

Correlates of psychiatric morbidity in Egyptian renal transplant recipients

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Background

High rates of psychiatric morbidity have been reported after successful renal transplantation.

Aim

The aim of this study was to estimate the prevalence of psychiatric disorders among renal transplant recipients and to study their sociodemographic and medical correlates.

Patients and methods

A stratified random sample of 230 postrenal transplant recipients was selected from the nephrology clinics of Ain Shams University Specialized Hospital and from Nasser Institute Nephrology Clinics. All cases were subjected to a semistructured questionnaire for renal transplant recipients, the socioeconomic family scale, the Arabic version of the General Health Questionnaire-28, and the Structured Clinical Interview for *Diagnostic and Statistical Manual of Mental Disorders*, 4th ed. Axis I Disorders.

Results

The prevalence of psychiatric morbidity was 39.1%. Major depression was the most frequently encountered diagnosis (16.52%), followed by adjustment disorder with depressed mood (9.13%), dysthymia (8.26%), generalized anxiety disorder (4.35%), and post-traumatic stress disorder (0.87%). There was a statistically significant association between psychiatric morbidity and age, occupational level, and marital status. However, there was no significant association between psychiatric morbidity and sex, educational level, social class, side effects of drugs received after transplant, medical diseases other than renal impairment, duration of hemodialysis therapy before surgery, and type of donor.

Conclusion

The frequency of psychiatric morbidity is quite high in renal transplantation recipients, which necessitates thorough screening of the demographic and clinical variables. The involvement of mental health professionals with the team of renal transplantation can help and facilitate early detection and proper intervention to help patients suffering from psychiatric complications after the surgery.

Keywords:

demographic data, psychiatric morbidity, renal transplant recipients, renal transplantation

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Introduction

Solid-organ recipients are a vulnerable group that needs pretransplant and post-transplant mental health assessment and more social support. Immunosuppressive drugs and associated physiological challenges can precipitate deterioration in the mental health – for example, depression – affecting up to 60% of recipients, which can lead to increased noncompliance and graft loss [1].

Kidney transplantation is now an established clinical technique; however, the emotional experiences and the psychological and psychopathological complications related to organ donation and transplantation should not be underestimated [2].

Kidney transplantation offers patients with end-stage renal disease freedom from frequent, time-consuming, and uncomfortable dialysis treatments. However, successful outcomes are not ensured, and transplant recipients face new challenges, including concerns about transplant rejection and the need to adhere to a complex regimen of therapy that may generate distressing side effects [3].

The American Society of Transplantation recommends a formal psychosocial evaluation for transplant candidates. The benefits of this assessment are clearly evident in determining factors that may influence a decision to place an individual on the waiting list. More than other surgical interventions, organ transplantation has a

psychological resonance relating to the self and body image representation [4].

Kidney transplantation is considered not only a surgical intervention but a complex course in which the extraordinary physiological and psychological stress sets substantial demand on the patient and his or her family. In every set, from the first surgical evaluation to the subsequent rehabilitation, many psychological and psychosocial problems can disturb patient's adaptation and affect therapeutic results [5].

High rates of emotional distress and psychiatric morbidity that have been reported following renal transplantation anxiety associated with transplantation, observed in almost two-thirds of cases, usually involves a fear of postoperative renal rejection, which decreases with time [6]. In addition, some studies report that more than 50% of patients may suffer from anxiety even some years after renal transplantation. Depression is also common in renal transplantation patients. Higher levels of depression are associated with increased mortality in end-stage renal disease patients [7]. Patients with psychiatric morbidity were not compliant to treatment regimens, with a higher risk for rejection, and greater total pain scores, as well as a lower level of satisfaction [8].

