Depressed mood and poor quality of life in male patients with chronic renal failure undergoing hemodialysis

Comportamento depressivo e má qualidade de vida em homens com insuficiência renal crônica submetidos à hemodiálise

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Abstract

Objective: To assess mood and quality of life in male hemodialysis patients, and to correlate mood swings with the different domains of the quality of life questionnaire. Method: Forty-seven male patients undergoing regular hemodialysis for more than six months were included in the study. The Hamilton Rating Scale for Depression and the Kidney Disease Quality of Life Questionnaire, in a version translated into and adapted to Portuguese, were used. Results: The patients’ age was 39.4 ± 8.9 years (median ± SD). Depression was observed in 32 (68.1%) patients according to the Hamilton Rating Scale for Depression. A significant negative correlation was found between the results from the Hamilton Rating Scale for Depression and the following parameters of the specific dimensions of the Kidney Disease Quality of Life Questionnaire: list of symptoms and problems (rs = -0.399; p = 0.005), quality of social interaction (rs = -0.433; p = 0.002), and quality of sleep (rs = -0.585; p < 0.001). Among the generic domains, mood showed a significant negative correlation with general health (rs = -0.475; p < 0.001), emotional well-being (rs = -0.354; p = 0.015), social functioning and energy/fatigue (rs = -0.518; p < 0.001). The other parameters of the Kidney Disease Quality of Life Questionnaire did not show significant correlations with the Hamilton Rating Scale for Depression. Conclusion: Mood showed a negative correlation with the various scores of quality of life assessed by the Kidney Disease Quality of Life Questionnaire, suggesting a possible influence of mood on the quality of life of chronic renal patients undergoing hemodialysis.

Descriptors: Renal dialysis; Quality of life; Depression; Scales; Renal insufficiency, chronic

Resumo

Objetivo: Avaliar o estado de humor e a qualidade de vida de homens em tratamento hemodialítico, correlacionar as alterações observadas no humor com os diferentes domínios do questionário de qualidade de vida. Método: Foram incluídos 47 homens em tratamento hemodialítico estável há mais de seis meses. Foram aplicadas a Escala de Hamilton de depressão e o Kidney Disease Quality of Life Questionnaire, questionário de qualidade de vida relacionado à saúde, em sua forma traduzida e adaptada para a língua portuguesa. Resultados: A média da idade dos pacientes era 39,4 ± 8,9 anos. Na avaliação pela Escala de Hamilton, observou-se em 32 (68,1%) pacientes a presença de depressão. Encontramos correlação negativa significativa entre os resultados obtidos na escala de Hamilton e os seguintes parâmetros das dimensões específicas do Kidney Disease Quality of Life Questionnaire: lista de sintomas e problemas (rs = -0,399; p = 0,005), qualidade da interação social (rs = -0,433; p = 0,002) e sono (rs = -0,585; p < 0,001). Entre os domínios genéricos, o estado de humor apresenta correlação negativa significativa com a saúde geral (rs = -0,475; p < 0,001), o bem-estar emocional (rs = -0,354; p = 0,015), a função social e a energia/fadiga (rs = -0,518; p < 0,001). Para os demais parâmetros do Kidney Disease Quality of Life Questionnaire não foram observadas relações significativas com a escala de Hamilton. Conclusão: O estado de humor apresentou correlação negativa com diversos escores de qualidade de vida avaliado pelo Kidney Disease Quality of Life Questionnaire, sugerindo possível influência do estado de humor na qualidade de vida dos pacientes renais em hemodiálise.

Descritores: Diálise renal; Qualidade de vida; Depressão; Escalas; Insuficiência renal crônica

Introduction

The technological development and advances in therapeutics observed in the medical field as leading to continuous improvement in dialytic methods have increased the survival rate of individuals with end-stage chronic renal failure. However, none of the methods used as a substitute for renal function leads to a cure. In patients with end-stage renal disease the physical, biopsychosocial,
dietary and hydric limitations resulting from disease or treatment are evident.\textsuperscript{1-5} Furthermore, patients undergoing hemodialysis show, over time, several comorbidities, such as muscle cramps, osteodystrophy, osteomalacia, neuropathy, anemia, hemolysis, hypotension, encephalopathy, oligo- or azoospermy and gynecomasty.\textsuperscript{4}

Depression is the most common psychiatric illness in patients with end-stage renal disease, and it has been associated with a poor outcome. Depression occurring in the context of another medical or psychiatric illness has been termed “compound” depression, and it may be more resistant to treatment.\textsuperscript{2,6}

Therefore, the level of depressed mood experienced by patients receiving hemodialysis may be one important factor leading to a worse quality of life. Greater recognition of mood changes and the adoption of interventions to alleviate them are required.

