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Case Report

Quality of Life and Liver Transplant: A Comparative Evaluation between Different Post-transplant Phases

Katherine Xavier Bastos[1,*], Maria Isis Freire de Aguiar[2], José Huygens Parente Garcia[3], Paulo Sérgio DouradoArrais[1]

[1]Department of Pharmacy, Federal University of Ceará, Fortaleza, Ceará, BRAZIL.
[2]Department of Nursing, Federal University of Ceará, Fortaleza, Ceará, BRAZIL.
[3]Department of Surgery, Federal University of Ceará, Fortaleza, Ceará, BRAZIL.

ABSTRACT

Background: Liver transplantation is a procedure used worldwide; however, after a surgery many changes are necessary for this outcome; therefore, the objective of this study is to evaluate the quality of life of liver transplant patients in the recent, and intermediate post-operative periods. **Materials and Methods:** A cross–sectional study with a quantitative approach conducted in the Liver Transplant Outpatient Service of the Walter Cantidio University Hospital (*Hospital Universitário Walter Cantídio*, HUWC) belonging to the Federal University of Ceará (*Universidade Federal do Ceará*, UFC). Data collection was carried out between July 2019 and August 2021. A total of 30 patients met the study inclusion criteria and were therefore characterised regarding gender, age, marital status, family income, origin, and reason for the transplant. The quality of life results were obtained through the Liver Disease Quality of Life (LDQOL) questionnaire. The *Research Electronic Data Capture* (REDCap) programme was used to store and analyse the data. **Results:** There was predominance of the male gender (n=20; 66.7%). The predominant age group was from 50 to 59 years old (n=9; 30%), and most of the interviewees were married (n=15; 50%). The most frequent family income was between 2 and 4 minimum wages (11; 36.6%), and most of the patients were from the Northeast region (n=21; 70%). In turn, regarding the cause of the liver disease, alcohol abuse was the reason for the transplants in a total of 9 (30%) patients. The quality of life analysis through LDQOL showed an increase in the scores from the recent post-transplant period to the intermediate post-transplant period, with significant scores (p<0.05) for the following domains: symptoms, effects of the liver disease, social issues, concern about the disease, sexual function, sleep, and isolation. **Conclusion:** There was a significant and positive difference in quality of life in the intermediate post-transplant period when compared to the initial phase of the transplant, with liver transplant considered as the best definitive treatment option for chronic, and irreversible liver diseases.

Keywords: Liver disease, Liver transplant, Quality of life.

Correspondence:
Katherine Xavier Bastos
Department of Pharmacy, Federal University of Ceará, Fortaleza, Rua Alexandre Baraúna, 949–Rodolfo Teófilo, Ceará, BRAZIL.
Email id: katherine_xb@hotmail.com

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INTRODUCTION

Liver transplant is a procedure applied worldwide in the treatment of several chronic and acute liver diseases, therefore being a practise in constant advancement, considerably reducing the complications rates, and increasing the patients' survival chances.[1]

According to the Brazilian Association of Organ Transplantation (*Associação Brasileira de Transplantes de Órgãos*, ABTO), during 2019 the number of organ transplantation procedures rose, with the exception of lung transplants. In the first half of 2020, despite the efforts made by the donation, and transplant teams, the numbers of transplants decreased, this reduction continued until September 2021, with an 8.9% drop when compared to 2020, making clear the influence of the pandemic caused by the SARS–CoV-2 virus (COVID–19) on transplants, adding challenges to public health since its outbreak.[2]

After the surgical procedure, some changes will take place in the everyday life of transplant patients, such as the following: periodic medical appointments and need for clinical evaluations according to each patient's specificities, in addition to the commitment to adhere to treatment with immunosuppressive drugs, for success in the process and, thus, to avoid possible complications, and graft rejection, which can interfere with quality of life.[3] All these imposed conditions can somehow worsen the quality of life of the transplanted patient.

