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Assessment of Health-Related Quality of Life in Hemodialysis Patients During Covid-19 Pandemic: Impact of Counselling Intervention

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Abstract*—Background**: *Chronic kidney disease (CKD) is a major global health problem associated with high morbidity and mortality. Patients with end-stage renal disease (ESRD) on hemodialysis experience a substantially diminished quality of life. The COVID-19 pandemic posed unprecedented challenges to dialysis patients.* ***Aim: *To evaluate health-related quality of life (HRQoL) in hemodialysis patients and determine the impact of counseling intervention during the COVID-19 pandemic.* ***Materials and Methods***: *Prospective observational study conducted at the Nephrology Department of a tertiary care hospital (February–December 2020). Twenty-one adult ESRD patients on maintenance hemodialysis for >3 months were included. HRQoL was evaluated at baseline and re-evaluated after 6 months during COVID-19 lockdown using the WHOQOL-BREF questionnaire.* ***Results***: *Cohort: 61.9% males, mean age 57.1 years. Baseline mean domain scores: physical health 46.00±5.48, psychological health 50.05±8.60, social relationships 71.76±9.48, environment 61.14±5.41. At 6-month follow-up, significant decreases were observed in physical health (39.90±4.57, P<0.001), psychological health (44.43±6.84, P<0.001), and environment (30.29±5.38, P<0.001). Social relationships remained stable (72.05±9.48, P=0.329).* ***Conclusion***: *The COVID-19 pandemic caused substantial deterioration in physical, psychological, and environmental well-being despite counseling. The environmental domain showed the most severe decline. Family support acted as a protective factor.*

***Keywords*—** *Chronic kidney disease; COVID-19; hemodialysis; patient counseling; quality of life; WHOQOL-BREF.*

I. Introduction

Chronic kidney disease (CKD) is a major global health problem, and its prevalence is rising steadily with the increasing prevalence of diabetes and hypertension, as well as the aging population.[1] End-stage renal disease (ESRD) or stage 5 CKD with a glomerular filtration rate of <15 mL/min/1.73m², along with symptoms of uremia, necessitates renal replacement therapy to ensure patient survival.[2] The prevalence of ESRD in India has risen substantially in the last two decades, with diabetic nephropathy emerging as a major cause.[3]

Hemodialysis remains the mainstay renal replacement therapy for the majority of ESRD patients in India.[4] The effects of thrice-weekly dialysis, dietary restrictions, medications, and disease complications substantially affect the health-related quality of life (HRQoL) of patients.[5] The evaluation of HRQoL has come to be recognized as a significant patient-centered outcome measure reflecting physical, psychological, social, and environmental effects of chronic disease.[6]

The WHOQOL-BREF questionnaire is a validated, cross-culturally applicable tool that assesses HRQoL in four domains: physical health, psychological well-being, social relationships, and environment.[7] Previous studies found HRQoL significantly compromised in hemodialysis patients compared to the general population and patients with other chronic diseases.[8,9]

Patient education and counseling trials have been beneficial in enhancing HRQoL outcomes in hemodialysis patients.[10,11] Organized counseling related to disease management, dietary compliance, medication adherence, and psychosocial support can improve patient knowledge, self-efficacy, and quality of life.[12]

The COVID-19 pandemic, which began in late 2019 and entered India in early 2020, presented an unprecedented set of challenges to hemodialysis patients. Lockdowns, transportation restrictions, fear of disease, and overburdened healthcare systems posed significant threats to the availability of life-sustaining hemodialysis care.[13,14]

This study aimed to assess baseline HRQoL in hemodialysis patients, provide structured patient counseling, and evaluate outcomes during the COVID-19 pandemic period.

II. Materials and Methods

Study Design and Setting

This prospective observational study was carried out in the Nephrology Department of PSG Institute of Medical Sciences & Research, a 1,200-bedded tertiary care teaching hospital in Coimbatore, Tamil Nadu, India. The study protocol was approved by the Institutional Human Ethics Committee (Ref: PSG/IHEC/2020/Appr/Exp/066, dated February 20, 2020). Informed consent was obtained from all participants.