Several studies have assessed, using suitable scales, the presence of depression, poor quality of life, and sexual dysfunction in these patients.\textsuperscript{2,6-10} These assessments are valid attempts to identify possible changes that may be negatively influencing their life and thus, to contribute to an improvement in its quality.\textsuperscript{2,11,12}

Nevertheless, the diagnosis of depression in renal failure patients is highly variable, from patients showing no signs of the disease to patients who show severe symptoms.\textsuperscript{12,13} This is due to different concepts of depression, which vary from isolated symptoms to major depressive disorder.\textsuperscript{14} Depression may affect the patient with chronic renal failure in many ways. In general, depressed patients are at higher risk for suicide and for non-compliance with treatment. They also have higher morbidity and mortality caused by the renal disease.\textsuperscript{12,15} For this reason, early diagnosis and the establishment of specific treatment are necessary.\textsuperscript{14,16}

The quality of life of patients with end-stage renal disease is a frequently overlooked yet critical consideration when evaluating the overall medical care of patients.\textsuperscript{2} In addition, the importance of this present study is that few studies have researched a possible negative influence of depression on the quality of life of patients undergoing hemodialysis.\textsuperscript{2,6,12}

The objective of this study was to evaluate the quality of life and the level of mood changes experienced by patients undergoing regular hemodialysis, and to correlate mood with the physical, mental and social domains of a multidimensional instrument, The Kidney Disease and Quality-of-Life-Short-Form (KDQOL-SFTM).

**Method**

This is a cross-sectional study that includes patients with end-stage renal disease undergoing regular hemodialysis treatment. The study was conducted at the University Hospital of Brasília and in four hemodialysis centers of the Federal District that serve patients of the Unique System of Health (SUS).

The study was approved by the Ethics Research Committee of the Faculty of Medicine of the Universidade de Brasília (Protocol number: CEP-FM 046/2004). All volunteers gave formal consent to participate in this study.

The criteria for inclusion in the study were: male individuals between 18 and 55 years of age; end-stage renal disease patients with a glomerular filtration rate of less than 15mL/min/1,73m²; undergoing hemodialysis for at least six months in the absence of other diseases such as cancer, cardiac or pulmonary failure or neurological problems due to associated brain disease; the ability to understand the purpose of the research and to answer the questionnaire; and not being treated with antidepressant and/or anxiolytic drugs.

The hemodialysis patients included in this study were undergoing three weekly sessions of hemodialysis that lasted four hours each, using standard bicarbonate low-flux dialysis on polysulfone filters.

**1. Research tools and administration methods**

The Hamilton Rating Scale for Depression\textsuperscript{17} and the KDQOL-SFTM were used.\textsuperscript{18,19} These questionnaires are commonly used in the literature and the KDQOL-SF is specifically intended for application in hemodialysis subjects.\textsuperscript{19,20} The patients answered these questionnaires during the hemodialysis session.

In the administration of the Hamilton Rating Scale, the researcher interviewed the patient, assessed his answers, and marked the item that was closest to the patient’s report in relation to the frequency and intensity of the event within a specific number of days. The questionnaire was administered according to the Interview Guide for the Hamilton Rating Scale, whose purpose is to standardize the questions. The degree of depression was classified following these criteria: score lower than 6 – without mood swings/normal; from 7 to 17 – slightly depressed; from 18 to 24 – moderately depressed; above 25 – seriously depressed.\textsuperscript{21}

