Association between work, income and quality of life of kidney transplant recipient the municipality of Teresina, PI, Brazil

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ABSTRACT

Introduction: Evaluate the quality of life of kidney transplant recipients has been a way to determine the impact of transplantation in health care and subsequent treatment of chronic character. **Objective:** To analyze the association between income, work and quality of life of kidney transplant recipients. **Methods:** The sample consisted of 147 people, with an average of 74.3 months of realization of the transplantation. Data was collected using the following methods: socioeconomic assessment tool and the Medical Outcome Study 36 - Item Short - Form Health Survey, validated for use in Brazil. A bivariate analysis was performed using the Mann-Whitney's U test. **Results:** The average quality of life related to health for the physical component was 63.8 (SD = 29.4), and for the mental component, 65.6 (SD = 29.2). The bivariate analysis showed that the exercise of labor activity and family income higher than three minimum wages were significantly associated with a better quality of life. **Conclusion:** Labor activities are significant for kidney transplant recipients and special attention must be given by the multidisciplinary team in the search for strategies that promote and encourage their maintenance and reintegration into the labor market.

Keywords: income; kidney transplantation; quality of life; work.

INTRODUCTION

Quality of life assessment has become an ancillary tool to help identify and prioritize patient problems in the physical, social and psychological arenas, allowing tailoring therapeutic interventions aimed at improving the individual's level of satisfaction with their health and treatment.[1]

Renal transplantation has become a broadly accepted surgical intervention in recent years, that provides years of life with high quality for patients with irreversible kidney failure, and the largest transplant centers are located in the United States, China, Brazil and India.[2]

Considering the progress in preventive and therapeutic programs and the increased survival of kidney transplant recipients, researchers have tried to measure quality of life after transplant completion.[3]

Health-Related Quality of Life (HRQoL) is influenced by factors associated with socioeconomic status and individual characteristics such as income, education and occupation, which are determinants of an individual's health - important in disease prevention and health intervention planning.[4]

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HRQOL assessment after kidney transplant in our country tends to compare patients on hemodialysis with renal transplant recipients. However, there is controversy about quality of life improvements after transplant.[5,6]

Socioeconomic issues have a significant impact on people's lives. Factors such as low income, low education level, residence in areas of social risk and difficulty to access health care are strong predictors of ESRD development, which may interfere with the HRQOL of kidney transplant recipients.[7]

Concerning patient occupation, the importance of the person working exceeds the needs of capital, because it also involves individual human needs. It is through an employment, that a person exerts influence on his social-personal structure, determining income, leisure, personal relationships, level of satisfaction, rewards, rights and duties. Given this context, our goal was to analyze the association between income, employment and quality of life in kidney transplant recipients.

Methods

This cross-sectional study, carried out at three accredited outpatient clinics with pre and post-kidney transplant patients, belonging to the state public and private healthcare networks of Teresina, in the state of Piauí - Brazil; serving patients from rural and urban areas of the North and Northeast regions of the country.

The study population consisted of 238 users of the Brazilian Public Healthcare System (SUS), submitted to kidney transplantation and under clinical follow up. The probabilistic, stratified and proportional sample consisted of 147 persons[C1], with a 95% confidence interval, 50% incidence, with a 5% sampling error. In this study, we included patients of both genders, literate, aged 18 years, who underwent renal transplantation for at least six months with a functioning graft. Those with difficulty communicating or understanding the questionnaire were taken off the study. We then approached the patients as outpatient post-transplant prior to their medical appointment. The study at all stages met the provisions of Resolution 196/96, and the project was approved by IRB/UFPI under CAAE-0012.045.000-10.

Two instruments were used: a form with multiple choice questions to obtain data on socioeconomic and demographic aspects, with the following variables: age, gender, origin, marital status, education, family and personal income, occupational activities prior to the illness; and the Generic Quality of Life Questionnaire - Medical Outcome Study 36 - Item Short-Form Health Survey, which assesses HRQoL, addressing the following domains: physical functioning, physical aspects, pain, general health, vitality, social functioning, emotional aspects and mental health. The data was measured considering the variability of scores from 0 to 100, with the results closest to 100 being suggestive of improved respondent's quality of life. The SF-36 is one of the most commonly used generic instruments and it is easy to apply, being culturally adapted for Brazil.[8]

For data analysis purposes we used the Statistical Package for Social Science (SPSS) software version 17.0. We performed a descriptive analysis for all variables, and the Kolmogorov-Smirnov test was applied to analyze whether the numerical variables had a normal distribution or not. As the only variable with a normal distribution of the study was age, we used the Mann-Whitney test to analyze the correlation between the dimensions of the SF-36 questionnaire and the variables of the study population, adopting a significance level of 0.05.

