

Perceptions of Health Status, Medication Side effects and Depression after Successful Renal Transplantation

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ABSTRACT

Objective: To investigate the perceptions of health status and depression among Renal Transplant Recipients (RTRs).

Study Design: A longitudinal research design was used.

Methods: Recipients' perceived health status (PHS) was measured by a self-developed questionnaire that reflected the symptom severity and frequency of common immunosuppressant side effects. Depression levels were assessed using Beck Depression Inventory B.D.I II). The sample population comprised of RTRs with a successful and healthy renal transplant recruited from private and government sector renal units in Lahore, Pakistan.

Results: Recipients with poorer perceptions of health status tend to be more depressed as indicated by significant negative correlations between PHS and depression. However, further regression analysis found both constructs as significant predictors of each other, raising a question of causal direction. A cross lagged correlation analysis indicated that PHS appears to be a stronger predictor of depression comparatively. Most recipients tend to have positive perceptions of their health status ($M = 30.84$, $S.D = 3.64$) with minimum to moderate level of depression ($M = 9.50$, $S.D = 4.00$), It is found that a positive perception of health status is associated with lowered depression.

Conclusion: Most recipients' with a healthy kidney transplant tend to report a positive perception of their health status despite adverse medication side effects. However, the perceived health status is significantly associated with consequent feeling of depression. The study confirms the efficacy and positive health outcomes of renal transplantation in Pakistan.

Key words: Perceived Health Status; Renal Transplant Recipients; Depression; Medication side effects; Transplantation.

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INTRODUCTION

Advancements in organ transplantation have significantly increased longevity of grafts and long term survival rates of renal transplant recipients¹. However, knowledge about the perceptions of health of these recipients remains limited². Pakistan has an alarmingly increasing rate of 100 persons per million with renal failures every year, which means that every year, 18000 to 20,000 persons are in need of kidney transplants to

live a normal life³. This alarming increase in renal failure and transplantation needs psychological focus besides medical treatment and follow-up. Transplant recipients need to address new challenges in care, coping, maintain and improving their physical health and overall quality of life with identification and management of psychological issues⁴ Therefore, it is important to study recipients' perceptions about their health and life after transplantation.

Transplant efficacy and health outcomes are reflected in improved Quality of Life (QoL)⁵. A study examined the perceptions of physicians and nurses of health status after renal transplantation for accuracy and if RTRs have realistic expectations about post-transplant QoL. It was found that most RTRs had higher expectations about their QoL after

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transplantation as compared to physicians and nurses⁴. However, physicians' and nurses' perceptions were found to be closer to the actual health status after transplantation than patients' expectations, suggesting physicians and nurses as reliable sources to confirm actual health status of RTRs⁶. Perceptions of health status are closely related to the frequency and severity of symptoms and common immunosuppressant side effects that are experienced by most RTRs⁷. Health status is directly associated with adherence to the recommended immunosuppressant regimen. Since medication adherence is mandatory for recipients, studies have also investigated whether changes in goal cognitions, illness perceptions, and treatment beliefs were related to self-reported medication adherence six months after kidney transplantation⁸. It was suggested to focus on interventions maximizing adherence and consequently clinical outcomes⁹. Intervention is needed to change unrealistic beliefs and expectations of non-compliant recipients regarding graft longevity¹⁰.

Although PHS significantly improves after transplantation reflecting the efficacy of this surgical procedure, there are psychological consequences such as depression and anxiety regarding uncertainty of graft survival and longevity. Therefore, screening recipients for depression can improve psychological well-being and increase QoL satisfaction¹¹. Depression and perceptions of QoL are discussed in de Leval's model^{12,13} suggesting that changes in cognitions about one's past, present, and future QoL are associated with changes in depressive symptomatology. Since the main domain of QoL is physical health, therefore, perceived health status may consequently influence the way recipients feel after transplant. It makes depression screening very crucial to identify vulnerable individuals whose actual health might be at risk merely because of what they perceive of their health¹⁴.

