ANXIOUS AND DEPRESSIVE SYMPTOMS IN HEMODIALYTIC TREATMENT PATIENTS

ABSTRACT
Objective: to identify anxious and depressive symptoms in patients with chronic renal disease on hemodialysis and its relationship with sociodemographic, economic and clinical variables. Method: quantitative, transversal, prospective and correlational study with 170 patients. To evaluate the variables, the Hospital Anxiety and Depression Scale and a questionnaire on demographic and clinical data were applied. The data were submitted to statistical analysis in the Minitab 17 and Statistica 10 Programs, presented in tables and figures and discussed with background in the literature. Results: most of the sample (59.4%) presented depressive symptoms, which showed association with race, low schooling, comorbidities, male sex and presence of partner. Anxious symptoms occurred in 32.9% of the sample, being associated with three or more complications, black/brown skin, female sex, illiteracy and absence of partner. Conclusion: high levels of depressive and anxious symptoms were identified in this population. The adoption of comprehensive and multidisciplinary interventions, is invaluable in order to reduce the impact generated by the condition of hemodialysis. Descritores: Anxiety; Depression; Renal Dialysis; Holistic Health.

RESUMO
Objetivo: identificar a sintomatologia ansiosa e depressiva em pacientes com doença renal crônica em hemodiálise e sua relação com variáveis sociodemográficas, econômicas e clínicas. Método: estudo quantitativo, transversal, prospectivo e correlacional, com 170 pacientes. Para a avaliação das variáveis, foi aplicada a Escala Hospitalar de Ansiedade e Depressão e um questionário sobre dados demográficos e clínicos. Os dados foram submetidos à análise estatística, nos Programas Minitab 17 e Statistica 10, apresentados em tabelas e figura e discutidos à luz da literatura. Resultados: a maior parte da amostra (59,4%) apresentou sintomas depressivos que mostraram associação com a raça, a baixa escolaridade, as comorbidades, o sexo masculino e a presença de companheiro. Os sintomas ansiosos ocorreram em 32,9% da amostra, sendo associados a três ou mais complicações, pele negra/parda, sexo feminino, analfabetismo e ausência de companheiro. Conclusão: foram identificados altos níveis de sintomas depressivos e ansiosos nesta população. É inestimável a adoção de intervenções integrais e multidisciplinares, a fim de reduzir o impacto gerado pela condição da hemodiálise. Descritores: Ansiedade; Depressão; Diálise renal; Integralidade em Saúde; Unidades Hospitalares de Hemodiálise; Saúde Holística.

ORIGINAL ARTICLE

ANXIOUS AND DEPRESSIVE SYMPTOMS IN HEMODIALYTIC TREATMENT PATIENTS

SINTOMATOLOGIA ANSIOSA E DEPRESSIVA EM PACIENTES EM TRATAMENTO HEMODIALÍTICO

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RESUMEN
Objetivo: identificar la sintomatología ansiosa e depressiva en pacientes con enfermedad renal crónica en hemodiálisis y su relación con variables sociodemográficas, económicas y clínicas. Método: estudio cuantitativo, transversal, prospectivo y correlacional, con 170 pacientes. Para la evaluación de las variables, se aplicó la Escala Hospitalaria de Ansiedad y Depresión y un cuestionario sobre datos demográficos y clínicos. Los datos fueron sometidos al análisis estadístico, en los Programas Minitab 17 y Statistica 10, presentados en tablas y figura y discutidos a la luz de la literatura. Resultados: la mayor parte de la muestra (59,4%) presentó síntomas depresivos que mostraron asociación con la raza, la baja escolaridad, las comorbilidades, el sexo masculino y la presencia de compañero. Los síntomas ansiosos ocurrieron en 32,9% de la muestra, siendo asociados a tres o más complicaciones, piel negra/parda, sexo femenino, analfabetismo y ausencia de compañero. Conclusión: se identificaron altos niveles de síntomas depresivos e ansiosos en esta población. Es inestimable la adopción de intervenciones integrales y multidisciplinares, a fin de reducir el impacto generado por la condición de la diálisis. Descritores: Ansiedad; Depresión; Diálisis renal; Integralidad en Salud; Unidades Hospitalares de Hemodiálisis; Salud Holística.

