Psychiatric Comorbidity, Sexual Dysfunction, and Quality of Life in Patients Undergoing Hemodialysis: A Case-Control Study

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ABSTRACT

Introduction: Due to disabilities caused by the disease and the need for dialysis, end-stage renal disease (ESRD) is frequently comorbid with psychiatric disorders, adversely affects quality of life, and causes significant sexual dysfunction (SD). We aimed to investigate the psychiatric comorbidity, quality of life, depression and anxiety levels, and SD in ESRD patients undergoing hemodialysis.

Methods: Forty-nine patients undergoing hemodialysis treatment in a dialysis center and 44 non-ESRD control subjects selected with snowball sampling were enrolled in the study. All subjects were assessed using Structured Clinical Interview for Axis-I Disorders (SCID-I). Sociodemographic data form, Hospital Anxiety and Depression Scale (HADS), Arizona Sexual Experience Scale (ASEX), and World Health Organization Quality of Life Short Form Turkish Version Scale (WHOQOL-BREF-TR) were applied to both groups.

Results: There was no difference between the groups in terms of sex, age, education period, marital status, presence of additional physical illness, and past history of psychiatric disorders. Compared with the control group, HADS depression subscale and ASEX scores were significantly high (p<0.01) in the patient group, and WHOQOL-BREF-TR psychological and physical domain scores were low (p<0.05 and p<0.01, respectively). There was a significant negative relationship between HADS scores and WHOQOL-BREF-TR psychological, environmental, and national environmental scores in the patient group (p<0.05). When the differences between the groups were reanalyzed after controlling HADS depression scores with covariance analysis, the significant difference in ASEX and WHOQOL-BREF-TR physical domain scores between the groups remained, but the significant difference in WHOQOL-BREF-TR psychological domain scores disappeared.

Conclusion: The quality of life of ESRD patients was lower, especially in the psychological and physical domains, and psychiatric comorbidities and SD rates were higher than in non-ESRD control subjects. Quality of life is affected by SD. Recognizing and treating depressive symptoms will help improve the quality of life, especially in the psychological domain.

Keywords: Kidney failure, quality of life, sexual dysfunctions, comorbidity

INTRODUCTION

Sexual dysfunction (SD) is a very common problem in end-stage renal disease (ESRD) patients, and a successful transplantation is the most efficient method of recovery of normal sexual function in ESRD patients (1,2,3,4). According to the Turkish Nephrology Association, at the end of 2009, a total of 59,443 patients were under renal replacement therapy (RRT), and this number will continue to increase, and the most common type of RRT is hemodialysis (78.5%). Renal transplantation accounts for only 1.4% of all therapies (5).

With the implementation of RRTs and the contributions of technological advancements to RRTs, the duration of life has increased in chronic renal diseases, and particularly, studies that aim to investigate the quality of life of patients under RRT has increased (6). Many studies report that compared with the general population, quality of life is lower in ESRD patients probably due to factors such as limitations caused by the disease and requirements of dialysis treatment (7,8,9). In the process leading to ESRD, different and progressive metabolic, hormonal, and emotional irregularities encountered by the patients increase their burden (10). It is reported that a worsening of the quality of life, especially in physical and psychological areas, increases mortality and hospitalization rates in ESRD patients, which in turn increases the importance of the quality of life in this group (11,12,13). Studies examining factors affecting the quality of life have increased in recent years, and particularly, SD (2,14,15) and anxiety and depression symptoms (16,17,18,19,20) are suggested to be important variables affecting the quality of life. Peng et al. (21) reported that advanced age, diabetes, and depressive symptoms are independently related with SD, and quality of life of patients with SD is lower. Although the studies frequently report evidences suggesting that SD affects the quality of life, there are also contradicting reports (22).

Although there are studies reporting that SD and depression and anxiety levels affect the quality of life, the number of studies evaluating both variables together and assessing the participants with structured interviews is rather limited. In this study, we aimed to investigate psychiatric...
comorbidity, depression and anxiety levels, frequency of SD, and quality of life in ESRD patients undergoing hemodialysis.