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Therefore, the concern with long–term quality of life after liver transplantation has already been the subject of a study, which in turn, demonstrated that recipients have quality of life indices similar to those of the general population, except for mental health, corroborating other authors who pointed out complicating factors such as depression, and anxiety that can affect the quality of life after transplantation, in addition to a slower recovery of mental health compared to physical health.[1,4,5]

Other researchers have investigated how different levels of pre-liver transplant disease severity can interfere with patients' quality of life before and after transplantation.[6] The literature also has a study that correlates the impairment of the functional capacity of cirrhotic patients and pre-liver transplant quality of life, demonstrating how these factors can interfere with the quality of life while waiting for the procedure.[7] Another study showed that the presence of comorbidities did not interfere with quality of life.[8] However, no study aimed to assess the quality of life of liver transplant patients in a transversal, and comparative way after liver transplantation.

Knowing the quality of life of patients undergoing liver transplantation is necessary and becomes an important guide to identify possible barriers to obtaining ideal results, development of interventions and multiprofessional behaviours that overcome them, making it necessary to immerse in studies that investigate which aspects originate higher or lower quality of life indices, and which patients are more prone to low indices.

In this sense, he objective of the current paper was to evaluate quality of life in liver–transplanted patients during the recent, and intermediate post-operative periods in a hospital that is a national reference in liver transplants.

SUBJECTS AND METHODS

This is a cross–sectional study with a quantitative approach conducted in the Liver Transplant Outpatient Service of the Walter Cantidio University Hospital (HUWC) belonging to the Federal University of Ceará (UFC), managed by the Brazilian Company of Hospital Services (*Empresa Brasileira de Serviços Hospitalares*, EBSERH). The outpatient service has a multiprofessional team comprised by physicians, a nutritionist, a psychologist, a physiotherapist, nurses, nursing technicians, a social worker, and a pharmacist. The latter behaves as a strategic professional, as he has the skills to establish a harmonious relationship in order to increase adherence to drug therapy, and consequent improvement in the quality of life of these patients.

Data collection was carried out between July 2019 and August 2021. The study population consisted of patients in the recent and intermediate post-liver transplant phases undergoing follow–up at the HUWC outpatient service during the data collection period.[9] The following inclusion criteria were applied for selection of the study participants: liver transplant recipients at the first post-transplant pharmaceutical consultation, aged between 18, and 75 years old, from any state of the country, undergoing regular follow–up at the transplantation service, able to answer the research questionnaires, and committed to return for consultation 6 months after the transplant. The exclusion criteria were as follows: recipients transferred to other states of the country, losses due to non-attendance, or impossibility to contact the patient, and evolution to death.

The population size considered the number of patients transplanted between July 2019 and January 2021, which totaled 178 patients, of these, 36 individuals met the required inclusion criteria, however, 6 of these lost follow–up during the research, ending the study with 30 patients, constituting the study sample.

The study participants were characterised regarding gender, age, marital status, family income, origin, and reason for the transplant by means of a form prepared by the researchers. The quality of life results were obtained through the Liver Disease Quality of Life (LDQOL) questionnaire, translated, and validated for the Brazilian population.[10]

The LDQOL questionnaire is an instrument targeted at evaluating quality of life in patients with liver diseases. It has 75 questions divided into 12 domains that assess different aspects of the patients. The answers obtained will be analysed on a Likert–type scale, with scores from 0 to 6 points, which in turn were converted into a scale from 0 to 100, where it can be interpreted that higher values suggest better quality of life.[3]

All the information about the patients' characterization was obtained at the time of the first post-transplant pharmaceutical consultation within 40 days after the surgery, together with application of LDQOL, which was repeated in the sixth post-transplant month, not exceeding the 8–month period after the surgical procedure, at the time the patients attended the post-operative follow–up appointments, or by telephone at a previously scheduled time. This last type of interview was necessary due to the pandemic moment caused by the SARS–CoV-2 virus (COVID–19) in which the country was and linked to the fact of avoiding agglomerations in the outpatient service (Figure 1).

The *Research Electronic Data Capture* (REDCap) programme was used to store and analyse the data collected. The data will be presented as absolute and relative frequencies, and calculations of the score mean values, and their standard deviations were performed for each of the LDQOL domains analysed. The comparison of the mean values obtained in the answers to the questionnaire between the different post-transplant periods was performed through Student's t or Wilcoxon's tests, considering a significance level of $p<0.05$.