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INTRODUCTION

Global Kidney Disease 3 confirms that the estimated prevalence of individuals with varying degrees of renal dysfunction (stages 1 to 5), in many countries ranges from eight to 16%, representing a contingent that, will potentially, require renal replacement therapy.¹

In 2013, 88.2% of all incident cases of Terminal Stage Renal Disease (TSRD) started Renal Replacement therapy (RRT) with hemodialysis and 63.7% of all prevalent cases were receiving this therapy. In addition, a further increase in the prevalence and incidence of RRT is expected by 2020.²

Although a general trend towards a drop in cardiovascular disease mortality coefficients, a recent study that estimated disability-adjusted years of life (DALY) in Brazil in 2008, confirms the prevalence of Chronic Noncommunicable Diseases (CNCDs) in all the regions of the country, with emphasis on cardiovascular diseases, chronic obstructive pulmonary disease, diabetes mellitus and mental disorders, which are notorious for depression.³

Chronic Kidney Disease (CKD) has been described as one of the main risk factors for cardiovascular events and depression, justifying its inclusion in the list of CNCDs associated with high morbidity and mortality, with a progressive increase in the world's populations.⁴

In the advanced stage of CKD, the patient becomes eligible to initiate renal replacement therapy by hemodialysis (HD), peritoneal dialysis (PD) or renal transplantation (TR), which will bring about changes in all of their physical and emotional functioning. Every life and treatment context to which the chronic renal patient is submitted has a negative impact on their quality of life (QOL), even in patients with early-stage CKD.⁵

Deficits in quality of life and the type of treatment to which the chronic renal patient is submitted may contribute to the emergence of psychoaffective diseases, among them, anxiety disorders and depression, with psychiatric disorders being more common in patients with chronic renal disease.⁶⁷

A literature review revealed a prevalence of depression from 22.8% to 39.3% in dialysis patients, and was associated with higher rates of hospitalization and mortality.⁶

Anxiety symptoms, often occur, together with depressive symptoms and appear to aggravate their relationship to quality of life.⁷ The literature demonstrates a prevalence of anxiety symptoms, ranging from 13 to 50% in patients with end-stage renal disease.⁷

These disorders predispose to a greater weakness of the physical component of the quality of life of patients with CKD, contributing to higher rates of morbidity and mortality.⁸ Although many studies have been conducted, over the years, to clarify the impact of CKD and its treatment on quality of life and the appearance of psycho-affective symptoms, there is still no substantial information that understands its entire dimension.

Despite the importance of knowing the mental state of patients on hemodialysis, most health professionals are not aware of the presence, or severity of psychological disorders in these patients.⁹ In addition, the patients themselves do not identify the symptom of depression and anxiety or need to treat these disorders, and, are often, not interested in modifying or initiating antidepressant treatment, commonly attributing, their depression to a recent acute event, chronic illness, or dialysis.¹⁰ It is therefore critical, to deepen knowledge about related factors that could identify patients who are at greater risk of developing mental disorders, so that health professionals can identify and work on these factors, developing strategies to improve their quality of life.

The value of the performance of a multiprofessional team in the early identification and monitoring of these factors is priceless for a plan of action that addresses the feelings caused by any change in the lifestyle of these patients and the prevention of mental and physical comorbidities. In this perspective, this study aims to identify the presence of anxious and depressive symptomatology in patients with CKD on hemodialysis and its relationship with sociodemographic, economic and clinical variables.

OBJECTIVE

- To identify the anxious and depressive symptoms in patients with chronic kidney disease on hemodialysis and its relationship with sociodemographic, economic and clinical variables.