Patients and methods

This was a cross-sectional observational study, approved by the Ethical Committee of Ain Shams University. After necessary permits, a stratified random sample of renal transplant recipient patients (during their follow-up clinical visits) was selected from the nephrology clinic of Ain Shams University Specialized Hospital and Nasser Institute. The sample size was 230 patients as calculated using the Epi-Info (Centers for Disease Control and Prevention (CDC), Atlanta, Georgia, USA) program, version 6 by a statistician. No inclusion or exclusion criteria were applied. Informed written consent was signed by the patients before their participation in the study, confidentiality was ensured, and explanation of the research nature was carried out.

The following tools were used.

- (1) A designed questionnaire: we designed a set of questions in the form of yes/no, multiple choice, or closed-ended format based on the Ain Shams Psychiatric Institute sheet to assess the following domains: age, sex, educational level, occupational level, and marital and social status.
- (2) The semistructured questionnaire for renal transplant recipients [9]: it was used to determine the medical condition of the postrenal transplant recipients (PRTRs) and the circumstances of surgery.
- (3) The socioeconomic family scale [10]: it was used to determine the social class of the PRTRs.
- (4) The General Health Questionnaire-28 (GHQ-28) [11]: it is a screening device for identifying minor psychiatric disorders in the general population and within the

community or nonpsychiatric clinical settings that are suitable for all ages. This self-administered questionnaire focuses on two major areas: the inability to carry out normal function, and the appearance of new and distressing phenomena. It is an ideal screening device for identifying minor psychiatric disorders to help inform further intervention. We used the GHQ-28 version, which detects somatic symptoms, anxiety and insomnia, social dysfunction, and depression. We used the translated and validated Arabic version [12], which denotes minor psychiatric morbidity in patients who scored 7 or more. High scorers were further interviewed using Structured Clinical Interview for *Diagnostic and Statistical Manual of Mental Disorders*, 4th ed. Axis I Disorders (SCID-I).

- (5) The SCID-I version [13]: the interview provides a broad coverage of psychiatric diagnoses according to *Diagnostic and Statistical Manual of Mental Disorders*, 4th ed. (DSM-IV). We used the translated and validated Arabic version [14].

Procedure

The study included a stratified random sample of 230 renal transplant recipients who were initially assessed using the Ain Shams psychiatric interview, the semi-structured questionnaire for renal transplant recipients, and the socioeconomic family scale.

All participants were asked to complete the GHQ-28 for the possibility of psychiatric morbidity. Among the 230 patients, 165 patients scored more than 7, and hence they were further interviewed using SCID-I. Only 90 patients out of them warrant a DSM-IV psychiatric diagnosis.

Statistical analysis

All data were recorded and analyzed using the statistical package for the social sciences (12th version) [15]. Qualitative data were described using frequency and percentage, whereas quantitative data were described using mean and SD. χ^2 provides a comparison of categoric variables. *P* value is an indicator of the level of significance ($P < 0.05 =$ significant).

Results

Description of the study sample (230 patients)

The study group comprised 165 (72%) male and 65 (28%) female patients, with a mean age of 37.3 ± 7.6 years. The incidence of patients who underwent renal transplantation was highest in patients between 30 and 40 years of age at 30.9%, whereas it was lowest in those between 50 and 60 years of age at 13%. The majority belonged to low middle social class. Most of them were married (74%), whereas 23% were single and only 3% were either widowed or divorced. A considerable percentage had finished secondary and preuniversity schools (32.2%), 20% were university graduates, 17.8% were illiterate, and 30% had received either primary or preparatory education.

About 23.06% were unemployed, whereas 7.83% were housewives; the rest were employed (Table 1).

