



HEALTH-RELATED QUALITY OF LIFE AMONG CHRONIC KIDNEY DISEASE PATIENTS RECEIVING HEMODIALYSIS

*H.T.P.U. Piyasena, W.G.P. Sandeepani, M.P.S. Ruwanthika, S.G.C.D. Wijesinghe, D.K.M. De Silva and K.A. Sriyani**

Department of Nursing, The Open University of Sri Lanka, Sri Lanka

Chronic Kidney Disease (CKD) leads to irreversible renal function decline, often necessitating hemodialysis (HD) treatment. Despite its life-saving benefits, HD poses challenges affecting patients' physical health, psychological well-being, and overall quality of life. The study aimed to evaluate Health-Related Quality of Life (HRQOL) among CKD patients undergoing HD at the National Hospital of Sri Lanka (NHSL), Colombo. This descriptive, cross-sectional study included randomly selected 110 CKD patients undergoing routine HD therapy. Eligible participants were of both genders and aged 18-85 years who underwent HD for over three months, excluding those with altered consciousness, cognitive impairments and physical disabilities. Health-related quality of life of patients was assessed using a Sri Lankan context-validated Kidney Disease Quality of Life Short-Form Survey (KDQOL-36™) instrument, comprising generic [Physical Component Summary (PCS); Mental Component Summary (MCS)] and disease-specific subscales [Symptoms and Problems of Kidney Disease (SPKD), Effects of Kidney Disease (EKD), and Burdens of Kidney Disease (BKD)]. Scores for each section were computed, with higher scores indicating better HRQOL. In addition, patients' socio demographic information was gathered. Descriptive statistics, Mann-Whitney U test and Kruskal Wallis were performed. The study was approved by the Ethics Review Committee of NHSL. Participants were predominantly males (76.4%) and aged 51-70 years (46.4%) indicating a higher prevalence of CKD among men than women. More than 80% were married and approximately half (50%) were employed. Education levels varied, with 70% having completed secondary level. Overall HRQOL score was 41.91 ± 12.25 while subscale scores were PCS= 34.00 ± 8.80 ; MCS= 31.56 ± 9.7 ; SPKD= 75.15 ± 14.3 ; EKD= 46.73 ± 20.5 ; BKD= 22.10 ± 19.4 . Males reported higher scores in the BKD domain ($p=0.009$), while married individuals showed a significant association with EKD scores ($p=0.044$). Education level was associated with improved scores across all domains, especially higher scores for those with a diploma or above ($p<0.05$). Employment was significantly associated with better scores in all domains, particularly PCS and EKD ($p<0.05$). The HRQOL of CKD patients undergoing HD is found to be poor. Their physical and mental health status was hampered, and CKD caused more effects and burdens on their lives. Findings highlight the importance of improving the quality of life of these patients through appropriate strategies while considering important socio-demographic variations.

Keywords: Chronic kidney disease, haemodialysis, HRQOL, KDQOL-36™

*Corresponding Author: kasri@ou.ac.lk



HEALTH-RELATED QUALITY OF LIFE AMONG CHRONIC KIDNEY DISEASE PATIENTS RECEIVING HEMODIALYSIS

*H.T.P.U. Piyasena, W.G.P. Sandeepani, M.P.S. Ruwanthika, S.G.C.D. Wijesinghe, D.K.M. De Silva and K.A. Sriyani**

Department of Nursing, The Open University of Sri Lanka, Sri Lanka

INTRODUCTION

Chronic Kidney Disease (CKD) represents a progressive and irreversible deterioration in renal function (Vo et al., 2018). It leads to the body's inability to maintain metabolic, fluid, and electrolyte balance. Although kidney transplantation is the preferred option for treating end-stage renal disease (ESRD), many patients perceive it as a difficult procedure (Kurt et al., 2012). Hemodialysis (HD) emerges as the leading treatment choice for CKD in this advanced stage (Kim et al., 2022). Despite its life-saving benefits, dialysis presents numerous challenges for patients. It impacts physical health and psychological well-being, daily activities, overall quality of life, and social interactions. Health-related quality of life (HRQOL) assesses how health status influences patients' overall well-being. Patients on HD typically exhibit lower HRQOL scores compared to healthy individuals. Reduced scores of HRQOL in CKD patients often correlate with their medical and socioeconomic circumstances (Senanayake et al., 2020). Kidney disease quality of life short-form survey (KDQOL-36™) is a disease-specific patient-reported outcome measure (Ricardo et al., 2013) used to assess HRQOL of CKD patients globally (Cohen et al., 2019; Kim et al., 2021; Kasonde et al. 2022). However, comprehensive analyses of KDQOL-36™ completion rates, score distributions, and item responses have not been conducted in a nationally representative group of patients receiving HD therapy. The present study aimed to assess the HRQOL of CKD patients receiving HD therapy from Dialysis Units of the National Hospital of Sri Lanka (NHSL), Colombo.

