



Symptoms of anxiety and depression in different stages of organ transplant¹

María Ángeles Pérez-San-Gregorio², Agustín Martín-Rodríguez, and
Antonio Galán-Rodríguez (*Universidad de Sevilla, España*)

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ABSTRACT. From this *ex post facto* study, we analysed if symptoms of anxiety and depression of the patients varies after transplant in relation to the three main stages of the process: a) Intensive Care Unit (ICU – patient recently admitted to ICU after transplant), b) post-ICU (when a patient comes out of ICU but remains in hospital), and c) post-hospital (when a year has passed after the transplant). 39 transplant patients were assessed in three different stages: ICU, post-ICU, and post-hospital. In each stage, the Hospital Anxiety and Depression Scale was applied and, in addition, during the first stage other information was obtained (socio-demographic, medical, etc.) by way of a psychosocial survey. Patients showed more symptoms of anxiety and depression in the ICU and post-hospital stages, diminishing in the post-ICU stage. After the organ transplant, it is noticed a psychological evolution in the shape of “U”, with an increase of psychological well-being in the middle stages.

KEYWORDS. Anxiety. Depression. Organ transplant. Psychological stages. *Ex post facto* study.

RESUMEN. Desde este estudio *ex post facto*, analizamos si los síntomas de ansiedad y depresión de los pacientes varían después del trasplante en relación a las tres fases del proceso: a) Unidad de Cuidados Intensivos (UCI – paciente admitido recientemente

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² Correspondence: Departamento de Personalidad, Evaluación y Tratamientos Psicológicos. Facultad de Psicología. Universidad de Sevilla. C/ Camilo José Cela, s/n. 41018 Sevilla (España). E-Mail: anperez@us.es

en la UCI tras el trasplante), b) post-UCI (cuando el paciente abandona la UCI pero permanece en el hospital) y c) post-hospital (cuando ha pasado un año tras el trasplante). Treinta y nueve trasplantados fueron evaluados en tres momentos diferentes: UCI, post-UCI y post-hospital. En cada fase se aplicó la Escala Hospitalaria de Ansiedad y Depresión; además, durante la primera fase se obtuvo información adicional (sociodemográfica, médica, etc.) a través de una encuesta psicosocial. Los pacientes presentaban los mayores síntomas de ansiedad y depresión en la UCI y en la fase post-hospital, siendo menores en la fase post-UCI. Por lo tanto, después del trasplante de órgano, se aprecia una evolución psicológica en forma de “U”, con un aumento del bienestar psicológico en las fases intermedias.

PALABRAS CLAVE. Ansiedad. Depresión. Trasplante de órganos. Fases psicológicas. Estudio *ex post facto*.

RESUMO. Neste estudo *ex post facto*, analisámos se os sintomas de ansiedade e depressão dos pacientes variam depois do transplante em relação às três fases do processo: a) Unidade de Cuidados Intensivos (UCI – paciente admitido recentemente na UCI depois do transplante), b) pós-UCI (quando o paciente abandona a UCI mas permanece no hospital) e c) pós-hospital (quando passou um ano após o transplante). 39 transplantados foram avaliados em três momentos diferentes: UCI, pós-UCI e pós-hospital. Em cada fase aplicou-se a Escala Hospitalar de Ansiedade e Depressão; além disso, durante a primeira fase recolheu-se informação adicional (sociodemográfica, médica, etc.) através de uma entrevista psicossocial. Os pacientes apresentavam os maiores sintomas de ansiedade e depressão na UCI e na fase pós-hospital, sendo menores na fase pós-UCI. Por conseguinte, depois do transplante de órgãos, aprecia-se uma evolução psicológica em forma de “U”, com um aumento do bem-estar psicológico nas fases intermédias.

PALAVRAS CHAVE. Ansiedade. Depressão. Transplante de órgãos. Fases psicológicas. Estudo *ex post facto*.

Introduction

Although organ transplant is associated with longer and better quality of life, in some patients a variety of psychological complications may appear: anxiety, depression, fantasies about the donor, dissatisfaction with physical image, sexual difficulties, feelings of guilt about the death of the donor and gratitude to the donor's family, etc. (Kaba, Thompson, Burnard, Edwards, and Theodosopoulou, 2005; Pérez, Martín, and Galán, 2005). In this context, it is of a great interest to take into consideration the different periods of time after transplant and to compare them. For example, there are studies which conclude that the quality of life improves during the first six months after the transplant, worsens in the interval of 13-24 months and improves again from 36 months after the transplant (Bona *et al.*, 2000). In the same way, other studies consider that there are short-term (0-6 months) and long-term (37-120 months) improvements in the quality of life of transplant patients, but medium-term (7-36 months) patients suffer a deterioration, going back to pre-transplant levels (Ponto *et al.*, 2001). Nevertheless,

other studies show that patients go through three stages (alert, coping, and exhaustion), with: a) more negative thoughts (anxious and depressive) and worse physical self-esteem during the first year and from two years after the transplant; b) no significant differences between those two periods; and c) differences between those two periods when compared with the interval of 13-24 months, in which the patients improve (Pérez, Martín, Galán, and Pérez, 2005).