Pakistan is a country with a high rate of young individuals diagnosed with renal failure and increased number of kidney transplants per year¹. Most researches are carried out to investigate health outcomes post transplantation in the clinical context, however, transplantation is not only a physical surgical experience in fact it has long term psychological consequences¹⁵. Therefore, it is important to focus and identify psychological aspects that contribute in influencing health outcomes in transplantation in a developing country like Pakistan where health care facilities implicate issues of accessibility and affordability as well. Socio-demographic factors such as poor financial conditions and lack of education and awareness of the post-transplant health care tend to cause negative

psychological consequences such as anxiety and depression which make the recipient vulnerable to a high risk for graft loss¹⁶. Therefore, significant psychological aspects such as Perceived Health Status and Depression were analyzed for their reciprocal impact to clarify the causal direction of these psychological consequences in RTRs.

The current study attempts to investigate the impact of perceived health status on consequent depression levels as experienced by RTRs on regular mandatory immunosuppressant medication and to study the socio-demographic correlates to identify risk and facilitating factors for graft longevity.

METHODS

A longitudinal study was carried out to examine if perceived health status of RTRs, influences their depression levels. Recipients were approached at different renal clinics in Lahore, Pakistan using purposive sampling technique. Recipients above the age of 18 years and a healthy graft functioning were assessed at three different times over a period of 15 months. The study was approved by the Ethics committee of University of Surrey ethics committee, U.K.

The inclusion criteria used to recruit participants involved adult Renal Transplant Recipients were recruited on the basis of a healthy kidney functioning as indicated by their renal function tests and clinical indicators, on regular medication and follow-ups without any co-morbidity (existing physical or mental disorders); not more than one previous transplant and a minimum basic formal education so that they could read and write Urdu.

The Participants were categorized on the basis of their marital status; those currently living with their spouses or engaged were considered to be 'in a relationship' and others who were either separated, widowed, divorced, or never married were categorized as 'single' because of their low representation. Most recipients were highly educated and currently employed. Recipients' family background/referred to their native locality. Recipients belonging to villages were categorized as 'rural' while residents of cities were categorized as 'urban'. Housewives and students were included in the unemployed category.

Renal Transplant Recipients (RTRs) were approached at renal units and private clinics in Lahore Pakistan. They were interviewed as referrals after being screened

according to the inclusion criteria by the physicians. The participants were interviewed before their visit to the physician (nephrologist) individually. Presence of the family member during the interview was at the discretion of the participant.

The assessment measures included;

1. Demographic Information Sheet: The demographic characteristics in this proforma included; age, gender, marital status, years of formal education, employment status, monthly family income, number of dependents, familial background (rural/urban), and family system i.e. joint or nuclear.
2. Medical Information Sheet: The clinical information about general physical health and transplant related details were recorded. These included; approximate onset and duration of renal disease, dialysis modality (hemodialysis, peritoneal or both) before transplant and duration of dialysis, primary & secondary nephrologic diagnosis to reveal the etiology of renal failure, time since transplant, current medications, complete blood profile with renal functions (including, serum creatinine, blood urea, uric acid).
3. Renal Transplant Side Effects Questionnaire for Perceived Health Status: It was designed to assess the occurrence, frequency and severity of the most commonly experienced potential side effects of mandatory immunosuppressant drugs and other medications given as a treatment protocol. The scale measures the extent to which these adverse side effects occur and affect the physical and social functioning, bodily pain, vitality, and general health perceptions. It involves a self-report rating scale that asks the recipients to rate their side effects. The nephrologists were asked to validate the list of commonly experienced side effects. The questionnaire also includes information on medication adherence which may directly influence health outcomes. A high score on this questionnaire reflects a positive perception of health status.
4. The Beck Depression Inventory (BDI, BDI-II): To measure depression, BDI-II was used which is a widely used 21-question multiple-choice self-report inventory. Responses on a rating scale range from 0 to 3, indicating minimum to severe depression. The score categories are 0–13: minimal depression; 14–19: mild depression; 20–28: moderate depression; and 29–63: severe depression. Participants are asked to rate how they have been feeling for the past two weeks¹⁵

The study involved a repeated measures design where

three assessments were carried out. An initial baseline evaluation (time 1) was done first in June 2010, followed by time 2 assessment with an interval of 6 months in December 2010. After one year of Time 2 assessment, the final Time 3 assessment was done in December 2011.

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2008. Informed consent was obtained from all patients for being included in the study.

