



Depressive symptoms and associated factors among kidney transplant recipients

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ABSTRACT

Background: Depression is one of the most prevalent psychological disorders experienced by kidney transplant (KT) recipients. The aim of this study was to determine the depressive symptoms exhibited by KT recipients and the related factors affecting them.

Methods: This descriptive-analytical cross-sectional study was conducted on 131 KT recipients referring to nephrology clinic of Imam Khomeini Hospital, Ardabil, in 2016. Convenience sampling method was employed. Data were collected using personal profile form and Beck Depression Inventory, self-efficacy and self-care behaviors of the KT recipients. Data were analyzed using the descriptive and analytical tests in SPSS software (Version 22).

Results: More than half of the patients exhibited symptoms of depression. The mean depression score was 15.55 ± 19.48 , indicating mild depression. Multiple linear regression indicated that depression symptoms were significantly associated with self-efficacy, self-care behaviors, symptom distress, age and marital status.

Conclusion: Self-efficacy and self-care behaviors found to be the efficacious and modifiable factors of depressive symptoms in KT recipients. Therefore, self-efficacy and self-care promotion in these patients should be a significant part of care plans these patients. In addition, depression and its related factors should be part of routine screening measures for KT recipients. Patients with signs of depression should undergo individual interventions based on the specific conditions of each patient.

Keywords: depressive symptoms, self-efficacy, self-care behaviors, kidney transplantation

INTRODUCTION

Although kidney transplantation ameliorates the patients' quality of life, they experience a high level of psychological disorders that depression is one of the most common ones (1, 2). Post-transplantation depression seems to be on the decline, however, with new concerns regarding the complex regimen of immunosuppressant drugs and fear of rejection, depression is a perilous risk (3). Depressive symptoms in KT recipients have been described in several studies (4, 5), and even in some studies, there was no difference in depression symptoms between KT recipients and hemodialysis patients (6). Weng believes that the prevalence of depressive symptoms among KT patients is similar to that of cancer patients and the elderly people (7).

Depression is still more prevalent among recipients of kidney transplantation than the general population and is associated with several factors. There are manifold risk factors for depression and there is also proof that there is a correlation between depression and self-efficacy, as well as self-care behaviors and mortality in the transplanted population (1, 5, 7).

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Self-efficacy and self-care behaviors have potent effects on depressive symptoms, and both are modifiable (8). If the KT recipients do not take care of themselves adequately, they will be exposed to infection, transplantation failure, and risk of rejection. This condition is regarded as the main cause of psychiatric problems in the population of KT recipients(9).

An increase in self-efficacy is associated with increased compliance with the treatment regimen, health promotion behaviors and reduction of psychological symptoms (10). Self-efficacy is a psychological structure that defines a person's confidence in exhibiting a particular behavior and surmounting the barriers to this behavior. Self-efficacy is the outcome of individual, behavioral, and environmental factors' interactions that produce behavior (11). It is a significant predictor of mental health (10, 12). High self-efficacy can ameliorate outcomes through specific behaviors and allow patients to control the conditions that aggravate their symptoms (8, 13). Several studies have demonstrated that self-efficacy is associated with self-care behaviors and symptoms of depression in chronic diseases (7, 14, 15).

On the other hand, survival after kidney transplantation depends on adherence to immunosuppressive drugs. The findings showed that almost all KT recipients suffered from at least one side effect of immunosuppressive drugs, which requires diagnosis, control and treatment (16). These patients may experience conditions such as weight gain, facial changes, leg edema, and hair loss (17). Body image impairment is often observed in KT recipients (18). Changes in the appearance of the body and impairment in the body image may diminish self-esteem, non-compliance with the drug regimen (19, 20), exacerbate mental health condition, reduce satisfaction with life (21) and eventually culminate in depression (2).

Different studies have shown the association of depressive symptoms with anomalous kidney function, low quality of life, low self-efficacy, loss of job after KT, increased mortality, illness and rejection (7, 22-24). However, only few research studies have investigated the relationship between self-efficacy, self-care behaviors and depression in KT recipients. On the other hand, considering the different results from studies on depressive symptoms and the various factors that affect it among KT recipients, further studies in this field can be of immense benefit to health care providers in providing appropriate strategies for the prevention and management of depression. Therefore, the aim of this study was to determine the depressive symptoms experienced by KT recipient sand the factors affecting them.

