

Hopelessness, suicide ideation, and depression in chronic kidney disease patients on hemodialysis or transplant recipients

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ABSTRACT

Introduction: Hopelessness, suicide ideation and depression symptoms affect life quality and expectancy of chronic kidney disease patients. **Objective:** To verify whether there are differences in hopelessness, suicide ideation and depression symptoms between chronic kidney disease patients on hemodialysis or transplant recipients. We also analyzed the influence of sociodemographic factors in these symptoms. **Methods:** Cross-sectional study in which 50 clinically stable chronic hemodialysis patients and 50 renal transplant patients matched by gender and age. Instruments-Beck Hopelessness Scale (BHS), Beck Scale for Suicide Ideation (BSI) and Beck Depression Inventory (BDI). **Results:** BHS: 2% of each group scoring > 8 ($p = 1.00$). BSI: 4% in hemodialysis and 6% of the transplant patients scoring > 1 ($p = 1.000$). BDI: 20% in hemodialysis and 12% of transplant patients scoring > 14 ($p = 0.275$). Patients who did not have a labor activity presented more depressive symptoms (average BDI score: 10.5 *vs.* 7.3, $p = 0.027$). Transplant patients from deceased donor presented more depressive symptoms compared with those with transplant from living donors (average BDI score: 11.0 *vs.* 6.7, $p = 0.042$). **Conclusion:** There was no difference in the intensity of hopelessness, suicide ideation and depression symptoms between stable hemodialysis and transplant patients. Not performing a labor activity and receiving the transplant from deceased donor lead to more depressive symptoms. The high prevalence of depressive symptoms and the finding of suicide ideation in both modalities of renal replacement therapy point to the need to monitor and care for those patients.

Keywords: depression; kidney transplantation; renal dialysis; suicidal ideation.

INTRODUCTION

Chronic Kidney Disease (CKD) is highly prevalent.¹ Brazil is the second country in absolute numbers of kidney transplants. In 2013, we performed 5,433 transplants. Despite these figures, the demand is still large and, in 2013, there were 8,609 active patients on the waiting list² and approximately 100,397 dialysis patients in Brazil, most of them in hemodialysis.³

There is no substantial information on the impact of treatment options on life expectancy,⁴ but it is known that mortality rates among chronic renal failure patients on hemodialysis is 20 times higher than that in the general population.⁵ CKD brings in a number of limitations in quality of life,⁶ as is the case of six other chronic illnesses, and causes a higher incidence of psychopathology when compared to the general population.^{7,8} Depression prevalence is higher in this population,⁹ particularly for those in chronic dialysis treatment, and also there are just a few reports on higher hopelessness rate¹⁰ and suicide attempts.^{11,12} Although transplantation provides better quality of life when compared to other forms of renal replacement therapy,¹³ we did not find studies that investigated whether

Submitted on: 10/17/2013.

Approved on: 07/17/2014.

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DOI: 10.5935/0101-2800.20150009

this improvement impacted the symptoms of depression, hopelessness and suicidal ideation in subjects successfully treated in different modalities.

Due to the strong influence of these symptoms on quality of life and life expectancy of patients with CKD,¹⁴ we can appreciate the importance of better understanding these phenomena in order to base future interventions that help this population fight the disease. We investigated whether there are differences in the intensity of symptoms of depression, hopelessness and suicidal ideation among patients on hemodialysis or kidney transplant. We also analyzed the following variables: work activity; having dependents (socially significant people who are financially dependent on the individual); gender and marital status which influence the intensity of symptoms of depression, hopelessness and suicidal ideation in this population.