METHODOLOGY

This study was a quantitative, descriptive, and cross-sectional study. A total of 110 CKD patients undergoing routine HD therapy were recruited using a simple random sampling method. The study included individuals aged 18-85 years of any gender who had been undergoing hemodialysis for over three months. Those with altered consciousness, cognitive impairment, or physical disabilities were not considered for the study. Data were collected using an interviewer-administered, Sri Lankan context-validated KDQOL-36™ instrument (Senanayake et al., 2020). It contains 36 items, encompassing both general and CKD-specific aspects. Its generic segment comprises two subscales assessing physical and mental health (Physical Component Summary - PCS) and Mental Component Summary - MCS), while the disease-specific section comprises three subscales; Symptoms and Problems of CKD (SPKD), Effects of CKD (EKD), and Burdens of CKD (BKD). Scores for each section were computed by adding up relevant item scores, graded on a scale of 0 to 100, where higher scores denote better HRQoL. The descriptive statistics include frequencies, percentages, and means, and non-parametric tests including the Mann-Whitney U test and Kruskal Wallis test, were performed to determine associations between KDQOL subscales and socio-demographic characteristics. All analyses were run through SPSS version 26. Approval for this study was granted by the Ethics Review Committee of the NHSL, Colombo.

RESULTS AND DISCUSSION

All 110 participants achieved a 100% response rate. Most participants were aged between 51-70 years (46.4%), while the sample predominantly comprised males (76.4%). As linear with these findings,



Suriyakumara et al. (2021) also found a higher CKD prevalence (67.9%) among men than women in Sri Lanka. Most participants were married (81%) and approximately half of the participants were employed (50%). Education levels varied, with the highest percentage having been completed up to the secondary level (70%) followed by the post-secondary level (21.8%).

Table 1. shows the HRQOL scores of the participants determined by the patients’ responses to the KDQOL-36 questionnaire. The mean±SD scores for each of the five subscales were PCS=34.00±8.80; MCS=31.56 ± 9.7; SPKD=75.15±14.3; EKD=46.73±20.5; and BKD=22.10±19.4. The average mean±SD score was 41.91±12.25.

In this study, the average mean HRQOL score of the CKD patients is below the average (41.91±12.25), similar to those reported by Vo et al. (2018) in Vietnam (42.9 ± 9.7). The average score for HRQoL reported by Abeywickrama et al. (2020) was 81.57±5.0, whereas the current study demonstrated a markedly lower average score, indicating a substantial disparity in quality of life between the two studies. In this study, participants exhibited lower scores in the MCS (31.56±9.7) compared to the PCS (34±8.8). This pattern contrasts with the findings of both Abeywickrama et al. (2020) in Sri Lankan patients and Vo et al. (2018) in Vietnamese patients. This suggests that, despite the deterioration in mental health conditions among CKD patients, their physical health appears to be relatively preserved.

Table 1. KDQOL-36TM subscale scores

Subscale	Mean ± SD	Range (Min-Max)
Symptom and Problems of Kidney Disease (SPKD)	75.15 ± 14.3	25.00 -100
Effect of Kidney Disease (EKD)	46.73 ± 20.5	3.13 – 93.75
Burden of Kidney Disease (BKD)	22.10 ± 19.4	0.00 – 87.5
Physical Component Summary (PCS)	34.00 ± 8.80	19.25 – 56.58
Mental Component Summary (MCS)	31.56 ± 9.70	15.76 – 60.95
Average HRQOL score	41.91 ± 12.25	14.86 – 77.93

In contrast with current findings Abeywickrama et al. (2020) highlights significant differences in the HRQOL scores among CKD patients. Current findings observed lower scores across all domains: SPKD, EKD, and BKD, as well as lower scores for both PCS and MCS, compared to the findings by Abeywickrama et al. (2020).