**METHODS**

Outpatients undergoing hemodialysis in a dialysis center affiliated to the Turkish Renal Foundation between February and April 2014, who met the inclusion criteria, were consecutively included in the study. The study protocol was approved by Bakırköy Training and Research Hospital for Psychiatry, Neurology and Neurosurgery’s Ethical Committee. All participants were informed about the study, and verbal and written informed consents were taken.

Inclusion criteria of the study are ages 18–65 years, being literate, having adequate mental and physical capacities for understanding and replying to the scales, and being under hemodialysis treatment for at least 12 months. Study exclusion criteria are mental retardation, history of use of alcohol and/or substance except smoking, having used a psychoactive substance in the previous 1 week, functional deficits and language problems to an extent that impedes psychiatric interviews, diagnosis of dementia, delirium or psychosis, hospitalization during the past 3 months, and failure to complete some scales of the study due to cultural and personal reasons. Five patients refused to participate in the study, six patients transferred to another dialysis center, three patients died during the study, and two patients who were diagnosed with dementia were not included. A total of 56 patients were enrolled, but seven of them did not fulfill the Arizona Sexual Experience Scale (ASEX) and were therefore excluded from statistical analyses, and thus, the study was completed with 49 hemodialysis patients. Forty-four volunteers without any renal disease selected with snowball sampling were also included in our study as the control group.

A total of 93 participants were evaluated by the fifth author of the study with Structured Clinical Interview for Axis I Disorders (SCID-I).

In this study, variables which are believed to affect the quality of life and are interrelated were examined and discussed: sociodemographic characteristics, depression and anxiety levels, existence of a psychiatric disorder, and sexual functions. All participants completed the sociodemographic and clinical data form, ASEX, Hospital Anxiety and Depression Scale (HADS), and World Health Organization Quality of Life Short Form Turkish Version Scale (WHOQOL-BREF-TR).

Participants and the physician responsible for dialysis patients were informed about psychiatric assessment results, and if deemed necessary, they were consulted for psychiatric treatment.

**Tools of Assessment**

**Sociodemographic data form:** It is a structured questionnaire developed for this study to determine sociodemographics (age, marital status, educational status, etc.) of the cases.

**SCID-I:** It is a structured measurement tool applied by the clinician and used for systematically gathering information for an Axis I disorder diagnosis according to the DSM-IV criteria. It was first developed by First et al. (23) and was adapted to Turkish and its reliability was tested by Özkürkçügil et al. (24).

**HADS:** It is a 4-point Likert type scale developed by Zigmond and Snaith (25) to identify the risk and measure the level of anxiety and depression in patients admitted to hospital. Turkish validity and reliability studies of the scale were performed by Aydemir (26), and it is reported that this scale is reliable for scanning of depression and anxiety symptoms in patients with physical diseases. It contains a total of 14 questions, and odd numbers measure anxiety and even numbers measure depression. It has anxiety (HADS-A) and depression (HADS-D) subscales. As a result of a study conducted in Turkey, cut-off score for anxiety subscale was found to be 10/11, and cut-off score for depression subscale was found to be 7/8. The lowest and highest scores of both subscales were 0 and 21, respectively.

**ASEX:** It is a short scale designed to evaluate five basic components (drive, arousal, penile erection/vaginal lubrication, orgasm, and satisfaction) of sexual function (27). Male and female forms of ASEX differ only in the question related to erection/lubrication. Each item is rated with a 6-point Likert system, with lower scores referring to an enhanced sexual function, whereas higher scores reflect impaired sexual function. Cut-off score of the scale is 19. Its Turkish validity and reliability study was conducted by Soykan (28) in patients undergoing hemodialysis treatment, and Cronbach alpha coefficient is determined to be 0.94 in females and 0.92 in males.

