RESEARCH ARTICLE

'Haemodialysis burden' overweighs the associations of demographic, social and clinical factors on quality of life: A single centre study from Pakistan

Imran Saleem, Murtaza Dhrolia, Ruqaya Qureshi, Kiran Nasir, Aasim Ahmad

Abstract

Objective: To assess health-related quality of life in haemodialysis patients, and the impact of various factors in this regard.

Method: The retrospective observational cross-sectional study was conducted at The Kidney Centre Post-Graduate Training Institute, Karachi, and comprised data from June to December 2019 of patients on maintenance haemodialysis. The health-related quality of life was assessed using the self-administered Urdu version of the Kidney Disease Quality of Life-Short Form version 1.3. Data was analysed using SPSS 21.

Results: Of the 150 questionnaires distributed, 110(73.3%) were received fully completed. There were 64(58.2%) males, 46(41.8%) were females, 90(81.8%) were under <60 years age, 76(69%) were married, 54(49.1%) had income up to PKR50,000, 64(58.2%) had received education up to secondary school, and 56(50.9%) had been on haemodialysis for <5 years. The overall health-related quality of life mean score was 52.0±11.7, and it had no significant association with age, gender, haemodialysis duration, marital status, education level, and income of the subjects (p>0.05).

Conclusion: The health-related quality of life in haemodialysis patients was not found to have significant association with age, gender, haemodialysis duration, marital status, education level, and income.

Keywords: Quality of life, Haemodialysis, Kidney disease. (JPMA 72: 886; 2022)

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Introduction

The term quality of life (QOL) in medical literature has a wide range of implications and usually relates to "psychological well-being, social and emotional functioning, functional performance, life satisfaction and social support",[1] to mention a few. It appears that factors which are technically non-medical are incorporated in one term of QOL, and the term encompasses various fields of interests instead of corresponding to a solitary specific definition. Therefore, there is no easily understood or a single method for estimating QOL. Over the years, there have been many published studies quantifying a solitary entity, called QOL, and patients' QOL.[2]

Better QOL improves compliance and lowers morbidity and mortality in haemodialysis (HD) patients.[3] Several factors, such as patient's age, gender, marital, employment and socioeconomic status (SES), could influence physical and mental health.[4] There are many studies in different parts of the world assessing the impact of these domains on HD patients, but limited data exists from Pakistan.

Many questionnaires have been developed to measure QOL; examples of generic tools include the World Health Organisation (QHO QOL-short form (WHOQOL-BREF), Assessment of QOL (AQOL), and QOL Scale (QOLS). Instruments specific to diseases are available and are much better than non-specific measurement tools. The Kidney Disease Quality of Life Questionnaire-Short Form (KDQOL-SF)[5] is used extensively to measure QOL related to chronic kidney disease (CKD) patients.[6-8]

The KDQOL-SF 1.3 is a self-administered questionnaire that includes the Medical Outcomes Study-Short Form-36 (MOSSF-36) generic core. It is specific to health-related issues of patients with kidney disease on HD. It covers multiple aspects, with each aspect having a specific number of questions. It also rates the overall health on a 0-10 response scale, ranging from "worst possible (as bad or worse than being dead)" to "best possible health".[5]

Anees et al[9] translated this questionnaire into Urdu, the national language of Pakistan, with a valid version to measure QOL in kidney disease patients on HD in Pakistan.

Over the years, different modes of renal replacement therapy have evolved and although they provide a significant mortality benefit, the QOL of patients on these therapies remain uncertain. The current study was planned to describe various dimensions of HRQOL in HD patients and to assess the impact of certain demographic,

Department of Nephrology, The Kidney Centre Postgraduate Training Institute, Karachi, Pakistan.

Correspondence: Murtaza Dhrolia. Email: mfdhrolia@hotmail.com

social and clinical factors on their QOL.

