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Coping strategies, anxiety and depression related to the COVID-19 pandemic in lung transplant candidates and recipients. Results from a monocenter series



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ABSTRACT

Background: The COVID-19 pandemic has been associated with an increase in anxiety and depression symptoms in people. We investigated the impact of the pandemic on coping strategies and anxiety and depression in lung transplantation (LT) recipients and patients with end-stage chronic lung disease awaiting LT.

Methods: We retrospectively investigated coping strategies by using the Coping Inventory for Stressful Situations questionnaire and anxiety and depression symptoms by the Hospital Anxiety and Depression scale in 115 LT candidates and recipients.

Results: Overall, 63 participants (20 women; median age 59 years [interquartile range 52–65]) answered one or both questionnaires (49 LT recipients and 14 LT candidates). The preferred coping strategy was task-focused for 51 (86.4%) participants, with no difference between LT recipients and candidates nor according to the main anamnestic and clinical data. Eleven patients had suspected or proven depression symptoms, and 18 had suspected or proven anxiety symptoms. Coping strategies related to COVID-19 did not differ by presence of anxiety or depression symptoms.

Conclusion: In the current pandemic, healthcare professionals should consider these results to provide relevant psychological help to these fragile populations and promote a systematic and wide multidisciplinary assessment of LT recipients and candidates.

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1. Introduction

The effect of the coronavirus disease 2019 (COVID-19) pandemic does not spare fragile patients, such as those with chronic respiratory insufficiency who are awaiting lung transplantation (LT) or LT recipients [1]. Studies of mental health during the first phase of the

pandemic in the general population highlighted the occurrence of anxiety and depressive symptoms [2].

Patients with end-stage chronic lung disease are prone to anxiety disorders [3,4]. In patients with end-stage chronic lung disease awaiting LT, the prevalence of pretransplant depression has been reported to range from 34.3% to 50.0% and the prevalence of pretransplant

Abbreviations: COVID-19, coronavirus disease 2019; CISS, Coping Inventory for Stressful Situations; HADS, Hospital Anxiety and Depression Scale; LT, lung transplantation

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anxiety from 25.1% to 50.0% [5]. During the COVID-19 pandemic, anxiety and depression symptoms were likely to be intensified in this population for various reasons (fear, loneliness, stress, lack of social support, etc.) [6]. The same is true for LT patients, who are at risk of anxiety and depressive disorders, especially in the first 2 years after surgery [7].

Coping strategies “refers to cognitive and behavioral efforts to manage, reduce or tolerate internal and/or external demands created by stressful transactions” [8]. Coping has two main functions: emotional and distress regulation and management of the task causing the distress. Active strategies of coping may be emotion-focused or task (or problem)-focused. An avoidance-focused strategy is considered a “passive” way of coping with a stressful situation. A predominant coping strategy can be identified according to the main strategy the person uses and deemed “adequate” if it allows for coping with a stressful situation. Chew et al. [9] reviewed the methods of the general population to cope with emergent infectious diseases. In the 24 studies analyzed, coping strategies focused on task solving and therefore allowed respondents to actively reduce feelings of uncertainty and increase feelings of control over their health.

The COVID-19 pandemic and associated measures have been reported to carry significant psychological consequences in France [2,10] and other countries [9,11]. LT recipients, among patients with other respiratory diseases, are well aware of their respiratory frailty. Moreover, regular patients’ follow-up was disorganized, with the replacement of outpatient visits by teleconsultation and cancellation of some hospitalizations. Our daily practice with patients awaiting LT raised the question of the presence of anxiety and depression symptoms in this very susceptible group and their strategies for coping with the threat of COVID-19. We assumed that coping strategies to face the stress of the current pandemic differed among LT candidates and recipients and according to the presence of anxiety and depression symptoms.

Our main objective was to report the “coping” strategies LT candidates and recipients used during the stressful COVID-19 pandemic. Secondary objectives were to 1) compare the preferred coping strategies of LT candidates and recipients; 2) assess anxiety and/or depression symptoms in LT candidates and recipients; and 3) study the association between the prevalence of these symptoms and the use of certain coping strategies.

