

Does End Stage Renal Disease or Type of Renal Replacement Therapy Affect Marital Relationship in Diabetics? A Preliminary Report

Nouhi S^a, Tavallaie SA^a, Abadi Farahani MA^b, Assari SH^b, Einollahi B^c

^a Baqiyatallah University of Medical Sciences ^bClinical Research Unit, Baqiyatallah Medical University, Nephrologist

Several studies have assessed marital relationship in patients with different chronic diseases. However, literature lacks data regarding this issue in diabetic patients receiving renal replacement therapy. Here, we report our preliminary findings regarding the differences of marital relationship between diabetics being treated for End-Stage Renal Disease (ESRD) and diabetics with normal kidney function.

Materials and Methods: In a case-control study, 94 diabetic patients were divided into three groups according to renal replacement therapy: group I, renal transplanted subjects (n=38); group II, hemodialysis patients (n=20); group III, diabetics without ESRD (n=36). The groups were matched for gender, age and educational levels. Group I and II were also matched with regard to the duration of ESRD. Information on parameters, clinical data, and marital relationship measures was gathered. Marital relationship was evaluated with the Revised Dyadic Adjustment Scale, which includes four domains of Dyadic Consensus, Affection Expression, Dyadic Satisfaction and Dyadic Cohesion, with lower scores indicating greater impairment in marital relationship. Scores of different subscales were compared between the groups.

Results: No significant difference was found between the groups with respect to any of the study subscales. In group I, marital relationship and scores of the four marital quality measures were better in patients without any history of renal graft rejection

than subjects with such a history.

Conclusion: We did not find any difference regarding marital relationship between diabetic patients with and without ESRD. It also seems that the quality of marital relationship is independent of the type of renal replacement therapy.

Key Words: Diabetes, Renal replacement therapy, Marital relationship, Kidney transplantation, Hemodialysis

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Introduction

In chronic illnesses, social support is believed to influence patient outcomes.¹ Research has shown that support from others can facilitate recovery from a physical illness and enhance the ability to cope with the consequences of a chronic disease.² Family support has also been emphasized as the major source of support for patients, and has been reported to improve the patients attitude and mental health,³ and their compliance with therapeutic regimens.⁴ Normal marital relationship is usually disrupted when one partner has a chronic disease,⁵ but spousal support still remains the most important source of mental support for the patients.⁶

One study has stressed the importance of family support in diabetic patients.⁵ It has

Correspondence: Sima Nouhi; P.O. Box 14155-6437, Postal code: 1435915371 Vanak Square, Mollasadra Ave. 19945-587 Tehran, I.R. Iran;
E-mail: cru_common@yahoo.com

been shown that better family cohesion and lesser family conflict are related to improved adaptation to disease and adherence to medical treatment in children and adolescents with type 1 diabetes,^{7,8} as well as adults with type 2 diabetes.^{9,10} Decreased social support in patients with type 2 diabetes has been shown to predict an inappropriate control of blood glucose (BG) in adolescents and adults.¹¹⁻¹³ Self-management of diabetic husbands who have conflict with their wives has been reported to be less satisfactory.¹⁴ Pieper et al showed that the spouse's beliefs and attitude regarding the importance of BG control are better predictors of such control than the patient's own belief,¹⁵ and it has been suggested that the effect of marital relationship on BG control might be even higher than general family support.⁵

In view of the fact that concurrent presence of diabetes and end-stage renal disease (ESRD), as well as the applied medical treatment, can further deteriorate marital satisfaction among couples,¹⁶⁻¹⁸ we investigated two hypotheses in this study. First, we sought to explore whether marital satisfaction is worse in diabetics with ESRD than those without ESRD. Secondly, we investigated whether renal transplanted diabetics have better marital relationships than those who remain on chronic hemodialysis.

