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The Impact of Expressive Emotion Brief Psychotherapy on Psychological Health of Kidney Transplant Recipients

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Abstract

Background: The effect of kidney transplantation on improvement of survival rate and post-transplant-medical health is dramatic. Transplantation is associated with various emotions such as loss, grief and bereavement. Therefore, any psychiatric intervention that can improve the psychological aspects of these patients is valuable.
Objectives: Due to the specific medical and psychiatric conditions of Kidney transplant recipients, researchers have designed expressive emotion psychotherapy as a simple, feasible and time limited brief psychotherapy for these patients. The aim was the assessment of this psychotherapy on quality of life and general health of kidney transplant recipients.
Methods: This 12-week randomized double-blind clinical trial took place at the Kidney transplant department of Imam Khomeini hospital, an academic and governmental hospital affiliated with Tehran University of Medical Sciences (TUMS) from November 2015 to February 2016 (Iran). From a total of 82 patients screened for this study, 64 patients (34 in the intervention group and 30 in the control group) completed the trial. Participants were divided to two groups: the first received expressive emotion intervention and the second received fact recording education as the control group. Outcomes were assessed by the kidney transplant questionnaire (KTQ) and general health questionnaire (GHQ-28) at baseline and at weeks four and twelve.
Results: Baseline demographic characters of patients in both groups were similar. The mean age of patients that participated in the study were respectively 39.26 ± 12.98 and 40.83 ± 14.37 for intervention and control groups. The results of this study indicated that patients in the "intervention" group had a statistically significant enhancement in total KTQ score ($P = 0.001$) and total GHQ score ($P = 0.001$). Regarding every domain of GHQ, this group had a better condition than the "control" group ($P = 0.000$). The intervention had a significant effect on certain domains of KTQ such as "uncertainty/fear" and "emotion".
Conclusions: Expressive emotion brief psychotherapy that focuses on the instructions of expression about one's living and dealing with a diagnosis of chronic medical condition is recommended for kidney transplant recipients.

Keywords: Brief Psychotherapy, Mental Disorders, Kidney Transplantation

1. Background

The effect of kidney transplantation on improvement of survival rate and post-transplant-medical health is dramatic. However, there is still a great potential for improvement in the social and psychological domains. Transplant is associated with various emotions like loss, grief and bereavement (1, 2). The fear of rejection and loss of the kidney, altered body image, side-effects of medication, frequent clinic visits, lab works, and the residual effects of pre-existing illnesses, are other worries that must be considered in transplant recipients (3, 4). Some researchers try to define these complications according to the diagnostic and statistical manual of mental disorders (DSM) criteria. Therefore, it has been reported that depression, anxiety, post-traumatic stress disorder, sexual disorder, body dysmorphic disorder and sleep disorder are common post-transplant complications (5-8). These conditions not only influence endocrine and metabolic state of the body, but also have negative effects on quality of life and medication adherence (9). Therefore, any intervention that can improve the psychological aspects of these patients is valuable. Pharmacotherapy due to its major interaction with other medications and side effect is challenging (10). There are limited studies that assess the efficacy of psychotherapy on the psychological health of kidney transplant recipients (11-13). Expressed emotion, as a brief psychotherapy method, can be modified for patients with medical problems (14-16). The philosophy of this method is that chronic inhibition of expression following exposure to significant trauma such as major disorder or surgery may inadvertently attenuate positive emotion while maintaining the full spectrum of negative affect (17). The efficacy of expressive emotion psychotherapy (writing or simply talking) is explained scientifically by stimulation of sympathetic and parasympathetic repairing (18, 19), which can inhibit progression of posttraumatic stress disorder (PTSD) and depression (20-22). Extensive research has documented links

between emotion disclosure and improvement in physical and mental health, when participants write about personal stress or traumatic experiences (18, 19, 22). Previous research has shown that the effect of exposure when simply talking into a tape recorder is just as likely to be beneficial as writing about the experience (23, 24).

It seems that emotional disclosure's effect is due to two basic components, self-confrontation and cognitive reappraisal of the event. Therefore, emotional disclosure by facilitating the processing of traumatic memories can lead to affective and physiological change (25, 26). Due to growth of kidney transplant rate of the world, designing relevant and effective interventions for the purposes of helping these patients seems necessary (27, 28). In this way, the simplicity and time limitation of the method must be considered, because the patients' disability can influence their compliance with the intervention. Currently, there is no defined psychological intervention in the kidney transplantation protocol. Therefore, in the current research, effects of expressive emotion therapy as a simple, feasible, time limited and useful method for addressing psychosomatic problems of kidney transplant recipients, was assessed.