2. Methods

2.1. Study design

We conducted a single-center retrospective study of prospectively collected data. All adult patients awaiting LT and LT recipients in the Paris-Bichat Lung Transplant Program were considered for participation unless they could not read French. From July 22, 2020 to October 12, 2020, patients for whom an email address was available in our database were asked to self-complete the questionnaires by our psychologist (AS). According to French Law, patient informed consent was waived.

The design of this study was approved by the Institutional Review Board of the French learned Society for Respiratory Medicine (*Société de Pneumologie de Langue Française* [CEPRO 2020-073]).

2.2. Data collection

Data were collected on main demographics (age, sex) and clinical information on type and date of LT for LT recipients as well as underlying respiratory diseases. Next, we collected data on usual living place, in rural areas or in the city; residence during the lockdown; and who patients lived with, assuming it might interfere with psychological symptoms. We collected the professional occupation according to the International Standard Classification of Occupations

[12]. We also collected whether patients had a psychological follow-up during the study period or if they received a sedative or anxiolytic drug, antidepressant therapy or a neuroleptic agent during the study period.

Coping strategies related to the COVID-19 pandemic were assessed by using the French version of the Coping Inventory for Stressful Situations (CISS; see Electronic Supplemental Material - ESM for details) [13,14]. The CISS questionnaire comprises 48 items linked to three subscales of 16 items each: task-, emotion- and avoidance-focused coping scales. Items are rated from 1 “not at all” to 5 “a lot” on a Likert scale. A high score (ranging from 16 to 80 on each scale) indicates the participant’s preferred strategy.

Anxiety and depression were assessed by the French version of the Hospital Anxiety and Depression Scale (HADS; see ESM for details) [15–17]. This 14-item scale contains two subscales, a depression and an anxiety subscale, of seven items each. Each item is rated from 0 to 3 (four response categories); the score for the entire scale ranges from 0 to 42. The higher the score, the more severe the symptomatology. A score ≥ 8 defines the presence of symptoms (“suspected” from 8 to 10, and “proven” ≥ 11) for anxiety or depression.

2.3. Medical and psychological management of LT candidates and recipients

During the evaluation before placement on an LT waitlist, all candidates undergo a psychological evaluation by a skilled psychologist (AS) and a psychiatric evaluation to rule out a disorder to treat or that would represent a contraindication to LT. After placement on a waitlist, all candidates are regularly followed up as outpatients by the medical team at 3-month intervals until LT. Our unit’s psychologist is available to perform a psychological follow-up if the patient feels it necessary until LT. The psychologist can also ask for a complementary psychiatric evaluation if needed. The frequency of the psychological follow-up is tailored to the patient’s need by agreement with the psychologist. After LT, all recipients receive a “classical” triple immunosuppressive therapy with a calcineurin inhibitor (mostly tacrolimus), a cytostatic agent (mycophenolate mofetil) and prednisone. In some cases, the cytostatic agent is replaced by an inhibitor of the mammalian target receptor. At any time, the psychologist is available on demand, either to the patient or the medical team, to assess the psychological aspects of the LT recipients. The psychologist provides a regular follow-up if the patient requests it or if the psychologist believes the patient would benefit from such care. All other aspects of medical LT care are described elsewhere [18].

2.4. COVID-19 pandemic in France

SARS-CoV-2 was detected in France during the first weeks of 2020; the first epidemiological peak occurred during week 15 (April 6 to 12), despite a strict lockdown ordered from March 17 to May 11. An increase in number of COVID-19 cases from the beginning of September 2020 led to a second wave, then a second lockdown from October 30. This second wave peaked during week 44 [19].

2.5. Statistical analysis

Continuous variables are reported as median and interquartile range (IQR) and categorical variables as number (%). Continuous variables were compared by Mann-Whitney test. Categorical variables were compared by Fisher exact test. Comparisons were according to LT status (recipients vs candidates), coping strategies (task-focused vs other strategies), and presence of suspected or proven anxiety or depression symptoms. Statistical analyses involved using GraphPad Prism v7.00 (GraphPad; La Jolla, CA, USA). $P < 0.05$ was considered statistically significant.