Results

Following, we present the sociodemographic characteristics of the persons undergoing transplantation as age range, gender, education, origin, marital and family status:

The mean age was 40.8 years (SD = 11.6), while most individuals had between 41 and less than 60 years of age. There was a predominance of males (62.6%), married or in a consensual union

(56.5%), with low educational attainment (7.5 years of formal study on average, SD = 4.7 years), residents with family members (96.6%), from the capital city (46.3%) (Table 1).

Among respondents, 78.2% were employed prior to the transplant, and 61.9% were unemployed after transplantation, with family income and personal income between 1 and 3 minimum wages, 81.6% and 72.1%, respectively (Table 2).

Regarding the type of work activity after transplantation, 33.9% were self-employed without formal employment - working as artisans, scalpers, manicures, masons.

Regarding income origin, 38.1% of respondents said it was from work; 36.1% said it came from a disability pension; 8.8% of sickness aid; and 17.0% had no income.

The physical component, which includes functional capacity, physical aspects, pain and general health, showed mean and standard deviation values of 63.8 (SD = 29.4), respectively, and had as the most affected aspect that of physical issues, with a mean value of 48.4 (SD = 42.6). The mental component, which includes vitality, social functioning, emotional and mental health issues, had a mean value of 65.6 (SD = 29.2), respectively (Table 3).

The values related to the type of donor renal transplant recipient were not statistically significant when associated with quality of life (Table 4).

The values related to family income were close to significance, with higher mean values in functional capacity (p = 0.06), role limitations due to physical issues (p = 0.07) for those with family income above 3 minimum wages compared with

Table 1 Sociodemographic characteristics of kidney transplant recipients. Teresina - PI (N = 147), 2010

Variables	X*	(s)**	Min-max***	n	%
Age range	40.8	11.6	18-70		
18 to 30 years				30	20.4
31 to 40 years				50	34.0
41 to < 60 years				56	38.1
60 years or more				11	7.5
Gender					
Males				92	62.6
Females				55	37.4
Schooling	7.5	4.7	1-17		
≤ 04 years of schooling				55	37.4
05 to 08 years of schooling				22	15.0
09 to 11 years of schooling				47	32.0
12 years and more				23	15.6
Origin					
Capital				68	46.3
Countryside				65	44.2
Another state				14	9.5
Marital status					
Married/consensual union				83	56.5
Single				50	34.0
Widow				03	2.0
Other				11	7.5
Lives with Family members					
Yes				142	96.6
No				05	3.4

* Mean; ** Standard Deviation; *** Minimum-Maximum.

Table 2 Work and income characteristics of kidney transplant recipients. Teresina - PI (n = 147), 2010

Variables	n	%
Work activity before the transplant		
Yes	115	78.2
No	32	21.8
Work activity after the transplant		
Yes	56	38.1
No	91	61.9
Type of work activity after the transplant		
Self-employed	19	33.9
Trader	7	12.5
Teacher	5	8.9
Farmer	4	7.1
Driver	4	7.1
Administration assistant	4	7.1
Office worker	2	3.5
Others*	11	19.6
Monthly family income **		
< 1 minimum wage	14	9.0
1 to 3 minimum wages	120	82.0
> 3 minimum wages	13	9.0
Monthly personal income **		
< 1 minimum wage	07	4.8
1 to 3 minimum wages	106	72.1
> 3 minimum wages	09	6.1
Without an income	25	17.0
Income origin		
Work	56	38.1
Disability pension	53	36.1
Sickness pension	13	8.8
No income	25	17.0

* "Others" refers to the professions listed only once, such as: general services worker, dentist, manager, physical therapist, realtor, attendant, guard, supervisor, bank analyst, cashier and manager. ** Minimum wage in effect at the time: R$ 510,00.

those with lower income. Those with family income above 3 minimum wages reported higher values for the emotional domain (p = 0.02) than those with lower income. As for working conditions, data are significant in relation to the domains: physical functioning (p = 0.02), role limitations due to physical issues (p < 0.01), pain (p = 0.04), social functioning (p = 0.01) and emotional aspects (p = 0.02) (Table 5).