2. Objectives

This brief psychotherapy method can be considered in the kidney transplantation protocol.

3. Methods

3.1. Study Design

This 12-week randomized double-blind clinical trial took place at the kidney transplant department of Imam Khomeini hospital complex as an academic and governmental hospital affiliated with Tehran University of Medical Sciences (TUMS) from November 2015 to February 2016 in the city of Tehran, Iran. Imam Khomeini hospital complex is a referral hospital with 79 wards and 1401 beds.

The protocol was approved by the psychosomatic research center and nephrology research center. It was carried out in agreement with the declaration of Helsinki and its subsequent revisions. After a complete explanation of the study details, written informed consent was obtained from eligible patients and their legally authorized representatives, informing the participants of their rights to withdraw from the trial at any time without any interruption in their health care benefits. This trial was registered at the clinical trials registry (ID: IRCT2015111625063N1).

3.2. Participants

Participants were all Iranian patients, who had referred from different regions of the country. All of them were recipients of a deceased donor.

Participants had to meet the following inclusion criteria: 1) having had a kidney transplant, 2) willing to answer questions and write about their life experiences and physical and emotional health, and 3) be at least eighteen years of age, and able to speak and write in Persian. Patients were excluded if they had any of the following criteria: 1) being medically unstable, as this can influence the patient's tolerance for participating in the study, 2) having received more than one organ transplant; obviously patients who require simultaneous organ transplantation are under more medical and psychological pressure, 3) positive history of kidney transplant rejection, because of its impact on patients' emotion and medical experiences and, 4) Intelligence Quotient (IQ) of less than 70 (mental retardation) based on clinical judgment, which could influence patients cognitive ability for participation in the study . In addition, participants with a score of $\geq$ 24 on the GHQ-28 were excluded from the study since patients with significant depression or anxiety may need more serious therapy such as pharmacotherapy.

3.3. Sample Size

The planned sample size was N = 60 (30 patients in each group) based on a 15% attrition rate, a margin of error of α = 0.05 and an expected power of 95% from a previous trial with transplant recipients.

3.4. Interventions

Participants were randomly divided to two groups: the first received expressive emotion intervention and the second received fact recording education as the control group. They were asked to write for fifteen minutes per day over a one-week period.

What was required from the emotion disclosure group was expression (writing or recording voice) of their deepest emotions and thoughts that they experienced before finding their kidneys were failing, while on dialysis, waiting for a transplant, being transplanted, and during their recent admission.

The expressive emotion group was given the following instructions (this was derived from Possemato's study) (16):

"What I would like you to write about in these sessions are your deepest thoughts and feelings about your experience with kidney failure and transplant. I realize that people in similar conditions experience a full range of emotions, and I want you to focus on all of them. You may think

about all the various feelings and changes that you experienced before finding out your kidneys were failing, while on dialysis, on waiting list, and now after transplantation. Whatever you choose to express, it is critical that you really focus on your deepest thoughts and feelings. Ideally, I would like you to focus on feelings, thoughts, or changes that you have not discussed in great detail with others. You might also link your thoughts and feelings about these experiences with other parts of your life, such as your previous life experiences, people you love, who you are, or who you want to be. The only requirement is that you write or talk continuously for the entire fifteen minutes. If you run out of things to say, just repeat what was said. Don't worry about grammar, spelling or sentence structure."

The control group was asked to focus only on the facts of renal failure and kidney transplantation, not on their emotions. They were given these instructions:

"What I would like you to express for these sessions is a detailed account of the facts about your kidney failure and transplant and their treatment; how the specifics of diagnosis and treatment differs for people who get kidney transplants; I realize that people who have had a kidney transplant experience a full range of emotions, but in your expression, I want you to focus only on the facts, not on your emotions. You might write about when and where you found out that you had kidney failure, appointments you had with your doctors, information you were given and treatments you received (dialysis, medication and transplantation). Again, the most significant part of your expression is that you try to reconstruct what happened as factual detail as possible. The only other rule is that you write continuously for the entire fifteen minutes. If you run out of things to say, just repeat what have already expressed. Don't worry about grammar, spelling, or sentence structure."

3.5. Outcomes

Socio-demographic, psychiatric and medical information was assessed by related questionnaires. Socio-demographic questions assessed gender, date of birth, education, socioeconomic status (poor, intermediate or high due to the patients' report), employment status, place of residence and emigration to receive better health services.

Medical history questions inquired the use of dialysis, and duration of waiting for a transplant.