METHODS

This is a comparative, cross-sectional study, with quantitative methodology, approved by the Ethics Committee of the Federal University of São Paulo (CEP No. 1624/07). The sample encompassed 100 patients: 50 in hemodialysis (Kidney and Hypertension Clinic and patients from the outreach unit of the Oswaldo Ramos Foundation) and 50 kidney transplanted individuals (followed by the Post-Renal Transplant Clinic of the Oswaldo Ramos Foundation). Inclusion criteria were: having been submitted to renal replacement therapy (RRT) for more than six months; to be clinically successful in the treatment adopted (according to the healthcare team's evaluation) and having between 18 and 65 years of age - so that variables such as childhood, adolescence and old age would not influence the findings. Patients with cognitive disorders were excluded. We were careful to make the definition of successful treatment criteria similar between transplant and hemodialysis. These criteria were: not being admitted or not having clinical complications for at least four months before the interview; having

good treatment compliance and be clinically stable. Exclusion criteria: history of psychiatric illness; use of psychotropic agents; scheduled kidney transplant; unwillingness to participate. Those who met the criteria were then appointed by the medical team; they were randomly selected and matched for gender and age (up to three years of difference) for both groups.

INSTRUMENTS

Identification questionnaire, employed to collect sociodemographic data. Economic Classification Criterion Brazil by the Brazilian Association of Poll Companies that categorizes the population into economic classes. Economic classification ranges are: A1 (best), A2, B1, B2, C1, C2, D, E (worst).¹⁵ The Beck scales had their Portuguese versions validated in 2001¹⁶ and are considered 'gold-standard' instruments. We used the following scales: BHS (Beck Hopelessness Scale); BSI (Beck Scale for Suicidal Ideation) and BDI (Beck Depression Inventory). BHS assesses the extent of negative expectations about the immediate and distant future. It is dichotomous and comprises 20 statements that involve cognitions about hopelessness. The total BHS scale score can range from 0 to 20 and enables the classification of hopelessness into levels. The cutoff points and their respective levels are: 0-4, minimum; 5 through 8, light; 9-13, moderate and between 14 and 20, severe level. In addition to these points, which have been used both in psychiatric populations as in the general population,^{14,16,17} we have also used a fixed cutoff point - the score greater than or equal to 9, for its relevance as a suicide predictor^{16,18-20} and for being used in people with serious diseases such as cancer and CKD.^{21,22} BSI is a scale that evaluates the presence of suicidal ideation, severity of ideas, plans and suicidal wish. There is no specific cutoff point, or levels. A score above 0 indicated suicidal ideation and requires attention.¹⁶ BDI measures depression intensity, without reflecting any particular theory. There are questions that describe attitudes and symptoms concerning depression. It comprises 21 groups of statements,

and each group investigates a type of depression symptom. The total score can range from 0 to 63. The higher the score displayed, the greater the intensity of symptoms. For BDI, the cutoff points used for various samples (psychiatric, healthy people, CKD, etc.) are: between 0 and 11 are equivalent to a minimum level; between 12 and 19, light; between 20 and 35, moderate and above 36, severe.^{9,16,17} The same cutoff points for many different samples can lead to questionable results. Thus, different cutoff points have been adopted according to the population evaluated. In CKD patients we used the fixed cutoff point between 14 and 16 in the BDI, while for the general population, the score used was greater than 10.^{9,10,23,24} We used the cutoffs points that generate classification levels, as well as the cutoff value higher than or equal to 15, which has shown good sensitivity when applied to CKD patients.^{24,25}

PROCEDURES

After explaining the study to the team and checking the charts, we held a draw with the names of the patients indicated. The selection of patients undergoing hemodialysis was similar to that of transplanted individuals. But among the candidates, there was a selection of those who could be matched with the transplanted ones, whom had already been interviewed. Next, the patients who agreed to participate signed an informed consent and an interview date was scheduled. This was done in a private room off the hemodialysis session time or sometimes during the dialysis session. In order to standardize the applications, all interviews were carried out by the same examiner.

STATISTICAL ANALYESS

Analyses were carried with the whole group and separately (hemodialysis and transplantation). In the first analysis we used the Mann-Whitney test to check whether there was a correlation between the total score of the scales with some patient characteristics, i.e. treatment type (hemodialysis *versus* transplantation); having

a job (yes *versus* no); having dependents (yes *versus* no); gender (male *versus* female); and marital status (married *versus* unmarried). In the second analysis, the patients were divided into two groups (hemodialysis and transplantation) and all analyzes aimed to compare them in terms of the variables available and scales investigated. Categorical data was compared using the chi-square test or, when necessary, Fisher's exact test. Continuous variables were compared using the Student t-test. Statistical significance was set at $p < 0.05$. Analyses were performed using the Minitab, version 15.1, statistical software.

