

QUALITY OF LIFE OF PATIENTS UNDERGOING HEMODIALYSIS

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ABSTRACT

Objective: The objective of the study was to assess the quality of life (QOL) of patients undergoing hemodialysis (HD). The QOL of HD patients was found to be considerably impaired when compared to that of healthy individuals of the general population. The careful assessment of QOL helps to guide and achieve medical management to optimize their health experience.

Methods: Cross-sectional research design was adopted with 130 samples who met the inclusion criteria to conduct the study in the dialysis unit, India. The instrument used for the study was to collect the data are demographic variable and kidney disease QOL - short form version 1.3 scale.

Results: The mean total score of QOL was 48.73 ± 22.65 , the highest score was for dialysis staff encouragement scale (84.04 ± 14.89) followed by social support scale (80.38 ± 20.38) and quality of social interaction (71.52 ± 18.74). However, role limitation caused by physical health problems, role limitation caused by emotional health, and burden of kidney disease scales yielded the lowest scores (22.12 ± 18.05 , 26.92 ± 24.15 , and 38.03 ± 12.81 , respectively).

Conclusion: The present study findings concluded that patients on HD were not having adequate QOL in all domains except patient satisfaction due to changes in the physiological, chemical changes occur in the kidney.

Key words: Quality of life, Hemodialysis, Chronic renal failure, End-stage renal disease, Health related quality of life.

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INTRODUCTION

Chronic diseases have become a major public health problem and the leading cause of morbidity and mortality [1]. Global status report on non-communicable diseases (2010) stated that 80% of chronic disease deaths worldwide occur in low- and middle-income countries [2]. End-stage renal disease (ESRD) is one among the chronic diseases which possess great threat globally and increased burden in the healthcare system and leads to increased morbidity and mortality and decreased the quality of life (QOL) [3]. According to the World Health Organization, Global Burden of Disease project, diseases of the kidney and urinary tract contribute to global burden with approximately 8,50,000 deaths every year and 11,50,10,107 disability-adjusted life years. Chronic kidney disease (CKD) is the 12th leading cause of death and 17th cause of disability. The global increase in CKD is being driven by the global increase in of diabetes mellitus, hypertension, obesity, and aging [4]. CKD is associated with increased incidences of cardiovascular mortality and loss of disability-adjusted QOL years [5]. CKD in India cannot be assessed accurately. The approximate prevalence of CKD is 800 pmp and incidence of ESRD is 150–200 pmp [1].

ESRD is the final stage of CKD in which the kidneys no longer function well enough to meet the needs of daily life. During this stage, renal replacement therapy is required to stay live, and hemodialysis (HD) is considered as the most widely used therapy and playing an essential role in increasing patients' lifetime. The QOL of HD patients was found to be considerably impaired when compared to that of healthy individuals of the general population as well as of renal transplant patients [6].

QOL is an overall assessment of a person's well-being, which may include physical, emotional, and social dimensions, as well as stress level, sexual function, and self-perceived health status. End-stage renal failure is a chronic disease that exerts a great negative impact on patients' health-related QOL mainly due to the accompanied impairment or to the imposed limitations in almost all domains of their

daily lives. Despite remarkable advances in the treatment of HD, the patients encounter certain physical, psychological, economic, and social problems which affect their QOL.

HD consist a complex procedure for patients that require frequent hospital or dialysis centers visits, mainly 3 times a week, thus implying substantial changes in the normal way of patients' living. 92% of HD patients may endure a high symptom burden and may experience troubling symptoms such as fatigue, decreased appetite, trouble concentrating, swelling in their feet and hands, and muscle cramps, and, all of which cause daily distress and negatively affects their QOL [7]. HD is a time consuming, and costly treatment and it needs more restrictions for diet and fluid, and long run dialysis causes a loss of freedom, reliance on caregiver, disturbance of marriage, family, social life, and reduction or lack of income. All these factors impair QOL [6,8].