3. Results

3.1. Demographics of participants

Between July 22 and October 12, 2020, the questionnaires were emailed to 115 patients (91 LT recipients, 24 LT candidates); 63 responded (49 LT recipients and 14 LT candidates – see Fig. 1). Comparison of respondents and non-respondents is summarized in the ESM Table 1. LT respondents and non-respondents did not differ in demographics or LT history (see ESM Table 2). In LT candidates, a significantly higher number of women than men did not respond (66.7% vs 14.3%; $p = 0.02$). Among respondents, 20 were women, and the median age was 59 years [interquartile range 52–65]. Underlying respiratory diseases were lung interstitial disease ($n = 32$, 50.8%), chronic pulmonary obstructive disease ($n = 23$, 36.5%), bronchiectasis ($n = 3$), graft-versus-host disease ($n = 2$), Langerhans cell histiocytosis ($n = 1$), and an undiagnosed cystic lung disease ($n = 1$). One patient was waitlisted for retransplantation (and was considered as awaiting LT). Demographics and anamnestic data did not differ by LT status (recipients vs candidates) or living habits during the lockdown.

Among the 49 LT recipients, 29 had received double LT (59.2%), 10 right single LT (20.4%), eight left single LT, and two combined hepatic and double LT.

During the study period, four LT recipients and four candidates had a regular follow-up by the psychologist of our center (AS).

3.2. Coping strategies related to the pandemic

The CISS questionnaire was completed by 59/63 patients (45 LT recipients and 14 candidates). The coping strategies were task-focused for 51 (86.4%), avoidance-focused for seven (11.9%) (therefore, an active coping strategy for 58, 98.3%), and emotion-focused for one (1.7%) (therefore, a passive coping strategy) (Table 2). Strategies did not differ between LT recipients and candidates (task-, avoidance- and emotion-focused strategies for recipients and candidates: 84.4%, 13.3% and 2.2% vs 92.8%, 7.1% and 0; $p = 0.69$) (Table 1). The preferred coping strategy between task-focused and other strategies did not differ in main anamnestic or clinical data or living habits.

3.3. Anxiety and depression

The HADS questionnaire was answered by 48 LT recipients and 14 LT candidates. Median anxiety scores were 6.0 [interquartile range 4.0–8.0] for LT recipients and 7.0 [5.0–10.3] for LT candidates ($p = 0.34$); median depression scores were 4.0 [2.0–6.0] and 4.5 [2.8–8.0], respectively ($p = 0.18$) (Table 1). Median HADS scores did not differ between LT recipients and candidates (Table 1). Median age was lower for patients with than without suspected or proven depression symptoms (55 years [46–59] vs 60 [55–65] years, $p = 0.02$) (Table 3). Eighteen patients had suspected or proven anxiety symptoms. Significantly fewer patients who spent the lockdown in their usual home experienced anxiety symptoms than those who spent the lockdown outside their usual home (72.2% vs 93.2%, $p = 0.039$). Spending the lockdown alone or with family or friends did not significantly differ according to anxiety or depression.

Median depression score was significantly higher for patients with than without anxiety symptoms (5.0 [3.5–8.5] vs 3.0 [2.0–6.0], $p = 0.049$). Lastly, coping strategy did not differ by HADS score.

4. Discussion

4.1. Main findings

After the first wave of COVID-19 in France, we surveyed 63 patients, either LT recipients or those waitlisted for LT, to determine the strategies they used to cope with the worldwide pandemic and the levels of their anxiety and depression symptoms. Our main results can be summarized as follows: 1) the main strategy used in LT recipients as in patients waitlisted for LT was a task-focused strategy; 2) an avoidance strategy was the preferred strategy for seven patients, whereas an emotion-focused strategy was scarcely used, by only one patient; 3) 22 patients had anxiety or depression symptoms, with no difference between LT recipients and candidates; 4) depression scores were significantly higher for patients with than without anxiety symptoms; and 5) coping strategies did not differ according to anxiety or depression symptom levels.