In all these fields, the mean values for people who had a job after transplantation were higher when compared to those without a job. Regarding the vitality (p = 0.09) and mental health (p = 0.08) components, the differences between the mean values of the patients who had work and those not working were close to significant values.

Discussion

The age group between 41 years less than 60 years was predominant, with a mean age of 40.8 (SD = 11.6) years, ranging from 18 to 70, which establishes that most kidney transplant recipients were in a productive stage of their lives. Studies show that kidney transplantation in full productive age makes a person more vulnerable to emotional problems, which requires maximum attention from healthcare professionals involved in the care of these people.[4,9]

There was a predominance of males, representing 62.6% of the sample. The data are consistent with other studies that indicate a higher prevalence of kidney failure in men than in women.[10,11]

As for education, we found that 37.4% of kidney transplant recipients had 4 or fewer years of study, which confirms the low educational level, corresponding to the Brazilian reality, in which much of the population has few years of schooling.[12]

A comparison of labor activity exercised by the persons before transplantation with those after transplantation reveals that 40.1% failed to develop any kind of work. This difficulty implies that budget constraints could jeopardize their livelihoods and cause financial dependence.

The values of the physical domain had the lowest scores, showing commitment in carrying out daily activities. These findings converge with the results from a quality of life comparative study, using the SF-36 in people before and after kidney transplant, with an average of 44.1 in the field of physical aspects in the post-transplant period, indicating impairment in carrying out daily activities.[5] Involvement of physical aspects may impair work activities and, consequently, affect income.

Several factors pose barriers to return to work after the transplantation and may contribute to the difficulty of finding work for these people, such as: limitations stemming from the transplantation, low education, the desire to

Table 3 Domains of the SF-36 quality of life questionnaire from kidney transplant recipients, Teresina - PI (N = 47), 2010

SF-36 domains	X*	(s)**	Median	min-max***
Physical components	63.8	± 29.4	70	0-100
Functional capacity	71.9	± 19.4	75	20-100
Physical aspects	48.4	± 42.6	25	0-100
Pain	71.0	± 27.8	72	10-40
General health status	60.8	± 23.7	60	0-100
Mental components	65.6	± 29.2	70	0-100
Vitality	66.6	± 21.2	70	10-100
Social aspects	73.9	± 26.8	75	0-100
Emotional aspects	56.5	± 44.0	67	0-100
Mental health	70.2	± 20.8	76	4-100

* Mean; ** Standard Deviation; *** Minimum-Maximum.

Table 4 Association between donor type and the SF-36 quality of life values between donor type and recipients of kidney transplant, Teresina - PI (N = 147), 2010

Domínios do SF-36 (X)	Tipo de Doador		*p**
	live	deceased	
Functional capacity	76.7	67.9	0.25
Physical aspects	76.2	69.1	0.33
Pain	73.6	74.9	0.86
General health status	75.1	68.9	0.64
Vitality	76.3	68.9	0.33
Social aspects	73.6	74.7	0.88
Emotional aspects	74.1	73.7	0.94
Mental health	72.4	77.4	0.51

* *p*-value Mann-Whitney test, using $p < 0.05$. The values in bold letters represent the associations which had statistically significant differences.

Table 5 Association between family income, current employment and values from the SF-36 quality of life domains from kidney transplant recipients, Teresina - PI (N = 147), 2010

SF-36 domains (X)	Family income**		*p**	Current employment		*p**
	≤ 3	> 3		yes	no	
Functional capacity	72.0	94.5	0.06	76.7	69.0	0.02
Physical aspects	72.1	93.4	0.07	62.9	39.5	< 0.01
Pain	72.8	86.2	0.26	76.6	67.6	0.04
General Health Status	73.9	74.6	0.95	64.4	58.6	0.15
Vitality	73.8	75.8	0.87	70.3	64.3	0.09
Social aspects	72.9	84.4	0.34	80.6	69.9	0.01
Emotional aspects	71.6	97.8[C1]	0.02	67.3	49.9	0.02
Mental Health	72.9	84.7	0.33	74.0	67.9	0.08

* *p*-value Mann-Whitney test, using $p < 0,05$. The values in bold type represent associations which had statistically significant differences.
** Family income in terms of a minimum wage of R$ 510,00.

[C1] The mean values presented on the table concern the quality of life level. The Results closer to 100, suggestive of better quality of life of the respondent (methodology), in other words, higher than three minimum wages provide a better quality of life as to the emotional aspect!!