Many studies found that CKD patients complain of depression, and other mental symptoms. On the other hand, little is known about patients and caregivers' health problems and their QOL [9]. HD-dependent patients with chronic renal failure, must cope with severe restrictions such as strict adherence to dialysis and medication regimens, dietary and fluid limitations, and minimal physical activities [10]. Problems with sleep are very common in ESRD (up to 40%–80%) and range from insomnia and sleep apnea to restless leg syndrome. Indeed, poor sleep is itself a predictor of mortality and QOL [11,12]. Continuous education and providing patient counseling could enhance adherence to therapies and thus could improve the QOL [13]. The careful assessment of health-related QOL (HRQOL) can help guide provision of medical management to optimize their health experience [14]. HRQOL is recognized as an essential health outcome for studies assessing the quality of healthcare, evaluating the impact of illness, and analyses of cost-effectiveness [12,15,16]. In addition, it has been shown that HRQOL is clinically important for improving dialysis outcome in patients on HD [17,18]. With this background, the researcher interested to assess the QOL among ESRD patients who have undergone HD with respect to

their all domains including physical health (PH), mental health, kidney disease problem, and patient satisfaction (PS).

METHODS

The research design adopted for the study was non-experimental, descriptive and cross-sectional study. The study was conducted in dialysis unit of the multispecialty hospital with 130 patients receiving HD regularly from April to June 2017 after obtaining Approval from Ethical Committee, and formal permission was obtained from the hospital authority. The samples were selected by convenient sampling technique who met the inclusion criteria. Patients with Stage V renal failure and on HD for more than 3 months with age group between 18 years and more than 71 years of both male and female, receiving HD 3 times per week or 2 times per week for 4 h per treatment, willing to sign an informed consent and participate in the study were included in the study. Patients who had dementia or other active mental disorders, neurological illness which may interfere the day to day activities of daily living, as well as mental health and hemodynamically unstable clients, were excluded from the study. The patients who consented in written form to participate were informed about the purpose of the study, rights to participate or withdraw from the study.

The instrument used for the study was to collect the data are demographic variable and Kidney Disease QOL - short form (KDQOL-SF™) version 1.3 scale [19]. Demographic variables contained the information regarding age, sex, residence, marital status, educational status, occupational status, and income. It also includes the clinical variables such as family history of CKD, duration of ESRD since diagnosis, cause for kidney disease, duration of HD, and number of HD treatment per week.

KDQOL-SFTM is a multidimensional, reliable and validated questionnaire intended for dialysis patients. The survey instruments were translated into the local language (Tamil) as per the guidelines provided by the KDQOL working group. It has 43 domains targeted for ESRD (43 items) and has as its generic core the 36 domain of the short form Health Survey (SF-36). It consists of two parts, namely, disease-targeted item and 36-item Health Survey.

Disease targeted item to focus on particular health related concerns of the patient with kidney disease and on dialysis: Symptoms/problems - 12, effects of kidney disease - 8, burden of kidney disease - 4, work status - 2, cognitive function - 3, quality of social interaction - 3,

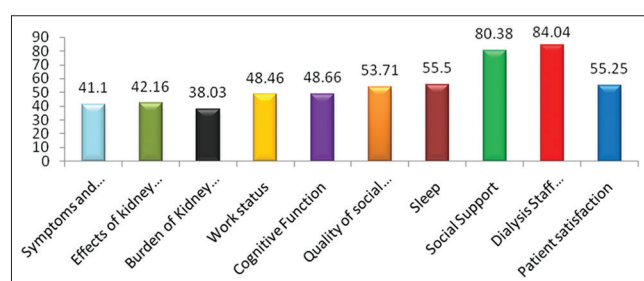


Fig. 1: Mean score of disease-targeted item

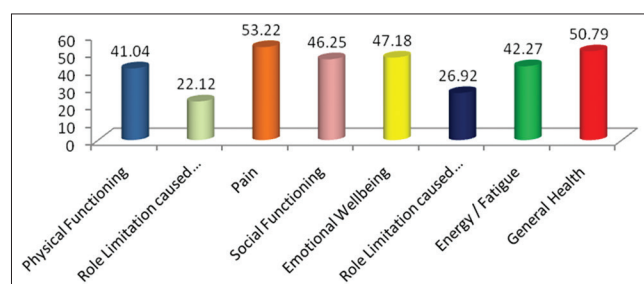


Fig. 2: Mean score of 36-item Health Survey

sleep - 4, social support - 2, dialysis staff encouragement - 2, and PS - 1. 36-item Health Survey includes: Physical functioning - 10, role limitation caused by PH problem - 4, pain - 2, general health - 5, emotional wellbeing - 5, role limitation caused by emotional problem - 3, social function - 2, and energy/fatigue - 4.