The KDQOL-SFTM, in a version translated, culturally adapted, and validated for the Brazilian population, has 80 items divided into 19 scales,\textsuperscript{19} and is self-administered, that is, the patients themselves mark the answers that they consider reflect their current condition. In the assessment of specific aspects related to end-stage chronic renal failure, the following were investigated: the symptoms and problems that trouble hemodialysis patients; the effects of the renal disease in their daily life, that is, how inconvenient the limitations caused by the disease are, the burden of the kidney disease, their work status, that is, whether the patient is able to undertake paid work and whether the disease has prevented the patient from undertaking paid employment; cognitive function, that is, how fast the patient’s thinking is and how well he can concentrate; the quality of his social interaction; sexual functioning, that is, whether the patient has experienced any erectile dysfunction; sleep; social support; the encouragement of the staff at the dialysis center and patients’ satisfaction in relation to the care they receive during dialysis treatment. In the general analysis of the KDQOL-SFTM, the following were assessed: the patient’s physical functioning, which sought to identify difficulties in performing daily activities and whether the disease has impaired the patient’s individual performance; pain; general health, emotional well-being; emotional effects, through the evaluation of questions about enthusiasm, attention, time taken to complete and performance of activities related to emotional aspects; social functioning, identified through information about physical and

Revista Brasileira de Psiquiatria 2010 • vol 32 • nº 4 • dez2010 • 370
emotional health that may have interfered in activities with family, friends, neighbors or social groups; and energy and fatigue, that is, the patient’s vitality. The scores from each area were calculated and transferred to a spreadsheet developed for this purpose. The spreadsheet is available on the website of the KDQOL international research group (Working Group Publications): www.gim.med.ucla.edu/kdqol. The higher the score shown in the fields, the better the quality of life.

2. Statistical analysis

The data had previously been submitted to the normality test (Kolmogorov-Smirnov). Since most of the data did not show normal distribution with great variability, the analysis of correlation between variables was done using the Spearman test. Comparison between the medians was done using the Mann-Whitney test. A statistically significant association or difference between variables was considered to be present when a two-tailed p value was equal to or less than 5% (p ≤ 0.05). Processing, analysis and graphic design of the data employed the SigmaStat® 3.11 / SigmaPlot 9.01 for Windows (Systat Software, Inc., USA, 2004) and the Prism 4 for Windows® (GraphPad Software, Inc., USA, 2005) software packages.

Results

Forty-seven men who fulfilled the requirements for inclusion in the research were selected. The average age was 39.4 ± 8.9 years. All individuals classified themselves as heterosexuals. The causes of chronic renal failure were: arterial hypertension in 28 (59.6%) patients, chronic glomerulonephritis in 8 (17%), diabetic nephropathy in 7 (14.9%), chronic pyelonephritis in 3 (6.4%), polycystic renal disease in 1 (2.1%).

The distribution of scores of the Hamilton Rating Scale for the assessment of depression was wide among patients, with variation from 0 to 30. In 15 (31.9%) patients the score was equal to or less than 6, which signals normal mood. In 32 (68.1%) patients the score was equal to or more than 7, which suggests depressed mood. Among the depressed subjects 29 (90.6%) had slight depression, 2 (6.3%) had moderate depression, and only one patient had an intense depressive state in conformity with the Hamilton scale.

Table 1 shows the scores from the quality of life areas. We found a poor quality of life in the areas relating to the problems of kidney disease and work status, but there was great variation in the area of sexual functioning.

As shown in Table 2, the physical effects, the areas of general health and the emotional effects had lower scores.

In Table 3 the various parameters of the KDQOL-SF and their correlations with the scores of the Hamilton Rating Scale for depression are presented. A wide distribution between the assessed parameters was found. This indicates that the results are heterogeneous. A significant negative correlation was found between mood and the following parameters of the specific dimensions of the KDQOL-SFTM: list of symptoms and problems (rs = -0.399; p = 0.005), quality of social interaction (rs = -0.433; p = 0.002) and of sleep (rs = -0.585; p < 0.001). Among the generic domains, mood shows a significant negative correlation with general health (rs = -0.475; p < 0.001), emotional well-being (rs = -0.354; p = 0.015), social functioning and energy/fatigue (rs = -0.518; p < 0.001). However, there was no correlation between mood and the effects of the kidney disease, the problems of the kidney disease, work status, cognitive functioning, sexual functioning, social support, the encouragement of the dialysis staff, patient satisfaction, physical functioning, physical effects, pain and emotional effects.