Psychiatric history questionnaire included past psychiatric problems (psychosis vs. neurosis), substance abuse and experiences of stressful events prior to renal failure or kidney transplant, while patients' dominant coping mechanism was assessed by an interview. Dominant coping style of every patient was defined by previous reactions to stressful experiences in their lives, which was obtained during psychological assessment. Various types of coping mechanisms can be identified with the following categories: social support (the person prefers to ask for or find emotional support from family members or friends), social withdrawal (social isolation during stressful events associated with criticizing and blaming one-self for the situation), problem avoidance (they don't try for solution finding, they keep themselves away from the stress by denial, dissociation, fantasy, passive aggression and reaction formation), wishful thinking (this refers to cognitive strategies that show inability to reframe and symbolically alter the condition), expression of emotions (referring to release and expression of emotions), cognitive restructuring (altering the way of thinking so that stress is reduced or removed) and problem solving (both behavioral and cognitive strategies that could change the stressful situation and eliminate the source of stress) (29).

Patients were evaluated by the general health questionnaire (GHQ-28) and kidney transplant questionnaire (KTQ) at baseline and on weeks four and twelve.

The primary outcome was assessment of difference in KTQ and GHQ-28 score reduction between two groups from baseline to week 12. The secondary outcome compared the subscales of these questionnaires scores between two groups. Medical complications were also checked during the research.

The kidney transplant questionnaire (KTQ) was designed as a disease specific QOL questionnaire for patients with a kidney transplant. The original version consists of 25 items and measures five quality of life (QOL) dimensions (physical symptoms, fatigue, uncertainty/fear, appearance and emotions). Responses are given on a five-point Likert scale ranging from "all of the time" to "never" (30). The study was done through the Iranian version of this questionnaire, with acceptable reliability ($P < 0.001$) and validity ($P < 0.001$) (31).

The general health questionnaire (GHQ-28) was developed as a screening tool to detect those likely to have or to be at risk of developing psychiatric disorders; it is a 28-item measure of emotional distress in medical settings. Through factor analysis, the GHQ-28 has been divided to four subscales. These are: somatic symptoms (items 1 - 7); anxiety/insomnia (items 8 - 14); social dysfunction (items 15 - 21), and severe depression (items 22 - 28). There are different methods to score the GHQ-28. It can be scored from zero to three for each response with a total possible score ranging from 0 to 84. Using this method, a total score of 23/24 is the threshold of distress. Alternatively the GHQ-28 can be scored with a binary method where 'not at all' and 'no more than usual' score zero, and 'rather more than usual' and 'much more than usual' score one. Using this method, any score above four indicates distress (32). In the

current study the Persian version of the questionnaire (the sensitivity and specificity of this questionnaire was 84.7% and 93.8%, respectively) was used and the assessment was done through the binary method (33).

3.6. Adverse Events and Safety

The expressive emotion technique does not have negative effects (34).

3.7. Randomization and Blinding

Randomization was done by a computer random number generator. The participants, with an equal ratio of 1:1, received either expressive emotion therapy or recording of facts. Nurses and physicians responsible for referring the patients, and the statistician, as well as the investigators, who assessed the patients during follow-up, were all blinded to the allocation. All the patients were educated and treated by one psychiatrist.

3.8. Statistical Analysis

All collected data were statistically analyzed using the statistical product and service solutions 23 software. Continuous variables were reported as means (SD) and categorical variables as numbers (percentage). Mean differences (MD) were described with 95% confidence intervals (MD (95% CI)). The comparison of the mean score changes of KTQ and GHQ-28 between the two groups was done by Independent sample T-test. The Chi-Square test of independence was used to determine if there is a significant relationship between categorical variables. The repeated measure analysis of covariance (ANCOVA) was used to test the influence of an express condition on KTQ and GHQ-28 scores, depending on the duration of assessments.

4. Results

4.1. Baseline Characteristics

From a total of eighty-two patients screened for this study, 70 patients were randomly assigned to either the expressive emotion therapy or fact recording control group, with 35 patients in each group. Sixty-four patients (34 in the intervention group and 30 in the control group) completed the trial. Findings of 67 patients in the first follow-up and 64 patients in the final follow-up were used for statistical analysis. All of the related questionnaires were completed. Baseline data of participants are summarized in Table 1. The mean age of patients that participated in the study was respectively 39.26 $\pm$ 12.98 and 40.83 $\pm$ 14.37 for intervention and control groups. There was no significant difference among the study groups regarding age (P = 0.176).

