



The factors affecting the quality of life of kidney transplantation patients at the Cipto Mangunkusumo General Hospital in Jakarta, Indonesia[☆]

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Received 13 November 2018; accepted 17 April 2019

Available online 8 July 2019



KEYWORDS

Kidney transplantation;
Quality of life;
Level of education

Abstract

Objective: The purpose of this study was to determine the quality of life (QoL) patients with kidney transplantation and the influencing factors.

Methods: This cross-sectional study used a purposive sampling data collection method that involved 110 patients who met the inclusion criteria. The QoL were measured using the abbreviated form of the World Health Organization's Quality of Life questionnaire. The data was analyzed using proportions, the chi-squared test, and a multiple logistic regression analysis.

Results: The QoLs of the kidney transplant patients at the Cipto Mangunkusumo General Hospital in Jakarta, Indonesia were generally good (71.8%). The factors affecting the patients' QoLs were the age ($p=0.002$), educational level ($p=0.001$), employment status ($p=0.010$), family support ($p=0.024$), and Immunosuppressant medication adherence ($p=0.009$). The dominant factor affecting the QoL was the educational level (odds ratio = 11.490).

Conclusion: The patients' QoLs were influenced by their ages, educational levels, employment statuses, family support, and immunosuppressant medication adherence.

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Introduction

Kidney transplantation (KT) is one of the therapy choices for patients with end-stage renal disease (ESRD).¹ Data

from The United States Renal Data System in 2015 reported that the number of KT patients in the United States was 18,805, with a 93% successful rate.² From 1977 to 2017, the number of ESRD patients treated using KTs in Indonesia, according to Indonesian Renal Registry data from 2015, was approximately 900 patients.³ The success of a KT itself is often associated with an improved life span, an improved patient quality of life (QoL), and less costs associated with medical treatment, when compared to dialysis.¹

Several previous studies have reported that the QoLs of KT patients are influenced by their age, sex, educational status, employment status, family support, donor source,

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[☆] Peer-review under responsibility of the scientific committee of the Second International Nursing Scholar Congress (INSC 2018) of Faculty of Nursing, Universitas Indonesia. Full-text and the content of it is under responsibility of authors of the article.

ESRD cause, length of time since the KT, immunosuppressant medication adherence, and side effects of the immunosuppressant drugs.^{4–10}

The Dr. Cipto Mangunkusumo General Hospital is one of the Indonesian hospitals that perform KTs; however, research related to the QoLs of the KT patients has not yet been conducted. In 2017, a study conducted at the Dr. Cipto Mangunkusumo General Hospital to determine the survival rate of KT patients after three years showed that 79.7% of the patients were still alive, but this study did not determine which factors influenced the survival rate.¹¹ Therefore, the purpose of this study was to determine the KT patients' QoLs and which factors influenced them.

Methods

This cross-sectional study was conducted in the outpatient clinic of the Department of Urology and Nephrology at the Dr. Cipto Mangunkusumo General Hospital. A purposive sampling technique was used, in accordance with the inclusion criteria, and it was applied to all of the patients who underwent KTs at the Dr. Cipto Mangunkusumo General Hospital between 2010 and 2017 who were not currently hospitalized. The research sample consisted of 110 KT patients whose QoLs were measured using the abbreviated version of the World Health Organization's Quality of Life (WHOQoL-BREF) questionnaire. The WHOQoL-BREF questionnaire is used worldwide to measure an individual's QoL, especially patients with chronic diseases.¹²

The dependent variable in this study was the QoL, while the independent variables influencing the QoL were the patient's age, gender, educational status, employment status, family support, donor source, ESRD cause, length of time since the KT, immunosuppressant medication adherence, and immunosuppressant side effects.

This study was conducted between April and May of 2018. The data collection process began with a search for KT patients based on the inclusion criteria. At the time of this study, each respondent was given an explanation of the purposes, benefits, and risks of this study, and the respondent candidates signed an informed consent form. However, this research did not pose any risks to the respondents. In order to maintain the confidentiality of the respondents, the results of this research were stored in a locked safe. Each respondent had the freedom to withdraw from this study at any time, if they so desired. Moreover, each respondent was also given the opportunity to ask questions if he or she did not understand something while filling out the questionnaire. All of the respondents followed all of the procedures through the end of the study. Each respondent spent about 30 minutes answering the questionnaire, and at the end of the study, he or she was given a souvenir bag containing a drinking bottle.