RESULTS

There were 50 patients on hemodialysis and 50 transplanted, and they were paired by gender and age. Fifty percent in each group were women and their mean age was 43 years (Table 1). Most of the subjects were married (60%); had children (63.5%); had dependents (47.9%); were Roman Catholics (48%); were Caucasians (48%); did not have a job (56%); were ranked as C1 economic class (32%); had a mean of 9.2 years of schooling and mean RRT duration of 59.1 months. Among comorbidities, the most frequent were hypertension (69.3%) and diabetes (20.5%). There was no statistically significant difference between the groups (hemodialysis and transplantation). Tables 1 and 2 depict: marital status; number of children; religion; ethnicity; mean age; gender; years of schooling; labor activity; social class; duration from the first symptoms and diagnosis, and hematocrit rate. The hemodialysis group had higher percentage of patients with dependents, higher mean frequency of associated diseases and longer mean RRT (Tables 1 and 2). Only four patients listed and selected through the draw refused to participate in the study (three transplanted and one in hemodialysis). All transplanted patients were interviewed in a private room. For those in hemodialysis, 21% agreed to be interviewed out of session time, the others were interviewed during the session, under a stable procedure. Results from the scales with cutoff points outlining levels: in the whole group, the total BHS score ranged from 0

TABLE 1 DEMOGRAPHIC DATA WITH THE GROUPS SEPARATED IN HEMODIALYSIS AND TRANSPLANTED PATIENTS

Demographic data	hemodialysis N (%)	transplanted N (%)	<i>p</i>
Marital status: married	28 (56.0)	32 (64.0)	0.414
unmarried*	22 (44.0)	18 (36.0)	
With children	27 (57.5)	34 (69.4)	0.224
Having dependents	28 (59.6)	18 (36.7)	
religion: does not have	1 (2.0)	3 (6.0)	0.214
Catholic	21 (42.0)	27 (54.0)	
Other**	28 (56.0)	20 (40.0)	
Ethnicity (skin color): White	20 (40.0)	28 (56.0)	0.226
Brown	15 (30.0)	13 (26.0)	
Black/Yellow	15 (30.0)	9 (18.0)	
Having a job	25 (50.0)	19 (38.0)	0.227
Age (years)			
Mean ± SD	43.4 ± 12.5	43.3 ± 12.5	
(min. - max.)	(19 - 65)	(19 - 65)	
Schooling (years)			0.088
mean ± SD	9.9 ± 4.5	8.4 ± 4.1	
(min. - max.)	(1 - 18)	(1 - 17)	

* Widow (er), single, separated; ** Evangelical, Spiritist/Kardecist, African-Brazilian (Umbanda, Candomblé); SD: Standard Deviation; min: Minimum; max: Maximum.

TABLE 2 ASPECTS OF THE KIDNEY DISEASE IN PATIENTS UNDER HEMODIALYSIS AND TRANSPLANTED

	hemodialysis	transplanted	<i>p</i>
First symptoms (months)			0.376
mean/SD	138/112	159/124	
(min. - max.)	(12 - 360)	(30 - 363)	
Diagnosis (months)			0.247
mean/SD	121/105	100/74	
(min. - max.)	(12 - 360)	(22 - 396)	
Time in HD/TX (months)			0.006
mean/SD	80/75	41/36	
(min. - max.)	(8 - 324)	(6 - 144)	
Patients with some associated disease	40 (90.0)	27 (71.0)	0.022

SD: Standard deviation; min: Minimum; max: Maximum; HD/TX: Hemodialysis/transplant.