METHOD

A quantitative, cross-sectional, prospective and correlational study, carried out from March to October 2015, at the Nephrology Service of a school hospital, at the quaternary level, of the interior of the State of São Paulo. The Nephrology Service serves approximately 274 patients, running from Monday to...
Saturday, from 6 am to 9 pm, and the duration of the hemodialysis sessions varies from three to four hours.

After applying the inclusion and loss criteria, the sample consisted of 170 patients with TSRD, who underwent hemodialysis treatment at the referred Nephrology service, aged 18 years or more.

Among the reasons for exclusion were: refusal to participate in the study (39 patients); difficulty in responding to the questionnaire (36 patients); need for hospitalization (one patient); death (19 patients); kidney transplantation (seven patients), age less than 18 years (one patient) and transfer to another dialysis service (one patient). Therefore, 104 patients from the total population (274 subjects) did not participate in this study.

Data collection was performed by the researchers during the hemodialysis sessions, with the procedure stable, through interview and questionnaire application. The researchers read the questionnaires to the patient, in a single moment, with an average duration of 25 minutes per interview.

The variables studied were: age; sex; skin color; residence; schooling; marital status; income; occupation, and data related to CKD and hemodialysis (clinical follow-up before hemodialysis, hemodialysis time, associated physical complications CKD and hemodialysis, comorbidities, type of current and previous vascular accesses, and renal transplantation).

For the identification of anxiety and depression, the Hospital Anxiety and Depression Scale (HADS) was used. This scale is easy to handle and fast to execute, and can be answered by the patient or the interviewer, and validated for use in Brazil.11

The reliability coefficient (Cronbach's alpha) of HADS can range from 0.78 to 0.93 for anxiety and 0.82 to 0.90 for depression. It has 14 items, seven for anxiety evaluation (HADS-A) and seven for depression (HADS-D). Each item includes four answers, ranging from zero to three, totaling a maximum score of 21 points. To identify the presence of anxiety and depression, the following score was used: no anxiety from zero to eight, with anxiety greater or equal to nine; without depression from zero to eight, with depression greater than or equal to nine.11

A pilot study was carried out by the researchers, with ten patients undergoing hemodialysis at the referred service, which made it possible to verify the comprehension of the questions, the applicability of the instruments and the time required for the interview. The patients in the pilot study were included in the sample, since there were no changes that compromised the research.

For statistical analysis, a database was prepared in the Excel for Windows Program in which the double digitization, was performed for data validation and conferencing, in order to obtain error-free data. These data were transcribed and analyzed in the Minitab 17 and Statistica 10 programs. Descriptive analysis was performed through frequencies, percentages and measures of central tendency and dispersion (mean, median, standard deviation, minimum and maximum values).

A descriptive analysis of the variables of sample characterization, comorbidities, complications and variables concerning chronic kidney disease was carried out. Associative test was applied between the occurrence of anxiety and depression with variables of sample characterization, comorbidities and complications, using the chi-square test.

Two comparative tests were also used. One comparing the occurrence of anxiety and depression with age, through the application of the t-test for independent samples, and another, with time of hemodialysis treatment, through the application of the Mann-Whitney test. To observe the relationship between the variables of sample characterization, comorbidities and complications, with the occurrence of anxiety and depression, Multiple Correspondence Analysis was used. In all studies, the significance of 0.05 was considered.

The study was approved by the Research Ethics Committee of the School of Medicine of São José do Rio Preto, under the number CAEE 17352513.0.0000.5415.

RESULTS

Regarding socio-demographic and economic data, the majority of the chronic renal patients evaluated in the study were male (59.4%), white (61.1%), mean age 56.2 years (± 15.5), came from other cities in the State of São Paulo (51.1%), lived with a partner (59.4%), had low schooling (91.1%), was retired (60.5%), 92.3%, without work (92.3%), inactive (91.1%), without other sources of income (70.0%) and had two children (25.8%).