The study was approved by the Research Ethics Committee of the Federal University of Ceará, under Opinion No. 3,358,115.

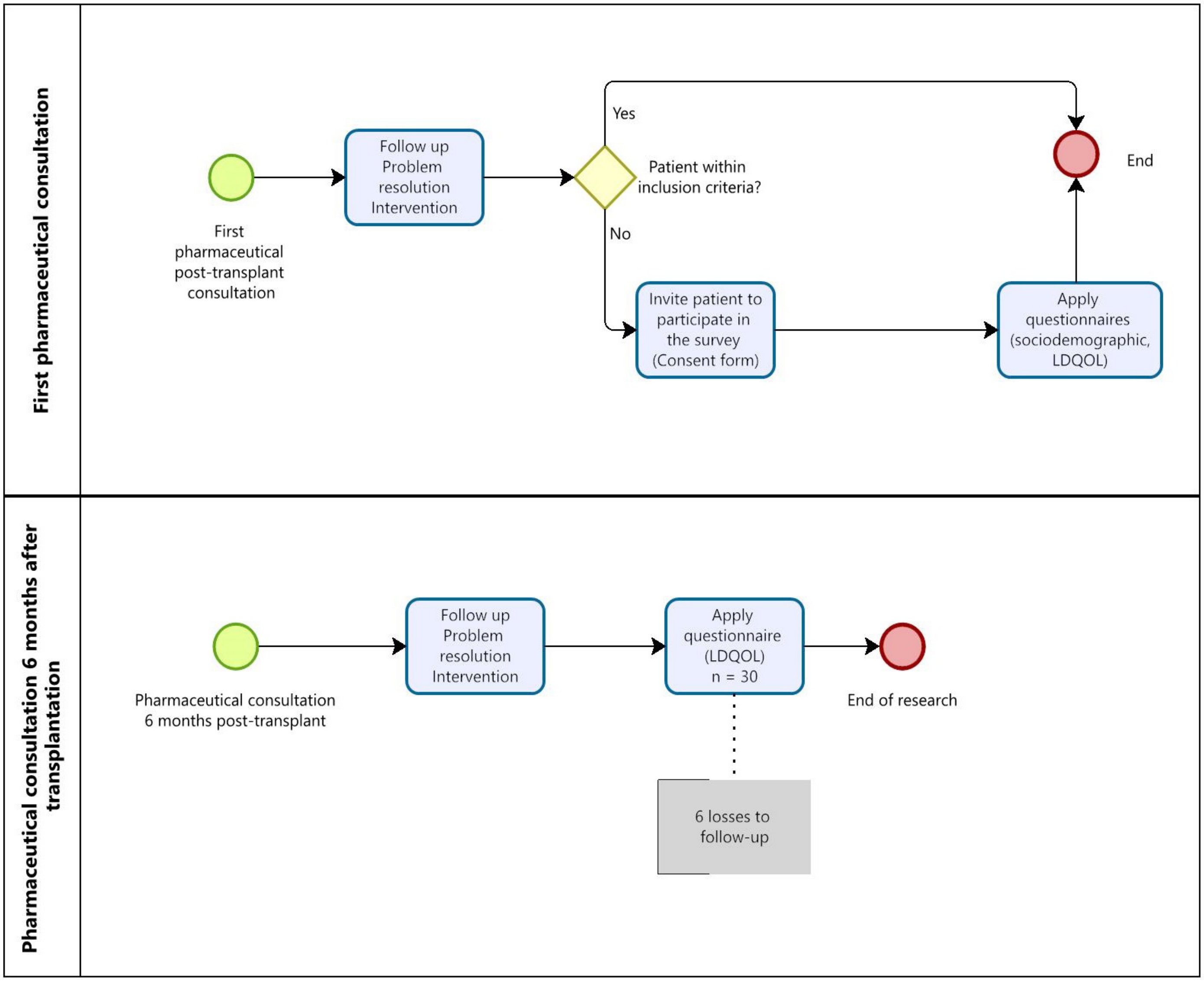

Figure 1: Study flowchart–HUWC–CE, Brazil, 2021.