Table 1 Description of the study sample

Variables	<i>N</i> =230 [<i>n</i> (%)]
Age (years)	
18–30	68 (29.6)
>30–40	71 (30.9)
>40–50	61 (26.5)
>50–60	30 (13)
Sex	
Male	165 (72)
Female	65 (28)
Social class	
Low	110 (48)
Very low	10 (4)
Low middle	110 (48)
Educational level	
Illiterate	41 (17.8)
Primary	25 (10.9)
Preparatory	44 (19.1)
Secondary	54 (23.5)
Preuniversity	20 (8.7)
University	46 (20)
Marital status	
Single	54 (23)
Married	168 (74)
Widow	3 (1)
Divorced	5 (2)
Occupation	
Unemployed	53 (23.06)
Unskilled	58 (25.22)
Semiskilled	26 (11.30)
Semiprofessional	50 (21.74)
Professional	25 (10.87)
Housewives	18 (7.83)
Duration of hemodialysis before surgery (years)	
<1	23 (0)
1–4	100 (43)
4–7	107 (47)
Presence of medical diseases before surgery	
Present	87 (38)
Absent	143 (62)
Side effects of drugs after RTS	
Side effects	90 (39)
No side effects	140 (61)
Time since RTS (years)	
<1	41 (8)
1–4	94 (41)
4–7	24 (10)
>7	71 (31)
Type of donor	
Relative	71 (31)
Nonrelative	159 (69)

RTS, renal transplant surgery.

The length of hemodialysis therapy before the operation ranged from 1 to 7 years and the length of follow-up after renal transplantation ranged from one to more than 8 years.

Those who received a kidney from a relative donor comprised 30.8% (*n* = 71), whereas 69.2% (*n* = 159) received from a nonrelative donor (Table 1).

Prevalence of psychiatric morbidity among renal transplant recipients

Ninety (39.1%) patients were deemed as psychiatric cases according to the SCID-I psychiatric diagnoses, whereas 140 (60.9%) patients did not warrant any psychiatric diagnosis. The prevalence of depression in the whole sample was 16.52% (*n* = 38), that for adjustment disorder was 9.13% (*n* = 21), that for dysthymia was 8.26% (*n* = 19), that for generalized anxiety disorder was

4.35% (*n* = 10), and that for post-traumatic stress disorder was 0.87% (*n* = 2) (Fig. 1).

Psychodemographic correlates of psychiatric morbidity among postrenal transplant recipients

Psychiatric disorders were more significantly encountered (34.5%) in the younger age group (18–30 years), followed by those in the age group 30–50 years. The least percentage of psychiatric disorders (10%) was found in the older age group (50–60 years). The distribution of psychiatric morbidity among recipients was significantly associated with age ($P < 0.01$). It was found that 74.2% of recipients in the youngest age group (18–30 years) and 44.5% in the eldest age group (>50–60 years) were diagnosed with major depressive disorder (MDD), whereas 37.8% in the age group 40–50 years were diagnosed with adjustment disorder and 38.5% of recipients in the age group 30–40 years were diagnosed with dysthymic disorder (Table 2).

Recipients who developed psychiatric disorders after transplantation were predominantly male (65.5%) compared with only 34.5% of female recipients ($P > 0.05$).

MDD and generalized anxiety disorder were more frequently encountered in female patients (48.3 and 16.1%, respectively), whereas the diagnosis of dysthymic disorder (23.8%) and adjustment disorder (25.5%) were recorded more commonly in male patients ($P > 0.05$).

The distribution of psychiatric disorders among renal transplant recipients was found to be nonsignificantly higher in those who had received preparatory (25.8%) and secondary education (31%). However, the incidence of developing mental symptoms after transplantation was lower in participants who had a higher university education (16.6%) and preuniversity education (9%). It was also noticed that patients who received no or few years of education showed lower rates of having postdonation psychiatric symptoms. The distribution of different diagnostic categories among recipients receiving different sets of education was nonsignificant ($P > 0.05$) (Table 2).

Recipients who developed psychiatric disorders were more significantly unemployed (26.7%) or unskilled individuals (23.3%). The least rate of psychiatric morbidity was found in housewives (45%), followed by professionals (12.2%) and semiprofessionals (15.5%) ($P < 0.01$).