Results related to the comparison of past medical and psychiatric history of each group are also shown in Table 1. No significant difference was found between the two groups. Mean $\pm$ standard deviation of dialysis duration was 32.40 $\pm$ 18.17 months for intervention group and 26.89 $\pm$ 14.91 months for the control group (P = 0.170). Mean $\pm$ standard deviation of time being on the waiting listed for kidney transplantation was 15.77 $\pm$ 6.38 and 16.80 $\pm$ 6.07 months, respectively, for the intervention and control groups (P = 0. 492).

Twenty percent of patients had a history of immigration, 65% of which was to receive a transplant.

The various types of coping mechanisms that kidney transplant recipients used were social support (20%), social withdrawal (17.1%), problem avoidance (15.7%), wishful thinking (14.3%), expression of emotions (12.9%), cognitive restructuring (10 %) and problem solving (10%).

Sixty percent of the intervention group preferred recording their voice to writing their emotion. In the control group, the preference for recording voice was 45.7%.

There was no significant difference in baseline KTQ and GHQ total and subscale scores between the two groups of patients (Table 2).

4.2. Kidney Transplant Questionnaire Total Score

The baseline total score didn't differ significantly between the two groups (P = 0.391). The intervention made a significant difference between the two groups. By three months, greater improvement in KTQ total score was reported by participants in the intervention group (P = 0.001). The effect of time*Intervention interaction was also significant for the KTQ score (P = 0.048) (Table 3).

4.3. Kidney Transplant Questionnaire-Physical Symptoms

The difference of baseline data of the two groups was not significant (P = 0.638). Repeated measure analysis of variance (ANOVA) indicated a significant time effect (P < 0.001). However, the group effect (P = 0.787) and time*treatment interaction (P = 0.301) were not significant (Table 3).

4.4. Kidney Transplant Questionnaire-Fatigue Score

The Baseline KTQ-fatigue score didn't differ significantly between the two groups (P = 0.271). The KTQ-fatigue score increased significantly during the trial (P < 0.001). The difference between the two groups was not significant (P = 0.168) and the effect of time*intervention interaction (P = 0.868) was not meaningful (Table 3).

Table 1. Demographic Characteristics of the Participants

Variables		Control, Count (%)	Target, Count (%)	P Value
Gender	Male	16 (45.7)	14 (40)	
	Female	19 (54.3)	21 (60)	
Marital status	Single	11 (31.4)	13 (37.1)	0.848
	Married	20 (57.1)	18 (51.4)	
	Divorced	1 (2.9)	2 (5.7)	
	Separated	3 (8.6)	2 (5.7)	
Level of education	Primary school	7 (20.0)	12 (34.3)	0.213
	High school	19 (54.3)	12 (34.3)	
	University degree	9 (25.7)	11 (31.4)	
Place of residence	City	22 (62.9)	22 (62.9)	> 0.999
	Village	13 (37.1)	13 (37.1)	
Emigration	No	25 (71.4)	25 (71.4)	> 0.999
	Yes	10 (28.6)	10 (28.6)	
Relationship of emigration with achieving health service	Negative	4 (40)	3 (30)	0.639
	Positive	6 (60)	7 (70)	
Socio-economic status	Poor	12 (34.3)	15 (42.9)	0.746
	Moderate	19 (54.3)	17 (48.6)	
	Severe	4 (11.4)	3 (8.6)	
Disorder	Diabetes mellitus	22 (62.9)	22 (62.9)	0.846
	HTN	9 (25.7)	8 (22.9)	
	Infection	1 (2.9)	1 (2.9)	
	Congenital	2 (5.7)	1 (2.9)	
	Other	1 (2.9)	3 (8.6)	
Past hx of dialysis	Negative	3 (8.6)	3 (8.6)	> 0.999
	Positive	32 (91.4)	32 (91.4)	
Type of transplant	Dead	34 (97.1)	31 (88.6)	0.356
	Alive	1 (2.9)	4 (11.4)	
Past psychiatric hx	Negative	23 (65.7)	23 (65.7)	> 0.999
	Positive	12 (34.3)	12 (34.3)	
Past hx of substance use	Negative	30 (85.7)	26 (74.3)	0.371
	Positive	5 (14.3)	9 (25.7)	

4.5. Kidney Transplant Questionnaire-Uncertainty/ Fear

The baseline score in this domain was not significant (P = 0. 826). Time effect (P < 0.001), group effect (P < 0.001) and time *intervention interaction (P < 0.05) were significant (Table 3).

4.6. Kidney Transplant Questionnaire- Emotion

There was no difference between the two groups at baseline (P = 0. 593). Kidney transplant questionnaire-emotion score increased significantly during the trial (P < 0.001). Trend of decrease in the two groups was statistically significant (P < 0.001). The experimental group revealed an increase in KTQ-emotion from pretest (0.344 + 0.163) to first follow-up (0.542 + 0.147), and (0.675 + 0.154) during the three months of follow up. However, this score trend in the control group changed moderately (P < 0.05) (Table 3).