**WHOQOL-BREF-TR:** It is a short form of the WHOQOL quality of life scale developed by WHOQOL group (29). Short form contains a total of 26 items, together with two questions, one inquiring about the general perceived quality of life and the other inquiring about the perceived health situation. After the addition of one national question during Turkish validity studies, WHOQOL-BREF-TR now consists of 27 items. Using questions other than the first two general questions, physical, psychological, social, environmental, and national environmental area scores have been analyzed. All five areas, i.e., physical, psychological, social, environmental, and national environment, are scored between 0 and 100 points; as the score increases, the quality of life improves. The Turkish validity and reliability studies of the scale have also been performed (30,31).

**Statistical Analysis**

Statistical Package for the Social Sciences (IBM SPSS Statistics Armonk, New York, USA) version 18 package program is used in the analysis of study data. Chi-square test is used for comparison of the rate and frequency of categorical variables. Means of continuous variables in the two groups were compared using Student’s t-test. Pearson correlation analysis was used to assess the interrelations of scale scores in the patient group. ANCOVA was performed in data which differences determined between groups to control the confounding effect of depression scores and depression scores were taken as covariance.

**RESULTS**

There is no difference between patient and control groups in terms of age, duration of education, sex, comorbid physical disease, and previous psychiatric disease frequency (Table 1).

However, in the patient group, the frequency of comorbid psychiatric disorder is significantly higher than that in the control group (49% and 20.5%, respectively, X2 = 8.241, p<0.01). In spite of this frequency in comorbid psychiatric disorders, it is determined that only 20.4% (n=10) of patients are currently under psychiatric treatment.

Table 2 demonstrates the comparison of scale scores of patient and control groups. HADS depression subscale mean score is 7.65±4.33 in the patient group and 5.43±3.28 in the control group, whereas HADS anxiety subscale mean score is 6.75±3.95 in the patient group and 5.77±3.36 in the control group, and depression subscale scores are significantly higher in the patient group than in the control group (t=−2.761, p<0.01). The mean score of ASEX in the patient group is 17.85±6.71, which is significantly higher than that in the control group (13.70±5.48) (t=−3.243,
When these two groups were compared in terms of WHOQOL-BREF-TR subscale scores (physical, psychological, social, environmental, and national environmental area scores), it was found that physical and psychological area scores are significantly lower in the patient group than in the control group (t=−4.83, p<0.01 and t=2.241, p<0.05, respectively).

Table 3 demonstrates the analysis of correlation between scales. A statistically significant negative correlation is found between both depression and anxiety subscale scores of HADS and psychological, environmental, and national environmental area scores of WHOQOL-BREF-TR. A significant correlation was not determined between ASEX scores and HADS subscale scores. There is a significant negative correlation between ASEX and physical sub-domain score of WHOQOL-BREF-TR (r=−0.40, p<0.05).

It is thought that depression may have a confounding effect on differences determined about sexual dysfunction and quality of life between patient and control groups (8,14,18). Results of covariance analysis where depression variable is assessed as a covariant are shown in Table 4. When depression variable is controlled, the differences in ASEX mean scores (F: 5.84; p<0.05) and in physical area mean scores (F: 15.07; p<0.01) between the groups continued. The significant difference determined in the psychological domain of WHOQOL-BREF-TR between the two groups, as shown in Table 2, disappeared as a result of covariance analysis.