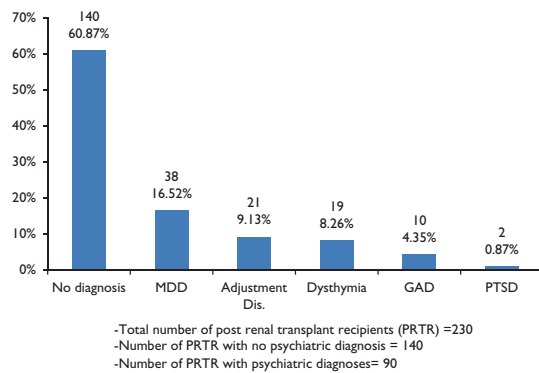
MDD was the most common disorder among the unemployed, unskilled, and professional categories, whereas adjustment disorder was the most common in the semiprofessional category. Dysthymic disorder was the most common among housewives, whereas generalized anxiety disorder was the most common in the semiskilled category. The difference between them is highly significant ($P < 0.01$).

The incidence of renal transplant recipients with psychiatric morbidity was significantly higher in the married category (77.8%) than in those who were single (16.6%) or divorced (5.6%). Depression was more

frequently encountered in single and divorced patients, whereas dysthymic disorder, generalized anxiety disorder, and adjustment disorder were more frequently encountered in married recipients ($P < 0.05$).

The majority of recipients having psychiatric morbidity belonged to the middle and low classes. The variability in the diagnostic categories among different groups of social class was nonsignificant ($P > 0.05$) (Table 2).

Figure 1



Prevalence of psychiatric morbidity among renal transplant recipients. Total number of postrenal transplant recipients (PRTR) = 230; number of PRTR with no psychiatric diagnosis = 140; number of PRTR with psychiatric diagnoses = 90.

Medical correlates of psychiatric morbidity

Our study illustrated no statistically significant differences among recipients with different psychiatric diagnoses as regards side effects of drugs received after transplantation, the presence of medical diseases other than renal impairment before the surgery, duration of hemodialysis therapy before the surgery, time since renal transplant, and type of donor either a relative or a nonrelative (Table 3).

Discussion

In 2003, the International Federation of Renal Registries [16] stated that the prevalence of renal failure in Egypt ranged from 9 to 14.5% of general population. The rate increased from 225 in 1996 to 483 per million people in 2004 [17]. We collected data from medical records and found that 1917 surgeries were conducted in Mansoura University Renal Centre for 37 years, 623 surgeries were conducted in Nasser Institute in Cairo during 10 years, and only 60 cases of renal transplant surgery (RTS) were conducted in Ain Shams Specialized Hospital in Cairo during 19 years.

In comparison with western countries [18], the rate of RTS in Egypt is still relatively low [19].

More than 29 countries, including all Arab countries, Iran, Turkey, Pakistan, and countries of central Asia, have a membership of the Middle East Society for Organ Transplantation, and collectively these countries have a

Table 2 Psychodemographic correlates of psychiatric morbidity among postrenal transplant recipients

