 420 months. The viral liver cirrhosis was the most frequent cause (31.76%) of the onset of chronic liver disease among patients.

The mean waiting time in days on the candidates' transplant list was 943.53 days (SD=775.78), minimum and maximum of six and 2626 days. It is noteworthy that 56.06% of patients were unable to inform how the waiting list worked for liver transplantation.

Regarding the most used drugs among patients, we highlight the use of adrenergic beta-blockers (78.82%), diuretics (76.47%) and gastric protector (50.59%).

Among the signs and symptoms of chronic liver disease observed in the candidates, we highlight the presence of esophageal varices (94.12%), fatigue complaints (75.29%), presence of gynecomastia in men (71.43%) and the presence of palmar erythema (69.41%), as shown in table 3. The decrease in libido, the presence of jaundice in the eye sclera, altered sleep pattern and wakefulness, lower limb edema in 68.24 % of participants.

From the investigated sample, only 23 patients (27.06%) performed physical exercises, mostly walking. Regarding the number of meals during the day, there were variations from one to six meals, with a mean of 4.73 meals. It is noteworthy that only 27 patients (31.76%) had six meals a day. Dietary restrictions of sodium chloride (94.12%) and fats (64.71%) were the most frequent.

Table 2. Distribution of patients according to clinical data (n=85)

Variables	n(%)
ABO type	
A	37(43.53)
B	6(7.06)
O	40(47.06)
AB	2(2.35)
MELD score* corrected(mean, SD**)	15.75 ± 3.88
MELD < 10	5(5.88)
MELD from 10 to 19	65(76.47)
MELD from 20 to 29	15(17.65)
Special situation for transplantation	
No	77(90.59)
Yes	8(9.41)
Body Mass Index (kg/m²) (mean, SD)	28.58 ± 6.17
Low weight*** (<18.50)	3(3.53)
Normal weight (18.50 to 24.99)	22(25.88)
Overweight (³ 25)	26(30.59)
Obesity level I (30 a 34.99)	23(27.06)
Obesity level II (35 a 39.99)	7(8.24)
Obesity level III (³ 40)	4(4.71)
Time (months) of liver disease (mean ± SD)	85.45 ± 82.23
Did not know	3(3.53)
1 to 24 months	18(21.18)
25 to 60 months	28(32.94)
61 to 120 months	19(22.35)
More than 120 months	17(20.00)
Chronic liver disease	
Alcoholic cause	22(25.88)
Viral cause	27(31.76)
Viral + alcoholic cause	16(18.82)
Other causes	20(23.54)
Waiting time in the list (days)	
Mean, SD (days)	943.53 ± 775.78
Up to 180 days	16(18.82)
Up to 720 days	26(30.59)
Up to 1800 days	28(32.94)
Other chronic disease	
Hypertension	22(25.88)
Diabetes mellitus	14(16.47)
Obesity	34(40.00)
Most used drugs	
Adrenergic Beta-blocker	67(78.82)
Diuretics	65(76.47)
Antibiotics	24(28.24)
Intestine regulator	33(38.82)
Vitamins	36(42.35)
Gastric protector	43(50.59)
Insulin or oral anti-diabetics	11(12.94)

*MELD - Model for End-stage Liver Disease; **SD - standard deviation;*** categories defined according to the World Health Organization

Out of the 85 candidates for liver transplantation, 10 (11.76%) were smokers, smoking a mean of 5.71 cigarettes per day (SD=8.85), the other 35 participants (41.18%) were ex-smokers. No patient reported drinking alcohol, but 59 (69.41%) were former alcoholics. Three (10%) patients reported use of some kind of illicit drug.

Regarding nighttime sleep, the mean hours was 7.18 per night (SD = 2.13), ranging from two to 12 hours of sleep. The daytime sleep is part of daily life routine of 53 patients (62.35%).

Table 3. Distribution of patients according to the signs and symptoms of chronic disease and lifestyle habits (n=85)

