A Cross sectional study to Assess Quality of Life (QOL) in Haemodialysis Patients

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Abstract : Background and Objectives: Hemodialysis is most common Renal Replacement Therapy in End Stage Renal Disease (ESRD). Study was conducted to assess QOL of Hemodialysis patients with respect to demographic and dialysis related factors. Methods: A cross-sectional study was carried out at dialysis units of five private hospitals. Fifty ESRD patients on hemodialysis for ≥ 3 months were enrolled after written informed consent. The QOL index was measured with Marathi version of KDQOL-SF™ 1.3 questionnaire. Results: Out of 50 patients, 31(62%) were men, 44(88%) were literate, 37(74%) were unemployed, 31(62%) were older than 44 years and 29(58%) were on hemodialysis ≥ 12 months. QOL of patients between subgroups of age (Z= -0.87), gender (Z= -0.313), primary cause of ESRD and socioeconomic classes showed no difference. Employed patients had better QOL in physical domain than unemployed one. Duration of dialysis & QOL had weak negative correlation (Correlation Coefficient= -0.0124) but individual domain score showed constant pattern. Interpretation and Conclusion: QOL of hemodialysis patients was independent of patient's age, sex, primary cause of ESRD, duration of dialysis, socioeconomic status. Employed patients had better QOL in physical domain than unemployed one. Duration of dialysis had reverse correlation with QOL. [Sangle D et al NJIRM 2013; 4(5) : 81-85]

Key Words: ESRD, Hemodialysis, QOL

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Introduction: End stage renal disease (ESRD) is a clinical state of renal pathology in which the patient is rendered permanently dependent upon renal replacement therapy either dialysis or transplantation. [1] The exact burden of chronic kidney diseases (CKD) in India still remains undefined with only limited data from the three population-based studies addressing this issue. The approximate prevalence of CKD is 800 per million population (pmp), and the incidence of ESRD is 150-200 pmp.[2, 3]

The burden of incident ESRD in India continues to be substantial and is going to be a major public health problem. [4] Over three-fourths of the people suffering from ESRD do not get treated, largely due to a lack of awareness of the disease and treatment options, inadequate access to care and affordability. [5] More than 20,000 patients undergo dialysis in around 700 dialysis centres in India. The choices and facilities for RRT are predominantly focused on maintenance hemodialysis and are woefully inadequate.[2] Little is known about the Quality of Life (QOL) and survival in the patients on maintenance hemodialysis.[6] This study was performed in order to evaluate variations in QOL of haemodialysis patients depending upon demographic factors like age, sex, literacy, socio-economic status, duration of dialysis, employment status and primary cause of ESRD.

Material & Methods: This was a cross-sectional study conducted at five private hospitals in Nashik, for a period of twelve weeks. Approval of Institutional Ethics Committee was obtained prior to commencement of the study. Patients between age group of 18-70 years and on maintenance haemodialysis for ≥3 months prior to enrolment were included in the study after written informed consent. Patients with recent history of hospitalisation for co-morbid illness and impaired sensory or motor functions that may affect scheduled assessment were excluded.

The KDQOL-F™1.3 instrument is a self report measure developed for individual with a kidney disease and on dialysis. The questions are grouped under 3 scales which are Physical component summary (PCS), Mental component Summary (MCS) & ESRD (disease) targeted area. A non-validated translated Marathi version of KDQOL-SF 1.3 questionnaire was used to assess the different domains of quality of life of haemodialysis

patients. Higher scores indicate better QOL[7]. Illiterate patients were provided with medical personnel for assistance.

Data are presented as mean ± SD and calculated for PCS, MCS & ESRD targeted scales of each patient subgroup. Z test of significance was used to compare variables within patient subgroups.

Percentages were calculated to find out primary cause of ESRD. The Pearson Correlation coefficient was calculated to find out the association between age, duration of dialysis & that of QOL index.

One way ANOVA test was used to compare QOL between different socioeconomic classes. A 'P' value less than 0.05was considered significant.

Results: Of total 50 patients studied, the mean age was 50.3 ± 11.87 years of which 62% (31 patients) were males (Table 1). Only 10(20%) patients could complete the questionnaire individually, while rest needed help of medical personnel for filling out questionnaire.