to 18, with a median of 2 points. Most patients (89%) had minimum hopelessness symptoms, followed by 9% with mild level; 1% moderate and 1% severe. There was no statistically significant relationship between BHS scores and the following variables: type of treatment, labor activity, having dependents, gender, marital status and type of donor. In BSI, the total score ranged from 0 to 7, with a median of 0 points. None of the variables considered showed significant correlation with the BSI scores. Two patients had already attempted suicide, one from each group. The BDI score

ranged from 0 to 37, with a median of 8 points. Most patients (68%) were classified at low level; 23% mild; 8% moderate and 1% severe. The variables that were related to the BDI results were: labor activity and donor type (Table 3). Patients without a job had more depression symptoms (*p* = 0.027). The median score of those without a job was 9.5 and patients with a labor activity scored 6 points. Transplant patients whose donor was deceased, also showed more depression symptoms than patients whose transplant was performed from living donors, median of 10 and 6.5 points,

respectively ($p = 0.042$). Unmarried patients were more likely to have depression symptoms than their married counterparts ($p = 0.070$). The other variables assessed were not statistically significant vis-à-vis the depression symptoms.

RESULTS FROM THE SCALES WITH A FIXED CUTOFF POINT

As for hopelessness, assessed by the BHS scale, 2% in each group had total scores greater than 8. Regarding suicidal ideation assessed by BSI, 4% of the group in hemodialysis and 6% in the transplantation group had total scores greater than 1 - also not statistically significant ($p = 1.00$). As for the depression symptoms, 20% of patients on hemodialysis group and 12% among those transplant had total BDI scores greater than 14 points, with no significant difference between the groups ($p = 0.275$).

DISCUSSION

There is a wide range of research indicating that renal transplantation, when successful, among the possible therapeutic modalities for

patients with CKD, is the one providing lower rates of morbidity, lower mortality and better quality of life.^{13,14,26,27} Based on this assumption, we evaluated whether the type of treatment (dialysis or transplantation) would also cause a difference in the frequency of their symptoms of hopelessness, depression and suicidal ideation - which did not occur. To hone the analysis of the results by the application of Beck scales, we adopted two forms of analysis, i.e. with continuous variables or predetermined fixed cut-off points. We did not find statistically significant differences between the hemodialysis and transplant groups with respect to the symptoms investigated, in both types of analysis. Given the above, some aspects should be considered, such as the fact that there are studies that corroborate our findings, indicating that treatment progression is more important than the type of treatment (which in both groups went on as well), the patients' personality traits and how they handle their illness.^{9,27,28} Thus, the possible benefits of kidney transplantation are not being challenged;

TABLE 3 BDI TOTAL SCORE IN THE GENERAL SAMPLE AND BY GROUPS

	N	mean	SD	minimum	median	maximum	p^*
Total score:	100	9.1	7.1	0	8	37	-
Treatment:							
Hemodialysis	50	9.7	7.4	0	9.5	37	0.327
Transplant	50	8.5	7.0	0	8	33	
Having a job							
Yes	44	7.3	6.2	0	6	27	0.027
No	56	10.5	7.6	1	9.5	37	
Dependents:							
Yes	46	9.6	7.4	0	9.5	37	0.378
No	50	8.6	7.2	0	7.5	33	
Gender:							
Male	50	7.8	6.0	0	7.5	26	0.105
Female	50	10.4	8.0	1	9	37	
Marital status:							
Married	60	8.3	7.3	0	7	37	0.070
Unmarried **	40	10.3	6.9	0	9	27	
donor type***:							
Live	29	6.7	5.5	0	6.5	21	0.042
Deceased	21	11.0	8.3	1	10	33	

* Level of significance by the Mann-Whitney test; ** Single, Widow (er), Separated; *** Only transplanted patients. BDI: Beck Depression Inventory; SD: Standard Deviation; N: Number of patients.

we rather highlight the importance of adaptive resources of patients and of being successful in their treatment whatever the therapeutic option adopted. We could not find studies that evaluated the symptoms in question using paired sampling, and one of the inclusion criteria were being well in the therapeutic modalities. Therefore, the comparison of some of our findings is hampered by the lack of similar studies. To comparatively evaluate patients in hemodialysis and transplant patients, one must be careful because there may be selection bias, since transplant patients usually have lower mean age and less comorbidity than their counterparts in hemodialysis.¹³ Pairing by gender and age between groups, which we used in this study, reduced the likelihood of this type of bias in the analysis.