This research was conducted by involving three nurses who acted as the data collectors, and a supervisor who checked the questionnaires. After all of the data was collected, it was processed using IBM SPSS Statistics for Windows version 22.0 (IBM Corp., Armonk, NY, USA). Univariate analyses and proportions (Table 1) were used to measure the demographic data, and a bivariate analysis was conducted using the chi-squared test (Table 2) to determine

how the independent variables might have influenced the dependent variable. Moreover, a multivariate analysis was used to determine the most dominant factors affecting the QoLs of the KT patients with a multiple logistic regression (Table 3).

This study was approved by the Faculty of Nursing at the University of Indonesia and the Ethics Committee of the Dr. Cipto Mangunkusumo General Hospital. Each of the respondents provided written informed consent after the objectives, benefits, and risks of this research were explained to them.

Results

Respondent characteristics

Table 1 shows that most of the respondents reported good QoLs (71.8%), and most of them were <65 years old (83.6%), males (72.7%), highly educated (72.7%), and employed (68.2%). Additionally, most of the respondents had good family support (77.3%), and their donor sources tended to be unrelated (78.2%). The most common ESRD causes were diabetes mellitus (DM) and hypertension (70.0%), with the length of time since the KT being >1 year (68.2%) in most cases. Moreover, the majority of the respondents were adherent to their immunosuppressant drug regimens (79.1%), and they did not experience side effects (67.3%).

Discussion

This study aimed to determine the QoLs of KT patients and the influencing factors that assesses by the WHOQoL-BREF questionnaire. Based on the results of this study, the QoLs of the KT patients tended to be good (71.8%). This could also be seen in the physical and psychological conditions of the respondents when they were filling out their questionnaires. However, 28.2% of the respondents who reported that they were not well were not accompanied by their families during the visit, and some of them stated that they often forget to take their immunosuppressant drugs. In 2010, Friedman stated that family support consisted of behaviors and acts of acceptance by the family toward the patient.¹³ Such support could be in the form of informational, assessment, instrumental, and/or emotional support. Previous research has also shown that family support is one of the factors that influence the QoLs of KT patients. Family support is also needed to encourage these patients to take their immunosuppressant drugs.

The results of this study showed that the patient's ages affected their QoL, with a p -value of <0.05. As many as 61.6% of the respondents >65 years old had poor QoLs. This is in line with the studies conducted in 2009, 2012, and 2013, which stated that respondents >65 years old are more likely to experience graft failure.^{14–16} The causes of graft function declines vary depending on the age of the KT patient, which, in turn, will affect his or her QoL. Therefore, age is a factor that must be considered when performing a KT.

As many as 72.7% of the male respondents and 70% of the female respondents in this study had good QoLs, which showed no significant difference between the sexes. Whether or not sex is one of the factors that can influence

Table 1 The distribution of the respondents based on the dependent and independent variables.

No	Variables	<i>f</i>	%
1	<i>Quality of life</i> a. Poor b. Good	3179	28.71.8
2	<i>Age</i> a. ≥ 65 years old b. < 65 years old	1892	16.483.6
3	<i>Sex</i> a. Male b. Female	8030	72.727.3
4	<i>Level of education</i> a. Secondary education (high school) b. Higher education	3080	27.372.7
5	<i>Employment status</i> a. Unemployed b. Employed	3575	31.868.2
6	<i>Family support</i> a. Poor b. Good	2585	22.777.3
7	<i>Donor source</i> a. Unrelated b. Related	8624	78.221.8
8	<i>Causes of ESRD</i> a. DM and hypertension b. Other complications	7733	70.030.0
9	<i>Time of KT</i> a. < 1 year b. ≥ 1 year	3575	31.868.2
10	<i>Immunosuppressant Medication adherence</i> a. Not adherent b. Adherent	2387	20.979.1
11	<i>Immunosuppressant side effects</i> a. Experiencing side effects b. Not experiencing side effects	3674	32.767.3

ESRD: end-stage renal disease; DM: diabetes mellitus; KT: kidney transplantation.