ESRD targeted domains are divided into four and each domain is further subdivided as follows:

1. PH: (a) Physical functioning, (b) work status, (c) role limitation due to physical function, (d) general health, (e) pain, (f) energy/fatigue, and (g) social function.
2. MH: (a) Emotional well-being, (b) quality of social interaction, (c) burden of kidney disease, (d) social support, and (e) role limitation due to emotional function.
3. Kidney disease problems: (a) Cognitive function, (b) symptoms/problems, (c) effects of kidney disease, and (d) sleep.
4. PS: (a) PS and (b) staff encouragement.

The participants were requested to answer by themselves after recall their experience of the past 4 weeks, and the researcher helped to fill the survey instruments. Each scale is scored as 0–100, with a higher score indicating better QOL. They were assured about their confidentiality and anonymity throughout the study. The collected data prepared and scoring was done as per the KDQOL-SF™ Version 1.3 scale scoring manual using Microsoft Excel. QOL assessment was done by SPSS Software Statistical Package Version 1.8.

RESULTS

The study findings showed that of the 130 patients included in the study, 75 (57.7%) were in the age group 50 years. The number of male (85%) more than the female (15%) and the majority of them (61.5%) are residing in the rural area and rest of them are 22.3% and 16.2% residing in semi-urban and urban area, respectively. The marital status observed more than 84.6% were married. Regarding educational status, 53 (40.8%) samples (40.8%) were illiterate, followed by 60 (46.2%) were completed the schooling up to primary school and only one subject was degree holder from our observation. More than 50% of the samples were housewife, and the majority of their monthly income was Rs.5000 and less than that. Data were presented in Table 1.

In the present study, clinical variables were also observed and represented in Table 2 which reveals that 26.9% of them have reported the family history of renal disease and diabetes mellitus (24.6%) and hypertension was found to be the most frequent cause of ESRD. With regard to duration of ESRD since diagnosis 43.1% of them have <1 year followed with 45.4% have 1–3 years and only one (0.8%) of them has more than 5 years duration of ESRD. More than 51.6 % of them were coming for HD regularly for past 1 year and 43.8% samples were undergoing HD for past 3 years and few samples 6(4.6%) were undergoing HD for more than 3 years and out of which 63.1% were coming thrice a week, and 36.9% were coming twice a week for HD.

The present study assessed the QOL in all subscales of disease-targeted item and 36-item Health Survey of KDQOL among study subjects. The mean total score was 48.73 ± 22.65 ; the highest score was for dialysis staff encouragement scale (84.04 ± 14.89) followed by social support scale (80.38 ± 20.38) and quality of social interaction (71.52 ± 18.74). However, role limitation caused by PH problems, role limitation caused by emotional health and burden of kidney disease scales yielded the lowest scores (22.12 ± 18.05 , 26.92 ± 24.15 , and 38.03 ± 12.81 , respectively). Sleep scale score was 55.50 ± 8.56 and pain scale score was 53.22 ± 10.96 .

The present study described the relationship of the clinical variables with the QOL using linear regression analysis, and then it was found that duration of HD (>2 years) attained borderline significance (regression coefficient=0.815; $p < 0.049$) in predicting the QOL ($p < 0.049$) as shown in Table 4. No other variable was found to be significant.

DISCUSSION

QOL is a broad multidimensional concept that usually includes subjective evaluations of both positive and negative aspects of life [20] and it important to everyone. Long-term HD treatment often results in financial troubles, loss of freedom, dependence on healthcare personnel and caregivers, negative impacts on marital status, family, and social activities. Thus, QOL should be measured and monitored for a better understanding of patients' condition [21]. Several studies proved that HD patients suffer poor HRQOL, despite continuing advancements in the treatment [22-24]. With this regard, the present study assessed the QOL and background variables of patients undergoing HD. It was found that majority of the patients were male and in the age group of 51 years and above were not having adequate QOL in the domains of PH, mental health, kidney disease problem and had better score in PS which reveals that they had good encouragement and interaction with the dialysis staff of both medical and nursing. Furthermore, it showed that had low score in role limitation caused by physical and emotional health due to signs and symptoms associated with kidney disease, which causes burden in their lives.