Table 2. presents the HRQOL scores of the participants categorized by their socio-demographic characteristics. Males had slightly higher mean scores for PCS compared to females, but this difference was not statistically significant (p = 0.927). However, significant differences were observed in BKD between genders, with males reporting a higher mean score (p = 0.009). Educational level was strongly associated with HRQOL, particularly for those with a diploma or higher education who had significantly better scores across multiple domains, including PCS (p = 0.000) and MCS (p = 0.002). This aligns with previous studies (Abeywickrama et al., 2020; Cohen et al., 2019), indicating that patients with high education levels experienced high levels of HQOL. Patients with a low level of education might have lower HRQOL because they likely stem from limited access to health information (Cohen et al., 2019), reduced understanding of self-care practices, and socioeconomic



Table 2. Association between KDQOL subscales' scores and socio-demographic characteristics of participants

Variable	SPKD		EKD		BKD		PCS		MCS	
	Mean (SD)		Mean (SD)	<i>P</i>	Mean (SD)	<i>P</i>	Mean (SD)	<i>P</i>	Mean (SD)	<i>P</i>
Gender										
Male	75.84±13.9	0.291	48.00±21.3	0.137	24.25±20.3	0.009**	33.99±8.7	0.927	32.23±9.9	0.133
Female	72.91±15.4		42.42±17.5		15.144±14.6		34±9.0		29.39±8.9	
Civil Status										
Married	74.71±14.1	0.367	45.22±20.6	0.044*	20.78±17.5	0.495	33.25±8.1	0.197	30.68±8.9	0.327
Single	74.61±14.9		47.26±15.0		23.43±17.5		35.33±9.3		33.49±8.4	
Separated / Widow	84.58±15.8		71.87±20.84		41.25±43.2		43.03±13.5		40.98±19.87	
Education Level										
Up to secondary level (up to grade 11)	72.72±14.3	0.015*	44.00±19.4	0.079	18.26±15.0	0.008*	31.63±7.1	0.000*	29.38±8.4	0.002*
Up to post-secondary level (G.C.E.A/L)	79.51±12.3		50.52±22.2		26.82±23.3		39.52±8.84		35.37±9.8	
Diploma/Graduate/PhD	84.25±13.7		60.07±20.9		42.36±27.2		39.58±13.0		40.02±13.2	
Employment										
Employed	80.03±11.7	0.000**	51.25±22.1	0.039**	27.72±22.8	0.007**	36.27±9.0	0.006**	32.98±10.8	0.226
Unemployed	70.26±15.0		42.21±18.0		16.47±13.1		31.73±7.9		30.14±8.4	

*Mann-Whitney U Test, Significant at $p < 0.05$.

**Kruskal Wallis Test, Significant at $p < 0.05$.



barriers to healthcare resources (Vo et al., 2018), highlighting the crucial role of education in promoting holistic well-being.

Surprisingly, separated/widowed participants showed the highest scores across all domains, particularly emotional well-being (EKD) ($p = 0.044$), although not all differences except EKD reached statistical significance. Consistent with previous studies (Abeywickrama et al., 2020; Vo et al., 2018), the present study found that employed participants had higher HRQOL scores across all domains, particularly in BKD and PCS.

CONCLUSIONS/RECOMMENDATIONS

The study revealed that CKD patients have significantly lower HRQOL, particularly in mental health, compared to previous studies, indicating a substantial decline in their perceived quality of life. Socio-demographic factors, including gender, education level, and employment status, significantly influence HRQOL scores. Higher education and employment are associated with improved scores, emphasizing the critical role of socioeconomic status and education in health outcomes. Interventions should focus on enhancing patient education, especially among those with lower educational backgrounds to improve self-care practices and QOL. Additionally, mental health support should be prioritized to address the psychological challenges faced by CKD patients, potentially improving overall HRQOL outcomes.