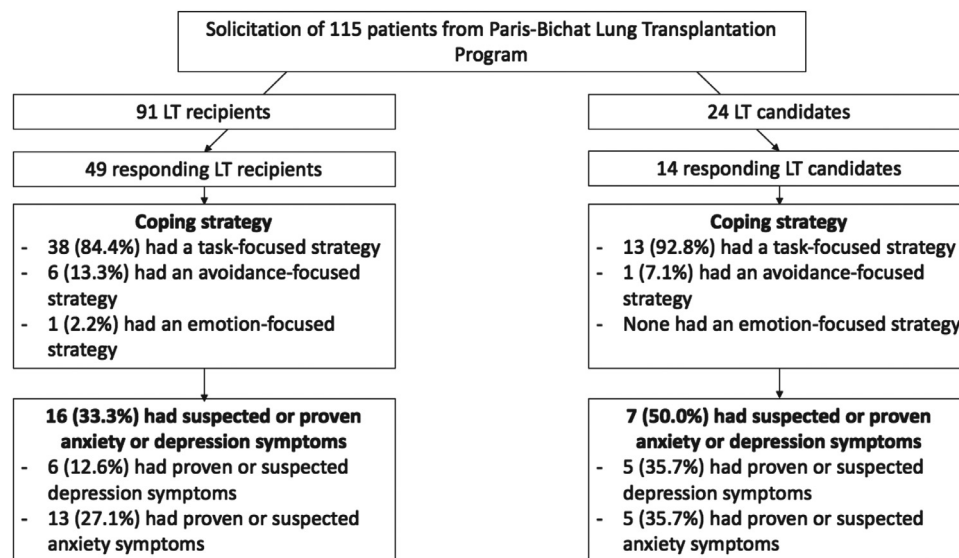


Fig. 1. Flowchart of the study. Among the 115 solicited patients (91 recipients and 24 candidates), 63 responded. A task-focused coping strategy was the main strategy used to cope with the pandemic situation among recipients (84.4% of 49 responding LT recipients) and candidates (92.8% of 14 responding candidates). The proportion of patients experiencing symptoms of anxiety or depression did not differ according to their recipient or candidate status.

Table 1
Characteristics of the respondents who completed the Coping Inventory for Stressful Situations according to coping strategy.

	Whole cohort n = 59	Task-focused strategy n = 51	Non-task-focused strategy n = 8	P value
Clinical data				
Age, years	59.0 [52.0–65.0]	59.0 [52.0–65.0]	59.5 [40.3–66.8]	0.996
Sex, M/F	40/19	34/17	6/2	0.999
Underlying respiratory disease				0.589
Obstructive pulmonary disease	23 (39.0)	20 (39.2)	3 (37.5)	
Interstitial lung disease	28 (47.5)	24 (47.1)	4 (50)	
Bronchiectasis	3 (5.0)	3 (5.9)	0	
Graft-versus-host disease	2 (3.4)	1 (1.9)	1 (12.5)	
Retransplantation	1 (1.7)	1 (1.9)	0	
Other	2 (3.4)	2 (3.9)	0	
LT recipients	45 (76.2)	38 (74.5)	7 (87.5)	0.666
LT candidates	14 (23.7)	13 (25.5)	1 (12.5)	
Time since LT, days	1121.0 [476.0–2954.0]	1046.0 [467.3–2120.0]	2404.0 [484.0–3188.0]	
Type of LT				0.329
Bilateral LT	25 (55.6)	21 (55.3)	4 (57.1)	
Right single LT	10 (22.2)	7 (13.7)	3 (42.9)	
Left single LT	8 (17.8)	8 (21.1)	0	
Combined hepatic and LT	2 (4.4)	2 (7.9)	0	
Anxiety and depression [§]				
HADS score	11.0 [7.0–14.0]	10.0 [8.0–14.0]	13.5 [4.3–19.5]	0.644
Depression component score	4.0 [2.0–7.0]	4.0 [2.0–7.0]	4.5 [2.3–6.5]	0.722
Proven depression	4 (6.8)	4 (7.8)	0	
Suspected depression	7 (11.9)	6 (11.8)	1 (12.5)	
Anxiety component score	6.0 [4.0–9.0]	6.0 [4.0–8.0]	8.0 [2.5–12.3]	0.797
Proven anxiety	11 (18.6)	9 (17.6)	2 (25.0)	
Suspected anxiety	7 (11.9)	5 (9.8)	2 (25.0)	
Suspected or proven anxiety or depression	23 (38.9)	19 (37.3)	4 (50.0)	0.70

Data are median [interquartile range], or n (%); LT: Lung Transplantation; M: male; F: female; HADS: Hospital Anxiety and Depression Scale.

