

Assessment of Health-Related Quality of Life among Chronic Kidney Disease Patients on Hemodialysis in an Academic Hospital

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ABSTRACT

Background: Chronic kidney disease (CKD) is a progressive, irreversible loss of renal function that often advances to end-stage renal disease, with diabetes and hypertension being the leading causes. It is a major public health concern because it significantly impairs health-related quality of life through physical, psychological, and social limitations, especially in patients on long-term hemodialysis. **Objective:** The aim of the study was to assess the health-related quality of life among chronic kidney disease patients undergoing hemodialysis in an academic hospital. **Methods & Materials:** This observational cross-sectional study was conducted in the Department of Nephrology, Shaheed Suhrawardy Medical College Hospital, Dhaka, Bangladesh, over 6 months after protocol approval. A total of 100 CKD patients on maintenance hemodialysis were enrolled by purposive sampling, and data were collected through face-to-face interviews using a structured questionnaire with SF-36 to assess quality of life. Data were analyzed using SPSS version 20.0, and ethical approval with written informed consent was obtained while ensuring confidentiality. **Results:** The study included 100 CKD patients on hemodialysis, predominantly aged 61–70 years (33.0%) and male (76.0%). Most were engaged in business/service and had primary-level education. Non-smokers formed the majority (56.0%). Diabetic nephropathy was the leading cause of CKD (32.0%). Most patients had serum creatinine 5–7 mg/dl and 1–5 years of dialysis duration. SF-36 scores were highest in pain and lowest in general health perception, with poorer scores seen in patients on dialysis for >5 years. **Conclusion:** Patients on long-term hemodialysis have significantly poorer health-related quality of life, particularly in physical, emotional, social functioning, and general health domains.

Keywords: Chronic Kidney Disease, Hemodialysis, Quality of Life, SF-36, Academic Hospital

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INTRODUCTION

Chronic kidney disease (CKD), previously termed chronic renal failure, refers to an irreversible deterioration in renal function which usually develops over a period of years. Initially, it is manifest only as a biochemical abnormality but, eventually, loss of the excretory, metabolic and endocrine functions of the kidney leads to clinical symptoms and signs of renal failure, collectively referred to as uraemia. When death is likely without renal replacement therapy (CKD stage 5), it is termed end-stage renal disease or failure (ESRD) [1]. The etiology of CKD is diverse, with diabetes, hypertension, and interstitial disease being the leading causes, while in many cases the underlying diagnosis remains unclear, particularly among elderly patients [1]. Chronic diseases have gained increasing attention due to their high morbidity and mortality, becoming a major public health concern. Among them, CKD is a progressive, incurable condition that significantly compromises patients' quality of life (QOL) [2,3]. Health-related quality of life (HRQOL) has been defined by the World Health Organization as an individual's perception of their position in

life in relation to their goals, expectations, standards, and concerns, within their cultural and value context. HRQOL includes physical, social, psychological, and treatment-related components. HRQOL has become an important marker of treatment quality in chronic diseases, as it reflects the patient's subjective perception of disease impact and helps guide clinical decision-making according to physical, emotional, and social needs. It also improves treatment adherence, quality of care, and survival [4]. In advanced CKD and patients undergoing renal replacement therapy, multiple limitations and complications contribute significantly to impaired quality of life [4]. Several factors influence HRQOL in CKD patients. Social support has been shown to play an important role, where patients with a steady partner demonstrated better physical domain scores compared to those without such support, suggesting improved ability to perform daily activities [5]. Self-care practices also contribute significantly to maintaining health and improving quality of life, especially as patients adapt to a lifelong, complex treatment regimen [6]. Adaptation to CKD involves coping with an incurable condition and numerous

lifestyle changes that directly affect QOL [7].

CKD is associated with physical and occupational limitations that negatively affect social and economic well-being, along with psychological and emotional disturbances that impair family and social relationships [7]. The duration of dialysis also influences quality of life; some studies suggest that patients on long-term dialysis may show better scores in functional, physical, vitality, emotional, and social domains [8]. However, dialysis-related restrictions and long treatment duration can also significantly alter lifestyle, work capacity, and overall quality of life [8]. Furthermore, hemodialysis is associated with psychological stress due to continuous treatment burden and major changes in personal, social, and professional life, which further deteriorate HRQOL [9]. Therefore, this study aims to assess the health-related quality of life among chronic kidney disease patients on hemodialysis in an academic hospital.