Table 1: Demographic characteristics of patients

Age (years)	Age group 18-44 Age group 44-70	19(38%) 31 (62%)
Gender	Males Females	31(62%) 19 (38%)
Duration of dialysis	< 12 months >12 months	21 (42%) 29 (48%)
Marital status	Married Unmarried	49 (98%) 1 (2%)
Employment Status	Employed Unemployed	13(26%) 37(74%)
Socioeconomic Classes	Low Middle High Don't know	20(40%) 19 (38%) 6 (12%) 5 (10%)
Literacy level	Literate Illiterate	44(88%) 50(12%)
Primary cause of ESRD	Hypertension Diabetes Hypertension+ Diabetes Other Don't know	21 (42%) 5 (10%) 1 (2%) 8 (16%) 15 20%)

Table 2: Quality of life (QOL) scores within each demographic subgroup

Patient Parameter		(n)	PCS (Mean ± SD)	MCS (Mean ± SD)	ESRD targeted Area (Mean ± SD)	Grand QOL score (Mean ± SD)
Age (Years)	18-44	19	914.21 (258.36)	518.42 (151.4)	2334.64 (357.6)	3812.01 (598.19)
	44-50	31	998.87 (376.76)	596.13 (211.9)	2356.82 (497.6)	4006.34 (979.67)
Sex	Females	19	929.21 (318.31)	559.21 (191.0)	2350.26 (425.0)	3887.63 (728.24)
	Males	31	989.68 (350.11)	571.13 (177.2)	2347.25 (427.0)	3959.99 (893.61)
Primary cause of ESRD	Hypertension	21	976.82 (359.92)	550.91 (196.65)	2,266.58 (452.92)	3,842.49 (916.83)
	Diabetes	5	815 (194.55)	570 (141.28)	2137.32 (493.03)	3558.32 (735.85)
Duration of dialysis	≤12 months	21	945.24 (322.72)	570.24 (178.53)	2,256.98 (484.71)	3,829.12 (889.41)
	> 12 months	29	982.24 (350.75)	563.97 (206.48)	2,414.59 (411.22)	4,007.35 (833.89)
Employment Status	Employed	13	1,159.62 (390.46)	635.00 (237.44)	2,436.15 (456.91)	4,279.99 (1,031.87)
	Un-	37	898.92	542.57 (172.63)	2,317.56 (443.97)	3,810.40 (759.75)

Patient Parameter		(n)	PCS (Mean ± SD)	MCS (Mean ± SD)	ESRD targeted Area (Mean ± SD)	Grand QOL score (Mean ± SD)
	employed		(291.59)			
Socio-economic status	Low	20	885.75 (308.60)	583.50 (175.28)	2,249.24 (487.02)	3,767.49 (824.60)
	Middle	19	1,124.21 (369.81)	625.53 (211.79)	2,517.36 (404.62)	4,322.36 (915.40)
	High	6	805.83 (185.46)	412.50 (154.75)	273.88 (384.15)	3,538.88 (382.91)
	Don't know	5	885.00 (278.46)	460.0 (111.52)	2,192.32 (403.39)	3,583.32 (701.96)

The mean QOL score of all the 50 patients was 3932.49(+ 853.31). Of 50 patients 8(16%) patients had QOL below average (Table 2). No statistically significant difference (Z= -0.87) was observed in any domain of QOL between patients of both age groups (Table 3). Although three patients (15.7%) of age group 18-44 year & five (16.12%) patients of age group 44-70 years had below average QOL scores. A similar pattern of QOL scores was observed in males & females. QOL indices in any domain did not vary with gender (Z= -0.313). However 2 (10.5%) females scored below average as compared to 6 (19.5%) males (Table 3).

The primary cause of ESRD in this patient population was hypertension (42%). But the QOL of hypertensive dialysis patients did not show significant difference (Z=0.65) on comparison with rest of dialysis patients (Table 3)

The cause of ESRD could not be established in 15(30%) patient population. Patients who were on dialysis for less than 12 months reported similar QOL patterns (Z= -0.72) in all the domains with that of patients on maintained hemodialysis for longer durations (Table 3). The Pearson correlation showed a weak negative relationship (Correlation Coefficient= -0.0124) between duration of dialysis & QOL(Table 4). The frequency of dialysis in 47(94%) patients was twice weekly & the vascular access was arteriovenous fistula in all the 50 patients.

The employment status has got a positive influence on patients QOL. The physical health of employed dialysis patients was significantly better (Z=2.20) than that of unemployed dialysis patients. QOL did not vary in any domain among different socioeconomic classes of patients(Table 3).