4.2. Coping strategies

The main strategy to cope with the COVID-19 pandemic was task-focused. According to Lazarus and Folkman [8,20], the effectiveness of task-focused efforts largely depends on the success of efforts to regulate one's emotions. Excessively intense emotions interfere with

the cognitive activity necessary for task-focused coping. Thus, emotion regulation could precede the implementation of task-focused strategies.

Surveyed LT recipients and candidates seemed to have turned their efforts toward the implementation of actions allowing them to deal with the stressful situation. According to Lazarus and Folkman

Table 2
Characteristics of the respondents to the Hospital Anxiety and Depression Scale according to anxiety and depression status.

	All respondents n = 62	Suspected or proven depression n = 11	No depression n = 51	P value	Suspected or proven anxiety n = 18	No anxiety n = 44	P value
Clinical data							
Age, years	59.0 [52.8–65.0]	55.0 [46.0–59.0]	60.0 [55.0–65.0]	0.021	57.0 [47.5–63.5]	59.0 [55.0–65.0]	0.144
Sex, M/F	42/20	8/3	33/17	1	12/6	30/14	1
LT recipients	48 (77.4)	6 (54.6)	42 (82.4)	0.10	13 (72.2)	35 (79.6)	0.52
LT candidates	14 (22.6)	5 (45.5)	9 (17.6)		5 (27.8)	9 (20.5)	
Time since LT ^a	1069.0 [472.0–2696.0]	777.5 [202.8–2050.0]	1120.0 [480.0–2873.0]	0.37	893.0 [329.5–2470.0]	1121 [484–2793]	0.52
Type of LT				0.94			
Bilateral LT	28 (58.3)	4 (66.7)	24 (57.1)		7 (53.8)	21 (60.0)	0.73
Right single LT	10 (79.2)	1 (16.7)	9 (21.4)		2 (15.4)	8 (22.9)	
Left single LT	8 (16.7)	1 (16.7)	7 (16.7)		3 (23.1)	5 (14.3)	
Combined hepatic and LT	2 (3.2)	0	2 (4.8)		1 (7.7)	1 (2.9)	
Coping strategy [*]							
Task-focused	51 (86.4)	10 (90.9)	41 (85.4)	0.84	14 (77.8)	37 (90.2)	0.22
Avoidance-focused	7 (98.3)	1 (9.1)	6 (12.5)		3 (16.7)	4 (9.8)	
Emotion-focused	1 (1.7)	0	1 (1.9)		1 (5.6)	0	
Anxiety and depression							
HADS score	10.5 [7.0–14.0]	21.0 [12.0–23.0]	9.0 [6.0–13.0]	<0.001	16.5 [12.8–21.3]	9 [6–11]	<0.0001
Depression component score	4.0 [2.0–7.0]	9.0 [8.0–11.0]	3.0 [2.0–5.0]	<0.001	5.0 [3.5–8.5]	3.0 [2.0–6.0]	0.049
Proven depression	4 (8.1)	4 (36.4)	0		3 (16.7)	1 (2.4)	
Suspected depression	7 (11.3)	7 (63.6)	0		3 (16.7)	4 (9.8)	
Anxiety component score	6.0 [4.0–8.3]	10.0 [3.0–13.0]	6.0 [4.0–7.0]	0.08	11.5 [9.8–13.8]	5.0 [3.0–7.0]	<0.0001
Proven anxiety	11 (17.7)	5 (45.5)	6 (11.8)		11 (61.1)	0	
Suspected anxiety	7 (11.3)	1 (9.1)	6 (11.8)		7 (38.9)	0	

Data are median [interquartile range], or n (%); M: male; F: female; HADS: Hospital Anxiety and Depression Scale.

^a Time since LT is provided for 48 LT recipients.

^{*} Coping strategy was missing for 3 participants (all without depression nor anxiety).