RESULTS

In the analysis of the profile of the patients subjected to transplants there was predominance of the male gender (*n*=20; 66.7%) to the detriment of the female gender (*n*=10; 33.3%). The predominant age group was from 50 to 59 years old (*n*= 9; 30%), followed by 60 to 69 (*n*= 6; 20%), 30 to 39 (n= 6; 20%), and, finally, 20 to 29 (*n*= 3; 10%) e 70 to 79 (*n*= 3; 10%). The most of the interviewees were married (*n*= 15; 50%). The most frequent family income was between 2 and 4 minimum wages (11; 36.6%), followed by income above 5 wages (*n*= 9; 30%), 1 to 2 wages (*n*=8; 26.6%), and, finally, income less than 1 wages (*n*=2; 6,6%); most of the patients were from the Northeast region (*n*=21; 70%) and the others, the North region of the country (*n*=9, 30%). In turn, regarding the cause of the liver disease, alcohol abuse was the reason for the transplants in a total of 9 (30%) patients (Table 1).

The results obtained from each quality of life domain evaluated by LDQOL showed an increase in the scores from the recent post-transplant period to the intermediate post-transplant period, for the following domains: symptoms (75.25 *vs* 88.16; $p<0.001$), effects of the liver disease (68.26 *vs* 85.13; $p<0.001$), social issues (75.33 *vs* 87.5; p=0,003), concern about the disease (69.17 *vs* 87.71; $p<0.001$), sexual function (70.46 *vs* 86.99; $p=0.006$), sleep (54.50 *vs* 71.67; $p=0.003$), and isolation (87.33 *vs* 95.83; $p=0.005$) (Table 2).

DISCUSSION

End–stage liver disease significantly reduces the patients' quality of life.[11] However, when liver transplant becomes the only option for chronic liver patients, although complex and expensive, it tends to enable physical, and psychological improvement in the patients.

Table 1: Profile of post-transplant patients –HUWC–CE, Brazil, 2021.

Variables	n (%)
Gender	
Male	20 (66.7%)
Female	10 (33.3%)
Age (years old)	
20–29	3 (10.0%)
30–39	6 (20.0%)
40–49	3 (10.0%)
50–59	9 (30.0%)
60–69	6 (20.0%)
70–79	3 (10.0%)
Marital status	
Single	7 (23.3%)
Married	15 (50.0%)
Widowed	3 (10.0%)
Divorced	2 (6.7%)
Stable union	3 (10.0%)
Family income (minimum wages)	
<1	2 (6.6%)
1–2	8 (26.6%)
2–4	11 (36.6%)
>5	9 (30.0%)
Origin	
North	9 (30.0%)
Northeast	21 (70.0%)
Cause of the liver disease	
Alcoholism	9 (30%)
Cryptogenic cirrhosis	7 (23.3%)
B virus hepatitis	4 (13.3%)
Hepatocarcinoma	3 (10%)
C virus hepatitis	1 (3.3%)
Schistosomiasis	1 (3.3%)
Hepatopulmonary syndrome	1 (3.3%)
Epithelioid hemangioendothelioma	1 (3.3%)
Budd Chiari syndrome	1 (3.3%)
Cirrhosis due to hepatoportal sclerosis	1 (3.3%)
Non-alcoholic steatohepatitis	1 (3.3%)
Total	30

*All data were presented as absolute frequency (n) and prevalence rate (%).

After transplantation, the patient needs to be monitored by a specialised multiprofessional team and to use of immunosuppressive medications throughout life, where their benefits outweigh the risks, and harms.[12] In this phase, the role of the multiprofessional team must include concerns regarding welcoming, qualified listening and the design of a care plan with interventions that will detect, and prevent problems for the patient.

