



Post Transplant Health Related Quality of Life (HRQL) Among Kidney Transplantation Recipients in Nepal

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Abstract

Background: End Stage Renal Disease (ESRD) is a growing public health concern, especially in low resource countries like Nepal, where access to renal replacement therapy is limited and costly. Kidney transplantation (KT) is the most effective and cost-efficient treatment, yet little is known about recipients' quality of life in the Nepali context. This study assessed health



related quality of life (HRQOL) among kidney transplant recipients (KTRs) and explored associated factors.

Methods: A hospital based cross sectional study was conducted among 183 KTRs attending follow up at KIST Teaching Hospital between December 2025 and February 2026. Participants ≥ 18 years and at least six months post-transplant were included. Data were collected using a structured questionnaire and the standardized KTQoL instrument. HRQOL scores were analyzed using descriptive statistics and chi-square tests ($p < 0.05$).

Results: Most of the participants were male (70.5%), and two thirds were aged 31 - 45 years. Nearly three quarters rated their post-transplant health as good or very good, and most reported improved daily activities (78.7%) and breathing (73.2%). Despite these improvements, about one third experienced anxiety or worry about infection and graft survival, and more than half (58.5%) reported financial strain due to lifelong immunosuppressive therapy. Higher HRQOL was associated with younger age, higher income, longer post-transplant duration, and good medication adherence, while financial hardship was linked to lower HRQOL.

Conclusion: Kidney transplantation in Nepal noticeably improves physical functioning and overall health perception. However, psychological stress and economic challenges persist. Strengthening psychosocial support, promoting adherence, and expanding financial protection are crucial to optimize long term HRQOL outcomes.

Keywords: End Stage Renal Disease, Kidney Transplantation, Health-Related Quality of Life, Immunosuppressive Therapy, Medication Adherence, Financial Burden, Nepal

Background

The incidence and prevalence of end-stage renal disease (ESRD) are increasing globally and are recognized as a major public health challenge, imposing a substantial economic burden on patients, families, and health systems. In Nepal, approximately 2,900 new cases occur annually; however, only a limited proportion of patients receive renal replacement therapy, and treatment remains costly and largely unaffordable despite partial government support for hemodialysis and kidney transplantation (Kamal Ranabhat, 2020).

Several studies have demonstrated that kidney transplantation (KT) is the preferred and more cost-effective treatment for patients with end-stage kidney disease (ESKD) compared with long-term dialysis. Over recent decades, post-transplant graft and patient survival have improved substantially due to advances in surgical techniques (Shrestha) and the development of newer immunosuppressive agents. However, kidney transplant recipients (KTRs) frequently experience a range of adverse effects, including cardiovascular disease, osteoporosis, neurotoxicity, infections, and weight gain, largely attributable to long-term immunosuppressive therapy. These treatment-related complications, together with the underlying kidney disease and associated comorbidities, may negatively affect post-transplant health-related quality of life (HRQOL) (Kamal Ranabhat, 2020) (Yiman Wang, 2021).

KT was legalized in Nepal in 2002, and the first successful live donor transplant was performed at Tribhuvan University Teaching Hospital (TUTH) in 2008. Initially, transplant services were



limited to a few centers, but currently there are about nine licensed kidney transplant programs in the country, including both public and private hospitals, although not all perform transplants regularly. Recently, new services have been established at facilities such as Bheri Hospital in Nepalgunj and Karnali Provincial Hospital, expanding access outside the Kathmandu Valley. The cost of kidney transplant surgery in Nepal typically ranges from NPR 400,000 to 500,000, with additional preparatory testing costs. Despite some government support, many patients still face financial barriers. Moreover, HRQOL outcomes among ESRD patients in Nepal remain poorly studied (Kamal Ranabhat, 2020) (Shrestha). Despite the growing number of KTRs, limited evidence is available about post-transplant HRQOL in Nepal. Factors such as socioeconomic challenges, high out of pocket costs for medications, and anxiety about graft survival may uniquely shape patients' HRQOL. This study therefore aimed to evaluate HRQOL among kidney transplant recipients, considering physical and mental health, clinical and sociodemographic influences, and overall changes compared with the pre-transplant period.

Methods

A quantitative analytical cross-sectional study was conducted to assess HRQOL among KTRs following renal transplantation. The study was carried out among renal transplant recipients attending follow up services at Kathmandu Institute of Science and Technology (KIST) Teaching Hospital, Kathmandu, Nepal, a major center providing renal transplant services in the country. The study population comprised all post-transplant recipients attending follow-up visits during December 2025 to February 2026.