Materials and Methods

The retrospective observational cross-sectional study was conducted at The Kidney Centre Post-Graduate Training Institute (TKC-PGTI), Karachi, and comprised data from June to December 2019. Data was retrieved from the institutional database after receiving exemption from the institutional ethics review committee (ERC) to re-analyse the previously-collected figures without any patient interaction. The original study's data figures had been collected using non-probability consecutive sampling after informed consent of the patients, and approval from the institutional ERC.

The TKC-PGTI is a tertiary level renal care facility with a dialysis unit that accommodates 66 HD patients and performs 82,500 dialysis sessions annually while following the standards defined by European best practice guidelines.[10] All long-term maintenance HD patients are dialysed for four hours three times a week.

Data of patients of both gender aged >18 years undergoing maintenance HD for >3 months was re-evaluated. Patients with major non-renal illness or surgical procedures within the preceding 3 months, malignancy, cognitive impairment, dementia, physical disability, active psychosis, significant hearing or visual impairment, alcohol consumption, and those with vascular access other than arterio-venous fistula arterio-venous graft were excluded. Data of patients who were non-compliant to HD therapy or not receiving the prescribed HD dose was also excluded.

The HRQOL score was assessed using self-administered Urdu version of KDQOL-SF version 1.39. The socio-demographic details of the patients were collected using a semi-structured questionnaire.

As per Hays scoring procedure[5], the data obtained was changed to pre-coded numeric value of items to a 0-100 possible range, with higher scores reflecting better QOL. Items were then averaged together to create the scale score.

Mean individual domain scores were compared and so were the scores of kidney-disease component summary (KDCS), mental component summary (MCS) and the physical component summary (PCS).

Data was analysed using SPSS 21. Mean with standard deviation and median with interquartile range (IQR) were calculated for continuous variables, while for the categorical variables, frequencies with percentages were calculated. To assess the mean differences between any two groups, independent t-test was applied in normally-distributed variables, while in case of skewed variables, Mann-Whitney U-test was applied. One-way analysis of variance (ANOVA) was used to compare the means among the groups. Normality of data was checked by Shapiro-Wilk's test. P<0.05 was considered statistically significant.

Results

Of the 150 questionnaires distributed, 110(73.3%) were received fully completed. There were 64(58.2%) males, 46(41.8%) were females, 90(81.8%) were under aged <60 years, 76(69%) were married, 54(49.1%) had income up to PKR50,000, 64(58.2%) had received education up to secondary school, and 56(50.9%) had been on haemodialysis for <5 years (Table-1).

The overall HRQOL mean score, assessed by KDQOL-SF, was 52.0±11.7. The mean scores for KDCS, MCS and PCS were 56.8±8.5, 40.8±10.0, and 35.4±9.6 respectively (Table-2). The mean KDQOL-SF score had no significant association with age, gender, HD duration, marital status,

Table-1: Impact of socio-demographic and clinical variables on KDQOL-SF mean score.

Variables	N (%)	KDQOL Mean Score ± SD & Median, IQR	P-value
Age:			
18-40 years	33 (30)	51.6 ± 11.6 & 50.3, 18.9	
41-60 years	57 (51.8)	52.6 ± 11.7 & 52.2, 16.7	0.628
>60 years	20 (18.2)	49.8 ± 9.1 & 51.3, 13.2	
Gender:			
Female	46 (41.8)	50.9 ± 12.1 & 50.3, 18.94	0.467
Male	64 (58.2)	52.4 ± 10.5 & 52.6, 13.94	
Duration of HD:			
<5 years	56 (50.9)	51.7 ± 11.5 & 49.8, 18.1	
5-10 years	40 (36.4)	51.7 ± 11.97 & 52.6, 18.66	0.987
>10 years	14 (12.7)	52.2 ± 7.7 & 52.2, 14.18	
Marital Status:			
Married	76 (69.1)	52.9 ± 10.8 & 52.6, 15.4	0.074*
Single	34 (30.9)	49.3 ± 11.8 & 49.4, 18.8	
Education:			
< Secondary School	64 (58.2)	52.9 ± 10 & 52.9, 13.9	0.199
> Secondary School	46 (41.8)	50.1 ± 12.6 & 49.3, 21.9	
Income:			
< 20,000	10 (9.1)	47.6 ± 15.1 & 40.1, 23.5	
21,000 – 50,000	44 (40)	53 ± 8.97 & 53.4, 12.8	0.539
>50,000	8 (7.3)	49.7 ± 17.5 & 42, 32.0	
Not known	48 (43.6)	51.9 ± 11.1 & 51.4, 15.6	

