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Technologies During the COVID-19 Pandemic: Teleconsultation in Care Management for Patients Undergoing Liver Transplant

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ABSTRACT

Background. The aim of this study was to identify home care management strategies for patients undergoing liver transplant, through teleconsultation, during the COVID-19 pandemic for maintenance and improvements in treatment adherence.

Methods. This was a qualitative, exploratory, and descriptive research study. Participants included patients who underwent liver transplant between 2020 and 2021. Through a semistructured script, data were analyzed according to the recommendations of content analysis and then simple statistics were applied.

Results. Twenty-two people participated in the study. Two analysis categories were developed, which resulted in 7 strategies and 22 care actions. The care strategy with the highest adherence involved actions related to the prevention of COVID-19.

Conclusions. Teleconsultation is an excellent tool to manage and supervise post–liver transplant care of patients. Considering that teleconsultation has presented strategies and care actions, which were developed by the patients, the patients have a direct effect on treatment adherence despite pandemic impositions.

THE declaration of a pandemic by the World Health Organization (WHO) in 2020, owing to the rapid spread of SARS-CoV-2, brought uncertainties about the pathogenic potential, treatment, and prevention of COVID-19. Attention has focused not only on the general population, but especially on those groups that are more susceptible to infection, such as individuals over 60 years of age, those with comorbidities, and other groups. These groups include immunosuppressed individuals, including liver transplant patients [1–4].

With COVID-19, concerns related to the health care of those who underwent transplant before the pandemic and for those who needed to undergo transplant during the pandemic period became apparent to the authorities, transplant teams, patients, and the patients' families. It is noteworthy that there was a need to maintain transplants, despite the pandemic, since transplant is the only treatment for patients being treated for severe and irreversible liver disease [1,3,4]. Thus, the pandemic, coupled with the need to continue with transplants, imposed on medical teams the need to search for new knowledge to help guarantee safety [1,3–6].

It is noteworthy that after liver transplant (THx), patients make continuous use of immunosuppressants that are necessary for prevention of the new organ's rejection; however, this results in a significant decrease in immunity [7,8]. Thus, the immunosuppression of the patient makes the patient more susceptible to infections such as SARS-CoV-2, which is transmitted through aerosols and contact [1,5,9,10].

Facing the pandemic, there was a reorganization of health care structures, especially regarding the logistics of care for chronic patients. For many services, there was a reduction and even a paralysis of certain health care activities, such as home visits by primary care teams from medical care units. Given this, new arrangements and/or strategies to support the

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transition of care for transplant patients between hospital discharge and adaptation to care at home have become necessary [1,9].

To support and continue care management for patients undergoing THx, health care technologies arise as an opportunity to monitor the adherence to treatment of these patients when they return home, especially because they require various types of care after hospital discharge [11]. Studies show that health care technologies have supported teams in managing and supervising care [1,12,13].

Given this, the guiding question of this study was: what care management strategies are being developed by patients undergoing liver transplant at home, through teleconsultation, during the COVID-19 pandemic for treatment adherence? The aim of the study was to identify home health care management strategies for patients who underwent liver transplant, through teleconsultation, during the COVID-19 pandemic for maintenance and improvements in treatment adherence.

MATERIALS AND METHODS

This is a qualitative, exploratory, and descriptive study, which was approved by the Ethics Committee on Research with Human Beings of a Public University in Brazil, according to protocol number 1.575.457. The study site was a reference hospital in southern Brazil for the development of THx. Participants included patients who underwent THx between March 2020 and October 2021 at the aforementioned hospital. The inclusion criteria included patients who underwent THx between March 2020 and October 2021 and outpatient follow-up conducted by the multiprofessional team of the mentioned hospital. The exclusion criteria included patients under 18 years of age and patients submitted to THx in a hospital unit different from the one established for the development of this study.