MATERIALS AND METHODS

The present study was a descriptive-analytical cross-sectional study. Convenience sampling method was used to collect data from May to September 2016. All patients presenting to the nephrology clinic section of Imam Hospital in Ardabil who satisfied the inclusion criteria and willing to participate in the study were enrolled. The inclusion criteria included having undergone kidney transplantation for at least 6 months and at most 10 years, having a minimum age of 18 and a maximum age of 65 years and being in a stable medical condition. In addition, recipients with disabilities or physical inability and chronic diseases such as cancer were excluded from the study. Eventually, 131 patients participated in the study. Data were collected using questionnaires that were divided into the following sections:

General and Demographic Form

Demographic variables included age, sex, level of education, marital status, employment and forgetting to take medications as prescribed. In addition, other information such as the type of donor for the transplantation(living or cadaveric), months after KT, hospitalization for infection, hospitalization for rejection and hospitalization for other symptoms and complications could be obtained from patients' file.

Depressive Symptoms

Depressive symptoms were determined by employing Beck Depression Inventory. The questionnaire consisted of 21 questions and the patient's response should be related to symptoms experienced in the last two weeks. The questions were administered using a 4 point Likert Scale ranging from zero (rarely or never) to 3 (usually or always), so that the range of total scores is from 0 to 63, with a high score indicating more problems as regard the depressive symptoms. Scores 0-10 indicate lack of depression, 11-18, mild depression, 19-29, moderate depression and scores higher than 30 severe depression. This questionnaire was employed in many internal and external investigations conducted on patients who have undergone kidney transplantation, and its validity and reliability have been confirmed (25, 26).

Self-care Behaviors Questionnaire in Kidney Transplant Patients

This questionnaire includes 13 questions that measure the number of self-care behaviors after kidney transplantation, such as "regular weight and blood pressure control," or "regular exercise". Questions were administered using a 5 point

Likert Scale ranging from zero (never done), to 4 (always doing). The total range of scores is 0-52. This questionnaire was designed by Weng with the Cronbach's alpha of 0.81(25). In the current study content validity index (CVI) and Cronbach's alpha were 0.88 and 0.74, respectively.

Self-efficacy Questionnaire in Kidney Transplant Patients

Self-care self-efficacy questionnaire for kidney transplant patients was designed by Weng, based on clinical experiences and studies performed (25). The questionnaire consisted of 13 questions and probed the self-confidence of the patients as regard their capability in doing the following: eating a healthy diet, engaging in regular exercise and taking medications as prescribed (3 items), monitoring early symptoms of infection or transplantation rejection (5 items), blood pressure control and other physical parameters (3 items) and control of mental problems (2 items).

All questions were administered using a 5 point Likert Scale ranging from zero (lack of self-confidence) to 4 (high self-confidence), so that the total range of points is from 0-52 with a high score indicating high self-efficacy. The reported Cronbach's alpha in Weng's study was 0.90 (25). In this study, the obtained CVI was 0.95 and Cronbach's alpha of 0.84.

Symptom Distress

Symptom Distress was measured using a 22-question scale with questions related to the side effects of the medication and treatment such as headache, overgrowth of hair and gum swelling. It was administered using a 4-point Likert Scale ranging from zero (no problem) to 3 (severe problem). In our study, CVI was 0.96 while Cronbach's alpha was 0.80.

The researcher, after obtaining the necessary permissions from the university, was referred to the nephrology clinic of Imam Hospital Educational center in Ardabil. The purpose of the study was clearly elucidated to each of the participants, and after obtaining their written consent, they were included in the study. The name and surname of each participant was not mentioned in any part of the questionnaire and they were notified about the confidentiality of the information. Participation and non- participation in the research for all units studied was optional. Data were analyzed using the descriptive statistics (mean, standard deviation, number and percentage) and the analytical tests (ANOVA, t-test, Pearson correlation coefficient and linear regression analysis) in SPSS software, version 22.

RESULTS

The mean age of the participants was 41.92 ± 12.41 years while the average mean months of time after their transplantation prior to inclusion in the study was 63.43 ± 34.89 . There were 63 males (48.1%) and 68 females (51.9%). Most of the participants were married (59.5%) and unemployed (72.7%). In addition, 47.3% had high school education and 74% of the participants never forgot to take their medication. Most of them received kidney transplants from living donors (90.1%) (**Table 1**).

