

QUALITY OF LIFE AND ASSOCIATED FACTORS AMONG KIDNEY TRANSPLANT PATIENTS IN CHO RAY HOSPITAL

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ARTICLE INFO	ABSTRACT
Received: 19/9/2023 Revised: 05/01/2024 Published: 03/02/2024	The study was conducted to assess the quality of life (QoL) of patients after kidney transplants as well as the associated factors in Cho Ray Hospital. A descriptive cross-sectional study was conducted at the Cho Ray Hospital clinic from May 2021 to February 2022. The quality of life for kidney patients (KDQOL-36) was used to evaluate patients' QoL after kidney transplantation with a score of 1-100. There were 400 participants, in which 294 were male and 106 were female. Study participants aged 20-74 years (40.25 years $\pm$ 10.14). 160 participants had a kidney transplant >5 years. In general, patients' QoL after kidney transplantation is average (56.59 $\pm$ 10.28). The linear regression model shows that the QoL of patients after kidney transplant had a negative relationship with age (β = -0.22, p < 0.001), comorbidities (β = -4.04, p < 0.001), female gender (β = -4.47, p < 0.001). Moreover, using standard immune suppressive has a positive association with quality of life among kidney transplant patients (β = 0.09, p = 0.038). It is necessary to develop intervention programs to improve the QoL for patients after kidney transplantation.
KEYWORDS Quality of life Kidney transplantation Kidney transplant patients Chronic kidney disease Kidney disease and quality of life (KDQOL-36)	

CHẤT LƯỢNG CUỘC SỐNG CỦA NGƯỜI BỆNH GHEP THẬN ĐANG ĐIỀU TRỊ TẠI BỆNH VIỆN CHỢ RẪY VÀ CÁC YẾU TỐ LIÊN QUAN

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THÔNG TIN BÀI BÁO	TÓM TẮT
Ngày nhận bài: 19/9/2023 Ngày hoàn thiện: 05/01/2024 Ngày đăng: 03/02/2024	Nghiên cứu được thực hiện nhằm đánh giá chất lượng cuộc sống (QoL) của người bệnh sau ghép thận cũng như các yếu tố liên quan tại Bệnh viện Chợ Rẫy. Nghiên cứu mô tả cắt ngang được thực hiện tại phòng khám Bệnh viện Chợ Rẫy từ tháng 5 năm 2021 đến tháng 2 năm 2022. Thang đo đánh giá chất lượng cuộc sống của người bệnh thận (KDQOL-36) được sử dụng với thang điểm 1-100. Có 400 người tham gia, trong đó có 294 nam và 106 nữ. Những người tham gia nghiên cứu ở độ tuổi 20-74 (40,25 tuổi $\pm$ 10,14). 160 người bệnh tham gia đã được ghép thận > 5 năm. Chất lượng cuộc sống của người bệnh sau ghép thận ở mức trung bình (56,59 $\pm$ 10,28). Mô hình hồi quy tuyến tính cho thấy chất lượng cuộc sống có mối quan hệ nghịch biến với tuổi (β = -0,22, p < 0,001), bệnh đi kèm (β = -4,04, p < 0,001), giới tính nữ (β = -4,47, p < 0,001). Việc sử dụng thuốc ức chế miễn dịch tiêu chuẩn có mối liên quan tích cực với chất lượng cuộc sống ở người ghép thận (β = 0,09, p = 0,038). Cần xây dựng các chương trình can thiệp nhằm cải thiện chất lượng cuộc sống cho bệnh nhân sau ghép thận.
TỪ KHÓA Chất lượng cuộc sống Ghép thận Người bệnh ghép thận Bệnh thận mạn Thang đo KDQOL-36	

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1. Introduction

Globally the prevalence of renal failure is on the rise. Kidney transplantation is the preferred and most affordable treatment for renal failure with improved health-related quality of life (HRQOL) compared to dialysis. Kidney transplantation is a treatment that improves health and health-related quality of life (HRQOL) and survival rates of patients with end-stage renal disease [1]. Both physical and mental scale scores were improved after transplantation [2]. According to the World Health Organization (WHO), there were 100,097 kidney transplants worldwide in 2019, that is 4.8% higher than the previous year [3]. In Vietnam, the first case of kidney transplantation was performed in the North of Vietnam in 1992 with Taiwanese aid; there have been >4400 patients with kidney transplant performed by Vietnamese surgeons throughout the country so far [4]. Cho Ray Hospital is one of the largest kidney transplant hospitals in Vietnam. Many diseases have had successful kidney transplants, and these patients are regularly monitored for their health [5].