Table 2. Mean ± Standard Deviation (SD) Scores of Baseline Assessment of Kidney Transplant Questionnaire (KTQ) and General Health Questionnaire (GHQ-28)

	Group	N	Mean (SD)	P Value
GHQ	Target	35	3.63 (1.33)	0.638
Physical	Control	35	3.42 (1.44)	
GHQ	Target	35	4.06 (1.92)	0.541
Anxiety	Control	35	3.60 (1.96)	
GHQ	Target	35	3.11 (1.62)	0.263
Social	Control	35	3.14 (1.42)	
GHQ	Target	35	4.03 (2.28)	0.301
Depression	Control	35	4.14 (1.85)	
GHQ	Target	35	15.00 (5.98)	0.613
Total	Control	35	13.94 (5.22)	
KTQ	Target	35	0.33 (0.14)	0.527
Physical	Control	35	0.32 (0.12)	
KTQ	Target	35	0.34 (0.14)	0.271
Fatigue	Control	35	0.36 (0.15)	
KTQ	Target	35	0.41 (0.19)	0.826
Fear	Control	35	0.39 (0.17)	
KTQ	Target	35	0.31 (0.14)	0.012
Appearance	Control	35	0.28 (0.10)	
KTQ	Target	35	0.36 (0.16)	0.593
Emotional	Control	35	0.38 (0.17)	
KTQ	Target	35	1.77 (0.62)	0.392
Total	Control	35	1.74 (0.50)	

4.7. Kidney Transplant Questionnaire-Appearance

The Baseline KTQ-appearance score differed between the two groups (P = 0.012). Although the group effect was not significant (P = 0.089), time effect (P < 0.001) and time*intervention interaction (P < 0.05) were meaningful (Table 3).

4.8. General Health Questionnaire-28 Total Score

Baseline total scores of GHQ-28 didn't differ significantly between the two groups (P = 0.613). The GHQ scores decreased drastically during the study. The difference in the decrease of the total score of GHQ between the two groups was significant (P < 0.001). The target group revealed a decrease in GHQ from 16.23 + 5.13 at baseline to 12.3 + 4.82 in the first follow-up and 8.50 + 4.78 in the second follow-up. This trend in the control group was partially flat (Table 3).

4.9. General Health Questionnaire-Somatic Symptom Score

No significant difference was seen between the two groups at baseline assessment (P=0.638). Time effect (P < 0.001) and group effect (P < 0.001) were significant. The time *intervention interaction effect was not meaningful (P = 0.734) (Table 3).

4.10. General Health Questionnaire-Anxiety/ Insomnia

The difference of the GHQ-anxiety/insomnia baseline score was not significant (P = 0.541) between the two groups. The score of GHQ-anxiety/insomnia decreased dramatically during the trial (P < 0.001). Trend of decrease in the two groups was statistically significant (P < 0.05). Time *intervention interaction showed that final score of GHQ-anxiety/insomnia in the two groups was similar (P = 0.480) (Table 3).

4.11. General Health Questionnaire- Social Dysfunction

No significant difference was seen between the two groups at baseline assessment (P = 0.263). Time effect (P <

Table 3. Results of Impact of Expressive Emotion Therapy on Kidney Transplant Questionnaire (KTQ) and General Health Questionnaire (GHQ-28) Findings With Repeated Measure Analysis