Regarding the clinical variables, there was a higher proportion of patients who underwent medical follow-up before hemodialysis (64.1%) and who were not submitted to peritoneal dialysis treatments (85.8%). Among the patients who performed this type of treatment, peritonitis (75.0%) was...
the main reason for discontinuation. In addition, a large part of the sample placed a double lumen catheter at the start of hemodialysis (83.5%) and, currently, had predominant venous access, to arteriovenous fistula (74.7%). The mean time of hemodialysis was 44.4 months, with a minimum time of three months and a maximum, of 228 months (19 years).

Of all the complications presented due to hemodialysis sessions and CKD, patients presented mostly cramps (52.94%) and weakness (64.12%), in the frequency of one or two associated complications (48.82%). None of the patients presented infertility, loss or weight gain due to CKD.

Among the comorbidities evaluated, Systemic Arterial Hypertension (SAH) was predominant (56.47%), followed by diabetes mellitus (33.53%), in the frequency of one to two associated comorbidities (72.94%). None of the patients had heart failure, pericarditis, autoimmune disease, cataract, osteopathy, hepatopathy and Hepatitis B (HbsAg +).

Regarding the variables related to the occurrence of anxiety and depression in patients on hemodialysis, 59.4% of the sample presented depressive symptoms, while 32.9% presented anxious symptoms.

Table 1 presents the percentages related to the relationship between the occurrence of anxiety and depression and the presence of complications and comorbidities.

Table 1. Percentages related to the relationship between the occurrence of anxiety and depression and variables of sample characterization (n = 170). São José do Rio Preto (SP), Brazil, 2015.

<table>
<thead>
<tr>
<th>Characterization variables</th>
<th>Anxiety No</th>
<th>Anxiety %</th>
<th>Depression No</th>
<th>Depression %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>114</td>
<td>67.06</td>
<td>69</td>
<td>40.59</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>42</td>
<td>60.87</td>
<td>27</td>
<td>39.13</td>
</tr>
<tr>
<td>Male</td>
<td>72</td>
<td>71.29</td>
<td>29</td>
<td>28.71</td>
</tr>
<tr>
<td>marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With partner</td>
<td>70</td>
<td>69.31</td>
<td>31</td>
<td>30.69</td>
</tr>
<tr>
<td>Without partner</td>
<td>44</td>
<td>63.77</td>
<td>25</td>
<td>36.23</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>10</td>
<td>66.67</td>
<td>5</td>
<td>33.33</td>
</tr>
<tr>
<td>Can read and write</td>
<td>104</td>
<td>67.10</td>
<td>51</td>
<td>32.90</td>
</tr>
<tr>
<td>Comorbidities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>22</td>
<td>19.30</td>
<td>1</td>
<td>1.79</td>
</tr>
<tr>
<td>1 to 2</td>
<td>57</td>
<td>50.00</td>
<td>26</td>
<td>46.43</td>
</tr>
<tr>
<td>3 or more</td>
<td>35</td>
<td>30.70</td>
<td>29</td>
<td>51.79</td>
</tr>
<tr>
<td>Comorbidities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>21</td>
<td>70.00</td>
<td>9</td>
<td>30.00</td>
</tr>
<tr>
<td>1 to 2</td>
<td>84</td>
<td>67.74</td>
<td>40</td>
<td>32.26</td>
</tr>
<tr>
<td>3 or more</td>
<td>9</td>
<td>56.25</td>
<td>7</td>
<td>43.75</td>
</tr>
</tbody>
</table>

P-value for the chi-square test at P <0.05.

The results of table 1 suggest the presence of two significant associations. The first association refers to the occurrence of anxiety and the presence of complications (P <0.001), and the majority of patients who did not present anxiety had one to two complications. However, the majority of patients who presented anxiety symptoms reported the presence of three or more complications. This result indicates that the number of complications that the chronic renal patient presents is highly associated with the occurrence of anxiety, and the probability of anxiety is greater with the increase in the number of complications. This result was not repeated for the occurrence of depression (P = .443).