Quality of life (QoL) has an important role in measuring the impact of disease on health, especially in patients with chronic diseases [6]. Quality of life also predicts hospitalization and mortality in kidney transplant (KT) recipients [7]. Evaluation of patients' quality of life as a complement to the assessment of clinical indicators is becoming an important factor in the opinion of treatment and health care [8], [9]. However, there are a few studies in Vietnam that have assessed patients' quality of life and its impact on their daily lives. This will strengthen the importance of health care for patients, helping them quickly improve their health and well-being. For these reasons, we are determined to carry out the *"Quality of life and associated factors among patients with kidney transplantation in Cho Ray hospital"* project using the questions in *"kidney disease and quality of life (KDQOL-36)"* to assess the patient's quality of life and related factors. The aim of this study was to assess the quality of life and related factors among kidney transplant patients.

2. Research methods

2.1. Research Design

This study was a cross-sectional descriptive survey conducted from May 2021 to February 2022.

2.2. Target Population

Patients with chronic kidney failure who have had successful kidney transplant surgery are monitoring their health periodically at the outpatient department of Cho Ray hospital.

2.3. Sample size

The sample size required for this study was obtained by using a single proportion formula where the initial sample size was obtained, by considering a 5% degree of precision (d). The magnitude was taken from a previous study, the magnitude of good quality of life among KT patients was 71% [10].

$$n = \frac{z_{1-\frac{\alpha}{2}}^2 P(1-P)}{d^2} \quad (1)$$

Where,

Z (1- α / 2): the value of the normal distribution (with 95% confidence)

d: permissible accuracy or error, confidence limit as 5% of 100 (absolute +/- %) is d =0.05.

n: is the estimated sample size.

α : confirm type 1 error, select $\alpha = 0.05$ so Z (1- α / 2) = 1.96.

P: the proportion of KT patients who had good quality of life in the previous study was 71%

Calculate n = 317 participants. Considering a 20% dropout rate, the survey was distributed to 340 kidney transplant recipients [9]. 400 participants met the inclusion criteria and were recruited for the study.

2.4. Sampling technique

A convenient sampling method was used in this study. The researchers selected subjects who had had successful kidney transplant surgery and were undergoing routine health monitoring. This selection was carefully screened for research and had no element of random chance.

2.5. Sampling standard

- *Inclusion criteria:* Patients aged 18 or older have received a kidney transplant for at least one year.
- *Exclusion criteria:* Patients do not have the ability to communicate correctly; vision loss, hearing loss, dementia, and worsening emergencies need to be transferred.

2.5. Research instrument

The research instrument had three different parts in order to assess background and demographic information regarding the patient; quality of life by using questionnaire KDQOL-36, which includes five aspects is equivalent to a certain score from 0 to 100; also assess the patient's understanding of self-care knowledge after kidney transplant through two prepared questionnaires.

Independent variables of the study were: Age, gender, marital status, and educational status, residence, occupation status, source of kidney transplant, time after kidney transplantation, Immunosuppressant drugs, comorbidities.

Dependent variables of the study was quality of life which was measured by questionnaire KDQOL-36. It includes the question calculates Likert scale scores level 1 – 5 from “worst” to “best”. In the analysis, it will be divided into 4 components: Physical Health, Psychological, Social relationships, Environment. Assessment scores the overall quality of life-based on two general questions about the patient's perception of quality of life and satisfaction with health issue.

The KDQOL-36 was tested for validity by three experts from Vietnam. They were invited to review the contents of the questionnaire. For the validity, I-CVIs were 1.00, S-CVI/Ave were 1.00. The reliability according to Cronbach's alpha coefficient in this study is 0.894.