Variables	Group	Base-Line, Mean± SD	Follow-Up 1, Mean± SD	Follow-Up2, Mean± SD	Time Effect P Value	Group Effect P Value	Time Group Effect P Value
KTQ	Target	1.77 + 0.62	2.42 + 0.48	2.92 + 0.46	0.001	0.001	0.049
Total	control	1.74 + 0.50	2.12 + 0.47	2.39 + 0.56			
KTQ	Target	0.33 + 0.14	0.45 + 0.11	0.48 + 0.09	0.001	0.787	0.301
Physical symptoms	control	0.32 + 0.12	0.38 + 0.10	0.47 + 0.09			
KTQ	Target	0.34 + 0.14	0.44 + 0.10	0.57 + 0.12	0.001	0.168	0.868
Fatigue	control	0.36 + 0.15	0.46 + 0.14	0.54 + 0/16			
KTQ	Target	0.41 + 0.19	0.55 + 0.17	0.67 + 0.17	0.001	0.001	0.041
Uncertainty/fear	control	0.39 + 0.17	0.47 + 0.18	0.49 + 0.20			
KTQ	Target	0.36 + 0.16	0.54 + 0.14	0.68 + 0.15	0.001	0.001	0.020
Emotion	control	0.38 + 0.17	0.43 + 0.14	0.45 + 0.17			
KTQ	Target	0.31 + 0.14	0.42 + 0.10	0.50 + 0.12	0.001	0.089	0.017
Appearance	control	0.28 + 0.10	0.36 + 0.11	0.42 + 0.11			
GHQ	Target	15.00 + 5.98	12.03 + 4.82	8.09 + 4.85	0.001	0.001	0.088
Total	control	13.94 + 5.22	14.67 + 4.850	14.53 + 4.73			
GHQ	Target	3.63 + 1.33	2.87 + 1.10	2.00 + 1.18	0.001	0.001	0.734
Somatic symptoms	control	3.09 + 1.44	3.15 + 1.32	3.10 + 1.29			
GHQ	Target	4.06 + 1.92	3.60 + 1.65	2.79 + 1.75	0.001	0.002	0.480
Anxiety/insomnia	control	3.60 + 1.96	3.24 + 1.73	2.93 + 1.68			
GHQ	Target	3.11 + 1.62	2.10 + 1.15	1.24 + 1.07	0.001	0.001	0.007
Social dysfunction	control	3.14 + 1.42	3.21 + 1.38	3.20 + 1.47			
GHQ	Target	4.03 + 2.28	3.47 + 1.97	2.06 + 1.84	0.001	0.001	0.001
Severe depression	control	4.14 + 1.85	5.03 + 1.55	5.33 + 1.47			

0.001), group effect ($P < 0.001$) and time*intervention interaction effect were significant ($P < 0.05$) (Table 3).

4.12. General Health Questionnaire-Depression

The difference between the two groups was not significant at baseline evaluation ($P = 0.301$). General health questionnaire-depression score decreased significantly during the trial ($P < 0.001$). Trend of decrease in the two groups was statistically significant ($P < 0.001$). Time *intervention interaction effect was significant ($P < 0.001$) (Table 3).

4.13. Medical Complications

Reported medical complications fell under the categories listed as thrombosis, renal failure, rejection of transplanted organs, infection or cancer of donated organs. Four patients of the intervention group and six patients of the control group reported these medical complaints during the study. There was no difference between the two groups ($P = 0.495$).

4.14. Statistical Analysis

There was a strong relationship between the emotion dimension of KTQ and depression subscale of GHQ ($r = -0.45$, $P = 0.001$). A similar relationship was seen between emotion dimension and anxiety subscale of GHQ ($r = -0.63$, $P = 0.001$).

The relationship of uncertainty/fear dimension of KTQ and anxiety subscale of GHQ was meaningful ($r = -0.56$, $P = 0.001$).

The analysis of the relationship of the KTQ Physical symptoms and GHQ physical symptoms revealed an in-