Table 1: Demographic data, depressive symptoms, self-efficacy, self-care behavior and Symptom distress(n=131)

Variable	M	SD	n	%
Age	41.92	12.41		
Gender				
Male			63	48.1
Female			68	51.9
Education				
None			24	18.3
Primary			30	22.9
High			62	47.3
Academic			15	11.5
Marital status				
Single			45	34.4
Married			78	59.5
Divorced/Widowed			8	6.1
Employment				
Yes			36	27.5
No			95	72.5
Months after kT	63.43	34.89		
Type of donor for transplant				
Cadaveric			13	9.9
Living			118	90.1
Forgetting to take medications				
Yes			34	26.0
No			99	74.0
Hospitalization for rejection				
Yes			20	15.3
No			111	84.7
Hospitalization for infection				
Yes			64	48.9
No			67	51.1
Hospitalization for other cause				
Yes			42	32.1
No			89	67.9
Self-efficacy	34.54	7.20		
Self-care behavior	32.90	6.82		
Symptom distress	10.62	5.65		
Depressive symptoms				
No(0-10)			50	38.2
Mild(11-18)	15.55	8.77	49	37.4
Moderate(19-29)			23	17.6
Severe(30 and above)			9	6.8

The mean depression score of the participants was 15.55 ± 8.77 with most of the patients experiencing some degree of depression, 37.4% had mild depression (11-18 score), 17.6% had moderate depression (score 19-29) and 6.9% had severe depression (score 30 and above). The mean score of self-efficacy was 34.54 ± 7.20 , the mean score of self-care behaviors was 32.90 ± 6.82 and the mean score of 'distress symptom' was 10.62 ± 5.65 (**Table 1**).

Pearson correlation coefficient revealed that depressive symptoms had a significant negative correlation with self-efficacy and self-care behaviors, as well as a positive correlation with "symptom distress". Self-efficacy with "symptom distress" and "age" had a negative correlation and with self-care behaviors had a positive correlation. In addition, self-care behaviors had a significant negative relationship with "age" and "months after KT" (**Table 2**).

Table 2: Correlation between demographic, Self efficacy, Self care behavior, Symptom distress and Depressive symptoms (n=131)

Variables	1	2	3	4	5	6
age	1.00					
Months after kT	0.11	1.00				
Self-care behavior	-0.37**	-0.17*	1.00			
Self-efficacy	-0.38**	-0.17	0.85**	1.00		
Symptom distress	-0.03	-0.03	-0.10	-0.27**	1.00	
Depressive symptoms	0.07	0.11	-0.60**	-0.69**	0.50**	1.00

1= age, 2= Months after kT, 3= Self-care behavior, 4= Self-efficacy, 5= Symptom distress, 6= Depressive symptoms

*p<0.05, **p<0.01

Table 3: Multiple regression analysis for depressive symptoms

Variables	B	Std.Error	Beta	t	Sig
Age	-0.21	0.56	-0.30	-3.78	0.000
Gender	-0.04	1.07	-0.002	-0.03	0.970
Marital status	2.68	1.15	0.17	2.32	0.022
Employment	-1.89	1.25	-0.09	-1.51	0.133
Months after kT	0.005	0.014	0.021	0.375	0.708
Hospitalization for infection	0.058	0.98	0.003	0.058	0.954
Self-care behavior	-0.312	0.144	-0.243	-2.165	0.032
Self-efficacy	-0.565	0.144	-0.464	-3.933	0.000
Symptom distress	0.552	0.093	0.356	5.920	0.000

Independent t-test was employed to scrutinize the relationship of depression with variables of gender, employment, type of donor for transplantation, forgetting to take medications, hospitalization for infection, "hospitalization for rejection" and "hospitalization for other causes". The results revealed that the mean depression score among females was higher than males ($t = -2.37$, $p = 0.01$) and the mean depression score among unemployed people was higher than employed people ($t = -3.06$, $p < 0.01$). In addition, the mean score of depression was higher in patients who were hospitalized for infection ($t = -2.12$, $p = 0.03$). ANOVA was employed to investigate the relationship between depression and "marital status" and "education". The mean score of depression was significantly higher among the divorced / widows ($F = 19.59$, $p < 0.01$). In addition, the mean depression score among the primary level was higher compared to the rest, but was not statistically significant ($F = 2.51$, $p > 0.05$).

Finally, the independent meaningful variables related to depressive symptoms were participated in the multivariate linear regression. The findings showed that variables including self-efficacy, self-care behaviors, symptom distress, age, and marital status were recognized as the predictors of depression (Table 3).