2.6. Data collection and statistical analysis

From May 2021, all patients after kidney transplants are periodically monitored at Cho Ray hospital. They will be invited to participate in the study if they meet the sampling criteria. The research method is a direct interview. The software used in the thesis is SPSS 22, which aims to describe the basic features of the data and provide basic summaries of the samples and measures used in descriptive statistics. Continuous variables are presented as mean and standard deviation. While nominal and ordinal variables are presented as frequencies and percentages. Multivariate linear regression models were performed to find out the related factors. The difference is statistically significant when $p < 0.05$.

2.7. Ethical issues

The researcher obtained approval and permission from the Ethical Research Commission of University of Meiho. Prior to data collection, a researcher explained the purpose of the study, the time to be spent filling out the questionnaire, the benefits and risks of study participation, personal information protection, and that participants could discontinue participation at any time. The study was conducted after receiving written consent of the participants.

3. Results

3.1. Baseline Characteristics of Participants

The study subjects were 400 kidney transplant patients. The majority of participants were female (73.5%). While the mean of age was 40.25. Only 26.8% of participants live in Ho Chi Minh city. Most study participants were employed (80%) and married (68.8%). See Table 1 for more details.

Table 1. Demographic characteristics of the participants (n=400)

The characteristics (n = 400)		n	%
Age	Mean $\pm$ SD: 40.25 $\pm$ 10.14		
Age group	20 – 30 years	66	16.5
	31 – 60 years	313	78.3
	> 61 years	21	5.3
Gender	Male	294	73.5
	Female	106	26.5
Accommodation	HCM City	107	26.8
	Other Cities	293	73.2
Occupation	Employment	320	80
	Unemployment	80	20
Marital status	Married	275	68.8
	Divorce/Widow/Widow	23	5.8
	Single	102	25.4

The result showed that the number of kidney recipients from the people who are alive accounts for 92.5% and 7.5% of participants were from brain-dead people. Subjects with kidney transplants with a duration of more than 5 years accounted for the highest percentage (40%). The immunosuppressive drug Tacrolimus was used the most (35%) compared to Cyclosporine and others. Most kidney transplant subjects had comorbidities such as blood pressure and diabetes and accounted for 81.2%. See Table 2 for more details.

Table 2. The clinical and subclinical variables (n=400)

Variables		n	%
Source of kidney recipients	Person who is still alive	370	92.5
	Brain death person	30	7.5
Time after kidney transplant	1 to 3 years	107	26.8
	3 to 5 years	133	33.2
	> 5 years	160	40
Immunosuppressants	Cyclosporine	90	22.5
	Tacrolimus	170	42.5
	Others	140	35
Comorbidities	No	73	18.8
	Yes	327	81.2

3.2. Quality of life of patients after kidney transplantation

Table 3 shows the result of participant's quality of life mean score.

Table 3. Participant's quality of life measured by KDQOLTM-36 (n=400)

Domains	Items	Mean	SD	Score range
General quality of life (Overall score)	35	56.59	10.28	0-100
Physical	5	67.41	21.77	0-100
Mental	7	65.56	14.21	0-100
The burden of kidney disease	4	45.86	27.10	0-100
Symptoms and problems	11	83.49	16.13	0-100
Effects of kidney disease	8	20.64	20.30	0-100

From table 3, we can see that the mean score of quality of life of participants was 56.59 (SD: 10.28). In particular, physical health improved significantly, with a mean of 67.41 (SD: 21.77),

followed by mental health, with a mean of 65.5 (SD: 14.21). The burden of kidney disease was lower than the average, with a mean of 45.86 (SD: 27.10). Symptoms and problems after kidney transplant are still very high, with a mean of 83.49 (SD: 16.13). Besides, the result recorded that the effect of kidney disease was the most serious, with a mean of 20.64 (SD: 20.30). See Table 3 for more details.

3.3. The related factors of quality of life

Table 4 indicates the associated factors of quality of life among kidney transplant respondents.