Variable	n(%)
Signs and symptoms	
Jaundice of the eye sclera	58(68.24)
Coagulation disorders	28(32.94)
Spider veins	31(36.47)
Palmar erythema	59(69.41)
Gynecomastia (men)	45(71.43)
Decreased libido	58(68.24)
Inappetence	30(35.29)
Altered sleep and wakefulness	58(68.24)
Ascites	47(55.29)
Esophageal varices	80(94.12)
Prior upper gastrointestinal bleeding	36(42.35)
Frequent infections	31(36.47)
Acute renal failure	25(29.41)
Constipation or diarrhea	40(47.06)
Lower extremity edema	58(68.24)
Hernia	31(36.47)
Encephalopathy hepatic	42(49.41)
Pain complaints	47(55.29)
Fatigue complaints	64(75.29)
Nausea complaints	31(36.47)
Previous abdominal surgery	33(38.82)
Lifestyle	
Physical exercise	23(27.06)
Meals/day (mean, SD*)	
Food restriction	4.73 ± 1.14
Sodium	80(94.12)
Proteins	52(61.18)
Carbohydrates (sugar)	22(25.88)
Fat	55(64.71)
Smokers	10(11.76)
Ex-smokers	35(41.18)
Ex-alcoholics	59(69.41)
Hours of sleep per night (mean, SD)	7.18 ± 2.13
Less than 8 hours	38(44.71)
8 hours or more	47(55.29)
Day time sleep (mean, SD)	1.43 ± 1.22
Do not sleep in this period	32(37.65)
Nap time of over 1 hour	53(62.35)

*SD - Standard deviation

Discussion

A cross-sectional study allows the researcher to seek accurate information related to a specific group of characteristics of people, institution, situation, or on the frequency of certain problem. As methodological limitations, in general, it does not clarify possible relations of cause and effect between variables and difficulties in knowledge of the temporal relationship of the data because they were collected in a single moment in time. Due to the sample size and for being a regional study, there are limitations of this study, and the results cannot be generalized to all candidates for liver transplantation in Brazil.

The contribution of this study is related to the identification of characteristics of patients awaiting for liver transplantation, and the knowledge of these can support the planning and actions of health. In the literature, there are few studies on the sociodemographic and clinical characteristics of candidates for liver transplantation in health services, and this aspect has limited the discussion of the similarities and differences of the sample investigated with the national reality and other countries. The characterization presented generated evidence that can be used in clinical nursing practice in the implementation of interventions aimed to improve the care and quality of life of patients. The highlighted results provide data, especially for the clinical practice of nurses who work in transplant programs, assisting in identifying health needs, a key aspect to plan strategies to the assessment of the reality of these patients. This study also provides subsidies for conducting future research on this topic, we recommend studies to assess the impact of sociodemographic and clinical characteristics in adherence to immunosuppression in liver transplantation.

Liver transplantation has been fundamental in both survival and the quality of life of patients with advanced liver disease. In national research, patient survival rates at one year and three years after surgery were 68.4% and 64.4%, respectively. [6] In the United States, these figures reach 82.4% and 76.75%. [7] This therapy has increased the survival rate for adults with irreversible liver disease in end stage.

In order to change the lives of patients with chronic liver disease, providing better quality of life, the proper selection of candidates for transplantation should be made, thus contributing to better results. The quality of the liver donor, as well as technical aspects of surgery and related factors for the

transplantation candidate can influence the number of complications after surgery.[5]

Over the past 20 years, the number of liver transplants performed worldwide has grown. However, the number of candidates awaiting for surgery is also increasing, keeping disproportional numbers of organs available for transplant. Consequently, the lack of organs, deaths or exclusion of the patient from waiting list, due to the worsening of their liver disease to irreversible levels of disease are worrisome.[3] It is noteworthy that the mortality in the waiting list vary 20-38% in Brazil.[8]

MELD is the classification model that indicates the severity of liver disease and is used to prioritize the allocation of patients for transplantation. The score, according to laboratory tests results, can vary from six to 40 points, and indicates the probability of death in three months.[9] In the present study, the mean MELD was 15.75 points, ranging from six to 29 points. These data indicate that the sample showed 27% to 76% mortality risk.

In solid organ transplants, donors generally cannot be allocated according to the gender of candidates, since there is not sufficient number of available donors. However, gender-related differences in the results of the grafts and liver receptors have been the focus of some studies.[10,11] In general, men have more liver disease than women, which corroborates the results of this study.

With the growth in the number of transplants performed, demand increased for surgery in older people. In some transplant centers, the candidate's age is a constraint for transplantation, but the research results showed that the age cannot be considered a negative factor for the success of the procedure.[10,12] In this study, 10.59% of patients were 60 years or older.

The level of education and its collaboration in the development of pre- and post-transplant is the subject of investigations, which indicated that the higher the level of education, the better patients will have its evolution in the perioperative period.[13] In this study, most patients (54.12%) had at least elementary school, this data may indicate possible impact of educational level with adherence to treatment, facing the difficulties of understanding medical therapy and it may influence the short and long term results.