KTs is still under debate. Based on the literature, research conducted in 2016¹⁸ found that women had better survival rates than men based on their adherence to their immunosuppressant drug protocols. However, this is contrary to several other studies reporting that male patients had better QoLs because they had the time to participate in more daily activities than women. These activities were within social environments, which can increase self-confidence while adapting to new body conditions after a KT.^{5,9,10}

Based on the results of previous studies comparing the sexes, both sexes have same potential for a good QoL. Moreover, the culture of women's emancipation, which is currently growing in Indonesia, is creating the opportunity for more and more women to cultivate relationships and participate in social activities that can increase their emotional and intellectual adaptations to their KTs.

Regarding to educational level, the study results showed that 72.7% of the respondents had higher educational levels and 27.3% had secondary educational levels, which showed that the educational level of a KT patient can influence his

or her QoL. This is related to the level of understanding of the necessity for adhering to their immunosuppressant drug protocols.^{17,18} Education is a process of developing individual skills with regard to attitudes and social behaviors. This is a process in which a person's self-development and social skills are influenced by an organized environment, such as one's home or school.¹⁹ A KT is a process that requires patience, motivation, and a high confidence level in order to achieve a good QoL; therefore, a patient's QoL will get better along with a better educational background.

The employment status also influenced the QoLs of the KT patients, with 68% of the respondents being employed (31.8% were unemployed). Research conducted in 2012, 2014, and 2017 found that there was a relationship between KT patients and their employment status, which suggested that the employed respondents had better QoLs than the unemployed respondents.^{4,14,20} Both the employed and unemployed respondents in this study had good QoLs, because the employed respondents, especially,

Table 2 Bivariate analysis results.

Variables	Poor	Good	p-Value	OR
<i>Age</i>				
≥65 years old	61.1	38.9	0.002*	5.657 (1.942–16.481)
<65 years old	21.7	78.3		
<i>Sex</i>				
Male	27.5	72.5	0.983	0.885 (0.352–2.226)
Female	30.0	70.0		
<i>Level of education</i>				
Secondary education	53.3	46.7	0.001*	4.952 (1.992–12.314)
Higher education	18.8	81.3		
<i>Employment status</i>				
Unemployed	45.7	54.3	0.010*	3.368 (1.407–8.066)
Employed	20.0	80.0		
<i>Family support</i>				
Poor	48.0	52.0	0.024*	3.206 (1.258–8.175)
Good	22.4	77.6		
<i>Donor source</i>				
Unrelated	29.1	70.9	0.892	0.813 (0.289–2.289)
Related	25.0	75.0		
<i>ESRD causes</i>				
DM and hypertension	24.7	75.3	0.309	0.573 (0.238–1.380)
Other complications	36.4	63.6		
<i>Time since KT</i>				
(<1 year)	37.1	62.9	0.230	0.534 (0.225–1.271)
(≥1 year)	24.0	76.0		
<i>Adherence to immunosuppressants</i>				
Not adherent	52.2	47.8	0.009*	3.904 (1.490–10.231)
Adherent	21.8	78.2		
<i>Side effects of immunosuppressants</i>				
No side effects	22	61.1	0.130	0.469 (0.198–1.109)
Side effects	57	77.0		

OR: odds ratio; ESRD: end-stage renal disease; DM: diabetes mellitus; KT: kidney transplantation.

* Statistically significant at $p < 0.05$.

Table 3 Multivariate analysis results.

Variables	B	Wald	p-Value	OR	95% CI
Education	2.441	17.080	0.000	11.490	3.610–36.572
Adherence	2.354	14.160	0.000	10.530	3.090–35.890
Constant	–2.378	10.998	0.001	0.093	

OR: odds ratio; CI: confidence interval.

had enough time to socialize within their working environments, which could have affected their perceptions of their lives. Good perception leads to self-confidence, which can translate to an increased effort to improve one's quality of life.

The study results showed that 78.2% of the kidneys came from related donors and 21.8% of them came from unrelated donors. However, the results suggested that there was no difference between the donor sources with the QoL. Previous research related to donor sources found that of

85 KT patients, 39 received their kidneys from cadaver donors. Using a cross-sectional study method, it was determined that there was a difference between the KT patients with regard to whether their kidneys came from living donors or cadaver donors.²¹ A study of the literature conducted in 2017, which was based on 96 articles, reported that there was an effect on the KT patients' QoLs based on the donor sources.²² However, in this study, the respondents who underwent KTs at the Dr. Cipto Mangunkusumo General Hospital went through rigorous donor selection stages, so the

difference between related and unrelated donors did not affect the QoLs of the KT patients.