Table 4. The difference in quality of life score between groups (n=400)

Factors	Mean $\pm$ Sd	F	p
Age	Mean $\pm$ SD: 40.25 $\pm$ 10.14		
Age group	20 – 30 years 31 – 60 years > 60 years	60.3 $\pm$ 10.6 56.1 $\pm$ 9.97 52.6 $\pm$ 11.0	5.76 0.006*
Gender	Male Female	58.0 $\pm$ 9.50 52.6 $\pm$ 11.3	19.1 0.000**
Accommodation	HCM City Other Cities	56.1 $\pm$ 10.9 56.8 $\pm$ 10.0	0.356 0.552
Occupation	Employment Unemployment	56.1 $\pm$ 10.3 58.4 $\pm$ 10.1	3.39 0.068
Marital status	Married Divorce/Widow/Widow Single	55.7 $\pm$ 10.1 56.7 $\pm$ 9.43 58.9 $\pm$ 10.6	3.55 0.035*
Source of kidney recipients	Person who is still alive Brain death person	56.8 $\pm$ 10.2 54.3 $\pm$ 10.7	1.51 0.228
Time after kidney transplant	1 to 3 years 3 to 5 years > 5 years	57.4 $\pm$ 9.90 57.2 $\pm$ 11.0 55.6 $\pm$ 9.84	1.41 0.245
Immunosuppressants	Cyclosporine Tacrolimus Others	57.9 $\pm$ 9.39 58.1 $\pm$ 10.4 53.9 $\pm$ 10.3	7.30 0.000**
Comorbidities	No Yes	61.1 $\pm$ 8.75 55.6 $\pm$ 10.3	21.7 0.000**

Note: *Significant level $p < 0.05$; ** $p < 0.001$

The result of the Anova test showed that the mean quality of life in the younger aged group was higher than the older aged group and the differences were significant with $F = 5.76$, $p = 0.006$. The mean of KDQOL-36 of male group was significantly higher than the female group, Mean = 58, mean = 52.6 respectively. The mean of KDQOL – 36 in the single group was higher than married and another group with $F = 3.55$, $p = 0.035$. Besides, participants who have comorbidities had lower mean score of QOL ($F = 21.7$, $p = 0.000$). Moreover, participants using Cyclosporine and Tacrolimus had higher quality of life than others and this difference is significant ($p < 0.001$). See Table 4 for more details.

Multiple linear regression models analyze the factors affecting kidney disease in kidney transplant patients. The result showed that age group, gender, immunosuppressive, comorbidities had a relationship with the QoL of patients. There is negative relationship between age and QoL among KT patients with $\beta = -0.22$, $p < 0.001$. Gender impacts the patient's quality of life with $\beta = -4.72$, which proves that women are less affected by Quality of life than men. Immunosuppressive influences quality of life with $\beta = 0.09$, indicating that using cyclosporine and tacrolimus medication affects quality of life more than others. Comorbidities impact the patient's

quality of life with $\beta = -4.04$ which indicates that comorbidities affected negatively to the patient's quality of life. See Table 5 for more details.

Table 5. *The related factors of the dependent variable quality of life (n=400)*

Factors	R ²	β	t	p
Age		-0.22	-4.07	0.000**
Gender		-4.72	-4.36	0.000**
Marital status	0.162	0.54	0.78	0.435
Immunosuppressive		0.09	2.08	0.038*
Comorbidities		-4.04	-3.25	0.001*

Note: *Significant level * $p < 0.05$; ** $p < 0.001$

4. Discussion

4.1. Quality of life of patients after kidney transplantation

Helping the KT patients in achieving optimal health compared to before the onset of disease, the patients after transplantation also need to ensure the balance between the function of organ transplant and the psychological and physical health. This study highlights the importance of assessing the quality of life in the KT patient after treatment.