The second association refers to the occurrence of depression and schooling (P = 0.016), that is, the vast majority of illiterate patients (86.67%) presented with depression and, in the case of patients who can read and write, between the percentages of occurrence and absence of depression. This fact indicates that illiteracy may be associated with the occurrence of depression in hemodialytic patients.

The results of table 2 below demonstrate the lack of significant differences in patient age and hemodialysis time with anxiety and depression, since the P values found were higher than the level of significance adopted. This result suggests that the age of the patients and the time of treatment are not preponderant factors for the occurrence of anxiety and depression.
Table 2. Descriptive statistics of age and time of hemodialysis in relation to the occurrence of anxiety and depression (n = 170). São José do Rio Preto (SP), Brazil, 2015.

<table>
<thead>
<tr>
<th>Characterization variable</th>
<th>Anxiety and depression</th>
<th>Occurrence</th>
<th>Average±SD</th>
<th>Median</th>
<th>Value P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Anxiety</td>
<td>No (n=114)</td>
<td>56.56±15.58</td>
<td>58.00</td>
<td>0.657¹</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes (n=56)</td>
<td>55.52±15.54</td>
<td>57.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Depression</td>
<td>No (n=69)</td>
<td>55.90±16.28</td>
<td>57.00</td>
<td>0.797¹</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes (n=101)</td>
<td>56.53±15.08</td>
<td>58.00</td>
<td></td>
</tr>
<tr>
<td>Time of treatment (months)</td>
<td>Anxiety</td>
<td>No (n=114)</td>
<td>45.54±41.61</td>
<td>36.00</td>
<td>0.577²</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes (n=56)</td>
<td>42.07±36.04</td>
<td>29.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Depression</td>
<td>No (n=69)</td>
<td>39.42±31.32</td>
<td>26.00</td>
<td>0.436²</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes (n=101)</td>
<td>47.79±44.49</td>
<td>36.00</td>
<td></td>
</tr>
</tbody>
</table>

¹Value P referring to the t test for independent samples at P <0.05. ²P-value for the Mann-Whitney test at P <0.05.

Figure 1 shows the arrangement of the variables evaluated in the study in the two-dimensional space generated by the Multiple Correspondence Analysis.

Figure 1. Configuration of the variables evaluated in the two-dimensional space generated by the Multiple Correspondence Analysis. São José do Rio Preto (SP), Brazil, 2015.

To better understand the relationships between the variables evaluated, the two-dimensional graph was divided into hemispheres. Variables in the same hemisphere show a high relation. Thus, it was possible to observe that the occurrence of anxiety is related to the occurrence of three or more complications and three or more comorbidities. In addition, anxiety was more frequent in patients with black or brown skin, female, illiterate and without partners. On the other hand, depression, located in the other hemisphere, had a high relation with white skin patients, with no or one to two comorbidities and complications, male, living with a partner.

**DISCUSSION**

The sociodemographic and clinical profile of this sample has characteristics similar to the profile of patients undergoing hemodialysis in other national and international services. Data from a Brazilian chronic dialysis survey, conducted in 2014, indicated a prevalence of 58% male patients on a dialysis program in Brazil. Annual reports from the United States Renal Data System showed that 44.5% of patients with TSRD are aged 65 or over and prevalence per million continues to increase more rapidly among age groups.

A large proportion of the sample (59.4%) had depressive symptoms, and a minority but significant proportion (32.9%), had anxiety symptoms. Several studies have shown a significant prevalence of these symptoms in the same population, suggesting that depression and anxiety appear to be the most frequent psychic disorders in patients receiving hemodialysis.