Data collection was conducted from April 2020 to October 2021 using a semistructured instrument for teleconsultation, which included 3 closed-ended questions related to the patient's health conditions (age, pathology for transplant indication, and transplant date) and 4 open-ended questions ("Tell me about the care you are developing to prevent SARS-CoV-2"; "Tell me how you are organizing with other family members living at home to prevent SARS-CoV-2"; "Tell me how you are organizing to return to routine activities considering the COVID-19 pandemic"; and "Tell me what strategies you are developing to follow the health care team's recommendations in the face of the COVID-19 pandemic and the continuity of care"). There was also available time for the patient to ask questions and resolve issues. Two teleconsultations were performed for each patient; the first teleconsultation was scheduled 15 days after hospital discharge and the second teleconsultation was scheduled 2 months after discharge. We scheduled the teleconsultation at the best time for the patient and their family, we explained how the teleconsultation would be conducted, and we informed the patient that at the end of the teleconsultation we would ask questions that would be part of this study. Then, we presented to the patient the Free and Informed Consent Terms (FICT) and sent it to the patient as an electronic form for completion and signature. A copy was sent via e-mail to the patient. On the scheduled day and time, the patient received a link to access the teleconsultation that occurred via the Google Meet platform.

At the end of the teleconsultation, we transcribed the information related to the open-ended questions and then the patients validated the information. The anonymity of the patients was maintained and they were identified as P1, P2, F1, F2, and so on, successively. The

teleconsultation was conducted by the researchers, one of whom has 22 years of expertise in THx. The average time of the teleconsultation was 30 minutes.

The critical evaluation of the information occurred through Bardin's content analysis [14], in its thematic modality, through the development of 3 stages: pre-analysis, exploration of the material with codification, and interpretation and analysis. Subsequently, a simple descriptive statistical analysis was performed by calculating the percentage of strategies used by the patients, according to each category.

RESULTS

Twenty-two participants took part in the study. Regarding the data related to the characterization of participants and variables related to transplant, refer to Table 1 for the results.

With regard to qualitative data, the first category, developing health care to minimize the risk of contamination from SARS-CoV-2, revealed 4 strategies developed by the participants for the prevention of aggravations (hygiene and cleaning,

Table 1. Characterization of Participants and Variables Related to Transplant, Santa Catarina, Brazil, 2022

Variable	Value	
	n	%
Participants (n = 22)		
Patients	12	54.5
Wife	6	27.2
Children	4	18.3
Sex (n = 22)	n	%
Male	10	45.5
Female	12	54.5
Age in years (n = 22)	n	%
25-34	6	27.2
35-44	5	22.7
45-54	8	36.4
55-64	3	13.7
	Mean	Standard deviation
Age of patients in years (n = 12)	55	21
MELD (n = 12)	18	12
Indication for transplant (n = 12)	n	%
Virus C	3	25
Cirrhosis due to alcohol	3	25
Cryptogenic cirrhosis	2	16.6
Others	4	33.3
Type of donor (n = 12)	n	%
Deceased donor	12	100
Living donor	0	0
Complications (n = 12)	n	%
Cytomegalovirus	6	50
Infections	4	33.3
Bile ducts	2	16.7
Posttransplant time at the beginning of the study (interval/d) (n = 12)	n	%
15-24	6	50
25-34	3	25
35-44	2	16.7
45-54	1	8.3
55-64	0	0

MELD, Model for End Stage Liver Disease.

reorganization for follow-up with the team, social isolation, and restructuring of the family members' circulation at home). For the development of these strategies, the following 13 health care actions were the most noted by the participants and had the highest adherence: use of alcohol gel, gloves and 2 masks (100%); cleaning of all products that enter the house by the caregiver (100%); and contact with the weekly team through technology made available via the Internet in order to avoid face-to-face contact (100%) (Table 2).

The second category, seeking to resume routine even with the risk of contamination by SARS-CoV-2, revealed 3 health care strategies (concern with the body; maintaining healthy mental and emotional care; and resuming routines after the release to the team), with 9 most noted and evidenced health care actions. The health care actions with the highest adherence were leaving the house to go to the market, bakery, pharmacy, and other places; always trying to maintain care to prevent transmission of SARS-CoV-2 (72.3%); monitoring food intake because they spent more time alone at home and needed to be careful with the consumption and quantity of food (63.4%) and Organizing the spaces in the house because of family members who remained residing in the house (63.4%) (Table 3).