OBJECTIVE

To assess the health-related quality of life among chronic kidney disease patients

undergoing hemodialysis in an academic hospital.

METHODS & MATERIALS

This observational cross-sectional study was conducted in the Department of Nephrology, Shaheed Suhrawardy Medical College Hospital, Dhaka, Bangladesh, over a period of 6 months following approval of the study protocol. A total of 100 patients with chronic kidney disease (CKD) undergoing hemodialysis were enrolled using purposive sampling to assess their health-related quality of life.

Inclusion criteria:

- All patients with chronic kidney disease (CKD) undergoing hemodialysis
- Age >18 years
- Both male and female patients

Exclusion criteria:

- Patients who did not voluntarily provide written informed consent
- Patients with mental disorders
- Patients with decreased level of consciousness

Data were collected through face-to-face interviews using a structured questionnaire focusing on socio-demographic characteristics. The main outcome variables were age, sex, and quality of life. A Bangla-translated and validated SF-36 questionnaire was used to assess quality of

life. It consists of 36 items covering eight domains of health-related quality of life, with scores transformed to a scale ranging from 0 (worst health) to 100 (best health). In addition, dialysis-related parameters were recorded, including duration of dialysis, type of dialysis, serum albumin level, hemoglobin concentration, hematocrit level, and adequacy of dialysis. A data-capturing master sheet was maintained throughout the study, and baseline characteristics were recorded at enrollment.

Data were collected using a predesigned pro-forma. At every stage of data collection, processing, and analysis, guidance from a statistician was obtained. The collected data were checked and rechecked to minimize errors and ensure accuracy. Data were entered into Microsoft Excel (Windows 2010) and analyzed using Statistical Package for Social Sciences (SPSS) version 20.0. Quantitative variables were expressed as mean ± standard deviation, while qualitative variables were expressed as frequencies and percentages. The study setting provided adequate patient flow, investigational facilities, library access, and a cost-effective environment for conducting research. Written approval was obtained from the concerned authority and department following due procedure. The aims and objectives of the study, along with potential risks and benefits, were

explained to each participant in an easily understandable local language. Written informed consent was obtained prior to data collection. Privacy, anonymity, and confidentiality were strictly maintained. Ethical clearance was obtained from the institutional ethical committee before commencement of the study.

RESULTS

Table I presents the sociodemographic characteristics of the study participants. The majority of patients were in the age group of 61–70 years (n = 33, 33.0%), followed by 51–60 years (n = 28, 28.0%), 41–50 years (n = 21, 21.0%), 31–40 years (n = 13, 13.0%), 21–30 years (n = 2, 2.0%), and >70 years (n = 3, 3.0%). Most participants were male (n = 76, 76.0%) and female (n = 24, 24.0%). Regarding occupation, the highest proportion were engaged in business (n = 30, 30.0%), followed by service (n = 28, 28.0%), housewife (n = 20, 20.0%), cultivation (n = 14, 14.0%), labour (n = 6, 6.0%), and students (n = 2, 2.0%). In terms of education, illiterate patients were 18 (18.0%), primary 22 (22.0%), Class V–X 16 (16.0%), SSC 20 (20.0%), HSC 12 (12.0%), graduate 10 (10.0%), and postgraduate 2 (2.0%).

Table I
Sociodemographic Characteristics of the Study Population (n = 100).

	Variable	Number (n)	Percentage (%)
Age (years)	21–30	2	2.0
	31–40	13	13.0
	41–50	21	21.0
	51–60	28	28.0
	61–70	33	33.0
	>70	3	3.0
Sex	Male	76	76.0
	Female	24	24.0
Profession	Business	30	30.0
	Service	28	28.0
	Housewife	20	20.0
	Cultivation	14	14.0
	Labour	6	6.0
	Student	2	2.0
Education	Illiterate	18	18.0
	Primary	22	22.0
	Class V–X	16	16.0
	SSC	20	20.0
	HSC	12	12.0
	Graduate	10	10.0
	Postgraduate	2	2.0

Table II presents the smoking history of the study participants. More than half of the patients were non-smokers (n = 56,

56.0%), followed by smokers (n = 24, 24.0%) and ex-smokers (n = 20, 20.0%).

