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Assessment of Quality of Life Studies of Renal Failure patients in different cities of Punjab, Pakistan

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ABSTRACT

Aim: To determine the quality of life (QOL) of renal failure patients on maintenance hemodialysis on the basis of their baseline characteristics in Lahore, Pakistan.

Study design: A cross sectional study was carried out with two hundred and ten patients selected randomly from dialysis centers in General, Mayo and Jinnah hospitals, Lahore Pakistan, to measure and analyze the QOL of hemodialysis patients by pre-validated KDQOL-SF™ version 1.3 in English language.

Methodology: Interviews of the patients were performed to collect data. SF-36 items mean and standard deviation were performed to analyze data on the basis of gender and age groups.

Results: Among the eleven scales targeting End-Stage Renal Disease (ESRD), only the "Effects of Kidney Disease" scale demonstrates a greater impact on males than females. However, three scales including Symptom/Problem list, Quality of Social Interaction, and Dialysis Staff Encouragement show suboptimal results in young patients. Similarly, two of the seven health-related outcome scales, Physical Functioning and Energy Fatigue, exhibit poor outcomes in young patients.

Conclusion: Major cause of their kidney disease was hypertension and diabetes. Overall, less number of prescribed medications, decreased hospitalization and reduced hospital visits are the factors showing overall better quality of life.This study helps us understand the impacts of kidney disease on different genders and age groups, guiding the development of personalized care plans.

Keywords: Quality of life (QOL), End stage renal disease ESRD, hemodialysis, KDQOL-SF™ version 1.3

INTRODUCTION

Chronic Kidney Disease (CKD) is the structural or functional abnormalities of kidney or decreased estimated glomerular filtration rate (eGFR) < 60 ml/min/1.73 m2 for more than three-month. CKD is one of the global health problems which is imposing a high economic and health burden. CKD affects more than 10% of the general population worldwide, amounting to >800 million individuals[1]. Major causes of CKD are diabetes mellitus (DM), hypertension, polycystic kidney disease, stones and glomerulus nephritis[2].

Progression of CKD results in End stage renal disease(ESRD) having eGFR less than 15ml/min/1.73ml, when life cannot be sustained without renal replacement therapy (RRT)[3]. Nutrition specifically suboptimal intake of protein and malnutrition is directly related to the CKD and ESRD patient outcomes. This suboptimal nutritional status causes multiple alterations in body including metabolic acidosis, hormonal deregulation, and alteration in bowel flora. Nutrition and protein balance require a specific focus in both CKD and ESRD patients, to get better health outcomes[4].

ESRD patients experience a poor quality of life due to various factors, some of which are manageable while others are not. The most significant factors affecting their quality of life are the burden of medication, level of education, age, gender, treatment costs, hospital stays, medical procedures, unemployment, lack of social support, unavailability of caregivers, dietary restrictions, and prognosis[10,11,12]. Understanding the factors that affect the quality of life of hemodialysis patients is essential for improving their care and ensuring better health outcomes. This study aims to examine the quality of life of renal failure patients undergoing maintenance hemodialysis in Lahore, Pakistan, by analyzing the impact of their baseline characteristics on their overall well-being.

Moreover, this study is particularly important because there is currently a lack of local data on the quality of life of hemodialysis

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patients in Pakistan. This information can be used to develop targeted interventions and support programs that can help these patients manage their condition and improve their quality of life.

The aim of study is Assessment of QOL in renal failure patients with SF-36 outcomes of kidney disease status and general health based upon gender and age.

MATERIAL AND METHOD

A cross-sectional study was carried out between March and August 2022 at three hospitals in Lahore, namely, General Hospital, Mayo Hospital, and Jinnah Hospital. Prior to enrollment, the study's purpose was explained to potential participants, and informed consent was obtained. Ultimately, 210 patients aged 18 to 70 years, who had been undergoing maintenance hemodialysis for at least six months, were included in the study. Patients with less than 6 months of dialysis treatment, acute kidney injury, liver disease, aged under 18 or over 70 years, and those who had refused a kidney transplant but were receiving hemodialysis were excluded from the study.

In this study, the instrument employed was the Kidney Disease and Quality of Life (KDQOL™-SF) 36, a self-reported questionnaire consisting of five domains. The first part includes general health-related items, such as moderate or vigorous activities, as well as physical and emotional health. The second part includes items related to the effect and interference of kidney disease with physical health, such as disease burden and time. The third part includes items related to the daily life of a patient, including their ability to work, diet and fluid restrictions, stress, cognitive functions, sexual effects, sleep disturbances, and family time span. The fourth part includes items related to the support, encouragement, and care provided by dialysis staff during the patient's kidney disease.

Finally, the fifth part includes demographic items, such as gender, age, marital status, race, insurance policy, income, and education level of the patient.

Statistical analysis: The data collected in this study were analyzed using IBM-SPSS version 23.0. Baseline qualitative

characteristics were reported as frequency with percentages, whereas ESRD and SF-36 item scores were presented as mean with standard deviation. Independent sample t-tests were conducted to compare the scores between genders, and one-way ANOVA was employed to compare the scores across different age groups. A statistical significance level of less than 0.05 was adopted for all tests.