Variables	MDD (N=38)	Dysthymic disorder (N=19)	GAD (N=10)	PTSD (N=2)	Adjustment disorder (N=21)	Total (N=90)	χ^2/P value
Age (years)							
18–30	23 (74.2)	3 (9.6)	5 (16.2)	0	0	31 (34.5)	22/ <0.01
>30–40	3 (11.5)	10 (38.5)	4 (15.5)	0	9 (34.5)	26 (28.8)	
>40–50	8 (32.4)	4 (16.8)	1 (4.4)	2 (8.6)	9 (37.8)	24 (26.7)	
>50–60	4 (44.5)	2 (22.2)	0	0	3 (33.3)	9 (10)	
Sex							
Male	23 (38.9)	14 (23.8)	5 (8.5)	2 (3.3)	15 (25.5)	59 (65.5)	2.9/ >0.05
Female	15 (48.3)	5 (16.1)	5 (16.1)	0	6 (19.5)	31 (34.5)	
Education							
Illiterate	2 (20)	0	4 (40)	0	4 (40)	10 (11)	3.2/ >0.05
Primary	3 (60)	2 (40)	0	0	0	5 (5.6)	
Preparatory	13 (56.7)	6 (26.1)	2 (8.6)	0	2 (8.6)	23 (25.8)	
Secondary	5 (17.8)	8 (28.6)	4 (14.3)	0	11 (39.2)	28 (31)	
Preuniversity	9 (100)	0	0	0	0	9 (10)	
University	6 (40)	3 (20)	0	2 (15)	4 (25)	15 (16.6)	
Occupation							
Unemployed	17 (72)	2 (8)	1 (4)	0	4 (16)	24 (26.7)	22/ <0.01
Unskilled	13 (62)	4 (19)	2 (9.5)	0	2 (9.5)	21 (23.3)	
Semiskilled	1 (6.4)	5 (31.2)	6 (37.4)	0	4 (25)	16 (17.8)	
Semiprofessional	2 (14.1)	4 (28.2)	0	0	8 (56.7)	14 (15.5)	
Professional	4 (36.4)	2 (18.2)	1 (9)	2 (18.2)	2 (18.2)	11 (12.2)	
Housewives	1 (25)	2 (50)	0	0	1 (25)	4 (4.5)	
Marital status							
Single	13 (86.6)	0	0	0	2 (13.4)	15 (16.6)	6.5/ <0.05
Married	20 (28.6)	19 (27.12)	10 (14.3)	2 (2.86)	19 (27.12)	70 (77.8)	
Divorced	5 (100)	0	0	0	0	5 (5.6)	
Widow	0	0	0	0	0	0 (0)	
Social class							
Very low	7 (100)	0	0	0	0	7 (7.8)	3.2/ >0.05
Low	20 (50)	5 (12.5)	0	2 (5)	13 (32.5)	40 (44.5)	
Middle	11 (25.6)	14 (32.6)	10 (23.2)	0	8 (18.6)	43 (47.7)	

GAD, generalized anxiety disorder; MDD, major depressive disorder; PTSD, post-traumatic stress disorder.

Table 3 Medical correlates of psychiatric morbidity among postrenal transplant recipients

Variables	MDD (N=38)	Dysthymic disorder (N= 19)	GAD (N= 10)	PTSD (N=2)	Adjustment disorder (N= 21)	Total (N=90)	P value
Side effects of drugs after RTS							
Present	28 (41.3)	19 (26.5)	8 (11.8)	2 (2.7)	11 (17.7)	68 (75.6)	$\chi^2=1.7 P>0.05$
Absent	10 (45.4)	0	2 (9.2)	0	10 (45.4)	22 (24.4)	
Presence of medical diseases before the surgery							
Present	13 (36.1)	9 (25)	8 (22.3)	2 (5.5)	4 (11.1)	36 (40)	>0.05
Absent	25 (46.3)	10 (18.5)	2 (3.7)	0	17 (31.5)	54 (60)	
Duration of hemodialysis before surgery (years)							
<1	13 (28.8)	11 (24.4)	8 (18)	0	13 (28.8)	45 (50)	>0.05
1-4	25 (62.5)	7 (17.5)	0	0	8 (20)	40 (44.4)	
4-7	0	1 (20)	2 (40)	2 (40)	0	5 (5.6)	
Time since RTS (years)							
<1	8 (40)	0	4 (20)	0	8 (40)	20 (22.3)	>0.05
1-4	19 (61.2)	0	2 (6.6)	0	10 (32.2)	31 (34.4)	
4-8	7 (23.3)	14 (46.7)	4 (13.3)	2 (6.7)	3 (10)	30 (33.3)	
>8	4 (44.5)	5 (55.5)	0	0	0	9 (10)	
Type of donor							
Relative	14 (56)	3 (12)	4 (16)	0	4 (16)	25 (27.8)	>0.05
Nonrelative	24 (36.9)	16 (24.6)	6 (9.2)	2 (3)	17 (26.3)	65 (72.2)	

GAD, generalized anxiety disorder; MDD, major depressive disorder; PTSD, post-traumatic stress disorder; RTS, renal transplantation surgery.

population more than 600 million. There are prominent obstacles for renal transplantation in the Middle East countries, such as inadequate preventive medicine, uneven health infrastructure, poor maintenance dialysis programs, poor awareness, and debate about religious issues of organ donation [20,21].