Table 4 shows the median and interquartile range of the KDQOL domains that were significantly lower in depressive patients than in non-depressive patients: general health, emotional well-being, energy/fatigue, quality of social interaction, quality of sleep, and patient satisfaction. The areas in which we did not find any difference between the two groups are not shown.

Discussion

In the present study the incidence of depression, identified through the Hamilton Scale, was frequent (68.1%) in renal failure patients undergoing hemodialysis. This shows that depression may be impairing their quality of life, as seen in other studies.13,15,22-25 In addition, depression may be associated with worse medical outcomes, including increased mortality.2,6 This is another reason...
Chronic renal failure and quality of life

such as stress, genetics and neurobiological changes. Family and personal history of depression are important factors when combined with chronic renal failure. Quality of life appears to be influenced by depression symptoms and this study has borne out this hypothesis. The treatment of patients with chronic renal failure undergoing hemodialysis prioritizes an improvement in their quality of life. Therefore, the variables that may interfere in the maintenance of a good quality of life must be identified and modified.

Other components of the KDQOL-SFTM may be important in assessing these patients’ quality of life. The KDQOL-SFTM is a reliable questionnaire validated specifically for patients undergoing dialysis. In addition, other factors, besides those assessed with the SF-36 and previously described, may also influence the QoL of the patient with chronic renal disease undergoing hemodialysis, factors such as depression and erectile dysfunction.

We found that quality of life as assessed by the KDQOL-SFTM showed a wide distribution among the various areas of the questionnaire. This suggests that patients with chronic renal failure undergoing hemodialysis vary in their quality of life. This why it is important to study depression in patients with end-stage renal disease.

Other authors reported a lower frequency of depression in relation to that observed in the present study: 30%, 26-28 25.3%, 29 20% 13,16 and 8.1%. This difference may be due to the fact that we have considered mild depression whereas the other authors assessed only severe depression. Indeed, nearly half of all dialysis patients report depression symptoms, but in less than 25% are the symptoms severe enough to be diagnosed as major depression disorder. Indeed, nearly half of all dialysis patients report depression symptoms, but in less than 25% are the symptoms severe enough to be diagnosed as major depression disorder.

In our study, most of the patients fell into the 7-17 range and presented with mild symptomatology, but one that had a strong influence on their lives. They can be diagnosed with dysthymic disorder, a chronic condition characterized by depressive symptoms that occur for most of the day for at least two years. This disorder leads to lack of energy, fatigue, feelings of inadequacy and poor sleep. Their relationship with others is jeopardized by frequent complaints and unnecessary concerns.

Adult patients with chronic renal failure are more vulnerable to depression when compared with patients suffering from other chronic diseases. Depression may be the result of various factors, such as stress, genetics and neurobiological changes. Family and personal history of depression are important factors when combined with chronic renal failure.

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### Table 3 - Scores of the various parameters of the KDQOL-SFTM and their correlation with the scores of the Hamilton Rating Scale for Depression in 47 patients with chronic renal failure submitted to hemodialysis