RESULTS

The findings revealed that most RTRs have a positive perception of their health status and are not distressed by the medication side effects of their mandatory medications. The depression levels ranged from minimum to moderate which confirm their satisfaction with physical health functioning. (See table 1)

Table 1: Descriptive Statistics for Perceived Health Status & Depression in RTRs.

	PHS time-1	PHS time-2	PHS time-3	Dep time-1	Dep time-2	Dep time-3
N	150	147	144	150	147	144
Mean	20.65	25.96	30.84	11.90	10.84	9.50
S.D	3.25	4.67	3.64	5.58	5.91	4.00

PHS=Perceived Health Status, Dep= Depression, RTRs= Renal Transplant Recipients

The descriptive analysis in the table above shows that most recipients tend to have a positive perception of their health status with minimum to moderate level of depression. The pattern across three assessments clearly indicates an improvement in the perceptions of health status and decrease in depression over time levels reflective of an improved overall improved psychological well-being.

Table 2: Correlations among Perceived Health Status & Depression in RTRs

	Depression Time 1	Depression Time 2	Depression Time 3
PHS 1	-.495**	-.453**	-.404**
PHS 2	-.341**	-.476**	-.198*
PHS 3	-.386**	-.449**	-.451**

***p<.001, **p<.01, *p<.05

Table 3: Regression Analysis for Perceived Health Status & Depression

Predictors	Adj. R ²	F	B	t	Sig	Outcome
PHS time-1	0.13	20.95	0.37	4.57	.000	Dep time-1
PHS time-2	0.11	19.50	0.35	4.41	.000	Dep time-2
PHS time-3	0.07	12.48	0.25	3.53	.001	Dep time-3

In order to clarify the direction of causality between PHS and depression across three times, a cross lagged correlation was carried out. See figure 1
Cross Lagged Panel (CLC) Analysis

The reciprocal relationships between recipients' PHS and Depression were examined in CLC

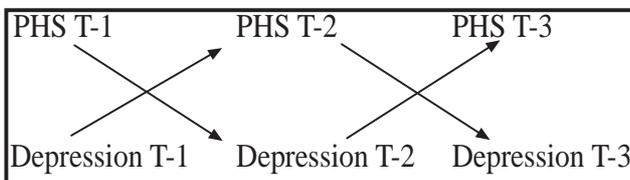


Figure 1

Table 4: Cross Lagged Correlations among PHS & Depression across three times

Predictors	B	t	p	Outcome
PHS 1	0.32	4.09	.000	DEP 2
PHS 2	0.30	3.79	.000	DEP 3
DEP 1	0.21	2.48	.014	PHS 2
DEP 2	0.28	3.41	.001	PHS 3

*PHS= Perceived Health Status, DEP = Depression levels

The above cross lagged analysis showed that although both variables appear to be significant predictors of each other, however, PHS at time 1 and 2 appeared to be a stronger predictor of recipients depression at time 2 and 3, $F(1, 146) = 16.74, R^2 = .11, p = .000$ and $F(1, 143) = 14.43, R^2 = .09, p = .000$. Whereas, depression did not predict PHS as strongly, $F(1, 149) = 6.17, R^2 = .04, p = .014$ and $F(1, 143) = 11.65, R^2 = .08, p = .001$. This indicates that depression appears to be an outcome of an individual's perceptions of health status. A comparison of strength of causal relationships indicates, PHS as a stronger predictor compared to depression.

Table 5 Correlations among Sociodemographics, Perceived Health Status & Depression.

Socio-demographics	PHS T-1	PHS T-2	PHS T-3	Depression T-1	Depression T-2	Depression T-3
Age						
Education						
MFI						
TST						

**p<.001, *p<.05 (MFI= Monthly Family Income) TST (Time since Transplantation)

The above table shows that age and time since transplant are negatively correlated with PHS, reflecting that as age and time post-transplant increases, perceptions of health deteriorate. Education level is positively associated with PHS, indicating that recipients with higher education level tend to have better perceptions of their health status. It can be concluded that increasing age is associated with a poorer perception of health status and older recipients tend to be more depressed.