Participants

Eligible patients were aged ≥18 years with CKD stage 3–5 on maintenance hemodialysis for at least 3 months, able to converse in Tamil or English, and willing to provide informed consent. Exclusion criteria included mental illness, peritoneal dialysis, previous kidney transplant, pregnancy, immunosuppressive therapy, active malignancy, severe

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hearing or speech impairment, and severe cognitive disturbance. The original target was 80 patients; however, COVID-19 pandemic restrictions limited the final sample to 21 patients completing both assessments.

Study Procedures

Phase 1 (February–March 2020): Collection of baseline demographic data and HRQoL measurement using WHOQOL-BREF in face-to-face interviews.
Phase 2 (March–April 2020): Individual patient counseling. Information leaflets in English and Tamil were distributed covering dietary advice, medication compliance, dialysis adherence, and lifestyle changes (~30 minutes per patient).
Phase 3 (August–September 2020): Follow-up HRQoL measurement after 6 months using the same questionnaire during the COVID-19 lockdown.

HRQoL Assessment

The WHOQOL-BREF questionnaire comprises 26 items evaluating four domains: (1) Physical health (7 items), (2) Psychological health (6 items), (3) Social relationships (3 items), and (4) Environment (8 items). Responses are scored on a 5-point Likert scale. Raw domain scores (4–20) are transformed to 0–100 scales, with higher scores indicating better HRQoL.

Statistical Analysis

Data were analyzed using SPSS version 22.0. Descriptive statistics included frequencies, percentages, means, and standard deviations. Paired t-tests compared domain scores at baseline and follow-up. Chi-square tests examined associations between demographic/clinical variables and HRQoL domains. Statistical significance was set at $P<0.05$.

III. Results

Demographic and Clinical Characteristics

Twenty-one patients completed both assessments [Table 1]. Majority were male (61.9%), aged 18–59 years (57.1%), and married (90.5%). Most were unemployed (42.9%) or homemakers (38.1%). Hypertension was the most common comorbidity (52.4%), followed by combined diabetes and hypertension (42.9%). Most patients (38.1%) had CKD for 3–5 years. Majority belonged to middle (52.4%) or lower (33.3%) socioeconomic classes.

TABLE 1. Demographic and Clinical Characteristics (N=21)

Characteristic	n (%)
Age	
18–59 years	12 (57.1)
≥60 years	9 (42.9)
Gender	
Male	13 (61.9)
Female	8 (38.1)
Marital Status	
Married	19 (90.5)
Unmarried	2 (9.5)
Occupation	
Homemaker	8 (38.1)
Business	4 (19.0)
Unemployed	9 (42.9)
Social Habits	
Smoking only	2 (9.5)
Alcohol only	3 (14.3)
Both	5 (23.8)
Neither	11 (52.4)
Comorbidities	
Hypertension	11 (52.4)
Diabetes + Hypertension	9 (42.9)
Other	1 (4.8)
CKD Duration	
<3 years	7 (33.3)
3–5 years	8 (38.1)
5–7 years	5 (23.8)
>7 years	1 (4.8)
Socioeconomic Status	
Upper class	3 (14.3)
Middle class	11 (52.4)
Lower class	7 (33.3)

HRQoL Assessments

At baseline, mean HRQoL domain scores indicated impairment across all domains, with the environmental domain showing the highest score (61.14±5.41) and physical health the lowest (46.00±5.48) [Table 2].

TABLE 2. HRQoL Domain Scores at Baseline and Follow-up

Domain	Phase 1 Mean±SD	Phase 2 Mean±SD	Mean Difference	t-value	P-value
Physical Health	46.00±5.48	39.90±4.57	6.10	6.461	<0.001*
Psychological	50.05±8.60	44.43±6.84	5.62	4.897	<0.001*
Social Relations	71.76±9.48	72.05±9.48	−0.29	−0.882	0.329
Environment	61.14±5.41	30.29±5.38	30.86	31.440	<0.001*