Materials and Methods

In a case control study, conducted in 2006 in Baqiyatallah Hospital, Tehran, Iran, 94 diabetics were selected through systematic sampling. Subjects were then divided into three groups as follows: Group I, those who had undergone renal transplantation due to ESRD (n=38); group II, those receiving hemodialysis for to ESRD (n=20) and group III, subjects with normal renal function (n=36). All diabetics with ESRD had been followed between 1995 and 2006, and group III were selected from among diabetic patients admitted to the internal medicine clinic of the hospital. The groups were matched with regard to gender, age and educational

level ($p>0.05$). Also, groups I and II were matched with respect to household monthly income and duration of ESRD ($p>0.05$).

Inclusion criteria were having diabetes mellitus, being in stable clinical conditions or the absence of any acute infections, being married, and presence of ESRD in the case of renal transplanted patients and hemodialysis subjects. Among the inclusion criteria in ESRD patients, also included was having an interval of at least six months from the time of renal transplantation or from the beginning of hemodialysis.

Data on demographic variables (gender, age, educational level and income) and medical data pertaining to diabetes, ESRD, hemodialysis and renal transplantation were documented. Revised Dyadic Adjustment Scale (RDAS) was used to evaluate the quality of marital relationship.¹⁹ RDAS measures dyadic adjustment by employing four subscales of Dyadic Consensus (ranging from 0 to 20), Affection Expression (ranging from 0 to 10), Dyadic Satisfaction (ranging from 0 to 20) and Dyadic Cohesion (ranging from 0 to 19), and total score ranges from 0 to 69, with lower scores indicating greater impairment in marital relationship. RDAS is usually used to assess marital adjustment and it provides a simple measurement of marital satisfaction when one partner suffers from a disease. The questionnaire consists of 14 questions which evaluate the couple's agreement on making appropriate decisions, marital satisfaction, and marital attraction. RDAS has an acceptable internal consistency (alpha coefficient = 0.90) and construct validity.¹⁹

Statistical analysis was performed using SPSS version 13 for Windows. Quantitative variables were defined by measures of central tendency and variability, and qualitative variables were defined using tables of frequency. Mean scores of domains of marital relationship in different subgroups were compared by means of Mann-Whitney, Kruskal-Wallis and Chi-squared tests. Sample size was calculated based on the formula of $n=2S^2/d^2 (Z_{1-\alpha/2} + Z_{1-\beta})^2$, with α of 0.05, $\beta = 0.15$,

$d=10$, and $S=11$. The number of patients for each group was 25 using this formula. Pearson correlation coefficient was applied to measure associations between scores of marital quality measures, total scores and other quantitative variables. P values less than 0.05 were considered statistically significant.

Results

Subjects: In group I, mean age of patients at the time of transplantation was 52.47 ± 10.12 years (range, 29-72 years). The mean interval between transplantation and

time of study was 35.7 ± 12.6 months (range, 6-135 months). Ninety-four percent of subjects had received their grafts from living donors. Eleven percent had a history of graft rejection, and 78% had undergone hemodialysis prior to renal transplantation.

In group II, mean duration of hemodialysis was 19.05 ± 14.23 months (range, 8-48 months). Table 1 displays other demographic variables in the three groups.

Table 1. Demographic characteristics of 94 diabetic patients

Parameter		Group I (transplanted)	Group II (hemodialysis)	Group III (control)	P value
Gender	Male (%)	32 (92)	16 (80)	22 (58)	<0.05*
	Female (%)	6 (8)	4 (20)	14 (42)	
Educational level	Diploma or above (%)	12 (33)	6 (30)	8 (21)	<0.05*
	Below diploma (%)	26 (67)	14 (70)	28 (79)	
Monthly household income	≥ 2000000 Rials (%)	20 (56)	10 (50)	--	<0.05*
	<2000000 Rials (%)	18 (44)	10 (50)	--	
Age (years)		52.70 ± 10.45	64.40 ± 9.43	57.00 ± 7.91	<0.05 [†]
Duration of ESRD (months)		26.94 ± 50.78	39.86 ± 48.64	--	<0.05 [†]

*Chi-Square test, [†]Kruskal-Wallis test

Table 2. Mean (\pm SD) value of overall score and subscales of marital relationship in the groups