Literature reports the following aspects as having influence on the symptoms analyzed in our study: age, schooling (educational level), marital status, having children, religion, hematocrit, ethnicity, time of diagnosis and income.^{13,14,28,29} The fact that we did not find differences between the two groups (transplanted and hemodialysis), in any of these respects may have mitigated the influence of the hemodialysis group having more dependents, more associated diseases, longer mean RRT and not having significant differences in the scores of the symptoms studied in relation to the transplant group. The parameters that were significantly different between the groups limit the sample homogeneity, but are difficult to be circumvented because they reflect differences concerning the reality of each treatment (except for the number of dependents). For example, the number of associated diseases was expected to be more frequent in the hemodialysis group than among the transplanted patients. In contrast, no difference between the groups regarding hematocrit was essential, because symptoms of anemia may act as confounding symptoms of depression.¹³ The question regarding time difference in the treatment between groups is a limitation of the study. But it is worth considering that, in our institution, the renal graft from a deceased donor is expected to last less than

the time the patient spends in hemodialysis.³⁰ We could not avoid this difference, but it was attenuated because there were no statistically significant differences in the occurrence of the time of the first symptoms and diagnosis, between the two groups. There was no significant relationship between BHS total score and the variables: type of treatment; labor activity; having dependents; gender; marital status and type of donor. But 11% of patients had scores classified as above the minimum level, and 4% had total scores greater than 8. Since BHS has been considered a direct indicator of suicide risk when the score is above or equal to 9, the rates we found require attention.^{19,20,31} People with symptoms of hopelessness believe that nothing will work out for them. Thus, their treatment is full of heartlessness and harmful behavior because they believe in a negative prognosis. Therefore, the idea of including only successful patients in therapeutic modalities may have affected the non-detection of subjects who were clinically ill due to hopelessness. It is likely that the criterion of only including successful patients in treatment has also reflected in the results of other variables; as with suicidal ideation - since this factor has restricted the identification of patients who did not comply with treatment as a suicidal ideation, to the extent that the consequence of this behavior is a poor clinical outcome, which was an exclusion criterion for making up the sample. Even with this limitation and the fact that most of the subjects were married, religious and had children - which are considered suicide protective factors, the rates found by applying the BSI require attention (4% in hemodialysis and 6% of transplanted patients had total scores greater than 1),³² mainly because they have easy access to the means for committing suicide (as the simple abandonment of treatment) and having CKD, which are risk factors.^{11,12,17} Literature states that suicide rates are higher among men and the attempts are higher among women - which was observed in our study; because the only individuals who had attempted suicide were females.³² Mortality is a human characteristic,

but not accepting this condition and having difficulties dealing with limits is exacerbated by modernity.³³ To commit suicide when facing a diagnosis and having to cope with CKD, which has a high mortality rate, is still an attempt to control the uncontrollable, so that even with marked variations in the findings, the few localized studies indicate that suicide rates are 10-400 times higher in the CKD population than in the general population.^{10,11,17,27} Therefore, it is extremely important to carry out investigations regarding suicide in this population, mainly associated with search for hopelessness, since this is considered a causal link between depression and suicide.^{19,34}

As for depression symptoms, the difference between the groups was not statistically significant, corroborating other studies.^{21,34} If the sample were larger, this difference could have been statistically significant. Therefore, the relatively limited number of patients studied should be cited as one of the study limitations, which may have restricted the statistical power of some comparisons. In both groups, the frequency of depressive symptoms found was markedly higher than in the general population, the majority of studies point to a prevalence of 3-5%.^{35,36} This finding also corroborates the current literature, which places the prevalence of depression symptoms in patients with CKD as higher than in the general population, and it is between 5 and 30%.^{5,9,24,27,29,37-39} There are several studies on depression in hemodialysis patients. We believe this is because the findings converge to stating that depression has the highest incidence among psychiatric disorders in CKD patients.^{9,12,24,29,40} These studies show that the prevalence of depression in CKD is greater than that in the general population, but the reported frequencies vary widely, from 0 to 100%. The prevalence rates of depression symptoms in this population are usually between 5 and 30% and are consistent with those found in our sample.^{5,24,27,38,39,41} The factors that were related to the frequency of depressive symptoms were work activity and type of donor.