One study, involving 152 patients at the start of renal replacement therapy (RRT),
found that quality of life is significantly affected by initiation of treatment in all respects. In addition, symptoms of anxiety and depression were present in 26.6% and 27% of the patients, respectively, being significantly related to the emotional component of QoL.5

A study that aimed to explore the association between anxiety, depression and quality of life in patients with TSRD showed that employment, marital status, young age and cost of treatment were positively related to QOL. In addition, anxiety and depression were independently related to this variable.15 Since depressive and anxious symptoms are associated with decreased quality of life, authors support the recognition and early treatment of these psychoactive disorders as fundamental strategies in hemodialysis patients.16

Other studies also suggest that different treatment modalities are associated with different risks of developing major depression in patients with CKD. Among renal substitution therapies, patients undergoing peritoneal dialysis are at greater risk of developing depression when compared to patients undergoing hemodialysis, whereas patients who underwent renal transplantation had a lower risk of developing this complication.17

The high prevalence of sexual dysfunction in hemodialytic patients has also been positively correlated with depression, anxiety, and impaired quality of life.18 Other authors further suggest that proinflammatory molecules, such as interleukin-619, low serum levels of vitamin D20, and sleep disorders21 appear to play an important role in the onset of depression in these patients.

In this study, the depressive symptomatology presented a high relation with patients with white skin, with low schooling, with none or with one or two comorbidities and present complications, male sex and presence of companion. Already the occurrence of anxious symptomatology was positively associated with the presence of three or more complications, black or brown skin, female sex, illiteracy and absence of companion.

The relationship of depressive and anxious symptoms in hemodialytic patients, with sociodemographic, economic and clinical variables, has been studied in the literature. Recent study suggests a relationship between depressive symptoms with lower economic status, less subsidies, less than three years in hemodialysis treatment and presence of comorbidities, besides showing association between anxiety and depression.22

Regarding gender, a positive relation, between female sex and the presence of anxious and depressive symptomatology was found in the literature. The authors suggest that the difference between genders may be due to women's greater concerns about the future and its multiple obligations, as well as a deficit in emotional and financial support, which may contribute to a higher prevalence of anxiety in this population.23

Although the mean age of this sample was 56.2 years, there was no relation between age and presence of anxious and depressive symptomatology. Other findings corroborate this result.24,25 On the other hand, anxiety scores were inversely associated with the age of the patients.23

The results of a study suggest that younger people with TSRD need more support to alleviate their health-related complaints and need extensive psychological assistance to deal with negative emotions related to the disease because they consider that dialysis causes more significant damage in their lives, because of all limitations imposed.24

The presence of depressive and anxious symptoms in hemodialysis patients was associated with unfavorable clinical outcomes. Depression in nephropathy patients was associated with an increased risk of hospitalization, longer hospitalizations, an increased risk of mortality4, and the occurrence of arthritis and arthritis.26

In addition, these psychoactive symptoms were also associated with a higher incidence of somatic symptoms, mainly immunological, cardiovascular, gastrointestinal and dermatological (such as allergies), in patients submitted to hemodialysis27, which explains, in part, the presence of physical symptoms without clear pathophysiological mechanisms.

The potential mechanisms responsible for the association of depressive and anxious symptoms, with adverse clinical outcomes, are not entirely clear. One plausible mechanism is non-adherence to medical treatment. This phenomenon has been demonstrated in hemodialysis patients with depressive symptoms, who have been shown to be less adherent to the prescribed drug treatment.28

The literature suggests several strategies to reduce rates of depression and anxiety in patients with CKD, such as providing adequate psychosocial care and antidepressant use.29

The implementation of physical exercise programs in hemodialysis units has also been associated with improved quality of life and the reduction of physical and psychological symptoms.30
CONCLUSION

This study identified high levels of depressive symptoms in patients with chronic kidney disease on hemodialysis, which showed association with race, low schooling, comorbidities, male gender and presence of partner. The levels of anxious symptoms were also elevated, being associated to three or more complications, black / brown skin, female sex, illiteracy and absence of companion.

The results found have important implications for clinical practice and for health research, since it points out ways to improve the approach to hemodialysis patients. The health team, based on an integral care, should consider what are the risk factors for the appearance of depressive and anxious symptoms and the resources offered to the patient and the families to experience this new condition, since the predictability of negative intercurrences minimize physical and mental damage.

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