The findings are consistent with the study conducted by Abdelghany *et.al.*, found that the mean total score was below 50 (out of 100 point) with mean PH composite (PHC)=35.57±7.34 and mean mental health composite=36.76±10.22 which revealed that all domains of HRQOL were reduced and very poor in HD patients. Anemia and unemployment adversely affected HRQOL scores [25]. The result of the study findings is parallel with the study conducted by Sathvik *et.al.* who reported that QOL of HD patients was significantly ($p<0.05$) lower in all the four WHOQOL-BREF domains [8]. Similarly a study conducted by Gerasimoula *et.al.*, who stated that the total score of QOL was found to be higher in participants <60 years ($p=0,009$), of higher educational

level, being very informed about the health problem, complied with therapeutic recommendations and the proposed diet, having very good relations with the medical and nursing staff or other patients, not experiencing difficulties with social or family environment, had help at home and in those who did not conceal their health problem from the social environment and furthermore, it was found that the increasing duration of HD session entailed poorer QOL ($p<0.001$) which contrast with the present study findings [26].

Stojanovic and Stefanovic assessed the QOL and reported that HRQoL in patients on HD was found markedly impaired. Comorbid conditions have a negative and statistically significant correlation with parameters of HRQoL, and older age and poor income substantially reduce HRQoL in HD patients [27]. The present study demonstrated the correlation between the QOL and background variable, and it was with duration of HD. Duration of HD was found to be a significant factor for predicting the QOL. When the number of cycles per week increases the level of QOL is significantly decreased. On the other hand Anees *et.al.*, who reported that unemployment is a positive predictor of QOL in social relation domain. Monthly income and place of residence is a positive predictor of QOL in environment domain [28]. Similarly in a study done by Bayoumi *et.al.*, QoL is reduced in all the health domains of HD patients. Older age, male gender, unemployment, and duration of dialysis adversely affected the QoL scores [29].

In this study, Abdel-Kader *et.al.*, who reported that the burden of symptoms, prevalence of depression, and low QOL are comparable in patients with ESRD and advanced CKD [30]. Mujais *et.al.* stated that baseline measures of HRQOL were reduced in CKD patients in proportion to the severity grade of CKD. Physical functioning score declined progressively with more advanced stages of CKD, and so did the score for role-physical [31]. Md Yusop *et.al.* had conducted a study and reported that the kidney disease had a greater effect on PH than on mental health [32]. The present study assessed all the four domains of KDQOL in the study subjects. PH was significantly affected among all the four domains of the KDQOL, and an average score was found to be 25.45±11.85 ($p<0.0015$). The average value of 71.93±12.35% ($p<0.029$) subjects were having satisfaction with dialysis care, which is lower than the recommended value of <65% [33]. Erythropoietin is one of the factors which extremely affect the QOL and study conducted

Table 1: Distribution of patients on HD according to demographic variables

S.no	Demographic variables	Study group
		n (%)
1	Age in years	
	18-30	13 (10)
	31-50	42 (32.3)
2	More than 50 years	75 (57.7)
	Gender	
3	Male	111 (85.4)
	Female	19 (14.6)
4	Residence	
	Rural	80 (61.5)
	Semi-urban	29 (22.3)
5	Urban	21 (16.2)
	Marital status	
	Married	110 (84.6)
	Unmarried	11 (8.5)
6	Widow	2 (1.5)
	Divorcee	7 (5.4)
	Educational status	
	Illiterate	53 (40.8)
7	Primary school	60 (46.2)
	Higher secondary	16 (12.3)
	Graduate and above	1 (0.8)
8	Occupational status	
	Housewife	66 (50.8)
	Daily Wages	42 (32.3)
9	Government job	-
	Private job	22 (16.9)
	Income in rupees	
10	Less than Rs. 5000/-	115 (88.5)
	5001-10,000/-	15 (11.5)
	10,001-15,000/-	-
	More than 15,001/-	-