A purposive sampling technique was adopted, and 183 KT patients participated in the present study. Eligible participants were aged 18 years or older, were at least six months post-transplant, were willing to participate, and were able to respond to the study questionnaire. Data were collected using a structured interview schedule for participants who were unable to read and write, and a self-administered questionnaire for those who were able to read and write. Sociodemographic information such as age, sex, province, educational status, occupation, and ethnicity was obtained using a self-developed questionnaire. HRQOL was assessed using the standardized Kidney Transplantation and Quality of Life (KTQoL) instrument.

Data collection was performed by trained enumerators following orientation on the study protocol and procedures. Prior approval was obtained from KIST Teaching Hospital, and informed verbal consent was secured from all participants. Participation was voluntary, confidentiality was strictly maintained, and collected data were used solely for research purposes. As the study involved only interviews using standardized questionnaires, no harmful interventions were involved.

Data were entered and analyzed using IBM SPSS version 26. Descriptive statistics, including frequency, percentage, and mean \pm SD, were calculated. HRQOL scores were transformed to a 0–100 scale (Jinsoo Rhu, 2019). Multivariate associations were assessed using chi square tests, with a p-value of <0.05 considered statistically significant.



Results

Table 1 presents the sociodemographic characteristics of KTRs following renal transplantation. Among the 183 participants, the majority (40.4%) were aged 31–45 years, followed by 31.7% aged 46–60 years, 10.4% aged over 60 years, and 17.5% aged under 30 years. In terms of gender, nearly three quarters (70.5%) were male, while 29.5% were female. Regarding provincial distribution based on permanent residence, more than half of the participants were from Bagmati Province (53.6%), followed by Lumbini Province (16.9%) and Gandaki Province (11.5%), while the remaining 18% were from other provinces, namely Madhesh Province, Karnali Province, and Koshi Province. Concerning monthly family income, 35% of participants reported earning less than NPR 20,000, 38.8% earned between NPR 20,000 and 40,000, and 26.2% earned more than NPR 40,000.

Table 1. Sociodemographic Characteristics of Participants (n = 183)

Variables		Frequency (%)
Age (years)	18–30	32 (17.5)
	31–45	74 (40.4)
	46–60	58 (31.7)
	>60	19 (10.4)
Sex	Male	129 (70.5)
	Female	54 (29.5)
Province	Bagmati	98 (53.6)
	Lumbini	31 (16.9)
	Gandaki	21 (11.5)
	Others	33 (18.0)
Monthly Income (NPR)	<20,000	64 (35.0)
	20,000–40,000	71 (38.8)
	>40,000	48 (26.2)

The self-reported overall health status of the respondents is presented in Table 2. A large majority (72.1%) rated their health as “good” or “very good,” reflecting the perceived benefit of kidney transplantation compared to the pre-transplant period. Nearly half of the participants (49.7%) rated their health as good, 22.4% as very good, 21.3% as moderate, and 6.6% as poor or very poor.

Table 2. Overall Health Status

Health Status	n (%)
Very good	41 (22.4)
Good	91 (49.7)
Moderate	39 (21.3)
Poor/Very poor	12 (6.6)

Table 3 shows the perceived HRQOL one month after transplantation. According to the table, physical discomfort related to the surgical site was reported as “always/mostly” by only 15.8%



of participants, while nearly half (49.8%) reported rarely or never experiencing discomfort. This suggests good post-surgical recovery and adaptation.

However, psychological concerns were more prominent. About 22.9% frequently experienced nervousness or anxiety, 29.5% worried about infections, and one-third (34.4%) frequently worried about graft survival.

Likewise, financial burden due to immunosuppressive medications was reported as “very much” by more than half (58.5%) of participants, indicating that a substantial proportion of recipients experience significant economic strain. Similarly, slightly more than one third (33.9%) reported major difficulty attending follow-up clinics, and 17.5% admitted to sometimes forgetting to take their immunosuppressive medications.

According to Table 3, improvement in daily life after transplantation was notable. A striking 78.7% reported “very much” improvement in daily activities, and 73.2% reported significant improvement in breathing.

Table 3. Health Related Quality of Life (HRQL) (Past 1 Month)

Domain		Always/Mostly (%)	Sometimes (%)	Rarely/Never (%)
Physical and Psychological Components	Surgical site discomfort	15.8	34.4	49.8
	Nervousness/anxiety	22.9	41.0	36.1
	Infection worries	29.5	43.2	27.3
	Graft survival concern	34.4	40.4	25.2
Financial and Treatment Related Factors	Financial burden of medication	58.5	29.0	12.5
	Difficulty attending clinic	33.9	41.0	25.1
	Forgot immunosuppressants (sometimes or more)	17.5	–	–
Improvement in Daily Life After Transplant	Improvement in daily activities	78.7	16.9	4.4
	Improved breathing	73.2	19.1	7.7

Table 4 presents the association between selected sociodemographic and clinical factors and overall HRQOL scores among KT patients. Gender was not significantly associated with HRQOL ($p = 0.23$). Participants aged ≤ 45 years had significantly higher HRQOL scores (73.4 ± 11.8) compared to those aged > 45 years (69.9 ± 13.2 ; $p = 0.04$).