It is known that chronic liver disease leads to significant changes in social and emotional aspects, which can influence adherence, treatment and transplant outcomes.[13] The work-leave due to disability caused by chronic disease and low family income are important social factors, however, these aspects were not prevalent in this search, since 54.12% of the patients worked and 44.71% had income from two to four minimum wages.

Literature also indicates that patients with obesity have a higher risk of morbidity and mortality after liver transplant, and some centers consider this comorbidity contraindication for surgery.[14] In the sample studied, there is a significant number of overweight and obese candidates, and relevant evaluation and nutritional monitoring of these individuals by health professionals.

European data show that viral hepatitis and alcoholic liver disease are the most prevalent indications for liver transplantation. In alcoholic disease, the requirement for surgery is abstinence from alcohol for at least six months. In general, patients with hepatitis C virus, suffer from recurrence of chronic hepatitis and gradual progression of cirrhosis in 10 to 15 years after transplantation.[3,15] In the present sample, 31.76% of patients had a viral cause, 25.88% alcoholism, and 18.82% had the association of hepatitis with alcoholism, as the main cause of chronic liver disease, which corroborates the results of the studies mentioned.

Chronic liver disease causes various complications, which are treated with pharmacological and interventional therapies, but the only treatment able to promote healing in the most severe stage of the disease is a liver transplant. To ensure its success, the candidate's careful evaluation is essential[1,3]. In this study, the most common signs and symptoms of the evolution of chronic liver disease were: esophageal varices, fatigue, gynecomastia (in men), palmar erythema, de-

creased libido, jaundice eye, altered sleep and wakefulness patterns and lower limb edema.

Patients with chronic liver disease refers to indisposition, significant fatigue and weakness, this situation is due to altered nutritional intake, increased metabolic needs and electrolyte changes. The standard energy level will not return to normal after the liver transplant and recovery of liver function. The patient should be guided and encouraged to perform physical exercises without exaggeration and without exceeding the comfort threshold.[1,4] In the present study, 72.94% of the candidates did not perform any exercises.

In chronic liver disease, according to its development, the nutritional impact may be greater, because the liver regulates the metabolism of protein and energy, besides accentuating signs and symptoms of poor appetite due to drug use. This indicates that the candidate for liver transplantation have increased risk of developing nutritional deficiencies.[16,17] In this study, 94.12% of patients reported sodium restriction, and 61.18% protein, especially red meat, for controlling the accumulation of fluid (ascites and edema) and the development of hepatic encephalopathy by the ingestion of such nutrient.

The negative health implications due to smoking outside the transplant setting are well known, causing increased risk of cardiovascular disease, stroke, cancer and peptic ulcer. Furthermore, smokers have increased susceptibility to infections and are most at risk for chronic kidney disease and insulin resistance. The prevalence of smoking among the general population is between 20 and 30%. In the literature, one study showed that among liver transplant recipients these rates reach 40% of patients with increased consequences of post-transplant mortality.[18] In this research, the results showed that less than 12% of candidates had this harmful habit to health, although more than 40% of the participants were ex-smokers.

An important data indicating the need for attention and intervention from the health team is that patients who are in the transplantation list due alcohol use, can return to the addiction even before surgery.[19] In this study, the results showed that no patient reported the use of this substance, but al-most 70% of the candidates mentioned they were ex-alcoholics.

In a research conducted in Portugal, the results showed that non-adherence to treatment of transplant recipients is relevant, the mean prevalence of 25.28% were influenced by demographic factors such as age, education, marital status, gender, race and socioeconomic status.[20] Thus, knowledge of sociodemographic and clinical characteristics of candidates for liver transplantation helps to identify health needs, key aspect to create strategies for the assessment of the reality of these patients, in addition to provide support for the planning and implementation of health interventions to promote better quality of life and successful treatment.

Conclusion

Considering this sample of 85 candidates for liver transplantation, we observed that most were males, with a mean age of 49.33 years, mean 8.76 years of education, 45.88% were on leave from work activities and the most frequent income was two to four times the minimum wages. Most had a mean MELD of 15.75 points, 70.60% were overweight and presented course of evolution of chronic liver disease mean 85.45 months. Liver cirrhosis of viral and alcoholic cause was predominant (76.46%) and the mean length of waiting list was 943.53 days. Among the main clinical manifestations, we highlight esophageal varices (94.12%), ascites (55.29%), hepatic encephalopathy (49.41%) and previous gastrointestinal bleeding (42.35%).

The characterization of candidates may subsidize the direction of nursing actions with a view to the adoption of individual conduct and support clinical and social conditions during the waiting period for a liver transplant.

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Collaborations

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