KDQOL-SF: Kidney Disease Quality of Life-Short Form, HD: Haemodialysis, SD: Standard deviation, IQR: Interquartile range. * Mann Whiteny U test.

Table-2: Mean scores for KDQOL-SF domains (N=110).

KDQOL-SF domains	Mean (SD)
Kidney-Disease Component summaries (KDCS)	**56.8 (8.5)**
Symptom/problem list	69.5 (26.9)
Effects of kidney disease	68.7 (21.7)
Burden of kidney disease	41.1 (30.7)
Work status	31.5 (29.5)
Cognitive function	36.1 (28.1)
Quality of social interaction	34.0 (23.2)
Sexual function	62.5 (33.6)
Sleep	59.1 (16.7)
Social support	79.8 (23.6)
Dialysis staff encouragement	80.9 (25.5)
Patient satisfaction	62.3 (33.7)
Physical Component summaries (PCS)	**35.4 (9.6)**
Physical functioning	39.7 (28.3)
Role limitations--physical	25.0 (33.9)
Pain	52.5 (30.3)
General health	52.4 (20.9)
Mental Component summaries (MCS)	**40.8 (10.0)**
Emotional well-being	61.7 (22.5)
Role limitations--emotional	33.3 (36.4)
Social function	52.6 (26.5)
Energy/fatigue	45.3 (20.4)
Overall Score	**52.0 (11.7)**

KDQOL-SF: Kidney Disease Quality of Life-Short Form.

education level, and income of the subjects (p>0.05).

Discussion

End Stage renal disease (ESRD), as perceived by the patients, significantly affects the functional status and QOL, and this perception is present even in the early stages, and is usually associated by symptoms that affect daily life. Five-point higher score for QOL in physical and mental health and CKD-specific issues were associated with a reduction of 4-8% in the risk of hospitalisation and 9-23% in mortality.[11]

The current study assessed HRQOL among patients undergoing HD; 81.8% of them aged <60 years, which is in line with earlier studies.[7,12]

A high male-to-female ratio was seen similar to other studies,[13,14] And 69% were married, as was seen in an earlier study.[15]

Many studies have shown poor QOL in HD patients,[13-15] The current results are concordant with all such studies. Compared to results from seven other countries,[6, 8,11,16-19,] KCDS and MCS scores in the present study were the lowest. In the PCS domain, the study had higher score than the United States and equal to that of Europe, while it was lower than the rest of the countries (Table-3).

In the current study, the higher score was observed in "dialysis staff encouragement" (80.9), followed by "social support" (79.8). Similar inferences were in a Pakistani[9] and a Brazilian study.[8] This could be due to better dialysis staff training and supportive attitude while treating these patients. This encouragement helps patients feel comfortable in the dialysis unit environment and may help in leading an independent life. In Pakistan, many patients live with extended families, which may make the patient's problems bearable and helps them to cope with the stress of the disease through family support.

Lower score was observed in "role-physical" (25.0), "work status" (31.5), "role-emotional" (33.3), "quality of social interaction" (34.0), "cognitive function" (36.1), and "physical functioning" (39.7). This can be attributed to the stigma of being on HD in Pakistani society, chronic co-morbidities, unemployment or time and effort spent in travelling to and from the dialysis unit.

Sexual activity questions were not answered by majority of patients since in Pakistan, people usually hesitate and disapprove discussing sexual activities openly. Similar observation was made in a study done in Saudi Arabia.[6] Among the current sample, there was a perception that sexual activity may decline the kidney function further.