<table>
<thead>
<tr>
<th>KDQOL-SFTM</th>
<th>median</th>
<th>Interquartile range</th>
<th>rs</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptom/problem list</td>
<td>77.8</td>
<td>69.2-83.3</td>
<td>-0.399</td>
<td>0.005</td>
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<tr>
<td>Effects of kidney disease</td>
<td>59.3</td>
<td>47.6-77.3</td>
<td>-0.155</td>
<td>0.206</td>
</tr>
<tr>
<td>Burden of kidney disease</td>
<td>31.2</td>
<td>18.7-50.0</td>
<td>-0.174</td>
<td>0.239</td>
</tr>
<tr>
<td>Work status</td>
<td>0.00</td>
<td>0.0-50.0</td>
<td>-0.156</td>
<td>0.206</td>
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<tr>
<td>Cognitive function</td>
<td>93.3</td>
<td>66.6-100.0</td>
<td>-0.165</td>
<td>0.265</td>
</tr>
<tr>
<td>Quality of social interaction</td>
<td>75.3</td>
<td>66.6-91.6</td>
<td>-0.433</td>
<td>0.002</td>
</tr>
<tr>
<td>Sexual function</td>
<td>75.0</td>
<td>25.0-100.0</td>
<td>-0.208</td>
<td>0.610</td>
</tr>
<tr>
<td>Sleep</td>
<td>67.5</td>
<td>50.0-80.0</td>
<td>-0.585</td>
<td>0.000</td>
</tr>
<tr>
<td>Social support</td>
<td>83.5</td>
<td>75.0-100.0</td>
<td>0.111</td>
<td>0.457</td>
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<tr>
<td>Dialysis staff encouragement</td>
<td>87.5</td>
<td>75.0-100.0</td>
<td>-0.186</td>
<td>0.210</td>
</tr>
<tr>
<td>Patient satisfaction</td>
<td>67.0</td>
<td>50.0-83.0</td>
<td>-0.244</td>
<td>0.098</td>
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<tr>
<td>Physical functioning</td>
<td>70.0</td>
<td>51.2-85.0</td>
<td>-0.149</td>
<td>0.315</td>
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<td>Physical effects</td>
<td>25.0</td>
<td>0.0-50.0</td>
<td>-0.209</td>
<td>0.158</td>
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<tr>
<td>Pain</td>
<td>67.5</td>
<td>57.5-90.0</td>
<td>0.050</td>
<td>0.737</td>
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<tr>
<td>General health</td>
<td>55.0</td>
<td>35.0-70.0</td>
<td>-0.475</td>
<td>&lt;0.001</td>
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<td>Emotional well being</td>
<td>72.0</td>
<td>60.0-80.0</td>
<td>-0.582</td>
<td>&lt;0.001</td>
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<tr>
<td>Emotional effects</td>
<td>33.3</td>
<td>0.0-91.6</td>
<td>-0.216</td>
<td>0.144</td>
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<tr>
<td>Social function</td>
<td>75.0</td>
<td>62.5-87.5</td>
<td>-0.354</td>
<td>0.015</td>
</tr>
<tr>
<td>Energy/fatigue</td>
<td>65.0</td>
<td>55.0-78.7</td>
<td>-0.518</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Values for all dimensions vary from 0 to 100 (best quality of life).

### Table 4 - Comparison among KDQOL domains in depressive and non-depressive patients

<table>
<thead>
<tr>
<th>KDQOL domains</th>
<th>Depressive*</th>
<th>Non depressive*</th>
<th>p†</th>
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<tbody>
<tr>
<td>General health</td>
<td>45 (32.5-70.0)</td>
<td>65 (55.0-75.0)</td>
<td>0.04</td>
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<tr>
<td>Emotional well being</td>
<td>68 (56.0-76.0)</td>
<td>80 (76.0-96.0)</td>
<td>0.006</td>
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<tr>
<td>Energy/fatigue</td>
<td>60 (50.0-77.5)</td>
<td>70 (65.0-85.0)</td>
<td>0.04</td>
</tr>
<tr>
<td>Quality of social interaction</td>
<td>73.3 (50.0-90.0)</td>
<td>87 (73.0-100.0)</td>
<td>0.05</td>
</tr>
<tr>
<td>Sleep</td>
<td>57.5 (47.5-75.0)</td>
<td>80 (75.0-87.5)</td>
<td>0.0001</td>
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<tr>
<td>Patient satisfaction</td>
<td>67 (67.0-50.0)</td>
<td>83 (67.0-93.0)</td>
<td>0.02</td>
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</tbody>
</table>

* median (interquartile range). † Mann-Whitney test
may occur because quality of life has a personal dimension, despite objective definitions.

However, it was found that several variables included in the KDQOL-SFTM have a significant inverse relationship with the level of depression diagnosed by the Hamilton Rating Scale. In Table 3, significant negative correlations between depression and the list of symptoms and problems and quality of social interaction and sleep are shown. In relation to the areas included in the SF, a significant inverse relation between depression and general health, emotional well-being, social functioning, and energy and fatigue was observed. This suggests that the occurrence of depression may negatively affect the quality of life of patients with chronic renal failure undergoing hemodialysis, especially in relation to the areas previously mentioned. These data are in agreement with those described by Vázquez et al. who also used the KDQOL-SFTM.