**DISCUSSION**

In this study, psychiatric comorbidity, depression and anxiety levels, SD, and quality of life was investigated in a group of ESDR patients undergoing hemodialysis and control subjects without any renal diseases.
Studies report that in ESRD patients, psychiatric disorders are more frequently reported because of factors such as the chronic course of the disease, difficulties and limitations imposed by hemodialysis, and hormonal or biochemical disorders caused by the disease. A review of studies using different scales and strategies for diagnosis showed that the frequency of comorbid psychiatric disorders in ESRD ranges between 5% and 50% (3,7,8,9,41). Accordingly, the results of our study also support the literature data. When interrelations of quality of life, SD, and psychiatric symptoms are examined in our study, particularly the severity of depression and anxiety symptoms is found to be negatively correlated with quality of life. As it is suggested that psychiatric disorders also worsen the quality of life independently from ESRD (42), it is an expected result that the severity of psychiatric symptoms in ESRD increases, the quality of life worsens more. Ozçetin et al. (20) reported a negative correlation between HADS and SF-36 scores, which measure the quality of life in patients undergoing dialysis. The results of our study are consistent with those of other studies which report lower quality of life in ESRD patients than in the general population (6,7,8,9), and the existing psychiatric symptoms further worsen the quality of life (16,17,18,20), and underline the importance of diagnosis and treatment of psychiatric disorders in ESRD.

Examining the WHOQOL-BREF-TR subscale scores evaluating the quality of life in our study reveals that the quality of life of patients in physical and psychological health areas is lower than that of the control group. This finding is consistent with results of other studies showing that SD is more frequent in patients with chronic renal disease (3,4,5,36,37,38). In a study conducted with patients undergoing dialysis, 65% of participants have expressed dissatisfaction with their sexual life, 40% have expressed that they are not interested in sexual relationship anymore, and 25% have expressed symptoms of probable SD (39). In a multicenter study performed by Peng et al. (40) with female hemodialysis patients, 55.7% of patients have refused to participate in the study on account of having no sexual life, and it is determined that 138 patients completed the study, and SD is significantly higher in the patients than in healthy control subjects. Similar results have also been repeated in studies conducted on male ESRD patients (37).

In our study, ASEX scores in the patient group were significantly higher than those in the control group. This finding is consistent with results of other studies showing that SD is more frequent in patients with chronic renal disease (3,4,5,36,37,38). In a study conducted with patients undergoing dialysis, 65% of participants have expressed dissatisfaction with their sexual life, 40% have expressed that they are not interested in sexual relationship anymore, and 25% have expressed symptoms of probable SD (39). In a multicenter study performed by Peng et al. (40) with female hemodialysis patients, 55.7% of patients have refused to participate in the study on account of having no sexual life, and it is determined that 138 patients completed the study, and SD is significantly higher in the patients than in healthy control subjects. Similar results have also been repeated in studies conducted on male ESRD patients (37).

A significant negative correlation between ASEX scores and psychical subdomain score of WHOQOL-BREF-TR was found. There are different

### Table 3. Correlations of scores of scales in patient group*

<table>
<thead>
<tr>
<th></th>
<th>WHOQOL-BREF-TR</th>
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<tbody>
<tr>
<td></td>
<td>Physical area</td>
</tr>
<tr>
<td>HADS-D</td>
<td>r=0.668</td>
</tr>
<tr>
<td></td>
<td>p=0.000</td>
</tr>
<tr>
<td>HADS-A</td>
<td>r=0.128</td>
</tr>
<tr>
<td></td>
<td>p=0.381</td>
</tr>
<tr>
<td>ASEX</td>
<td>r=-0.400</td>
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<tr>
<td></td>
<td>p=0.048</td>
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</tbody>
</table>

*p Pearson Correlation Analysis is used. Values of p<0.05 are considered as statistically significant. HADS-D: Hospital Anxiety Depression Scale-Depression Subdomain; HADS-A: Hospital Anxiety Depression Scale-Anxiety Subdomain; ASEX: Arizona Sexual Experience Scale; WHOQOL-BREF-TR: World Health Organization Quality of Life Short Form Turkish Version

### Table 4. Comparison of WHOQOL-BREF-TR Physical and Psychological Area Scores and ASEX Scores Between Groups after Controlling HADS-D Scores*