DISCUSSION

Patients submitted to THx adhering to treatment was one of the biggest challenges of the multiprofessional health care team.

During normal times, without the situation imposed by the COVID-19 pandemic, it was already necessary to involve the health care network and the multiprofessional health care team to support and ensure the continuity of care of a THx patient returning home. The authors reinforced the need for continuity of transplants during the COVID-19 pandemic. It was essential that the multiprofessional health care team identified strategies to monitor patients at home, in addition to tracking adherence to treatment and maintaining basic care for the prevention of SARS-CoV-2, considering that studies demonstrated a low rate of contaminated patients [1,5,10,11,15].

In this study, the data presented male, middle-aged patients who had Model for End-Stage Liver Disease scores higher than 20 and a mean waiting list time of 6 months. The data from this study are in line with the recommendations for conducting transplants during the COVID-19 pandemic and performing transplants for priority patients, based on the patient's disease severity and their priorities. Studies point out the importance of the multiprofessional health care team to carefully evaluate who will be transplanted, since there is a reduced number of effective donors facing the pandemic scenario [3,4,16,17].

New strategies were necessary to meet the demand of transplanted patients, the patients' family members, and the patients' caregivers. Thus, teleconsultation became an important and effective tool for management of the patient's return home because it allowed visual access to the patient's conditions; the opportunity to keep the patient in a safe environment; and the

Table 2. Presentation of the Composition of the First Category: Developing Health Care to Minimize the Risk of Contamination From SARS-CoV-2

Strategies for SARS-CoV-2 Prevention	Developed Care	n	%
Sanitation and cleaning	When outside of the home, used alcohol sanitization gel, gloves, and 2 masks.	22	100
	The caregiver cleaned all of the products they brought to the house.	22	100
	When the caregiver returned to the patient's home after performing outside activities, the caregiver took a shower and changed all their clothes before being in contact with the patient.	18	81.8
Reorganization for follow-up with the team	There was weekly communication with the team through Internet technologies, avoiding in-person contact.	22	100
	In the case of signs and symptoms that generated doubts, there was communication with the support team. The signs and symptoms were investigated and, if necessary, the team requested the patient send photos, videos, and voice messages for further clarification and decision making.	16	72.7
	Reviewed the best times to communicate with the team so that there is as minimal presence of the other patients in the outpatient clinic.	18	81.8
Social isolation	Patient and caregiver stayed at home. They only went out for appointments with the team and for exams.	18	81.8
	Patient stayed in one room of the house, not circulating through the other spaces in the home due to the presence of other family members.	12	54.5
	During the first 6 months, the patient did not leave the house for any other activity. The patient was afraid of being contaminated by SARS-CoV-2.	11	50
Restructuring the movement of family members in the home	Family members moved to other people's homes because they had to leave every day for work.	14	54.5
	Family members were not allowed to visit for a period of 3 months.	12	54.5
	Only the patient and the caregiver stayed in the house. When there were children, the children stayed with a relative (grandparents, uncles, and friends).	8	36.3
	Family members who went to work, and on returning home, initially went to the bathroom and changed their clothes. They also tried to wear a mask at home and physically distanced themselves from the transplanted patient.	10	45.5

Table 3. Presentation of the Composition of the Second Category: Trying to Resume Routine Even with the Challenge of the Risk of Contamination by SARS-CoV-2