**Statistically significant at P<0.05*

Impact of COVID-19 Pandemic

Follow-up assessment during COVID-19 lockdown revealed significant deterioration in three domains despite counseling intervention.
Physical health: Mean scores decreased significantly (46.00±5.48 to 39.90±4.57, $P<0.001$), likely reflecting reduced physical activity, difficulty accessing medical care, and stress-related fatigue.
Psychological health: Scores decreased (50.05±8.60 to 44.43±6.84, $P<0.001$), reflecting pandemic-related fear, anxiety about treatment continuity, and social isolation.
Social relationships: Only domain showing stability (71.76±9.48 vs 72.05±9.48, $P=0.329$), suggesting maintained family and social support networks despite restrictions.
Environment: Most dramatic decline (61.14±5.41 to 30.29±5.38, $P<0.001$), reflecting severe lockdown impact on transportation access, healthcare accessibility, financial strain, and community participation.

Chi-square analysis revealed age significantly associated with psychological health ($P=0.012$), with patients ≥60 years reporting lower well-being.

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IV. Discussion

This study provides important insights into HRQoL of hemodialysis patients and the COVID-19 pandemic impact on this vulnerable population. ESRD patients undergoing maintenance hemodialysis experience substantially impaired HRQoL across all domains, consistent with previous research.[8,9,15]

The most striking finding is significant HRQoL deterioration at 6-month follow-up during India's COVID-19 lockdown. Despite structured patient counseling and education materials, substantial declines occurred in physical health, psychological health, and environmental domains. This paradoxical finding—worsening HRQoL despite intervention—highlights the overwhelming pandemic-related disruptions on dialysis patients.

The environmental domain demonstrated the most severe decline (mean difference 30.86 points), suggesting lockdown restrictions created substantial barriers to healthcare access, transportation, financial stability, and community participation. Many patients reported transportation difficulties, fear of COVID-19 infection, and financial strain. These findings parallel reports from other regions.[13,14,16]

Social relationships domain stability represents an important positive finding. Despite social distancing and lockdown, patients maintained close family and social support networks. In the Indian cultural context, extended family systems and strong community ties likely provided crucial support. Previous research has identified social support as a key protective factor for HRQoL in dialysis patients,[17] reinforced even under pandemic conditions.

Psychological health domain decline reflects substantial emotional burden. Dialysis patients faced unique stressors including heightened COVID-19 vulnerability, anxiety about treatment continuity, infection fear, and social isolation.[18] Older patients (≥60 years) showed significantly worse psychological scores, likely reflecting increased vulnerability and mortality risk.

Male predominance (61.9%) is consistent with the literature, partially explained by higher smoking and alcohol consumption prevalence. Hypertension and diabetes predominance as comorbidities (95.3% combined) aligns with these being leading ESRD causes in India.[3]

Clinical Implications

Our findings have important clinical and policy implications: (1) Consistently low HRQoL scores emphasize need for comprehensive, multidisciplinary care addressing medical management, psychological support, and environmental accommodations; (2) Healthcare systems must develop contingency plans for maintaining dialysis services during emergencies; (3) Substantial psychological impact underscores need for integrated mental health services; (4) While counseling did not prevent pandemic-related HRQoL deterioration, social relationship stability suggests some protective effects; (5) The protective role of social relationships highlights the importance of engaging family members and facilitating peer support networks.

Limitations

This study has several limitations. First, small sample size (n=21) limits statistical power and generalizability. COVID-19 necessitated reducing enrollment from the planned 80 patients. Second, absence of a control group limits determining the counseling protective effect. Third, a single tertiary care center may not represent other settings. Fourth, follow-up timing coincided with peak lockdown restrictions. Finally, specific pandemic-related variables were not collected.

V. Conclusion

Haemodialysis patients experience substantially impaired HRQoL across all domains. The COVID-19 pandemic significantly worsened HRQoL despite counselling interventions, with environmental and psychological domains showing the greatest deterioration. Social relationship stability suggests family and community support networks provide important buffering effects during crises. These findings highlight the extreme vulnerability of dialysis-dependent patients during healthcare disruptions and emphasize the need for pandemic preparedness planning to ensure dialysis service continuity.

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