Patients who did not have a job had more depressive symptoms than patients who had. Having a job, when it brings about a sense of existence, is closely related to the self-concept and self-perception of one's social role. Our findings corroborate the literature data on the importance of having a job, to remain active, to reduce depressive symptoms. The relationship of being regularly employed with improving quality of life and having a lower incidence of mental disorders is highlighted by several studies.^{42,43} Transplant patients from deceased donors had more depressive symptoms than patients whose transplant was performed from living donors. It is important to further investigate this information, with extended samples, since we did not find similar studies that would enable the comparison of these results. Kidney transplantation and donation are permeated by a series of symbolisms that our study did not aim to analyze. Although unmarried patients are not considered to have more depressive symptoms than their married counterparts, the difference between them was very close to statistical significance, thereby indicating a trend. This finding strengthens the concept of the family and the social network to be preventive of psychopathology, especially depression symptoms.^{14,29} Even when the group in hemodialysis had more dependents, the fact that the sample was homogeneous as to the number of children and marital status may have influenced the non-differentiation of the prevalence of symptoms between the groups studied. Some factors that hinder the comparability of studies on depression are: use of varied instruments and diagnostic parameters; diagnosis made by teams with diverse backgrounds and different inclusion criteria for making up the sample.^{14,38,40} About the instruments and diagnostic parameters, despite the fact that the BDI can be criticized for computing in its assessment of physiological symptoms that could be concerning the KD, we used it because it is the most widely used scale in this population.³⁸ But to mitigate this factor, we used a higher cutoff point than the one used for the population without diseases and which is

often used in CKD patients. Another aspect that may have reduced the frequency of depressive symptoms was that our sample was made up of subjects with more than 6 months of treatment, minimizing the variability stemming from the diagnosis impact - since studies indicate that the incidence of psychiatric disorders is higher at treatment onset.^{27,29} It was very important to exclude subjects in the (kidney) disease diagnosis preparation stage. An example of this is that symptoms that could be associated to an elaborative, transient depressed mood caused by receiving a diagnosis of a severe condition (CKD), can be characterized as a Depressive Episode (moderate), according to the ICD-10, and a Major Depressive Episode according to the DSM-IV, for a two-week period, the subject presents with: depressed mood, decreased energy, insomnia, loss of appetite and decreased ability to concentrate. This alerts to how much a healthy mental development framework, associated with some physical symptoms - associated with the disease, may be misdiagnosed, even using the criteria of the two major guidelines (ICD-10 and DSM IV). Again, the sample comprising two groups that were going well in their therapeutic modalities could have led to having less depressed subjects, in so far as studies indicate that the better the physical status, the lower the risk of psychiatric disorders.^{27,29} However, this criterion was important for our study in order to compare types of RRT; thus ruling out the possibility that other clinical factors could interfere with the symptoms that were the goal of this study. Despite the strong relationship between hopelessness and depression, our study confirms the view that hopelessness and depression are at least partially different phenomena,⁴⁴ because 26% of the subjects had a score greater than 14 on the BDI, while only 2% had scores higher than 8 at the BHS; and there was one subject who had a score higher than 8 in the BHS and had no score lower than 14 on the BDI. In conclusion, our findings indicate that depression symptoms are common in CKD patients on dialysis or in renal transplant recipients. In addition, symptoms of

hopelessness and suicidal ideation were found in both groups, although to a lesser extent than depression symptoms. These findings are relevant, considering that we evaluated clinically stable patients under these types of RRT. Given the importance of morbidity and mortality associated with these symptoms, the small number of studies that compared both of these modes of renal replacement treatment, an expansion of this study is warranted to see if our results are corroborated and if the symptoms studied in the CKD population are more influenced by other variables than by the treatment itself.

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