At least in part, depression may explain the decline in the scores of the KDQOL-SFTM in these patients, since an inverse relationship between the parameters of this scale and those of the Hamilton Rating Scale was found in this study. Previous studies have already shown that social-demographic variables (female gender, advanced age, low social status and not being in paid employment) and clinical factors (greater frequency of comorbidity, a decrease in the levels of hemoglobin and albumin and previous transplant failure) are associated with a lower score obtained in the SF-36 and with scores relative to the specific dimensions of the KDQOL-SFTM.

According to Vázquez et al., a few specific dimensions of the KDQOL-SFTM would have a strong influence on the results of the questionnaire, such as those related to emotional well-being, physical functioning and cognitive function. We found that only emotional well-being is strongly related to depression. This suggests that treatment of depression may improve this dimension of quality of life in patients with renal failure undergoing hemodialysis.

Signs of anxiety and/or depression symptoms were associated with a poor quality of life in the generic and specific dimensions of the KDQOL-SFTM, with a great degree of explanation in the majority of cases described in the study by Vázquez et al. We also found a strengthened association between depression and poor KDQOL-SFTM scores.

Recently, a strong relationship between depression and health outcomes was described. In this study, the prevalence of depression among participants was 25.3%, and there were more symptoms reported in the depressed group of patients than in those who were not depressed. In addition, the authors observed that the quality of life was not as good in the depressed group when compared to patients who were not depressed.

Vázquez et al. also found that the association of anxiety signs and depression symptoms was greater in relation to mental health (in particular emotional well-being and summary of mental components). This association was also observed in the present work. In addition, the authors cited above found that anxiety signs and/or depression symptoms contributed to the score for

physical condition (physical functioning, pain, symptoms and problems), functional capacity (physical and work status), and social functioning (social function, quality of social interaction).

A significant negative correlation between depression and quality of social interaction and sleep was found. Also, a strong but not significant correlation between depression and cognitive and sexual functioning was observed. Moreover, a significant inverse relationship between depression and general health, emotional well-being, social functioning, and energy/fatigue was seen.

In this study no significant correlation between encouragement by the dialysis staff and the Hamilton Scale score was observed. This finding is also in agreement with that described by Vázquez et al, who did not show a significant relevance of this item to the score obtained in the KDQOL-SFTM. This indicates that personal aspects that may lead to depression have a greater impact than the encouragement that may be offered by the dialysis staff.

Some KDQOL dimensions were significantly less in depressive patients than in non-depressive patients, as is shown in Table 4: general health, emotional well-being, energy/fatigue, quality of social interaction, sleep and patient satisfaction. Except for patient satisfaction, all these dimensions also showed a significant negative correlation with the scores of the Hamilton Rating Scale (Table 3). This strengthens the hypothesis that depression negatively influences the quality of life of renal patients.

However, these results should be evaluated carefully for cause and effect because the low quality of life of patients undergoing hemodialysis may influence the frequency and intensity of depression. In fact, the quality of life of end-stage renal disease patients is dependent on several factors: for example, it has been demonstrated that erythropoietin and intensification of dialysis improves patients’ quality of life. Moreover, relationships have been shown between the patient’s perception of his quality of life and the negative impact of his illness, social support, pain and sleep disturbance.

**Conclusion**

The scores of the Hamilton Rating Scale for Depression observed in hemodialysis subjects showed a negative correlation with several areas of the multidimensional questionnaire on quality of life. Thus, the treatment of depression, once identified, may be extremely valuable in the care of these patients. Psychological support given by specialists and the use of drugs should be considered with the goal of fighting depression in these patients.
Disclosures

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<th>Research grant</th>
<th>Other research grant or medical continuous education</th>
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**Modest**

**Significant**

**Significant: Amounts given to the author's institution or to a colleague for research in which the author has participation, not directly to the author.

Note: UnB = Universidade de Brasilia.

For more information, see Instructions for Authors.

References