Monitoring by a qualified multidisciplinary team is associated with an improvement in the quality of life of patients with chronic diseases, such as those observed in Parkinson's disease patients with inflammatory bowel disease.[13,14]

Thus, considering the contributions made by the multiprofessional team itself, the results point to an increase or maintenance of the quality of life in transplanted patients, when comparing the initial, and intermediate post-transplant periods.

The improvement in the symptoms related to liver disease observed in this study can be attributed to recovery of liver function, in addition to the establishment of a new routine, with a lower frequency of tests, and attendance to the service.

The fact that the outpatient service has a multiprofessional team reflects in the patients being better assisted in terms of some health problems that they may have, which are promptly solved, or where the chances of complications are reduced. A study with diabetic patients showed that the care provided by the multiprofessional team resorting to strategies and the link created in management of these patients contributed major benefits to their lives.[15]Another study with grade III obese patients, complex patients who require comprehensive care, showed that it was possible to observe the need for a multiprofessional team due to the comprehensive care such team offers.[16]

It is worth noting that, despite the improvement in the physical symptoms, other factors need attention, such as the psychosocial dimension, with improvements in the following domains: social interaction, effects of the liver disease, concern, isolation, and stigma of the disease. It is also noted that the patient's psychological health does not improve with the same intensity as physical health does.[17] The literature lacks instruments and studies that assess this dimension in the patients, mainly after all their to reach the intermediate post-transplant time, especially when, in addition to the transplant process, the patients also need to intensify care due to an external, and totally new situation that is the current reality at the global level after the COVID–19 outbreak.

When analysing the "social interaction" domain, a significant improvement is noticed when the post-transplant moments are compared. It is believed that the better the individual's ability to socially relate, the greater the probability of obtaining components that reinforce and qualify their behavioural repertoire, favouring

Table 2: Analysis of the quality of life domains from the LDQOL scale in the initial and intermediate periods after liver transplant – HUWC–CE, Brazil, 2021.

Domain	Recent post-transplant period	Intermediate post-transplant period	*p* value	Effect Size
Symptoms of the liver disease	75.25 ± 12.95	88.16 ± 12.47	<0.001	-0.82
Effects of the liver disease	68.26 ± 21.25	85.13 ± 15.85	<0.001	-0.86
Concentration	81.16 ± 22.71	89.41 ± 14.17	0,070	-0.45
Memory	80.83 ± 22.28	82.22 ± 24.07	0.723	-0.10
Social issues	75.33 ± 17.95	87.5 ± 12.09	0.003	-0.68
Concern about the disease	69.17 ± 23.72	87.71 ± 21.74	<0.001	-0.75
Sexual problems	80.55 ± 31.91	74.99 ± 29.23	1.000	0.33
Sexual function	70.46 ± 31.86	86.99 ± 19.35	0.006	-0.70
Sleep	54.50 ± 23.57	71.67 ± 17.58	0.003	-0.64
Isolation	87.33 ± 16.33	95.83 ± 14.51	0.005	-0.75
Hope	90.21 ± 13.10	91.04 ± 12.68	0.753	-0.08
Stigma of the liver disease	82.50 ± 19.83	90.97 ± 12.86	0.053	-0.51

*Data are presented as mean and ± standard deviation (*n*=30).

coping with conflict, and stress situations, such as the essential need for a transplant.[18] It is valuable to find such a result because of the moment the world is going through; it is noted that, despite the recommendations to reduce in-person social interaction, the transplanted patients managed to incorporate strategies (such as strengthening bonds, even relationships with other transplanted patients) that allowed them to maintain social relationships without prejudice to the process they faced, such as the strengthening of relationships via telephone, as they reported. The literature shows that these interpersonal relationships, mainly with other patients who share the same problem, in the case of renal–transplanted patients, are extremely valuable for continuity of the therapy.[19]

Regarding the effects of the liver disease, the patients experienced a significant improvement six months after the transplant. It should be considered that, although liver transplant can lead some patients to evolve with significant morbidity, and mortality, as well as its possible adverse events,[20] the study patients were successful with improvement in the symptoms initially presented, reaching zero, or very limited symptoms six months after the transplant.