Regression analysis reveals that age and work status were found to be significant predictors of PHS and depression, reflecting that as older recipients tend to have increased depression levels and poorer perceptions of health. However, recipients who are currently working/ employed tend to report lower depression levels and a positive PHS. Higher level of education was also found to predict more depression in recipients. Therefore, Age, work status and educational level can be considered as factors in influencing PHS and depression.

DISCUSSION

Psychological aspects need attention in health outcomes to determine efficacy of transplantation. Transplantation is a surgical procedure that implicates both physical and psychological health outcomes¹. Although Pakistan has an alarmingly high rate of renal transplantation but there is lack of research on the psychological issues and consequences of renal transplantation. Therefore, it is important to study how most recipients perceive their health status post transplantation and also the individual differences in their adjustment and coping with transplant despite similar physical health status. The purpose was to find individual differences in perceptions of health status and its impact on depression levels among RTRs with similar clinical picture and

physical health functioning. The aim was to find out if depression levels are determined by perceptions of health status or vice versa so that the causal factor can be identified.

A positive finding was, that overall, across three times of assessment, most RTRs reported a positive PHS and low level of depression, indicating the efficacy of transplantation in a developing country like Pakistan, where most people have limited access to quality health care and issues of cost and affordability¹⁷. However, demographic differences were also found and a poorer perception of health status was associated with older age as indicated in the findings of the present study. Psychological issues in RTRs have become an important outcome in determining the transplant efficacy. Although the medical and clinical aspects of QoL are frequently investigated, there is still a lack of knowledge about the significant role of psychological factors affecting not only the psychological well-being but also the functioning, survival and longevity of the transplanted kidney in Pakistan¹⁸.

Socio-demographic (gender, age, education, average income), medical/clinical (glomerular filtration, serum albumin, number of co-morbid diseases) and psychological factors (neuroticism, extroversion, psychological distress) seem to influence both physical health status and psychological well-being. Improved perceptions of health status were associated with younger age, higher education and income, a low number of co-morbid diseases, lower neuroticism and distress. Psychological well-being was associated with higher education and income, longer time since transplant, higher extroversion, lower neuroticism and distress.. The findings verify the importance of psychological factors as etiological factors for distress in RTRs⁸.

Affective disorders have been commonly reported in RTRs but there is limited data regarding psychosocial issues following kidney transplantation. A study aimed to measure the prevalence of depression and the demographic factors associated to depression among RTRs. It was found that depression adversely affects health outcomes after transplantation. The researchers pointed out the clinical implication emphasizing the need to assess depressive symptoms as well as other affective disorders as part of the screening and treatment of renal transplant patients¹⁹.

Researchers have also found annual income, age, race, and Medicare status, time post-transplant as significant predictors of physical health status in renal transplant

recipients. This suggests a need to identify Sociodemographic correlates of Quality of Life after renal transplant²⁰.

A consistent pattern of differences in PHS is being found across demographic variables. Mostly, male gender, younger age, marital status (being married) appears to have better perceptions of health status²¹. Interestingly, researches have also suggested that socioeconomic factors such as income and healthcare coverage may play a more critical role in determining RTRs PHS compared to other demographic variables (e.g., age, gender, race, marital status). Several general population studies have found associations between lower income and poorer perceptions of health²². Since most RTRs also experience a significant amount of psychological distress and are at risk for developing depression²³. There is consensus that depression has a significant negative impact on health outcomes, including graft and patient survival²⁴. Moreover, depressive symptoms in RTRs also increase the risk of noncompliance to the mandatory immunosuppressant regimen, ultimately leading to poorer health outcomes and in adverse cases, graft rejection and death⁷. The significant question is to examine the clinical and psychosocial factors influencing recipient's perception of physical health and psychological wellbeing that implicates their affective condition as well. A study explored the predictors of perceived health status (PHS) in RTRs.

Conclusion: It is evident that the psychological impact of these side effects shapes their PHS. The transplant follow-up management plans must incorporate recipients' side effect concerns and distress. Effective counseling to understand, accept and cope with these adverse side effects can minimize depression and maximize psychological well-being guarantying improved health outcomes.

To improve transplant efficacy and health outcomes, there is a need to highlight the currently undermined significance of socio-demographic diversities. Psychological aspects of transplantation need to investigate in order to identify barriers in health promoting behaviors, to minimize risk factors implicated in post-transplant care.

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