REFERENCES

- Abeywickrama, H. M., Wimalasiri, S., Koyama, Y., Uchiyama, M., Shimizu, U., Kakihara, N., Chandrajith, R., & Nanayakkara, N. (2020). Quality of life and symptom burden among chronic kidney disease of uncertain etiology (CKDU) patients in Girandurukotte, Sri Lanka. *International Journal of Environmental Research and Public Health*, 17(11), 4041. <https://doi.org/10.3390/ijerph17114041>
- Cohen, D. E., Lee, A., Sibbel, S., Benner, D., Brunelli, S. M., & Tentori, F. (2019). Use of the KDQOL-36™ for assessment of health-related quality of life among dialysis patients in the United States. *BMC Nephrology*, 20(1). <https://doi.org/10.1186/s12882-019-1295-0>
- Goh, K. K. K., Lai, P. S. M., & Lim, S. K. (2019). Cross cultural adaptation and validation of the Malay Kidney Disease Quality of Life (KDQOL-36™). *BMC Nephrology*, 20(1). <https://doi.org/10.1186/s12882-019-1397-8>
- Kim, K. Y., Ryu, J.-H., Kang, D.-H., Kim, S.-J., Choi, K. B., & Lee, S. (2022). Early fluid management affects short-term mortality in patients with end-stage kidney disease undergoing chronic hemodialysis and requiring continuous renal replacement therapy. *BMC Nephrology*, 23(1), 102. <https://doi.org/10.1186/s12882-022-02725-7>
- Kim, S., Nigatu, Y., Araya, T., Assefa, Z., & Dereje, N. (2021). Health related quality of life (HRQOL) of patients with End Stage Kidney Disease (ESKD) on hemodialysis in Addis Ababa, Ethiopia: A cross-sectional study. *BMC Nephrology*, 22(1), 280. <https://doi.org/10.1186/s12882-021-02494-9>
- Kasonde, J., Makukula, M., & Musenge, E. (2022). Quality of life in chronic kidney disease patients on dialysis at the University Teaching Hospital-Adult Hospital, Lusaka, Zambia. *Open Journal of Nephrology*, 12, 460-481. <https://doi.org/10.4236/ojneph.2022.124046>
- Senanayake, S., Gunawardena, N., Palihawadana, P., Senanayake, S., Karunarathna, R., Kumara, P., & Kularatna, S. (2020). Health related quality of life in chronic kidney disease; a descriptive



study in a rural Sri Lankan community affected by chronic kidney disease. *Health and Quality of Life Outcomes*, 18(1). <https://doi.org/10.1186/s12955-020-01369-1>

Suriyakumara, V., Samarathunga, T. A., Gunaratne, D., Karunarathne, C., Gajanayaka, R., & Kumarasinghe, N. (2021). Health-related quality of life among patients with chronic kidney disease of unknown etiology (CKDU) of an agricultural community in Kebithigollawa, Sri Lanka. *J Clin Med Res.*, 3(3), 1-19. [http://dx.doi.org/10.37191/Mapsci-2582-4333-3\(3\)-071](http://dx.doi.org/10.37191/Mapsci-2582-4333-3(3)-071).

Health-related Quality of Life among Patients with Chronic Kidney Disease of Unknown Etiology (CKDu) of an agricultural Community in Kebithigollawa, Sri Lanka

Turgut Kurt, Y., Erdem, E., Kaya, C., Karakas, A., & Arik, N. (2012). The Effect of Education Given to Hemodialysis Patients on Blood Pressure and Weight Gain. *Turkish Nephrology Dialysis Transplantation*, 21(01), 39–44. <https://doi.org/10.5262/tndt.2012.1001.07>

Vo, T. Q., Tran, T. Q., Duong, K. N., & Pham, K. C. (2018). Impact of chronic kidney disease on health-related quality of life: A prospective observational study using the KDQ OL-36 instrument. *Journal of Clinical and Diagnostic Research*, 12(6), 66–71. <https://doi.org/10.7860/jcdr/2018/36694.11708>

ACKNOWLEDGMENTS

We extend our sincere gratitude to all participants of the study, the Deputy Director General in NHSL, all Nurses-In-charge in Dialysis Units, and the Ethics Review Committee in NHSL.