[20], a task-centered coping strategy might only be effective when facing a controllable situation. If the event is deemed uncontrollable, efforts are doomed useless. However, the controllability of a situation might be real or simply perceived; if the patient perceives the pandemic as controllable, a task-centered strategy may be efficient [21]. This finding is consistent with those described by Chew et al. [9] from the general population. In this review of 24 studies, the coping strategies to face emergent infectious diseases focused on task solving and therefore allowed respondents to actively reduce feelings of uncertainty and increase feelings of control over their health. Nevertheless, some respondents favor avoidance strategies. In our series, only seven (11.9%) respondents used avoidance-focused strategies. We did not evidence any clinical or anamnestic characteristics associated with a non-task-focused response. This type of strategy aims at distancing the stressful situation in order to avoid confronting the emotions that may be associated with the event and therefore avoid actions to "solve" the situation.

Only one respondent used an emotion-focused coping strategy. The 63-year-old man had undergone bilateral LT 264 days before answering the questionnaire. At the time he responded to the questionnaire, he had confirmed anxiety symptoms, which suggests that the strategy he implemented to reduce the emotional impact of the stressful situation was ineffective.

Among the seven patients who adopted an avoidance-focused strategy, only one had proven anxiety symptoms. Avoidance-focused strategies of coping allows for distancing the stressful element, which can limit the expression of an anxious or depressive symptomatology by not confronting the anxiogenic or depressogenic factors. Moreover, some patients who had adopted an avoidance-focused strategy may have declined to answer the questionnaire as a way to avoid such a stressful situation.

4.3. Anxiety, depression and chronic respiratory diseases

More than one-third of the surveyed patients experienced symptoms of anxiety or depression. Patients with chronic obstructive pulmonary disease were expected to have increased psychological symptoms, including anxiety and depression, during the COVID-19 crisis [6]. In our series, half of the LT candidates experienced anxiety or depression symptoms. A high rate in this context is understandable. First, patients with end-stage chronic lung disease awaiting LT are prone to such disorders, with the prevalence of pretransplant depression ranging from 34.3% to 50.0% and prevalence of pretransplant anxiety ranging from 25.1% to 50.0% [5]. Mood, anxiety or adaptation disorders before LT are reported in 67.6% of LT recipients [3]. Indeed, waiting for LT is a stressful situation because of the uncertainty while waiting for the call for transplantation and because of patients' perception of their own physical deterioration. Second, COVID-19 had a significant impact on French hospitals, including ours [22], particularly on organ procurement and transplantation [23]. LT candidates might have been particularly worried about their ability to receive an LT during the COVID-19 pandemic. In France, the lay press relayed information about the overwhelmed health system during the pandemic and the suspension of surgical procedures, which might have exacerbated the feeling of anxiety for LT candidates.

Havermans et al. [11] adapted a questionnaire initially designed for healthcare providers working in traumatic circumstances to study the emotional well-being of cystic fibrosis patients, including those who had undergone LT, during the COVID-19 pandemic and during the lockdown in Belgium. Patients reported feeling sadness, discouragement and a sense of powerlessness toward their family and friends. In addition, the authors underlined an increase in stress and negative thoughts. However, participants appeared to have resilience skills. Although we did not investigate the same aspects as Havermans et al., their findings could be similar to our results for severely ill patients with end-stage respiratory disease and LT recipients. The main coping

strategy used was task-focused to face stress and negative thoughts induced by the COVID-19 pandemic and the related lockdown.

4.4. Implication for clinical practice

Anxiety and depression symptoms have been shown to be prevalent in surveyed LT candidates and recipients in the context of this health crisis. Such risks ought to be anticipated from now on, to provide relevant psychological support to these fragile populations and to promote a systematic and wide multidisciplinary assessment of LT recipients and candidates.

Teleconsultations has recently gained attention. In the LT field, teleconsultation might not be adapted to any situation because patients might clearly benefit from pulmonary function tests and fiberoptic bronchoscopy. Nevertheless, teleconsultations have certainly become a new healthcare method in case of a lockdown or with the inability to maintain regular outpatient clinic activity.

From a psychological point of view, we consider it of utmost importance to stay in touch with patients during this health crisis, to provide valuable help in case of the presence of anxiety or depression symptoms, whether by tele-consultation or in-person. Tele-consultations have been assessed, with results not significantly different from face-to-face interviews in terms of patient satisfaction, quality of life, and psychological symptoms [24,25]. In the absence of face-to-face interviews, teleconsultations help to maintain the relationship between patients and the healthcare team, to provide psychological support, limit isolation, and maintain the trust-based relationship. Maintaining this link also allows the caregiver to remain alert to changes in the patient's mood, to prevent psychological suffering or distress and to provide a response. In our opinion, the family or proxy implication is hardly conceivable in lieu of professional intervention. Indeed, verbalization of anxiety or depression symptoms from patients can resonate with the uncertainty of the family or proxy and difficulties coping with the situation.