From these studies, we can conclude that after the organ transplant the health of the patient is not stabilised, but different phases are observed (some better and some worse). All of this is considered in relation to the compared intervals, which differ according to the investigation. Given the relevance of this, the principal objective of this *ex post facto* study (Montero and León, 2005; Ramos-Álvarez, Valdés-Conroy, and Catena, 2006) is to analyse if the anxious and depressive symptoms of patients vary after the transplant in relation to the three main stages of the medical process: a) Intensive Care Unit (ICU), with recent transplant patients and admitted into intensive care; b) Post-ICU, when the patient is out of intensive care but remains in the transplant ward of the hospital; and c) Post-hospital, when a year has passed after discharge from a hospital.

Method

Participants

We selected a group of 39 transplant patients (82.1% men and 17.9% women) who were assessed in three different stages: ICU, Post-ICU and Post-hospital. The average age of the subjects was of 50.56 years ($SD = 9.62$). As for the type of organ, there was a predominance of liver (71.8%), followed by heart (20.25%) and kidney (7.7%). The average time spent in hospital was 12.13 days ($SD = 12.57$) in transplant ICU and 19.34 days ($SD = 21.76$) in the transplant ward. The organ donors were men (59%) and women (41%). Causes of death of the donors were as follow: strokes (48.7%), head injuries (41%) and others (10.3%).

Instruments

- Psychosocial Survey, consisting of socio-demographic information (sex, age, social and economic standing, etc), medical history (illness, rejections, etc.), psychological data (expectations towards the illness, highly-stressful situations experienced in life, etc.) and family information (living with the principal carer, relationship between patient and carer, etc.).
- Hospital Anxiety and Depression Scale (HAD; Zigmond and Snaith, 1983), consisting of 14 items (seven referring to anxiety and seven to depression). Each patient is asked about his/her feelings during the last week and he/she must choose among four answers. Values for each of the scales (Anxiety and Depression) are provided; in both cases scores are classified as: normal (0-7 points), doubtful (8-10 points), and clinical problem (11 points or more). In Spanish studies, alpha values range between .80 and .90, we used the version developed by Caro and Ibáñez (1992).

Procedure

The group of transplant patients was assessed at three different stages: ICU, Post-ICU, and Post-hospital. In each stage, the Hospital Anxiety and Depression Scale (HAD) was applied. In addition, in the first stage more information (socio-demographic, medical, etc.) was obtained by means of a psychosocial survey. As general conditions for the selection of patients in this research, it was required that there would be no evidence of disturbed sensory aptitudes or mental states that would impede orientation or the ability to maintain a coherent conversation. In all cases, selection was carried out in the order in which the patients were admitted to the ICU after the transplant. In the first two stages (ICU and post-ICU), before proceeding with the psychological assessment, we waited approximately a week for the patients to adapt to the conditions of hospitalization.

Results

To compare the anxiety and depression symptoms of the patients in the three stages (ICU, Post-ICU, and Post-hospital), we took the following steps. First, in the two studied variables (total anxiety score and total depression score) we applied a normality test (Kolmogorov-Smirnov) in each stage of the research. Secondly, as all variables followed a normal distribution, we applied a repeated measures analysis of variance ($F_{(2, 37)} = 4.69, p = .015$ in anxiety; $F_{(2, 37)} = 6.16, p = .005$ in depression). Thirdly, paired *t*-tests were performed to identify in which groups there differences were; in anxiety, $t = 3.03, p = .004$ (stages 1 and 2), $t = 1.71, p = .095$ (stages 1 and 3), $t = -1.3, p = .201$ (stages 2 and 3); in depression, $t = 3.2, p = .003$ (stages 1 and 2), $t = .66, p = .512$ (stages 1 and 3), $t = -2.6, p = .013$ (stages 2 and 3).

TABLE 1. Symptoms of anxiety and depression in different stages ($N = 39$).

Psychological variables	Stages: Mean (Standard Deviation)			ANOVA <i>p</i> value	Stages: <i>t</i> -comparisons		
	UCI (1)	Post-UCI (2)	Post-hosp. (3)		(1-2)	(1-3)	(2-3)
Anxiety	6.87 (5.10)	4.67 (3.23)	5.44 (4.28)	.015*	.004**	.095	.201
Depression	4.36 (3.08)	2.90 (2.73)	4.03 (3.63)	.005**	.003**	.512	.013*

Note. The stronger the anxiety/depression state, the higher the score.

* $p < .05$, ** $p < .001$.

Subsequently, in the group comparisons that were significant, we made an analysis of items to identify the most important. To do this, we followed two steps; firstly, we applied the Kolmogorov-Smirnov test to all items on HAD in each stage of the study; and secondly, as none of the items followed a normal distribution, we applied non-parametric Wilcoxon test for related samples.