<table>
<thead>
<tr>
<th></th>
<th>Control group (Mean/SD)</th>
<th>Patient group (Mean/SD)</th>
<th>F</th>
<th>p</th>
<th>Efa Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASEX</td>
<td>14.26/0.911</td>
<td>17.35/0.6</td>
<td>5.84</td>
<td>p=0.018</td>
<td>0.61</td>
</tr>
<tr>
<td>Psychological area</td>
<td>65.56/1.99</td>
<td>63.40/1.88</td>
<td>0.565</td>
<td>p=0.454</td>
<td>0.006</td>
</tr>
<tr>
<td>Physical area</td>
<td>68.11/2.72</td>
<td>53.38/2.55</td>
<td>15.07</td>
<td>p=0.000</td>
<td>0.143</td>
</tr>
</tbody>
</table>

*ANCOVA is used. Values of p<0.05 are considered as statistically significant. HADS-D: Hospital Anxiety Depression Scale-Depression Subdomain; ASEX: Arizona Sexual Experience Scale; WHOQOL-BREF-TR: World Health Organization Quality of Life Short Form Turkish Version
findings about this relationship in the literature. Basok et al. (3) reported that SD in female patients undergoing hemodialysis is particularly related with the psychical domain of the quality of life. Some other studies have reported the inverse relation between SD and quality of life (40). SD as a factor affecting self-confidence, the feeling of integrity, and social and marital relationships may decrease the quality of life. There are studies that have reported no relation between the two variables (22). Coelho-Marquez et al. (22) interpreted this finding as compared with the challenges brought with the disease and hemodialysis treatment, patients may ignore the sexual functions among the whole quality of life. Nevertheless, the fact that sexuality has an important place among the factors affecting quality of life is undeniable and consistent with the widespread data. Our findings report the inverse correlation between CD and quality of life. We suggest that interventions for CD are supposed to take place among studies aimed at improving quality of life.

In our study, compared with the control group, HADS-D and ASEX scores have been found to be significantly high and scores of physical and psychological areas of WHOQOL-BREF-TR have been found to be significantly low in the patient group. As known, depressive symptoms cause SD and worsening in the quality of life in the general population (43,44). In our study, differences between the patient and control groups reported in all three fields have been re-examined by covariance analysis by controlling the depression scores. After covariance analysis, severity of SD has been found to be still significantly higher, and quality of life in physical area has been found to be still significantly lower than those in the control group. When the severity of depressive symptoms is controlled, the difference of quality in psychological area between the groups disappeared. According to the results of our study, in ESRD, the quality of life in psychological area is particularly related to depressive symptoms, and deterioration in sexual function and quality of life in physical area is independent from depressive symptoms. Considering that a successful transplantation is the most effective way of improving CD in ESRD patients (1,2,3,4), transplantation comes into prominence in ESRD also from this point of view. As the quality of life in psychological health area is particularly affected from depressive symptoms in ESRD, psychiatric assessment and treatment of depression in patients with ESRD undergoing hemodialysis will be useful for improving the psychological domain of the quality of life.

In conclusion, in ESRD patients undergoing a hemodialysis treatment, the quality of life particularly in psychological and physical areas is lower, and psychiatric comorbidities and SD are higher than those in the control subjects. Diagnosis and treatment of the depressive symptoms will contribute to the improvement of quality of life in the psychological area. As SD is not affected only from psychiatric symptoms, and also its best treatment known is transplantation currently, the importance of transplantation comes into prominence for the treatment of SD, too.

Hormonal and biochemical values which may affect sexual functions and quality of life in ESRD were not assessed in our study, and this may be considered a limitation of the study; therefore, its results are required to be assessed and evaluated within the frame of this limitation.

**Ethics Committee Approval:** Ethics committee approval was received for this study from the ethics committee of Bakırköy Prof. Dr. Mazhar Osman Training and Research Hospital for Psychiatry, Neurology and Neurosurgery.

**Informed Consent:** Written informed consent was obtained from all participants who participated in this study.

**Peer-review:** Externally peer-reviewed.


**Conflict of Interest:** No conflict of interest was declared by the authors.

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