Higher income was significantly associated with higher HRQOL scores ($p = 0.02$), with the highest mean score observed among participants earning $> NPR 40,000$ per month. Recipients more than two years post-transplant had significantly higher HRQOL scores ($p = 0.03$).



Good medication adherence was significantly associated with higher HRQOL scores (74.6 ± 11.0 vs. 67.2 ± 14.1 ; $p = 0.01$). Participants experiencing heavy financial burden had significantly lower HRQOL scores ($p = 0.04$).

Sex, province of residence, difficulty in attending follow-up clinics, and occasional forgetting of immunosuppressive medications were not significantly associated with overall HRQOL scores ($p > 0.05$).

Table 4: Association Between Selected Sociodemographic and Clinical Factors and Overall HRQL Score (n = 183)

Variable	Category	Mean HRQL Score (Mean \pm SD)	p-value
Gender	Male	72.6 \pm 12.1	0.23
	Female	69.8 \pm 13.4	
Age Group (years)	< 45 years	73.4 \pm 11.8	0.04*
	> 45 Years	69.9 \pm 13.2	
Monthly Income (NPR)	<20,000	67.9 \pm 13.6	0.02*
	20,000–40,000	71.5 \pm 11.9	
	>40,000	75.2 \pm 10.8	
Duration post-transplant	\leq 2 years	69.3 \pm 13.4	0.03*
	>2 years	74.1 \pm 11.2	
Medication Adherence	Good adherence	74.6 \pm 11.0	0.01*
	Poor/Irregular	67.2 \pm 14.1	
Financial Burden of Medication	Very much	68.5 \pm 13.8	0.04*
	Some/Not at all	73.6 \pm 11.7	
Province	Bagmati	72.3 \pm 12.4	0.42
	Lumbini	70.9 \pm 13.1	
	Gandaki	71.6 \pm 11.8	
	Others	70.8 \pm 13.6	
Difficulty Attending Follow-up Clinic	Very much	69.5 \pm 13.9	0.14
	Some	71.9 \pm 12.2	
	Not at all	73.4 \pm 11.5	
Forgot Immunosuppressants	Yes (sometimes or more)	69.1 \pm 14.2	0.09
	No	72.4 \pm 12.1	

*Statistically significant at $p < 0.05$.



Discussion

The present study entitled Post-Transplant Health Related Quality of Life (HRQOL) Among Kidney Transplant Recipients in Nepal included 183 kidney transplant recipients and found that the majority of participants were male (70.5%), possibly reflecting gender disparities in healthcare access and decision-making authority. Female family members, such as mothers and wives, often serve as living donors, while men are comparatively less likely to donate. Most recipients were below 60 years of age (80.6%), representing the economically productive age group, suggesting that transplantation restores functional capacity during peak working years. More than half of the participants (53.6%) were from Bagmati Province, while 16.9%, 11.5%, and 18% were from Lumbini, Gandaki, and other provinces, respectively, likely due to the location of KIST Teaching Hospital, indicating potential geographic disparities in access to services. Considering the lifelong cost of immunosuppressive therapy and follow up care, many recipients remain economically vulnerable. Overall, sociodemographic factors including gender, age, geographic location, and economic status appear to influence post-transplant quality of life and long-term outcomes (Dibya Singh Shah, 2023).

Likewise, the self-reported overall health status in this study showed that a large majority (72.1%) rated their health as “good” or “very good,” indicating substantial perceived improvement following kidney transplantation. Nearly half of the participants (49.7%) rated their health as good, 22.4% as very good, while only 6.6% reported poor or very poor health. These findings are consistent with a study conducted at a larger referral center in Nepal, as well as a study conducted in Pakistan, where hemodialysis patients scored significantly lower than transplant recipients across all QoL domains and in overall health perception. This comparison reinforces the evidence that kidney transplantation offers superior HRQOL outcomes compared to long term dialysis. Furthermore, the earlier study identified ethnicity, socioeconomic status, educational level, and employment status as significant determinants of overall quality of life among patients with ESRD. These determinants align with the present study’s findings, which highlight the role of income and financial burden, suggesting that socioeconomic stability remains a critical factor influencing HRQOL even after transplantation (Hamza Attiq, 2023) (Kamal Ranabhat, 2020). However, a study conducted in France suggested that psycho social variables particularly KTRs treated with antidepressants and those who felt unmet needs for social support have a negative effect on their QoL. It may be useful to organize psychological support specifically adapted for patients after kidney transplantation (Yosra Mouelhi, 2018).