TABLE 2. Analysis of items: Wilcoxon test ($N = 39$).

Items	Comparison: UCI and Post-UCI		
	Mean (Standard Deviation)		
	UCI	Post-UCI	Z (p value)
Anxiety:			
-‘I have a sensation of fear, as if something bad is going to happen’	1.05 (1.07)	.41 (.54)	-3.49 (.000**)
-‘My mind is full of worries’	.92 (1.18)	.49 (.82)	-2.28 (.022*)
-‘I can sit down and feel relaxed’ (+)	1.18 (.91)	.79 (.73)	-2.34 (.019*)
-‘I have a feeling of fear, as butterflies in the stomach’	.74 (.93)	.36 (.48)	-2.63 (.009**)
Depression:			
-‘I still enjoy the things I liked’ (+)	.85 (1.01)	.38 (.71)	-2.61 (.009**)
-‘I feel as if each day I go slower than the day before’	1.18 (.99)	.79 (.89)	-2.06 (.039*)
Items	Comparison: Post-UCI and Post-hosp.		
	Mean (Standard Deviation)		
	Post-UCI	Post-hosp.	Z (p value)
Depression:			
-‘I can laugh and see the funny side of things’ (+)	.21 (.40)	.44 (.64)	-3 (.003**)

Notes. The higher the score, the stronger the agreement in each sentence, except in (+). Only items with statistically significant differences in Wilcoxon test have been included.

* $p < .05$, ** $p < .001$

As can be seen from the analysis of the Table 1 and the Table 2, during the ICU and Post-hospital stages, the patients were found in a worse psychological state, since they showed more symptoms of anxiety and depression than in the Post-ICU stage.

Discussion

After the organ transplant, in the three compared stages (ICU, Post-ICU, and Post-hospital) we notice a psychological evolution in “U” shape, particularly; they show more symptoms of anxiety and depression in the ICU and post-hospital stages, diminishing in the post-ICU stage. With respect to the symptoms of anxiety, the main differences were found between the ICU and Post-ICU stages; the patients felt worse in the first of these stages. A possible explanation is that the ICU presents certain characteristics the patients find stressful: environment (machines that invade space of the patients, artificial light, monotonous noise, etc.), temporary (natural day and night rhythms are lost, perception of death becomes more apparent due to the death of other patients, etc.) and depersonalisation (staff develop no relationship with the patients due to the urgency of the situation and the short time spent in intensive care, the only contact is through the machines, etc.) (Dorr-Zeger, 1988). These conditions, together with the fact that at

this stage a patient is in a worse state and that the first few hours after the transplant are crucial for the success of the transplant, make the ICU a particularly stressful environment with negative repercussions on the mental health of a patient. Specifically, symptoms of anxiety increase; for example, subjects say that they have feelings of fear, as if something bad is going to happen, that their minds are 'full of worries', that they can not 'sit down and feel relaxed' and that they have 'feelings of butterflies in the stomach'.

With respect to the depressive symptoms, the main differences were found, on one hand, between the ICU and Post-ICU stages and, on the other, between Post-ICU and Post-hospital. Specifically, of the three stages compared (ICU, Post-ICU, and Post-hospital), the psychological state of the transplant patients improves in the second stage and gets worse in the other two; between these two stages, there were no significant statistical differences. One possible explanation for this psychological evolution is that the ICU, as stated before, represents a highly stressful situation for the patients, and many of them are not equipped to cope with. This makes the patients depressed; for example, patients say that they do not enjoy things they liked before, or that they feel as if each day passes slower than the day before. Later, in the Post-ICU phase, the psychological state of the patients improves because, among other things, there is a sense of liberation from the dependence on the machines in the ICU, and the patients' uncertainty is finished, as much as the waiting for an organ as for the transplant operation that follows (Moore, Burrows, and Ardi, 1997; Ponto *et al.*, 2001). Later still, in the Post-hospital stage, when a year has passed after discharge from hospital, the patients once again suffer from low morale, with levels of depression similar to those of the ICU stage. Among others, the main reasons for this could be the following: side effects of immunosuppressive treatment, the re-incorporation to the workplace (sometimes non suitable for their physical condition), the constant fear of organ rejection, and family conflicts after the resumption of previous roles that other family members assumed when patient had serious health problems (Achille, Oulette, Fournier, Vachon, and Hebert, 2006; Dew *et al.*, 2005; Ichikawa *et al.*, 2000; Moore *et al.*, 1997; Ponto *et al.*, 2001). This situation leads, for example, to have difficulties 'to laugh and see the funny side of the things'. So in the long-term, disillusion occurs with the realisation that the transplant does not mean the recovery of the life they had before their illness, but only offers the possibility of living, and always under medical observation (Pérez, Martín, Gallego, and Santamaría, 2000).

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