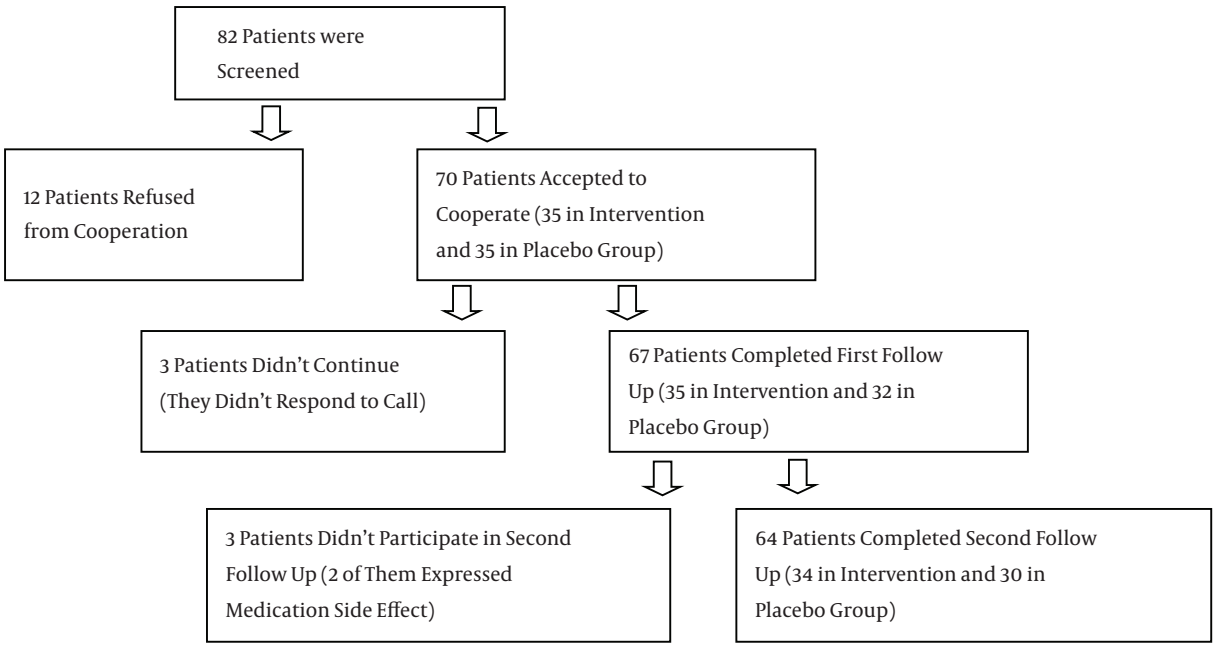

Figure 1. Flowchart of the Study

verse and meaningful correlation between the two variables (r = 0.35, P = 0.04).

5. Discussion

The aim of this recent investigation was an evaluation of the essential effects of the Expressive Emotion technique on kidney transplant recipients. Participants in the expressive emotion disclosure group experienced significant improvement of general health scores and a considerable increase in their quality of life. Dramatic changes in time effect assessment can be explained by the effect of transplantation as a way for improvement of mental distress. Improvement in general health and quality of life was seen in both groups. However, the findings of the group effect showed the dramatic impact of expressive disclosure in comparison to daily recording. This impact was seen in all aspects of general health and most aspects of quality of life. Results of Time*treatment interaction showed sustainability of expressive disclosure impact on uncertainty/fear, emotion and appearance dimensions of KTQ and depression and social dysfunction of GHQ.

Obviously, patients in the waiting list of kidney transplantation experienced emotional distress and transplantation itself decreased some of their worries, yet in this study the dramatic effect of emotional disclosure was clear. Patients were assessed during the first days after transplantation. Baseline GHQ scores showed significant distress in all patients. The sustainability of this stress in the Control group is an indicator of the ineffectiveness of fact recording. However, the expressive emotion therapy intervention stabilized the target group's emotion.

Although both groups showed improvement of quality of life in all domains, which can be a reflex of the transplantation process itself, the expressive emotion intervention influenced the "emotional" and "uncertainty/fear" domains drastically. These were also parallel with the findings of GHQ.

It is important to note that some changes are more prominent in the long-term. These changes are best explained theoretically. Emotional expression by transduction of a stressful trauma into a linguistic structure leads to the promotion of understanding of the event. This method can decline the impact of stress-related cognitions and intrusive thoughts (35). Writing and talking about stressful events, by cognitive restructuring, helps focus on acceptance and solution of the problem (23). Biological studies indicate the positive role of expressive emotion effect in stability and regulation of automatic arousal, endocrine system and cortisol level, which can be responsible for positive change of affect and wellbeing (36, 37).

The only similar research that was found in the field of kidney transplantation was a cross sectional internet-

based study that assessed expressive emotion effect on post-traumatic stress disorder of these patients. This study was susceptible to sampling bias. Participants of this study had higher education and were able to use the Internet. However, they reported no harmful consequences of participating in the study and experienced significantly less stress, better quality of life and increased positive affect. They reported decreases in both emotional and physical aspects of quality of life. Individuals with alexithymia, who had a deficit in processing and regulating emotional states and have difficulty describing their emotions verbally, experienced less changes in stress and quality of life (34).

In this study, the coping mechanism of patients was assessed at baseline; due to the small size of the study, comparison of both groups regarding various coping mechanisms was impossible.

Expressive emotion can increase self-reassurance and reduce self-criticism in the general population (38). In the normal population, even if emotion expression cannot change anxiety, depression and physical symptoms, it can be effective as a significant moderator of anxiety outcomes (39). In adolescents with emotional problems, the effect of disclosure therapy depends on the level of intervention. Interventions that are designed as psychotherapy sessions can lead to larger positive effects on somatic complaints (40). Niles et al. (39) in their study assessed effects of expressive emotion therapy on mental and physical health of the general population and revealed that participants in the expressive emotion group benefited from this method as a significant moderator of anxiety outcomes, although no significant improvements in symptoms of anxiety and depression, or physical symptoms were reported in comparison to those in the control group. Travagin et al. (40), who assessed the effectiveness of this approach on adolescents, in a meta-analytic review, revealed that expressive emotion therapy leads to dramatic improvements on adolescents' well-being.