Strategies to Return to Routine Even With the Pandemic	Care to Move Forward Even in the Face of Pandemic Limitations	n	%
Concern with the body	Performed outdoor physical activity, such as cycling and walking, while taking care to avoid contamination.	6	27.3
	Carefully monitored food since the patient spent more time alone at home and needed to be careful with the consumption and quantity of food.	14	63.4
Maintaining mental and emotional health	Communicated, through digital technologies, with family members who did not reside in the house.	12	54.5
	Meeting, at a distance, with family members who left the house.	6	27.3
Resuming routines after the release to the team	Organizing the spaces in the house because of family members who remained residing in the house.	14	63.4
	Left home to go to the market, bakery, pharmacy, and other places; the patients always maintained SARS-CoV-2 prevention.	16	72.3
	Returning to work, keeping distance from other people, and using 2 masks and alcohol sanitization gel.	2	9
	Participated in family and friend gatherings, but always kept physically distant and implemented all possible care.	12	54.5

opportunity to become familiar with the reality of the patient’s situation, family, and support network. It also allowed the teleconsultation participants to monitor home health care and adherence to treatment. Studies also point out that immunosuppressed patients felt satisfied with teleconsultations, aside from the tool being a vital support to them [18,19].

The authors emphasize that adherence to treatment needs to be assessed and monitored by a multiprofessional health care team to prevent complications arising from the incorrect use of medications and to ensure continuity of care. These same authors emphasize that self-management, allied to self-regulation and vigilance of the team, are fundamental factors for graft viability, adherence to treatment, and quality of life [7,8].

With regard to the health care strategies and actions obtained in the form of categories, it is noted that in the first category there was a greater adherence to care for the prevention of COVID-19, such as focus on reorganizing the home environment, on contact with other people, and on restrictions staying at home. It is a noted concern among these patients to follow the COVID-19 prevention recommendations. It was observed that the patients, along with their families, structured new organizational arrangements within their own family nucleus of care.

However, it is noteworthy that the health care actions developed by the patients established social distancing from their own family and general social isolation, which can trigger stress, anxiety, fear, doubts, and insecurity. The authors point out that during a pandemic it is necessary that the multiprofessional health care team is alert to characteristic signs and symptoms of emotional stress of patients, especially those who have greater restrictions due to comorbidities or unusual health situations. It is noteworthy that the pandemic has completely changed the way of caring for patients with cirrhosis [16,17,20].

The second category shows the patient's concern with the health care, body, mind, and social environments. It is noted

that there was greater adherence in care related to the return to daily living and eating activities, coupled with the reorganization of the environment to be with other family members and the prevention of COVID-19. However, it is observed that there was low adherence in care related to the development of physical activities and the return to work. These are fundamental care actions, which must be developed by all patients in the post-transplant period, not only during a pandemic. Fundamental care actions entail the need for care that aims to avoid complications related to transplant and other comorbidities, as well as care that aims to minimize the risk of contamination from COVID-19.

Preventing SARS-CoV-2 is of utmost importance for these patients; however, it is not necessary for the patients to be in total isolation. It is fundamental to avoid contamination, but above all, it is important to preserve mental health, such as promoting outdoor activities that can ensure quality of life. Studies show that patients who are waiting for clinical treatment, or who are in treatment with caregivers, during a pandemic had increased anxiety, depression, and deteriorating quality of life [21,22].

The authors point out the need for the patient to adapt as soon as possible to their routine, while adhering to the medical team's guidelines. After the first 6 months, in which patients are submitted to high doses of immunosuppressants, they need to resume their previous work activities. Also, during this 6-month period, physical activities and social contact must be maintained to establish good quality of life, besides preventing diseases related to sedentarism and strengthening mental health [23,24].

Given the data presented, the need to manage and monitor the post-THx patient when returning home, and the new reality of isolation and health care during the COVID-19 pandemic, teleconsultation emerges as a strategy to monitor the patient's situation, even at a distance, because besides having contact with the patients, it is possible to perceive their realities.

CONCLUSIONS

The main health care strategies identified through teleconsultation involve care directed to the hygiene of the home environment, patient, and family members to prevent COVID-19. Also, it was observed that health care was directed to the circulation of people around the home environment and online consultations with the multiprofessional health care team in order to maintain isolation. We identified strategies related to the care of the body, mind, and social aspects, aiming at psychological care even with the COVID-19 pandemic.

Therefore, it is understood that teleconsultation is an excellent tool to manage and supervise THx patients' home health care, developed by patients submitted to THx, upon their return home, while facilitating the identification of adherence and continuity of their proposed treatment.

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