Table II

Smoking History of the Study Population (n = 100).

Smoking history	Number (n)	Percentage (%)
Smoker	24	24.0
Non Smoker	56	56.0
Exsmoker	20	20.0

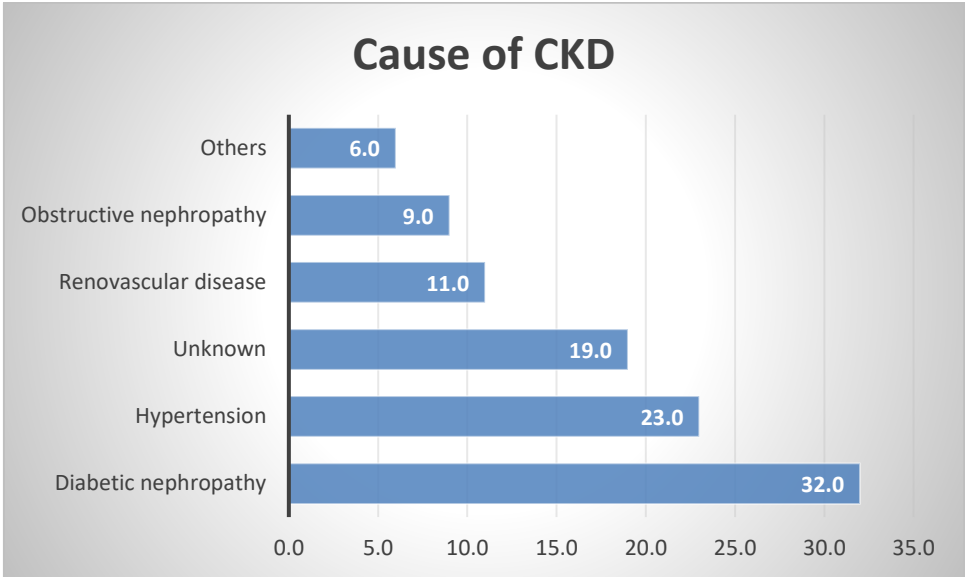


Figure I: Distribution of Study Patients by Cause of Chronic Kidney Disease (n = 100).

Figure 1 shows distribution of causes of CKD, with diabetic nephropathy being most common (n = 32, 32.0%), followed by hypertension (n = 23, 23.0%), unknown causes (n = 19, 19.0%), renovascular disease (n = 11, 11.0%), obstructive nephropathy (n = 9, 9.0%), and other causes (n = 6, 6.0%).

Table III presents the serum creatinine levels among the study participants. Serum creatinine levels of 5–7 mg/dl were observed in 42 patients (42.0%), followed by 7.1–10 mg/dl in 26 (26.0%), <5 mg/dl in 21 (21.0%), and >10 mg/dl in 11 (11.0%).

Table III
Serum Creatinine Levels of the Study Population (n = 100).

Serum creatinine (mg/dl)	Number (n)	Percentage (%)
<5	21	21.0
5–7	42	42.0
7.1–10	26	26.0
>10	11	11.0

Table IV presents the duration of maintenance hemodialysis among the study participants. Most patients had been on hemodialysis for 1–5 years (n = 56, 56.0%), followed by 3 months to <1 year (n = 27, 27.0%), and >5 years (n = 17, 17.0%).

Table IV
Duration of Maintenance Hemodialysis Among the Study Population (n = 100).

Duration of maintenance hemodialysis	Number (n)	Percentage (%)
3 months – <1 year	27	27.0
1–5 years	56	56.0
>5 years	17	17.0

Table V presents the SF-36 quality of life domain scores among the study participants. The highest mean score was observed in the pain domain (65.56 ± 22.96), followed by mental health (51.96 ± 18.56), physical functioning (49.58 ± 22.98), role limitations due to emotional problems (44.15 ± 24.18), vitality (38.59 ± 17.47), social functioning (36.79 ± 16.41), role limitations due to physical problems (27.02 ± 26.56), and general health perception (25.54 ± 11.52).

Table V
SF-36 Quality of Life Domain Scores Among Hemodialysis Patients (n = 100).