Psychiatric morbidity has been reported following successful RTS [8,22]. Moreover, studies have identified many psychological problems facing successful adaptation to the transplantation condition or the postoperative adherence to the management plans [2].

As far as we know, psychiatric morbidity was not previously studied among Egyptian renal transplant recipients. Thus, we aimed to unravel the prevalence and the possible demographic and clinical correlates to such morbidity.

Prevalence of psychiatric morbidity in postrenal transplant recipients

Kidney transplantation treatment is connected to long-term emotional tension. There can appear anxiety and depressive symptoms, especially directly after the transplantation and throughout the functioning of the graft. Therefore, frequently, patients require psychiatric treatment and interdisciplinary care [23].

A total of 39% of recipients in our study had psychiatric disorders according to DSM-IV diagnostic criteria. The rate of psychiatric morbidity among the renal transplant recipients varied widely across studies. Some investigators reported high rates up to 50% [24-26]. However, lower rates of psychiatric morbidity were recorded in Japan (28%) [27] and in Turkey (18.4%) [28]. This variation could be attributed to different tools of assessment, sampling, selection bias, or underreporting of symptoms due to patients' motivation to present themselves positively [29].

Few studies have examined the rate of depression among patients who underwent RTS. In our sample, the most common diagnosis was MDD (16.52%), followed by adjustment disorder (13%) and dysthymic disorder

(4.35%). Similar to our results, depressive disorder was encountered in 15.1% of a studied sample [29]. Some studies reported the variation in the incidence of depression over time as depression was identified in 3360 PRTR in 3 years after transplantation with cumulative incidences of 5.05, 7.29, and 9.15% at 1, 2, and 3 years, respectively [3]. Following renal transplantation, patients often exhibited highest scores in depression [30], which might be associated with two-fold greater risk for graft failure, return to dialysis, and death with a functioning graft [31]. Depression can easily be understood as a postoperative complication when one thinks about unfulfilled wishes and about the medical complications that may arise in those patients [32].

Organ transplantation can result in a psychosomatic crisis that moves patients toward developing mental disorders such as post-traumatic stress disorder and panic disorder, and this mandates mobilization of all biopsychosocial resources during the process of adaptation to the new foreign organ, which may result in an alteration of self-image and identity, with possible psychopathologic consequences [2].

Our findings are in agreement with previous investigations [29,33], which reported that anxiety disorders have been observed in the transplant population. We reported that 4.35% had generalized anxiety disorder and 0.87% had post-traumatic stress disorder; this could be attributed to the continuous fear and uncertainty about the future of the graft [34].

Sociodemographic correlates of psychiatric morbidity

Age

In the current study, it was noticed that the eldest age group (>50-60 years) had the least percentage of psychiatric morbidities after renal transplantation (10%), whereas the youngest age group (18-30 years) had the highest prevalence of morbidity (34.5%). This could be attributed to the fact that young patients who underwent RTS had difficulties in maintaining a normal life like their peers, which expose them to extreme frustration and stress and may predispose them to psychiatric illnesses. Our

results are compatible with the findings reporting that renal transplantation was much less common among elderly patients [35].

Sex

The total prevalence of psychiatric morbidity was found to be nonsignificantly higher in male population. However, female renal transplant recipients showed more nonsignificantly higher rates of depression and generalized anxiety disorder, whereas male recipients predominantly had minor depression, adjustment, and post-traumatic stress disorder. The comparison between the two sex groups revealed nonsignificant differences, which is a conclusion reached by other researchers as well [25,28,36,37].

In other studies, female sex was linked with a statistically higher rate of major depression compared with male sex [3,38].