Regarding the causes for ESRD, 70% of the respondents suffered from ESRD due to DM or hypertension, while the ESRD in 30% of the respondents was caused by glomerulonephritis, kidney stones, or the excessive consumption of nephrotoxic drugs. However, the statistical analysis showed that the cause of ESRD had no effect on the QoLs of the KT patients. The most common reasons for kidney failure are cardiovascular disorders, while DM-caused ESRD has many kidney-related complications, such as vascular problems, infections, foot ulcers, and hemodynamic instability.^{23,24}

KTs cannot be performed on patients with severe cardiovascular disease (ejection fractions <35%, heart valve diseases, and ventricular arrhythmias) or DM with organ failure. KT patients are strictly monitored with specific follow-up protocols: weekly after the surgery during the first month, then biweekly for 3 months, then once a month for the first year, and then every two months. These patients must comply with their follow-up appointments so that their condition can be closely monitored, which will ensure a good QoL.²⁵

In the terms of the time that passed since the KT, both the respondents who underwent their KTs ≥ 1 year previously and <1 year previously had good QoLs (76% and 62.9%, respectively). Therefore, there is no differences between the QoL based on the time that has passed since the KT and the QoLs of the KT patients. One study conducted in Switzerland that obtained data from 689 patients who underwent KTs <6 months previously and ≥ 1 year previously also showed that there was no difference between the time that had passed since the KT and the QoLs of the KT patients. However, being prepared for a good KT is something that affects the QoL of the patient.²⁶ Different results were obtained from a study of 42 KT patients conducted in 2011; 20 of the patients underwent KTs <1 year previously, but there was no influencing on the QoL based on the time that had passed since the KT. Most of the patients who undergo KTs at the Dr. Cipto Mangunkusumo General Hospital come from different regions in Indonesia. Therefore, during the first three months of taking their immunosuppressant medication, patients choose to live in apartments closed to the hospital so that they have faster and better access to the hospital after their control period. Moreover, these patients regularly attend their follow-up appointments according to their schedules.

The results of this research showed that 52.2% of the respondents who were noncompliant with their immunosuppressant medications had poor QoLs. Based on the average of the answers obtained, the patients stated that they forgot about taking their medications. A systematic review of 38 articles related to transplant patients' immunosuppressant drug compliance found that 28–52% of the patients did not adhere to their schedules.²⁷ Immunosuppressants are the main medications taken by transplant patients in order to avoid transplant rejection. Immunosuppressants work by activating the regulatory T cells by suppressing the B cells so that the T cells respond to other antigens. Therefore, when a patient receives a new kidney, and the body recognizes it as an unidentified organ, the immunosuppressants help with the adaptation process and prevent rejection. A failure in the KT process can make a patient depressed and anxious,

and if this condition is not taking care immediately, it can affect the QoL of the patient.²⁸

Of the respondents in this study, 32.7% experienced drug side effects, while 67.3% did not experience side effects. However, there was no difference in the QoL whether the respondent experienced side effects or not. A KT requires an adaptation process, strict monitoring, and support from all areas, starting with the healthcare workers, family, and environment. The body system can adapt based on the way that the regulator and cognator subsystems are influenced.²⁹ Educating a patient about the importance of maintaining good health before and after their KT can lead to a good quality transplantation experience.

The strength of this study was that the ESRD patients chose transplantation as the first alternative therapy. In Indonesia, transplantation procedures have been increasing every year. However, research related to transplantation patients' QoLs and the factors that influence them has never been conducted in Indonesia, so it is necessary and interesting to conduct research in this field. Nevertheless, this study did have some limitations, such as the fact that only a general picture of the QoL was obtained, without looking deeply into the dimensions affecting the QoL.

The results of this study showed that the majority of the KT patients had good QoLs (71.8%). The factors that influenced the QoLs of the KT patients included their age, educational level, employment status, family support, and immunosuppressant drug adherence. The dominant factor affecting the QoL was the educational level.

Conflict of interests

The authors declare no conflict of interest.

Acknowledgements

This work is supported by Hibah PITTA 2018 funded by DRPM Universitas Indonesia No. 1847/UN2.R3.1/HKP.05.00/2018.

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