[C1] The sample was probabilistic and involved 147 people submitted to kidney transplant, based on the formula utilized to calculate a finite population.

$$n = \frac{\partial^2.p.q.N}{e^2.(N-1)+ \partial^2.p.q}$$

$$n \geq \frac{238 \,.\, 1.96^2 \,.\, 0.25}{0.05^2 \,.\, 237 + 1.96^2 \,.\, 0.25} \geq 146.6 = 147$$

Whereas: N: Total sample; n: Sample to be calculated; ∂: Confidence level; e: Sample error; p: Presumed prevalence; q = 100-p (tolerable error in percentage).

maintain the illness pension and the retirement pension, the feeling of physical and psychological inability to work.[13]

Regarding the origin of the income, the data from this study converge with those obtained by a study in Campinas, whereby the majority of kidney transplant (51.9%) recipients were beneficiaries of Social Security.[14]

Among the subjects who work, 33.9% were self-employed. Informal ties better accommodate kidney transplant recipients, considering that they can choose the activity that best fits their abilities, their general condition, and especially, more flexible hours and time periods.[15]

On the other hand, many kidney transplant recipients after the transplantation, become beneficiaries of social security, being retired or receiving an illness pension. These ties may hamper access to the formal labor market, since, by law, voluntary return to work activity will result in automatic cancellation of the pension benefit, from the date of returning to work.[16]

It is noteworthy that kidney transplantation aims to rehabilitate people and make them able to work, though, paradoxically, many of the recipients are dependent on social security. In Brazil, there is no specific legislation on the rights of kidney transplant recipients, or public policies that foster reintegration into the labor market; however, some benefits such as shelter care, disability pension and sick pay, apply to such persons, provided they are within the criteria for the grant of each one of them.[17]

As for the association between the type of donor for kidney transplant recipient and the quality of life domains, studies show a higher prevalence of rejection, waiting time and complications of deceased donor graft recipients compared to live donor recipients; however, with no significant relationship between quality of life and donor type.[18,19]

Regarding the association between work and values from the quality of life domain, significant or near-significant results were observed when compared to working conditions, which enable us to infer that the persons performing labor activity after the transplantation, have better functioning, less pain and show gains in physical status, vitality and mental health compared to those who have no work. A study showed that the return to work after kidney transplantation, is of interest both from a social point of view, as an individual, because, in general, there is a reduction of financial losses, expansion in social relationships and increased self-esteem, therefore, an improvement in quality of life as a whole.[20]

The better QoL in the form of better physical and mental health, with a lower rate of healthcare service utilization was achieved after the implementation of an interdisciplinary program, whose objectives were careful to avoid comorbidities, professional counseling and social improvements.[21]

Social life, achieved with having a job, prevents feelings of sadness and anxiety, which reduce the ability for good development in the workplace and in society and, when performed under favorable conditions, may provide a financial gain and a sense of personal competence.[22]

The multidisciplinary team comprised of physicians, nurses, social workers and psychologists can assist in planning to promote meetings between patients, so as to provide exchange of experiences on work-related activities, information on the limits imposed by the treatment, and their rights. These people should be encouraged to lose the notion of passivity and become protagonists of their own care, which reflect in a better quality of life.[23]

These limitations are related to the cross-sectional design of this study, which prevents us to gain knowledge on changes in quality of life over time and to being peculiar to a state in Brazil.

Conclusion

The study showed that the exercise of a labor activity after kidney transplantation was strongly associated with better quality of life in all areas surveyed. Having a job is significant for kidney transplant recipients, and special attention should

be given by the multidisciplinary team in the search for strategies that promote and encourage their wellbeing and reintegration into the labor market.

Family income had a positive association when related to the emotional aspect domain.

Kidney transplantation significantly influenced HRQoL. Scores assessed by the SF-36 showed above average scores for physical and mental components; however, in isolation, the physical aspect had values below the mean, which can interfere with daily life, limiting or preventing the execution of activities.

The type of donor was not statistically significant when associated with quality of life domains.

The majority (61.9%) after the transplantation, remained without work activity and hence no income or they were dependent on social security. This fact points to the need for support from various social sectors, to ensure material support, family support and social reintegration of these people after the transplant.

Future studies to evaluate the access of kidney transplant recipients to the labor market are needed because having a job impacts HRQoL and the consequent evolution of kidney transplantation.

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