There was no correlation between age and mean KDQOL score in the current study, which may be indicative of the fact that the 'ESRD burden' overweighs the 'age burden'. In a study of dialysis patients in Greece, 'older' patients on HD had better QOL than 'younger' patients.[20] However, this finding contradicts the findings of studies from many other countries, such as Saudi Arabia,[6] Brazil,[21] Ireland,[22] and the US.[23] A study from the United Kingdom found

Table-3: Comparison of KDQOL-SF scores across different countries.

Country	Pakistan*	KSA[6]	Europe[10]	Japan[17]	USA[15]	Korea[16]	Brazil[8]	Turkey[18]
PCS	35.4	52.7	35.5	41.8	33.1	53	60	62
MCS	40.8	54.1	43.3	44.8	46.6	51	68	71
KDCS	56.8	59.7	69.9	75.8	71.1	62.9	67.9	63.8

KDQOL-SF: Kidney Disease Quality of Life-Short Form, PCS: Physical component summaries, MCS: Mental component summaries, KDCS: Kidney disease component summaries.
* Current study.

that the subjective QOL for older patients varied depending on their expectations and beliefs.[24]

In the current study, gender had no substantial influence on the scores, which was reported in the Dialysis Outcomes and Practice Patterns Study (DOPPS).[16] This could again be a benefit of having an extended family support system. However, numerous studies have concluded that women have lower scores on QOL assessment, especially in physical function.[6,22] It is unclear if these are related to social and/or psychological factors. In studies from different cultures,[25,26] the rates of depression and mortality were lower in married compared to unmarried individuals. The current study observed that married patients had better KDQOL score as compared to single patients. This difference was found close to being statistically significant (p=0.074). This might have been because of the limited sample size. However, married patients did seem to show a trend toward better QOL.

Regarding the education level, a Brazilian study[21] showed that individuals with higher education who were professionally active had a higher PCS score. Like the Saudi study,[6] the current study did not show education to have any impact on the scores. SES is best assessed by income (monthly or annual) and lower SES is not only related to an increased CKD incidence, its advancement to ESRD and inadequate dialysis treatment, but also to worse health consequences.[27] Moreover, higher income correlates with better emotional and mental health in dialysis patients.[6,21,28] In the current study, income was not found to be a significant factor in affecting the QOL of patients, and the same was reported in DOPPS.[16]

At TKC-PGTI, the site of the current study, there is high financial support available through welfare plans for patients undergoing maintenance HD, allowing them to have four-hour sessions thrice per week. Therefore, the dose of HD is the same for almost all the patients regardless of their income, which possibly reflected in QOL scores with regards to income.

KDQOL mean score was also not affected significantly by HD duration in the current study, which was similar to the Saudi study.[6]

The current study has limitations, like the self-administered questionnaire. Another limitation is that it did not look at levels of objective biomarkers, like haemoglobin, albumin and dialysis adequacy that play an important part in HRQOL. Religion and spirituality also play an important part which were not taken into account. No demographic or clinical factor was significantly associated with scores of KDQOL in univariate analysis, and, hence multivariate analysis was not run. The findings cannot be generalised because the study used non-probability consecutive sampling technique in the selection of the subjects.

Despite the limitations, however, the current study can serve as a starting point for larger, multicentre evaluation of QOL of patients on maintenance HD that may facilitate better understanding about HRQOL and may lead to measures that improve the QOL in HD patients.

Conclusion

Overall HRQOL score was low, and it was even lower in PCS and MCS domains, indicating how HD adversely affects the physical and mental status of CKD patients. Low scores were seen in the "work status", "cognitive function", "quality of social interaction", "physical functioning", "role-physical" and "role-emotional" factors, while high scores were seen in "social support", "dialysis staff encouragement", "effects of kidney disease", and "symptoms" domains. No demographic, social and clinical factor was found to have significant impact on mean HRQOL score, which may suggest that the 'HD burden' outweighed the effect of these factors on QOL.

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