Table 3: Results of "Z" Test of significance for difference of QOL between patient subgroups

	PCS	MCS	ESRD Targeted area	Overall QOL
Between age groups of 18-44 & 44-70 yrs	-0.94	-1.51	-0.18	-0.87*
Between Females & Males	-0.627	-0.22	0.024	-0.313*
Employed & Unemployed patients	2.20**	1.29	0.81	1.50*
Diabetic & nondiabetic patients	-1.67	0.05	-1.02	-1.18*
Hypertensive & nonhypertensive patients	-0.18	0.50	1.15	0.65*
Patients on dialysis for ≤12 & >12months	-0.39	0.11	-1.21	-0.72*

**Not significant, **Significant*

Table 4: Correlation Coefficient for different domains of QOL with respect to Age and Duration of Dialysis.

	PCS	MCS	Disease targeted area	Overall health
Age	0.0353	0.098	0.1147	0.1001
Duration of dialysis	0.0137	-0.1545	0.0382	-0.0124

Discussion: ESRD hampers the health of a patient to such an extent that he is left with no choice than opting for renal replacement therapy. Hemodialysis compels the patient to incorporate radical life style changes that negatively affect his QOL. Health related quality of life (HRQOL) assessment is a promising tool for measuring benefits & burdens of dialysis therapy from patient's point of view. This study evaluates variations in different domains of QOL of dialysis patients depending upon demographic and dialysis related factors. In our observational study we divided the patients in different subgroups according to age, gender, primary cause of ESRD, duration of dialysis, socioeconomic classes & then compared PCS, MCS & ESRD targeted scales within these subgroups.

A similar pattern of QOL was observed in physical health, psychological health as well as disease targeted area in patients of both the age groups. Generally, it is assumed that younger patients cope up better with the negative impacts of haemodialysis, but we did not observe significant difference in QOL of patients below and above the age of 44 years. In fact, Pearson's correlation coefficient showed a weak positive relationship between age & QOL (Correlation Coefficient= 0.1001) which indicates that older patients tolerate the dialysis in better way. This is contradictory to results obtained by Sathvik & colleagues.[8]

The QOL of females with respect to physical and mental component was not significantly different from that of males. But mean PCS & MCS scores of females were lower than that of males. This is consistent with the study results of previous studies. Effects & burdens of kidney disease on daily lives of both genders were nearly same. The reason behind lower MCS scores of Indian females could be that they feel guilty for posing financial burden on their families.

We found hypertension as the primary cause of ESRD in contrast to diabetes. Hypertension is associated with more rapid loss of renal function & development of cardiovascular diseases. Hypertension is associated with ESRD either as a cause or consequence of ESRD in most of the CKD patients. But we did not observe its influence on patients QOL. The QOL scores of diabetic dialysis patients were found to be poor in physical, psychological & disease targeted scales which can be attributed to multi organ damage caused by diabetes.

Duration of dialysis plays an important role in affecting QOL in dialysis patients. Anees et al conducted similar kind of study in Pakistan & found that duration of dialysis had a reverse correlation with QOL. [9] Ideally, QOL should be measured for individual patient at the initiation of dialysis therapy & then periodically after elapsing a certain interval of time. In our study, most of the patients were on dialysis from 3 months to 24 months prior to enrolment in the study. We observed a weak negative relation between duration of dialysis & QOL (Correlation Coefficient= -0.0124). This may indicate that QOL of patient deteriorates with increasing duration of dialysis. But individual domain score showed a constant pattern irrespective of duration of dialysis. Here, adequacy of dialysis was not measured.

We observed that most of the patients were on twice weekly dialysis as compared to thrice weekly regimen recommended internationally. Technically in such situations patient should experience a poor quality of life, which was not observed during our study.

The overall QOL of employed hemodialysis patients was substantially better than that of unemployed and retired group. Employed patients scored better in their physical, psychological health domains. The findings of our study were consistent with those of other studies in this area. Employed patients as such enjoyed better mobility, work capacity and financial independence to some extent. These factors might be responsible for better PCS & MCS scores in employed patients. Socioeconomic classes in this study were closely related to each other. These classes did not affect QOL in any domain probably because there was only marginal difference between annual income

of lower and higher socio-economic classes. This is again contrast to previous studies.

The limitation of the study was that our patient population was considerably small (n=50). The HRQOL domains should be studied in much larger sample of ESRD patients. Translated Marathi version of KDQOL-SF^{TM}1.3 questionnaire was not validated in general healthy population & its reliability as well as adaptability of assessing QOL in populations of Nashik city was not tested.

Conclusions: We found that Quality of Life of hemodialysis patients was independent of patient's age, sex, primary cause of ESRD, duration of dialysis & socioeconomic status. Only the employed patients reported better QOL in physical domain than the unemployed one. Duration of dialysis had a reverse correlation with the QOL.

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