The study indicates that the QoL of patients after KT are above average, both physical and mental health. The average scores generally obtained from KDQOL-36 was 56.59 ± 10.28 . This is consistent with a study conducted at the Organ Transplant Center, Viet Duc University Hospital which showed that the overall mean score of KDQoL among 153 KT patients was 68.67 ± 13.75 [11]. However, this is quite lower than the recent report of Cordeiro in Brazil on 222 individuals after renal transplantation showing the average score by 78.5 ± 16.8 [12]. Compared with the individuals with ESKD who received dialysis treatment in several previous studies in Vietnam, the overall HRQOL scores were 40.78 points in 112 patients at 103 Military Hospital and 48.89 points in 360 patients at People's Hospital 115 [13]. However, a study in Indonesia reported that the majority of the KT patients had good QoLs (71.8%) [10].

In this study the domain of KDQOL-36 had the highest score of "symptom and problems" (84.49 ± 16.13) and "effects of the kidney disease" domain had the lowest score (20.64 ± 20.30). This is consistent with many previous studies. A study in Ha Noi indicated that the highest in the domain in KDQOL -36 was "Symptoms and Problems" and the lowest score was "effects of kidney disease" with 87.06 ± 16.00 ; 43.21 ± 27.04 respectively. Study in Brazil, the domain was the highest score of "Symptoms and Problems" (83.1 ± 14.5) while the score of "effects of kidney disease" was 83.1 ± 16.3 [12]. Overall, the health related quality of life among kidney transplanted patients is slightly lower than many previous in most domains of quality of life.

4.3. The related factors of quality of life of patients after kidney transplantation

A kidney transplant is a better option than dialysis for the vast majority of patients, resulting in improved survival rates and better quality of life [1].

We analyzed factors related to the quality of life, the findings showed that quality of life among older participants was lower than younger. There is a negative relationship between age and quality of life among KT patients with $\beta = -0.22$, $p < 0.001$. This finding is consistent with many previous studies. A study at the Cipto Mangunkusumo General Hospital in Jakarta, Indonesia showed that patient's ages affected their QoL, with a p -value of < 0.05 . The KT patients > 65 years old had poor QoLs more than 5 times compared to young respondents ($OR = 5.657$) [10]. Another study in five French kidney transplant centers also indicated that the quality of life of kidney transplant patients is associated with their age ($\beta = -0.3$, $p < 0.001$) [8]. Similarly, a study in Brazil among KT patients presented a similar result about age and patient's quality of life [14].

In this study, female KT patients had a poorer quality of life than the male group with ($\beta = -4.72$, $p < 0.001$). This is consistent with a study in France which indicated that there was a positive association between age and QoL ($\beta = -4.7$, $p = 0.001$). Similarly, a study in Brazil showed that the quality of life among male KT patients was better than the female group. While another study reported that there was no significant difference in quality of life between male and female patients [10].

Kidney transplant patients have to take immunosuppressants all their lives to prevent graft rejection. However, this medication may cause them to be more susceptible to infections, fractures, and side effects [14]. The factor of treating immunosuppressive drugs affects quality of life and it is statistically significant. Tacrolimus (FK506) and cyclosporine (cyclosporin A,) are cornerstone immunosuppressive agents administered to solid organ transplant recipients to prevent and treat allograft rejection. However, many patients could not accept these medications, they had to change medication following physician's instruction. In this study, KT patients who used other immunosuppressive drugs had poorer quality of life than patients used of tacrolimus and cyclosporine ($p=0.038$). This is consistent with previous study with showed that QoL of KT patients associated with Immunosuppressant medication adherence ($p=0.009$) and side effects [10].

The quality of life among KT patients who had comorbidities, were lower than others with no comorbidities ($\beta = -4.04$, $p = 0.001$). This indicated that there was negative impact of presence comorbidities on QoL of KT patients. This finding consistent with previous study in Brazil which indicated that quality of life among KT patients associated with the presence of comorbidities [15]. This study highlights the need for helping kidney transplant recipients manage and monitor comorbidities among patients after transplantation as an important method for improving health related quality of life.

5. Conclusion and recommendations

This study was conducted to identify quality of life and associated factors in kidney transplant recipients. It was found that the quality of life in kidney transplant patients was at a moderate level with the mean score above average (56.59 ± 10.28). It was also found that health-related quality of life among KT patients is associated with age, female gender, use of Immunosuppressive and presence of comorbidities. As the factors influencing kidney transplant recipients' quality of life were age, gender, using immunosuppressive medication, comorbidities, a special program to help kidney transplant recipients enhance medication and manage comorbidities to be developed.