DISCUSSION

Totally, the findings showed a mild depression among KT recipients. Except 38.2%, the rest of the study sample showed a degree of depressive symptoms. This finding which is congruent with other similar previous studies (1, 26), revealed that depression is still a common challenge among KT recipients.

According to Weng, depressive symptoms in KT recipients possibly reflects a mental state that may arise from a long-term experience of chronic conditions such as prior chronic renal disease and post-transplant drug regimes (7). After transplantation, KT Patients experience new challenges and actually start another phase of life with new chronic condition. Patients would encounter multiple physical problems such as infection, risk of rejection, weight gain and other long-term complications associated with the side effects of immunosuppressive medications. This can endure a lot of psychosocial stress simultaneously (3, 7). This study revealed that only a little more than one third of the participants exhibited no symptoms of depression.

The mean score of self-efficacy and self-care behavior was slightly more than average in the participants which demonstrated that most patients can manage their own self-care behavior, and repose a great deal of trust in them. This confidence in behaviors engenders proper decisions in the daily lives of patients who have undergone kidney transplantation as well as improve their living conditions (27). Moreover, it is also imperative that individual differences should be considered.

Self-efficacy had a significant negative correlation with depressive symptoms. The results of this study are similar to other studies conducted on chronic diseases (28, 29). Self-efficacy is the most significant determinant of depression in

KT recipients. A person with high self-efficacy has a positive self-assessment (7), also, having a positive belief in one's own capability creates a sense of control in the individual, which can lessen negative emotional symptoms. Individuals with self-efficacy can employ different strategies to attain their goals by reducing thoughts and symptoms of depression (8, 30).

The results of the study revealed that self-care behaviors have a negative correlation with depressive symptoms. This result was also reported in previous studies (7, 31). Self-care behaviors and illness-related activities and therapies are imperative for physical and mental health of patients (12). The range of self-care behaviors goes far beyond medication and periodic referrals and is related to the quality of life of patients (25).

In the current study, symptom distress was one of the predictors of depression. The prevalence of multiple physical challenges such as fatigue, increase in weight, headache, swelling, gingivitis, facial changes, and hair loss are due to the side effects of immunosuppressive drugs (16, 17). In addition, fear of transplant rejection (3), and multiple social problems can intensify depression in these patients. The results of our study also supported this fact.

According to the findings of our study, which is congruent with previous studies (26), aging is one of the predictors of depression in KT recipients. Elderly people encounter a lot of physical, psychological and mental challenges throughout life, and it is not surprising that these will negatively affect their mental health (32). Along with numerous interventions and drug regimes in KT recipients, aging can intensify the depressive symptoms through decreasing of patient's tolerance to stressful events.

Marital status was also one of the predictors of depressive symptoms in KT recipients. Divorced/Widowed participants exhibited the most depression. This difference is possibly due to lack of support from family members (26). Living alone shows that patients are not truly socially supported and may induce difficulties in attempts at resolving issues, with the concomitant effect of exacerbating depression (5). However, spousal support from partners showed to decrease the depressive symptoms in KT patients (5, 33, 34).

Since the participants of this study were recruited from one nephrology clinic, generalization of the finding should be used carefully in other settings. In addition, our study was cross-sectional without any intervention on predictive factors. Self-reporting of data by the patients and sample size may increase the limitations of this study. Therefore, further studies using multiple centers are necessary in the future studies.

CONCLUSION

Altogether, this study showed that KT recipients experience a mild level of depression and self-efficacy, self-care behaviors, symptom distress, marital status and age were determined as the main predictors of depressive symptoms. Self-efficacy and self-care behaviors are efficacious and modifiable factors of depressive symptoms. Therefore, assessing and strengthening patients' confidence in their own capabilities should be an essential part of the care plan for the patients. In addition to strengthening self-care skills among KT recipients, health care providers should try to promote the patient's confidence in self care behaviors based on social cognitive theory to reduce the symptoms of depression. Post-operative teaching and training of KT recipients should include a wide range of self-regulatory strategies such as help seeking behaviors, prevention of side effects of immunosuppressive drugs and psychological adaptation. They should also discuss with patients about any challenges they encounter in their self-care behaviors in everyday life and provide solutions to these problems. Therefore, the measuring of depressive symptoms and its related factors among KT recipients should be part of routine care or patient assessment. Patients with depressive symptoms should receive individual interventions based on their own specific condition.

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