Over time, less concern about the disease was also noticed, as the study observed an increase in the quality of life of the transplanted patients with regard to this domain, which leads us to believe that several negative feelings have been overcome, as evidenced by the results in other domains surveyed (symptoms of the liver disease, sleep, sexual function, self-perception, isolation).

It is fundamental to consider that transplanted patients can experience anxiety due to concerns about the side effects of the immunosuppressive treatment and difficulties adapting to post-transplant conditions.[21] Rejection is another constant concern and a major challenge for the multiprofessional team, both to be able to assist them in their vital health condition, and integrally in terms of their mental health.[22] Depressive symptoms, hopelessness, and suicidal ideals can also be present.[23]

Regarding sexual function, a significant, and positive difference was obtained in the intermediate post-transplant period when compared to the initial phase. This is a normally expected problem, which directly influences the quality of life, well–being, self-esteem, and interpersonal relationships of some transplanted patients,[24] although likely to improve over time.[25] Despite being a problem to be explored, it is considered insignificant when compared to others presented by the patient.[26] The subject matter is also not often brought up to health professionals or ignored in the post-transplant consultation.[27] It is known that satisfactory sexual health is fundamental for quality of life in transplanted patients; therefore, it cannot be disregarded during outpatient monitoring.[11]

The improvement in the sleep pattern observed in this study can be related to reduction of the anxiety related to the disease and the expectation of undergoing the transplant, as well as the resolution of physiological conditions present in the disease in the initial post-transplant phase.

Disorders related to the disease, anxiety, pain, drug treatments, itching, and fatigue are usually the factors that cause changes in the sleep quality of patients with liver disease.[28] Several mechanisms, such as hepatic encephalopathy, melatonin abnormalities, and circadian rhythm disturbances, have been shown in the pathophysiology of sleep disorders in patients with cirrhosis, with liver transplant as the most effective treatment;[29] however, these effects can also be found in some patients at the first interview, which actually leads to improved sleep only a few months after the transplant. Therefore, the aforementioned corroborates the results found in this study, reinforcing the improvement in the sleep pattern, mainly in the intermediate phase of liver transplant.

The data obtained in the "isolation" domain showed that there was an increase in the related scores among participants in the intermediate period after the liver transplant, a situation that is similar to the one found in Aguiar's study, which evidenced higher quality of life levels after the transplant.[30]

It is interesting to note that some of the study patients experienced social isolation caused by the rapid spread of COVID–19 during 2020, although the stress factors resulting from this moment do not seem to have affected the "isolation" domain much, given that the event allowed for greater family interaction between people who lived under the same roof, and this was possibly a factor that generated more safety, and increased the transplanted patient's self-esteem. The individuals who perceive themselves as socially isolated assess every day stresses as more severe and engage in more passive coping mechanisms than those who perceive themselves as socially connected.[31]

In the "stigma of the liver disease" domain there was a reduction in the occurrence of most of the issues evaluated 6 months after the transplant, which confirms the findings of similar studies.[30] Another study showed that the health situation experienced by a patient has a direct influence on them, with the possibility of affecting the formulation of health self-care concepts, environmental control, risk behaviours, prevention, lifestyles, and self-concept.[32]

It is believed that with resolution of the issues related to the disease, transplanted patients improve self-esteem and social interaction, providing a significant impact on their emotional state, thus optimising their self-perception, and the way of coping with the disease within the scope of their psychological identity, a fact observed in this study by the results obtained.

CONCLUSION

Liver transplantation remains the best definitive treatment option for chronic and irreversible liver diseases, as there has been significant improvement in the domains of symptoms, effects of liver disease, social issues, concern about the disease, sexual function, sleep, and isolation in the intermediate post-transplant.

The result of this study also provides indications of the points that need to be worked on by the multiprofessional team and which therapeutic plans to adopt with the liver transplant patient in order to obtain progress in aspects related to concentration, memory, sexual problems, hope, and stigma of liver disease. Despite the evident improvement after six months of transplantation, lower levels of quality of life are a reality in the initial post-transplantation phase, and further studies on this topic are suggested with a view to identifying the factors that led to lower quality of life indices. at this stage and how to overcome them.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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