Marital relationship	Group I (transplanted)	Group II (hemodialysis)	Group III (control)	P-value*
Dyadic consensus	16.22 ± 3.64	15.80 ± 2.66	16.74 ± 3.74	0.70
Affection expression	7.83 ± 2.23	8.50 ± 2.32	6.74 ± 2.60	0.14
Dyadic satisfaction	17.00 ± 3.38	16.10 ± 3.96	15.58 ± 3.47	0.40
Dyadic cohesion	10.61 ± 4.67	10.40 ± 5.17	8.10 ± 2.92	0.15
Overall score	51.67 ± 11.78	50.80 ± 12.06	47.16 ± 9.64	0.40

*Kruskal-Wallis test

Comparison of marital relationship between groups.

No significant difference was found regard-

ing overall score of marital relationship and scores of four subscales between the groups ($p > 0.05$) (Table 2).

Marital relationship and quantitative parameters in the groups:

Group I: Overall score and scores of different marital quality measures did not have any significant correlation with age, age at time of transplantation, duration of ESRD, and the interval between transplantation and the time of study ($p>0.05$).

Group II: Overall score and scores of different marital quality measures had no correlation with age, duration of ESRD or length of dialysis ($p>0.05$).

Group III: Overall score and scores of different marital quality measures were not correlated with age ($p>0.05$).

Marital relationship and qualitative variables in the groups:

Group I: Patients without a history of graft rejection, compared with those with prior graft rejection, had overall better marital relationships (53.79 ± 7.55 vs. 26.50 ± 4.95 , $p=0.026$), Dyadic Consensus (16.71 ± 2.89 vs. 9.50 ± 0.71 , $p=0.025$), Affection Expression (8.21 ± 1.37 vs. 3.00 ± 1.41 , $p=0.019$), Dyadic

Satisfaction (17.50 ± 2.21 vs. 10.50 ± 4.95 , $p=0.045$), and Dyadic Cohesion (11.36 ± 3.86 vs. 3.50 ± 0.71 , $p=0.026$). Overall marital relationship and marital quality measures were not correlated with gender, educational level, household monthly income, or history of dialysis prior to transplantation ($p>0.05$).

Group II: Women, as compared to men, had better overall marital relationship (65.50 ± 4.95 vs. 47.12 ± 10.32 , $p=0.036$) and Dyadic Cohesion (17.50 ± 1.12 vs. 8.62 ± 3.96 , $p=0.036$). Other marital quality measures had no significant correlation with gender ($p>0.05$).

Overall marital relationship and its subscales were not correlated with educational level or monthly income ($p>0.05$).

Group III: Overall marital relationship or its domains had no significant correlation with gender and educational level ($p>0.05$).

Table 3 shows the associations between scores of overall marital relationship and its four subscales.

Table 3. The correlations between overall scores of marital relationship and scores of marital quality measures

Subscales		Spearman correlation coefficient (r)*			
		Dyadic consensus	Affection expression	Dyadic satisfaction	Dyadic cohesion
Overall score	Group I	+0.88	+0.84	+0.72	+0.78
	Group II	+0.91	+0.70	+0.79	+0.91
	Group III	+0.87	+0.59	+0.63	-0.45

*All correlations are significant ($p<0.05$).

Discussion

This study shows that the quality of marital relationship does not deteriorate in diabetics with ESRD who receive renal replacement therapy. Also, we did not find any difference in the quality of marital relationship between diabetics receiving hemodialysis and renal transplanted diabetics.

Previous studies have reported various findings regarding the quality of marital relationship in patients with chronic diseases.^{17,20-}

²¹ Reports on couples with a spouse who had

a chronic disease have shown a rising prevalence of spousal abuse,²¹ increased psychological stress and a high occurrence of mental disorders in the both partners,²² impairment of sexual functioning,^{23,24} and lack of spousal support in partner's adaptation to the illness. Thus, some authors have suggested that co-existing diabetes and ESRD, with their short and long term complications, can seriously damage normal marital relationships, in these patients.^{16,25,26} By contrast, some studies have recommended that development of a chronic

illness in one partner might improve quality of marital relationship. Luk showed that, following renal transplantation, patients felt more intimate with their families and family members tended to give greater support to patients.²⁷ It has also been said that spouse of a diabetic patient may adjust his/her own diet with that of the sick partner.²⁸ The current study, however, could not show such an improvement in the marital quality in couples with one partner suffering from two chronic illnesses.