HD: Hemodialysis

Table 2: Distribution of patients on HD according to clinical variables

S.no	Clinical variables	Study group
		n (%)
1	Family history of ESRD	
	Yes	35 (26.9)
2	No	95 (73.1)
	Duration of ESRD since diagnosis	
3	<1 year	56 (43.1)
	1-3 years	59 (45.4)
	3-5 years	14 (10.8)
	More than 5 years	1 (0.8)
4	Cause for kidney disease	
	Diabetes Mellitus	32 (24.6)
	Hypertension	44 (33.8)
	Polycystic kidney disease	4 (3.1)
5	Unknown etiology	9 (9)
	Any other cause	41 (41)
	Duration of HD	
	6 months - 1 year	67 (51.6)
6	1-3 years	57 (43.8)
	More than 3 years	6 (4.6)
7	HD treatment per week	
	Thrice in a week	82 (63.1)
	Twice in a week	48 (36.9)

HD: Hemodialysis, ESRD: End-stage renal disease

Table 3: Assessment of QOL among patients undergoing HD

Item	Mean±SD	Median
Disease-targeted item		
Symptoms and problems	41.10±8.14	41.66
Effects of kidney disease on daily life	42.16±9.75	40.62
Burden of kidney disease	38.03±12.81	37.50
Work status	48.46±23.24	50.00
Cognitive function	48.66±11.69	46.66
Quality of social interaction	53.71±9.59	53.33
Sleep	55.50±8.56	57.50
Social support	80.38±20.38	83.33
Dialysis staff encouragement	84.04±14.89	87.50
PS	55.25±42.22	50.00
36-item Health Survey		
Physical functioning	41.04±8.92	40.00
Role limitation caused by PH problems	22.12±18.05	25.00
Pain	53.22±10.96	55.00
Social functioning	46.25±13.35	50.00
Emotional wellbeing	47.18±15.33	48.00
Role limitation caused by emotional health	26.92±24.15	33.33
Energy/fatigue	42.27±10.36	40.00
General health	50.79±7.68	50.00
Total score	48.73±15	49.41

SD: Standard deviation, QOL: Quality of life, PS: Patient satisfaction, PH: Physical health, HD: Hemodialysis

Table 4: Clinical factors related to QOL HD patients

Regression coefficient (95% CI)	p
Family history	
No reference category	0.069 (NS)
Yes-1.24 (-2.56-0.08)	
Duration of ESRD	
<1-year reference category	
1-3 years 0.262 (-1.58-1.05)	0.696 (NS)
More than 3 years 0.065 (-0.96-1.09)	0.902 (NS)
Causes of ESRD	
Diabetes mellitus reference category	
Hypertension 0.566 (-1.07-2.20)	0.499 (NS)
Others 0.187 (-0.59-0.96)	0.638 (NS)
Duration of HD	
<1 year reference category	0.326 (NS)
1-2 years-0.711 (-2.12-0.70)	0.049
More than 2 years 0.815 (-1.61- -0.02)	
HD cycle per week	
Twice a week reference category	
Thrice a week 0.807 (-1.59- -0.02)	0.047 (S)

QOL: Quality of life, HD: Hemodialysis, CI: Confidence interval, ESRD: End-stage renal disease, NS: Non-significant, S: Significant

by Sihombing *et al.* had proved that erythropoietin can improve QOL of CKD patients with routine HD [34].

There are some limitations in the current study. The limitation of the present study was cross-sectional in design and not intensively analyses the factors associated with poor QOL, so there is a lack of cause and effect relationship. The study does not compare the QOL with their biochemical markers such blood urea, serum potassium, serum creatinine and hemoglobin, and dialysis adequacy such as Kt/V and urea reduction ratio which are also main influencing factors for the QOL. In future prospective interventional study can be conducted focused on interventions focused on providing resources for patients and their families including greater social support and increased self-efficacy.

CONCLUSION

The present study finding implies that patients on HD are not having adequate of life due to changes in the physiological, chemical changes

occur in the kidney. The implementation of interdisciplinary and multidisciplinary approach consisting of dialysis technician, nurse, physician, nutritionist, physiotherapist, and clinical psychologist by designing structures exercise plan especially intradialytic exercise, dietetic strategies and yoga and meditation, counseling for psych emotional problem to focus on the physical and mental health problems to prevent further deterioration of the health status and to improve the QOL of HD patients and cope successfully with the full range of challenges encountered with kidney disease.

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