The role of a professional would be to help the patient identify and understand the anxiety- or depression-provoking situations. If the anxiety or depression symptoms become too intrusive, the caregiver ought to provide sympathetic listening. An explanation of these symptoms and their roots should be provided. A second step would be to determine the presence of the underlying thinking patterns, which may favor anchoring the symptomatology. Once these patterns are determined, they can be progressively deconstructed. A thorough follow-up might be needed to rule out any danger for the patient.

The best coping strategy is one that helps the patient cope with a stressful situation, without any excess psychological burden. Therefore, the caregivers' role is in no way to direct the patient toward one strategy or another.

4.5. Strengths and limitations

We describe the coping strategies LT recipients and candidates used to deal with the COVID-19 pandemic. Stress and coping with the stress by patients in an LT process is of high interest because their care pathway is highly demanding. These patients must adapt to the many health-related difficulties and deal with various stressful situations. These difficulties can affect their moral state and lead to psychological disorders. Moreover, immunosuppressive therapies that LT recipients receive might affect or exacerbate underlying mood disorders.

Although quite novel, our study has several limitations. First, we surveyed LT recipients and waitlisted LT candidates during summer 2020, far from the beginning of the crisis and also after the end of the first French lockdown period. Therefore, some participants may have changed how they adapted to the stress generated by the pandemic and hence their coping strategies. The responses might have differed had we surveyed them during the lockdown. Excessively intense

emotions might interfere with the cognitive activity necessary for task-focused coping. Surveying patients remotely from the stressful situation might have shown that they shifted their strategy to task-focused after an emotion-focused strategy. In that the situation evolved over the months as did the recommendations for coping with the crisis, the perception of the situation may have changed. Nevertheless, at this time, the pandemic was still ongoing, and LT recipients and candidates were clearly aware of the dangers of the virus. Next, although we submitted the questionnaire to 91 LT recipients among the 271 who were followed in our LT program at the beginning of the survey period and the 24 LT candidates who were waitlisted on this date, only 49 LT recipients and 14 waitlisted patients agreed to respond. A single assessment of these questionnaires for a sample of such limited size is a limitation. Moreover, one might question a selection bias: some of the non-respondents might have experienced very high anxiety and/or depression, which could have influenced their desire not to participate in the study.

Finally, the assessment of anxiety and depressive disorders at the time of the crisis may have been a confounding factor owing to the over-representation of these disorders in LT recipients and the end-stage respiratory disease population. Indeed, the HADS scores might not simply reflect response to the COVID-19 pandemic. We assumed that the health crisis was in itself responsible for the high stress levels; however, the stress and coping strategies of these same patients could have been assessed before the crisis to confirm this hypothesis. Unfortunately, the diffusion velocity of COVID-19 surprised LT professionals, therefore preventing us to perform such assessment.

4.6. Conclusion

In this survey, a task-centered strategy was widely used to cope with the COVID-19 pandemic by a small sample of patients, dominated by LT recipients and a few LT candidates who agreed to participate, whatever their anxiety or depression symptoms. With time and successive COVID-19 waves, the idea of living in the midst of the viral threat seems more familiar to patients and healthcare teams. Therefore, we must anticipate these risks in order to provide relevant psychological help to these fragile populations and to promote a systematic and wide multidisciplinary assessment of LT recipients and candidates.

Declaration of Competing Interest

CG received speaker fees and travel support from Pfizer, MSD; fees for board memberships from SOS Oxygène and Pulmatrix; grant support from Ohre Pharma, Pfizer, MSD, SOS Oxygène, ISIS Medical, and AstraZeneca. HM reports grants from Pfizer, and fees from Novartis, and Boehringer. JM received congress reimbursement fees from CSLBehring and Fisher&Paykel.

Supplementary materials

Supplementary material associated with this article can be found in the online version at [doi:10.1016/j.resmer.2021.100847](https://doi.org/10.1016/j.resmer.2021.100847).

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