Education

The majority of the studied sample had received high school and university education. Only 18% were illiterate and 9% could read and write, indicating that renal transplantation is more common in those who received an adequate education rather than in those who did not attain an educational level. This is in agreement with Zarifian [39], who found that 1% of recipients were illiterate, 5% could read and write, 26% had moderate education (preparatory and secondary), and 42% high university. Thus, education may help in seeking available information concerning their clinical condition. It seems that education may facilitate decision making about RTS, yet it did not significantly impact the type of diagnosis. Contrary to our findings, previous reports showed that low educational level was predictive of depression [40–42]; they reported that low education and the perception of medical care as being a substantial economic burden predicted greater mental symptoms and poorer functional status among renal transplant recipients.

Occupation

There was a significant difference between recipients with different occupational levels as regards the psychiatric diagnoses: MDD was the most common disorder in the low occupational level; adjustment disorder and generalized anxiety disorder were the most common in the middle occupation ranking; and dysthymic disorder was the most common in the high-level occupation. This finding could be attributed to their return to work but with impaired functioning in the form of frequent absenteeism or decreased productivity. In contrast, the set of occupation was found to be nonsignificantly different among recipients with or those without psychiatric diagnoses [25].

Marital status

Psychiatric disorders were more significantly encountered among the married recipients than among the single recipients. Married patients either male or female usually have many responsibilities toward their spouses and families; this may lead to additional stress contributing to psychiatric morbidity. These findings were supported by Kimmel [43].

Other studies reported that married patients had a lower percentage of mental illness due to the psychosocial support from their spouses [44,45]. However, the set of marital status was reported to be nonsignificantly different among recipients with and those without psychiatric diagnoses [25].

Social class

Participants in the current research predominantly belonged to low and middle social classes; this was attributed to the selected sites of the study as both Ain Shams Hospital and Nasser Institute, which are governmental hospitals in which the cost of services are provided by insurance or the government, whereas more affluent patients seek help in the private sectors from which they buy the service from their pockets.

Clinical variables in recipients

Psychiatric symptoms reported after RTS may be related to the immunosuppressive therapy given after transplantation, especially early postoperative [6,46].

We reported that 68% of our patients had emerged side effects from their postoperative medication intake. However, it seems that it did not influence the development of psychiatric morbidity.

In our sample, there was no statistical significance between psychiatric morbidity and duration of dialysis before transplantation surgery. In Turkish population, Arapaslan *et al.* [25] also found that the set of the duration of illness is not significantly different between patients with and those without psychiatric diagnoses. However, previous studies clarified that 3-year dialysis therapy before transplantation or longer was associated with more psychiatric symptoms among recipients [3,47].

There was no statistical significance in our study between psychiatric morbidity and total duration of renal failure before transplant surgery. This is contrasted by a study that found a correlation between postrenal transplant depression and the long duration of illness before surgery [48].

Medical comorbidity was not found to influence the psychiatric disorder in our sample; however, other studies reported a positive correlation between mental disorders and medical condition postoperatively [3,49]. Furthermore, patients with multiple morbidities accounted for less improvement after RTS than others without [50].

Findings in our study found no statistical significance between the psychiatric morbidity and the type of donor (being either a relative to the patient or a non relative). This is in agreement with the results of a study conducted by Andrade *et al.* [51], who reported no association between type of donor for renal transplantation and the development of mental symptoms.

Conclusion and recommendations

Renal transplantation recipients suffer from various psychiatric disorders, mainly MDDs. This finding should draw the attention of surgeons to the importance of psychiatric

evaluation of all patients before and after surgery. The involvement of mental health professionals with the team of renal transplantation can help and facilitate early detection and proper intervention to help patients suffering from psychiatric complications after the surgery.

Strength and limitations

This study is among few studies in Arab countries using structured interviews to examine psychiatric morbidity in renal transplant recipients. However, it is limited by the relatively small number of cases, the cross-sectional design, and the recruitment of cases from one catchment area. We recommend replication of the study on a larger sample size from different facilities and thorough assessment of patients and continuation of services in follow-ups is highly recommended.

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Conflicts of interest

There are no conflicts of interest.

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