SF-36 Domain	Mean±SD	Range (Min, Max)
Physical Functioning	49.58 ± 22.98	41, 63
Role Limitations due to physical problems	27.02 ± 26.56	0, 59
Role Limitations due to emotional problems	44.15 ± 24.18	38, 70
Vitality	38.59 ± 17.47	28, 62
Mental health	51.96 ± 18.56	29, 65
Social functioning	36.79 ± 16.41	18, 46
Pain	65.56 ± 22.96	37, 98
General health perception	25.54 ± 11.52	11, 34

Table VI compares SF-36 quality of life domain scores according to duration of hemodialysis. Patients on hemodialysis for more than 5 years had lower mean scores in key domains, including physical functioning (38.70 ± 23.50), role limitations due to physical problems (15.82 ± 27.21), role limitations due to emotional

problems (32.83 ± 25.02), social functioning (29.24 ± 17.32), and general health perception (20.36 ± 12.52), compared to patients with 3 months to <1 year of dialysis (physical functioning: 56.32 ± 22.42; social functioning: 44.26 ± 16.04) and 1–5 years (physical functioning: 53.72 ± 23.02; social functioning: 36.87 ±

15.87). Statistically significant differences were observed in physical functioning (p = 0.034), role limitations due to physical problems (p = 0.038), role limitations due to emotional problems (p = 0.032), social functioning (p = 0.012), and general health perception (p = 0.037).

Table VI
Comparison of SF-36 Domain Scores According to Duration of Hemodialysis (n = 100).

SF-36 Domain	3 months–<1 year (Mean±SD)	1–5 years (Mean±SD)	>5 years (Mean±SD)	p-value
Physical Functioning	56.32 ± 22.42	53.72 ± 23.02	38.70 ± 23.50	0.034
Role Limitations due to physical problems	36.92 ± 26.54	28.32 ± 25.93	15.82 ± 27.21	0.038
Role Limitations due to emotional problems	52.58 ± 23.98	45.04 ± 23.54	32.83 ± 25.02	0.032
Vitality	44.17 ± 17.35	38.46 ± 17.21	33.14 ± 17.85	0.117
Mental health	58.40 ± 18.30	50.70 ± 17.50	46.80 ± 19.90	0.085
Social functioning	44.26 ± 16.04	36.87 ± 15.87	29.24 ± 17.32	0.012
Pain	67.96 ± 22.92	66.94 ± 22.68	61.78 ± 23.28	0.654
General health perception	29.28 ± 11.08	26.98 ± 10.96	20.36 ± 12.52	0.037

DISCUSSION

This observational cross-sectional study was carried out to assess the quality of life in chronic kidney disease patients on hemodialysis. A total of 100 patients with chronic kidney disease undergoing hemodialysis were included in this study. Patients aged more than 18 years of both genders (male and female) were enrolled. Patients who did not voluntarily consent, those with mental disorders, and those with decreased level of consciousness were excluded from the study. The present study findings were discussed and compared with previously published relevant studies. In this current study, it was observed that 76.0% of patients were male and 24.0% were female, indicating that chronic kidney disease patients on hemodialysis were predominantly male. Greenwood et al. [10] in their study observed that 62.4% were male and 37.6% were female, which closely resembles the present study. Similarly, Joshi et al. [11] and Murali et al. [12] also found male predominance among their study subjects. In this present study, it was observed that 30.0% of patients were engaged in business, followed by 28.0% service holders, 20.0% housewives, 14.0% cultivation workers, 6.0% labourers, and 2.0% students.

In this current study, it was observed that 22.0% of patients had primary education, followed by 20.0% SSC, 18.0% illiterate, 16.0% Class V–X, 12.0% HSC, 10.0% graduate, and 2.0% postgraduate. Joshi et al. [11] in a study found that the education level of CKD patients on HD was 20.6% illiterate, 31.2% primary, 24.8% secondary, and 23.4% higher/university, which is comparable with the current study. In a study done by Murali et al. [12], the educational status was observed as 42.0% schooling level and 58.0% degree holders. In this present study, it was observed that 56.0% of patients were non-smokers, followed by 24.0% smokers and 20.0% ex-smokers. Greenwood et al. [10] found that 42.0% of CKD patients on HD were smokers and 58.0% had never smoked, which is similar to the present findings. Chronic kidney disease (CKD) is an emerging disease caused by diabetes, hypertension, and other conditions. Diabetes and hypertension are responsible for nearly one-third and one-fifth of CKD, respectively. [13] Regarding the cause of CKD, it was observed in this current study that 32.0% of patients had diabetic nephropathy, followed by 23.0% hypertension, 19.0% unknown causes, 11.0% renovascular disease, 9.0% obstructive nephropathy, and 6.0% other causes. Greenwood et al. [10] observed that

