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**Effectiveness of a Psychological Intervention Focused on Expressive Writing in Patients
undergoing to Kidney Transplant**

Background

Kidney transplantation is a replacement therapy in chronic renal failure which could allow a better quality of life. However, renal transplantation also represents an emotionally strong experience, which is associated with feelings of acceptance of the transplanted organ, change in lifestyle, side effects of pharmacotherapies, anxiety, depression, redefinition of one's body, as well as one's own social and family role. For these reasons it can be experienced as a traumatic event and be associated with an unfavorable post-operative course, in particular with regard to adherence to medical prescriptions and the consequent increase in the possibility of rejection. Adherence, in fact, implies the correct management of drugs and the constant and assiduous presence at pre-established check-ups at the transplant center, taking the required exams and promptly reporting any complications. In kidney transplant patients, adherence to immunosuppressive therapies becomes fundamental to reduce the risk of organ rejection or, in the most extreme cases, the risk of death. Several studies show the importance of adherence to post-operative course treatment in different types of transplant (Stilley et al., 2010, Rebafka et al, 2016). Furthermore, it has been shown that poor levels of adherence, recognized as a risk factor for organ rejection, are associated with an increase in healthcare costs (Muduma et al., 2016). Among the risk factors of non-adherence in kidney transplant patients there are young age (Gremigni et al, 2007), depression and anxiety (Reber et al., 2016), avoidant-type adaptation strategies (eg avoiding the stressful event) (Pisanti et al., 2016). Also, alexithymia (known as the inability to identify and describe emotions), the inability to regulate intense emotional states (Calia et al, 2015; Lai et al, 2016), and attachment style (Calia et al, 2015), are associated with poor levels of post-transplant adherence. Possemato and collaborators (2010), showed the efficacy of an intervention focused on expressive writing in the reduction of post-traumatic stress symptoms in kidney transplant patients. This technique seems to be effective also in patients with chronic pathologies (Smyth et al., 1999; McGuire et al., 2005, Norman et al., 2004) and cancer (Gallo et al, 2015), in particular in the reduction of symptoms , in the management of disease and psychophysical symptoms in cancer patients. The ways in which this technique acts are not yet clear, however it is hypothesized that the externalization and processing of traumatic events linked to the disease may favor an improvement in the ability to express emotions, and the reduction of negative thoughts and feelings to it associated (Frattaroli et al, 2006). These studies suggest that using the technique of expressive writing in kidney transplant patients would allow them to externalize and process emotions, feelings and thoughts related to illness, transplantation and consequent

changes (constant controls and therapies, sudden change in the style of life, drug therapies and its effects, physical modifications), and that this can favor a mental reorganization of negative events, a greater expression and regulation of the emotions related to them, and the improvement of the relational style with family members and medical staff. Furthermore, this could be associated with a greater ability to cope with the consequences and psychophysical changes following transplantation and encourage greater levels of adherence with effects on the risk of organ rejection and health costs.

The hypothesis of the present study was that the expressive writing treatment produces an improvement in the emotional condition, levels of adherence and renal function, and a decrease in healthcare spending.

Material and Method

Thirty-five patients were recruited at the kidney transplant center of the Policlinico Umberto I, Sapienza University of Rome. Each participant completed an informed consent form. The sample was divided into two groups in a randomized way. Of the 35 patients, 3 were excluded for not completing the task, due to logistical problems and due to the hospital situation, 1 refused to perform the writing task, and finally 3 dropped to T2 (3rd post-transplant month). Of the remaining 28 recruited patients, 2 had an acute rejection before starting the writing task. The final sample is $n = 26$.

Each participant completed an informed consent form. Adult patients of Italian nationality with a sufficient level of education in order to understand the questionnaires and to execute the writing task were included in the study. Patients with uncompensated psychopathology, already excluded in the pre-transplant psychiatric evaluation, and / or affected by cognitive impairment, were excluded.

The study had 3 phases:

Pre-operative phase (T0)

The time of admission, just before the kidney transplant. In this phase to all participants were asked socio-demographic information and specific characteristics of the pathology in progress (eg. duration of dialysis treatment, date of transplantation, onset of disease). Then, they completed the following self-administered questionnaires: Beck Depression Inventory (BDI) for the evaluation of depression (Beck et al., 1961), State Trait Anxiety Inventory I and II (STAI Y1 - STAI Y2) for the evaluation of trait and state anxiety (Spielberger

et al. , 1983), Toronto Alexythymia Scale 20-item (TAS-20) (Bagby et al., 1994) for assessing the ability to identify and describe one's emotions, Interpersonal Reactivity index (IRI) (Davis et al, 1980) for the evaluation of empathy and the Health Locus of Control (HLC) for the evaluation of the patient's beliefs on his state of health and a questionnaire for the evaluation of healthcare costs, built ad hoc. To assess the level of adherence, each patient answered to the following question: "Have you ever forgotten to take the drugs prescribed by your treatment plan?" with dichotomous answer yes / no. Finally, in order to assess the pre-transplant renal function values, such as Creatinine, CDK-EPI and azotemia, were collected.

Writing Phase (WP)

Five days after the operation, patients belonging to the experimental group, performed the writing task related to their deepest emotions, thoughts and concerns focused on the disease and the transplant itself, for 3 consecutive days, for 20 minutes a day. They did the writing session in a closed, silent room, which guaranteed their privacy. The instructions were according to the standard delivery by Pennebaker, creator of the technique (Pennebaker et al., 1986), translated and adapted for the specific hospital situation already proposed in a study on urological patients by Solano et al, 2007. Instead, the control group performed the neutral writing task, related to the description of an object in their room, without mentioning emotions, but just describing in a neutral way what they saw, for 3 consecutive days, 20 minutes each day.

The *day of discharge Phase (T1)* and *three months follow up (T2)* all participants filled the questionnaire completed before the operation and they had the blood analysis according to the hospital protocol for transplanted patients.

Statistical analysis

Statistical analysis will carry out using the software Statistica Soft 10.0. In order to evaluate the effectiveness of the expressive writing intervention, an analysis of variance with repeated measures (Fisher's F) and planned comparisons between the two randomized groups will be performed on psychological variables, the renal function indices and the health expenditure. The times taken into consideration will be T0, T1, T2 and the differences between T0, T1 and T2 will be respectively evaluated. To test the hypotheses on the dichotomous variable of adherence, Chi Square test will carry out.