Holley and colleagues have reported that strong family support is usually taken into account while making the decision to perform renal transplantation on an ESRD patient.²⁹ This may explain why chronic hemodialysis diabetics have less satisfactory marital relationship than their renal transplanted peers in some studies. In other words, as this study implies, hemodialysis and transplanted diabetics might have no significant difference in their marital quality measures if the effect of confounding factors is removed.

Not surprisingly, this study showed that renal transplanted diabetics without a history of graft rejection have more pleasing marital relationships than those with such a history. This finding is supported by earlier reports,¹⁰ and it could be a result of poor quality of life,³⁰ increased prevalence of anxiety and depression,³¹⁻³³ higher comorbidity³⁴ or increased costs of medical treatment³⁵ which follow transplant rejection.

In the present study, female hemodialysis diabetics had better quality of marital relationship than their male peers. Previous studies have also reported the effect of gender on marital role strain in patients receiving renal replacement therapy.^{18, 36}

In candidates for kidney transplantation, family support is a key factor to achieve satisfactory outcomes and, thus, marital relationship is an important issue.³⁷ Any impairment in marital relationship can negatively affect quality of life, cause depression, and lead to decreased activity and social functioning in these subjects.^{27,38,39} After transplanta-

tion, married persons tend to have better quality of life owing to the support from their spouse and other family members.⁴⁰ Married individuals are less likely to develop depression, which again could be a result of spousal support and care.²⁷

It is believed that patient's compliance with a therapeutic regimen can considerably influence treatment outcomes in most chronic diseases.⁴¹ For instance, lack of compliance of patients with immunosuppressive regimens after renal transplantation is a major cause of graft loss and rejection.⁴² Several studies have confirmed that suitable family support can improve patients' adaptation to treatment.^{38,41,43} In this regard, psychological care, regular mental health consultations and therapeutic interventions have been reported to prevent noncompliance in patients.⁴⁴ In addition, it is expected that participation of the spouse and other family members in psychological consultation sessions can improve family support and patients' adaptation to treatment, and can enhance families' and patients' quality of life by decreasing the rate of stressors and mental disorders, such as anxiety and depression, after renal transplantation.²⁷

With regard to study limitations, we should point out that we failed to compare our study groups regarding microvascular involvement such as retinopathy and neuropathy and also macrovascular involvement such as coronary artery disease or cerebrovascular disease. Obviously, these complications may affect the quality of marital relationship and must be assessed by future studies. It should also be noted that among different causes of ESRD, ESRD secondary to diabetes is considered a high-risk etiology for renal transplantation,⁴⁵ and thus diabetics are less likely to receive a renal transplant.⁴⁶ Furthermore, due to the shortage of kidney transplants, diabetics are being excluded more and more from the pre-transplant evaluation lists.⁴⁷ Overall, diabetic transplantation candidates are rare cases in any transplant center. This limitation prevented us from collecting a

large sample size for our study and, as a result, the power of the study might have been affected. Another limitation of this study was the unavailability of data regarding adequate glycemic control in our patients, of which one that can be mentioned is HbA1c glycohemoglobin. As HbA1c is linked to the late complications of diabetes, it might be a suitable indicator of the effect of good marital relationship on diabetes control.^{48,49} However, given the shortened erythrocyte lifespan in ESRD patients on chronic hemodialysis,

HbA1c may not be a very reliable indicator of blood glucose control.⁴⁸ In addition, HbA1c level may even be affected by the abnormal non-enzymatic glycosylation of proteins in uremia.^{50,51}

To conclude, it appears that there is no significant difference between renal transplanted diabetics and diabetics receiving chronic hemodialysis with regard to marital satisfaction. More studies with larger sample sizes are warranted in the future.

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