The study has a few limitations. First, the sample was a convenience sample of kidney transplant recipients from a hospital, thus the generalization of the study's findings is difficult. Consequently, a future study should be conducted using a representative sample to investigate the factors associated with HRQOL. Second, the study used a cross-sectional research design that gives only a snapshot quality of life among KT patients and does not explain a cause and effect. It means that further longitudinal studies would improve the limitation of this research. Therefore, qualitative study is recommended to deepen and broaden the understanding of factors contributing to quality of life among patients after kidney transplantation.

REFERENCES

- [1] M. A. Kaballo, M. Canney, and P. O'Kelly *et al.*, "A comparative analysis of survival of patients on dialysis and after kidney transplantation," *Clinical kidney journal*, vol. 11, no. 3, pp. 389-393, 2018.
- [2] H. J. Lim *et al.*, "Health-Related Quality of Life of Kidney Transplantation Patients: Results from the KoreaN Cohort Study for Outcome in Patients with Kidney Transplantation (KNOW-KT) Study," *Transplantation proceedings*, vol. 48, no. 3, pp. 844-847, 2016.
- [3] Global Observatory on Donation and Transplantation (GODT), *International report on organ donation and transplantation activities executive summary 2019*, Geneva: World Health Organization, 2021.

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- [4] B. P. Van and C. V. Duc, "Global dialysis perspective: Vietnam," *Kidney* 360, vol. 1, no. 9, p. 974, 2020.
- [5] L. N. Vu, N. Q. Nghia, and T. M. Tuan *et al.*, "Measuring Health-Related Quality of Life in Vietnamese Patients After Kidney Transplantation," *Frontiers in Surgery*, vol. 8, pp. 1-8, 2021.
- [6] W. Fiebiger, C. Mitterbauer and R. Oberbauer, "Health-related quality of life outcomes after kidney transplantation," *Health and Quality of Life Outcomes*, vol. 2, no. 1, pp. 1-6, 2004.
- [7] K. Dweib, S. Jumaa, M. Khmour, and H. Hallak, "Quality of life for kidney transplant palestinian patients," *Saudi Journal of Kidney Diseases and Transplantation: An Official Publication of the Saudi Center for Organ Transplantation, Saudi Arabia*, vol. 31, no. 2, pp. 473-481, 2020.
- [8] Y. Mouelhi, E. Jouve, and M. Alessandrini, "Factors associated with health-related quality of life in kidney transplant recipients in France," *BMC nephrology*, vol. 19, no. 1, pp. 1-12, 2018.
- [9] Y. Hwang, M. Kim, and K. Min, "Factors associated with health-related quality of life in kidney transplant recipients in Korea," *PLoS ONE*, vol. 16, no. 3, pp. 1-13, 2021.
- [10] K. Yetti and L. Sukmarini, "The factors affecting the quality of life of kidney transplantation patients at the Cipto Mangunkusumo General Hospital in Jakarta, Indonesia," *Enfermería Clínica*, vol. 29, pp. 428-433, 2019.
- [11] L. N. Vu *et al.*, "Measuring Health-Related Quality of Life in Vietnamese Patients After Kidney Transplantation," *Frontiers in surgery*, vol. 8, pp. 1-8, 2021.
- [12] E. D. Cordeiro *et al.*, "Quality of life of individuals receiving kidney transplantation in Amazonas state," *Rev Latino-Am Enfermagem*, vol. 28, 2020, Art. no. e3291.
- [13] A. Afendy *et al.*, "Predictors of health-related quality of life in patients with chronic liver disease," *Aliment Pharmacol Ther*, vol. 30, pp. 469-476, 2009.
- [14] H. Ha *et al.*, *Organ transplantation and nursing*, Seoul: Gyechuk Cultural Press, 2019.
- [15] J. Alvares *et al.*, "Factors associated with quality of life in patients in renal replacement therapy in Brazil," *Ciencia & saude coletiva*, vol. 18, no. 7, pp. 1903-1910, 2013.