78.0% of CKD patients on HD had hypertension and 39.0% had diabetes. In another study, Ellam et al. [14] found that 32.0% had diabetic nephropathy, 9.0% hypertension, 30.0% cause unclear, 12.0% renovascular disease, 7.0% obstructive nephropathy, and 5.0% other causes, which is close to the present findings. In this present study, it was observed that 21.0% of patients had serum creatinine levels <5 mg/dl, 42.0% had 5–7 mg/dl, 26.0% had 7.1–10 mg/dl, and 11.0% had >10 mg/dl. In this current study, it was observed that 27.0% of patients had maintenance hemodialysis duration of 3 months to <1 year, 56.0% had 1–5 years, and 17.0% had >5 years. Joshi et al. [11] in a study found that 26.8% patients were dialyzed for 3 months to <1 year, 55.6% for 1–5 years, and 17.6% for >5 years, which is consistent with the present study. In this present study, the mean physical functioning score was 49.58 ± 22.98, role limitations due to physical problems 27.02 ± 26.56, role limitations due to emotional problems 44.15 ± 24.18, vitality 38.59 ± 17.47, mental health 51.96 ± 18.56, social functioning 36.79 ± 16.41, pain 65.56 ± 22.96, and general health perception 25.54 ± 11.52. Murali et al. [12] observed that physical health was the most affected domain among all KDQOL components,

with an average score of 25.45 ± 11.85 ($p < 0.05$). An average score of 34.50 ± 13.95 was observed for mental health and was better than physical health and statistically significant ($p < 0.05$). We also found that physical health is more affected than mental health (49.58 ± 22.98 vs 51.96 ± 18.56) in CKD patients on HD.

In this present study, it was observed that physical functioning, role limitations due to physical problems, role limitations due to emotional problems, social functioning, and general health perception scores were higher among patients with shorter duration of dialysis (3 months to <1 year), while these were significantly lower among patients with duration of hemodialysis >5 years.

Joshi et al. [11] observed a significantly lower quality of life score in the social domain among patients who had undergone dialysis for more than 5 years compared to those with shorter duration. Yang et al. [15] found similar results and correlated low social domain scores with dissatisfaction with sexual life and feeling less respected. Their findings are also consistent with other studies. [16,17] Murali et al. [12] observed that income and duration of dialysis had greater significance with respect to social and environmental domains than other factors. The reduced quality of life in the social domain may be due to decreased time and willingness to spend with family and friends as dialysis duration increases, negatively affecting social relationships. In addition, patients on long-term dialysis were least satisfied with their sexual life, which may also contribute to poorer social domain scores. We also found that duration of dialysis has a greater impact on quality of life, especially physical and mental health. These findings may help doctors, healthcare professionals, and family members better understand the physical and psychological problems of CKD patients on maintenance hemodialysis. Better social support is necessary for patients on long-term maintenance hemodialysis.

LIMITATIONS

The study had a few limitations:

- The study population was selected from a single hospital in Dhaka city; therefore, the findings may not reflect the true picture of the country.
- The present study was conducted over a relatively short period of time.
- A small sample size was also a limitation of the present study.

CONCLUSION

This study was undertaken to assess the quality of life in chronic kidney disease patients on hemodialysis. Most patients were in the sixth and seventh decades of life, were predominantly male, and had a low educational level. Nearly half of the patients were smokers. Diabetic nephropathy and hypertension were the most common causes of CKD. Most patients had been on maintenance hemodialysis for 1–5 years. Physical functioning, role limitations due to physical problems, role limitations due to emotional problems, social functioning, and general health perception scores were significantly lower in patients who had undergone dialysis for a longer duration.

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CONFLICTS OF INTEREST

There are no conflicts of interest.

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