Expressive disclosure has been found to be effective with a number of psychiatric and medically compromised populations (41-48).

For people diagnosed with major depressive disorder, expressive writing decreased depression scores immediately after the intervention. This positive effect persisted during the four-week follow-up (49).

Although findings about kidney transplant recipients are limited, there are many studies about the effectiveness of expressive emotion therapy on various kinds of cancer. Craf et al. (50) showed that expressive emotion about one's breast cancer and its trauma significantly improved the quality-of-life outcome. Gallo et al. (51), by analysis of various literature reports about effects of expressive emotion on breast cancer survivors, reported its effectiveness on reduction of mood disorders and quality of sleep, yet no significant reductions in psychological distress and improvements in physical health were reported. Similar findings, in addition to improving positive mood and decreasing depressive symptoms, were found in the study of Zachariae et al. (52). Amongst patients diagnosed with prostate cancer, patients who received expressive emotion intervention reported physical improvements, yet no change in the psychological domain was detected (42). Carmack et al. (43) assessed the effect of written and verbal expression program on psychologically distressed colorectal cancer patients. At two and four months, the intervention group scored significantly better on brief symptom inventory global severity index scores (BSI-GSI) and centers for epidemiologic studies depression scale (CES-D); and European organization for research and treatment of cancer emotional functioning scores (EORTC-Global QOL) approached significance. In patients with ankylosing spondylitis, three months after the intervention, functional status of the intervention group was significantly better than the controls (53).

Different scales for the assessment of mood, coping style and QOL are used in these studies that make the comparison difficult. However, their findings are in favor of the effectiveness of Expressive Emotion on mood, quality of life and well-being. They showed that although expressive emotion was painful on the days it was written, therapy had positive effect on declining stress level in the long-term (54). In these studies no side effects related to expressive emotion were reported (34).

However, some studies with medically ill participants have failed to show the same effect. Patients with metastatic renal cell carcinoma, who used this method as an adjuvant therapy of smoking cessation, did not experience reduction in perceived stress (55). This can be explained by biological aspects of this distress in these two groups.

Although the prevalence of depression and anxiety after transplantation is less than the wait list period, it is still high (about 22%) (56). Psychiatric conditions can be affected by various risk factors such as receiving transplant from living or deceased donors (57). Therefore, in the current study only recipients from deceased donors were assessed. Due to the significant effect of psychiatric problems on different aspects of recipients' life (56, 58), screening and treatment of patients with psychiatric problems is important. There are serious limitations in using pharmacotherapy in these situations and it is limited to severe cases of psychiatric disorders (10). Psychotherapy can be an effective method for transplant recipients. Gross et al. (12) assessed the efficacy of mindfulness-based stress reduction on solid organ transplant recipients. This kind

of psychotherapy reduces distressing symptoms and depression and improves sleep quality, mental health and vitality in transplant recipients. Ghetti et al. (13) assessed the efficacy of active music therapy on recipients' mental health. Music therapy using Emotional-Approach Coping led to significant increases in positive affect, decrease in pain and significant decreases in negative affect.

What is important is the increasing rate of kidney transplantation. Therefore, psychiatrists will have to deal with more cases of transplant recipients with psychosomatic problems.

It is undeniable that different psychotherapies can be effectively used for diminishing distress in organ transplantation, but what makes expressive emotion different from other psychotherapies, is its easiness and feasibility.

One of the limitations of this study was the small size sample, which was due to the difficulty in selecting patients. We could not use patients from different centers because of some differences in medical protocols in various centers, which could influence the psychiatric side effects of medications and some variables like effects of therapeutic environment and staffs' support.

Continuous follow-up of patients is difficult and requires perseverance of researchers. Excellent rapport between researchers and patients solve this problem.

5.1. Conclusion

Based on this investigation, the use of emotional expressiveness, due to improvement of psychological health and quality of life, is recommended for kidney transplant recipients. Additional studies are required with a focus on the efficacy of expressive emotion psychotherapy on physical health. Results from the current study give rise to several other questions for future exploration such as most appropriate 'dose' of emotional expression or the most helpful timing of the intervention. Assessment of the role of coping mechanism in psychotherapy responsiveness can be the other field for more researches.

Clearly, emotional expressiveness, as a feasible approach, is recommended to help the patients achieve a unique view in relation to their illness and the world.

One of the difficult parts of this study was encouraging the patients to focus on their deepest emotions; for some patients it was difficult to distinguish emotions from real events. It was needed to discuss the aim of the intervention repeatedly. Focusing on emotions and thoughts is a special skill that demands education.

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Footnote

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