Although kidney transplantation is generally associated with improved survival and functional outcomes, the findings of this study indicate that substantial physical, psychological, and financial challenges persist among recipients. Nearly half of the participants continued to experience surgical site discomfort, suggesting that residual physical symptoms remain relevant to post-transplant HRQOL. Psychological distress was even more notable, with a majority reporting ongoing nervousness or anxiety, as well as persistent concerns about infection and graft survival. These patterns reflect the chronic uncertainty inherent in



transplantation, where fear of complications and potential graft failure may undermine psychological well-being despite successful clinical outcomes. Financial strain emerged as a critical determinant, with most participants expressing concern about the cost of long-term immunosuppressive therapy, highlighting the sustained economic burden of lifelong treatment in a resource limited context. A similar study conducted in Pokhara reported comparable findings, supporting the consistency of these results. Nevertheless, the substantial proportion of participants reporting improvement in daily activities demonstrates meaningful functional recovery and enhanced social participation. Collectively, these findings suggest that while transplantation substantially improves daily functioning, comprehensive post-transplant care must address psychological support and financial protection to optimize long term HRQOL (Dhurba Khatri, 2025).

The analysis of overall HRQOL scores among kidney transplant recipients indicates that both sociodemographic and clinical factors influence post-transplant quality of life, with economic and treatment related variables playing key roles. Gender was not significantly associated with HRQOL, suggesting that male and female recipients experience similar overall wellbeing after transplantation. Younger recipients (≤ 45 years) reported higher HRQOL scores, likely due to greater physical resilience, fewer comorbidities, and better ability to resume productive and social roles. Income and financial stability were strong determinants, with higher earners reporting better HRQOL and participants facing heavy financial burden showing lower scores, highlighting the economic challenges of lifelong immunosuppressive therapy and follow up care.

Clinical factors also affected outcomes: recipients more than two years post-transplant had higher HRQOL scores, suggesting improved functional recovery and psychological adaptation over time, while good medication adherence was associated with higher HRQOL. Equally, province of residence, difficulty attending follow up clinics, and occasional missed doses did not significantly impact HRQOL. Similar findings were reported in national referral centers in Nepal and at Shanghai Changzheng Hospital, China, where KT recipients showed improved overall and physical HRQOL but continued to experience mental challenges and discomforts such as fatigue and skin problems, comparable to hemodialysis patients (Kamal Ranabhat, 2020) (Kai, et al., 2025).

These results emphasize that optimizing post-transplant HRQOL requires effective clinical management, long term follow up, and interventions addressing financial support, medication adherence, and age specific psychosocial care.

Conclusion

This study demonstrates that kidney transplantation in Nepal significantly improves recipients' overall health, functional capacity, and daily life activities. The majority of participants reported good to very good health post-transplant, reflecting substantial benefits compared to long-term dialysis. Younger recipients and those with higher income reported better HRQOL, while recipients more than two years post-transplant and those with good medication adherence also showed higher QoL scores. These findings highlight that transplantation not only restores



physical functioning but also supports social participation and psychological adaptation over time.

Despite these positive outcomes, significant challenges persist. Many recipients continue to experience surgical discomfort, anxiety, concerns about infection and graft survival, and financial burden related to lifelong immunosuppressive therapy. Gender, province of residence, and occasional forgetfulness in taking medications did not significantly influence HRQOL, suggesting that economic and adherence related factors are more critical determinants. Results emphasize the need for comprehensive post-transplant care that includes psychosocial support, financial assistance, and adherence counseling to optimize long term HRQOL. As kidney transplant services expand across Nepal, addressing these multifactorial influences will be essential to ensure equitable and high-quality care for all recipients.

Recommendations

This study recommends that kidney transplant recipients in Nepal receive comprehensive post-transplant care that addresses clinical, physical, psychological, and social needs. Structured follow up programs should monitor residual surgical discomfort and support functional recovery, while counseling and peer support services can help recipients manage anxiety, concerns about infection, and fears regarding graft survival. Given the financial burden of lifelong immunosuppressive therapy, financial assistance, medication subsidies, or insurance coverage should be provided to reduce out of pocket expenses. Efforts to promote consistent medication adherence through education and counseling are essential for maintaining graft health and improving HRQOL. Special attention should be given to older recipients and those with lower income through tailored interventions, such as home-based care and enhanced follow up. Furthermore, expanding transplant services beyond major centers and conducting longitudinal research are recommended to improve equitable access and long-term outcomes.

Supplementary Information

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Availability of data and materials: All data generated or analyzed during the study is attached in the additional supporting files. The datasets used and analyzed for the study is also available from the corresponding author on reasonable request. The email id of the corresponding author is: ashok.adhikari@gmail.com

Declarations

Ethics approval and consent to participate: Prior approval was obtained from KIST Teaching Hospital, Kathmandu, before conducting the study, and all participants were provided with an informed consent form before the start of data collection.

Consent for publication: Not applicable.

Competing interests: The authors declare that they have no competing interests.



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