RESULTS

Among 210 patients, there were 105(50%) male and 105(50%) having ratio of 1:1. Most of the patients were in age group 31-60 years 148 (72.9%). In 94(44.8%) patients the level of education was 8th grade or less and only 14(6.7%) were graduate. In 44.3% of patients, the average annual inco
me was than 5000 USDand 45.2% didn't know about total annual income (Table 1).

While evaluating the disease specific variable analysis on SF-36, basedon gender and age group, the mean score of dialysis staff encouragement was found to be highest 79.88±18.0, but the difference of this response among gender was statistically not significant (p-value=0.50). The mean response score of "Effect of kidney disease" was 61.10±19.51 overall, 63.78±19.71 and 58.42±19.03 in male and female respectively (P-value=0.04). The difference in response score of other parameters among gender was statistically insignificant. (Table 2) The mean score of "Dialysis staff encouragement", "Quality of social interaction" and "symptoms list" was 77.1±20.7, 79.1±14.1 and 56.9±29.9 respectively in age group 18-30 years. The score of these variables was statistically significant (p-valve <0.05) (Table 2). Samples with older age group have higher scores on dialysis staff encouragement and low scores on symptom list and quality of social interaction as compare to younger age group samples.

The analysis of the general health variables measured by the SF-36 questionnaire was conducted in this study, with a focus on gender and age stratification. The results from Table 3 show that there were no significant differences in mean scores between male and female patients for any of the SF-36 items (p > 0.05), as independently determined by sample t-tests. On further examination of the effect of age on SF-36 scores using one-way Analysis of variance, a significant difference in mean scores was found for physical functioning and energy fatigue (p< 0.05) across age groups. Specifically, the data revealed that older patients had lower scores on these variables as compared to younger patients.

These findings highlight the importance of age in assessing general health and suggest the need for interventions to address the health needs of older individuals.

Table 4 presents the analysis of background information related to causes of kidney disease, prescription medication usage, and hospital visits without hospitalization in the past 6 months. The study found that hypertension was the major cause of kidney disease in 75 patients (35.7%), while 56 patients (26.7%) were unaware of the cause of their kidney disease. The majority of patients (91.4%) were compliant with their prescribed medication. In terms of the number of prescribed medications, 57.8% of patients were prescribed between 1 to 5 medications, 40.1% were prescribed 6 to 10 medications, and 2.1% were prescribed 11 to 15 medications. The results showed that 73.3% of patients did not have an overnight hospital stay in the past 6 months, while 22.4% had a stay of 1 to 30 days, and 2.4% had a stay of 31 to 60 days. Moreover, the number of hospital visits (without overnight stay) in the past 6 months showed that 77.6% of patients did not visit the hospital, while 13.3% had 1 to 30 days of visits, 8.1% had 31 to 60 days of visits, and 1% had visits between 181 to 210 days.

Table 1 Details of Baseline Characteristics of Studied Samples (n=210)

Characteristics	n	%
Age		
18-30 years	24	11.8
31-60 years	148	72.9
61-70 years	31	15.3
Gender		
Male	105	50.0
Female	105	50.0
Education Level		
8th grade or less	94	44.8
Some high school or less	51	24.3
High school diploma or GED	15	7.1
Vocational school or some college	11	5.2
College degree	25	11.9
Professional or graduate degree	14	6.7
Total household income (last year)		
Less than $5,000	93	44.3
$5,001-$10,000	14	6.7
$10,001-20,000$	6	2.9
$20,001-$40,000	1	0.5
$40,001-$75,000	1	0.5
Don't know	95	45.2

Table 2 Disease Specific Variable Analysis

ESRD Targeted Areas	Mean	SD	Male (n=105)		Female (n=105)		p-value	18-30 years	31-60 years	61-70 years	p-value
			Mean	SD	Mean	SD		Mean (SD)	Mean (SD)	Mean (SD)	
Symptom / Problem list	69.67	18.39	71.58	17.45	67.76	19.16	0.13	79.1(14.1)	69(18.5)	66.4(19.3)	0.02*
Effects of Kidney Disease	61.10	19.51	63.78	19.71	58.42	19.03	0.04*	62(15.5)	60.1(20.3)	64(19.2)	0.58
Burden of Kidney Disease	29.88	21.64	30.77	20.98	28.99	22.03	0.55	34.4(22.1)	28.3(20.2)	31.5(26.6)	0.35
Work Status	35.97	29.83	37.17	32.53	34.76	26.96	0.56	41.7(31.9)	35.5(29.9)	32.3(27.5)	0.49
Cognitive Function	71.68	19.24	73.02	18.89	70.35	19.59	0.31	78.1(13.4)	70.3(19.5)	71.8(21.8)	0.18
Quality of Social Interaction	51.59	27.86	52.70	27.94	50.48	27.87	0.56	56.9(29.9)	52.7(26.2)	38.2(31.7)	0.01*
Sexual Function	86.59	20.26	89.02	18.55	84.14	21.67	0.08	90.1(16.4)	84.9(21.5)	91(16.5)	0.20
Sleep	47.44	13.21	47.66	13.53	47.22	12.95	0.81	50.2(11.9)	47.2(13.6)	46.5(12.3)	0.53
Social Support	77.14	25.23	77.93	25.37	76.35	25.19	0.65	82.6(26.7)	76.3(23.8)	80.6(27.6)	0.40
Dialysis Staff Encouragement	79.88	18.05	79.05	17.97	80.71	18.18	0.50	77.1(20.7)	80(17.4)	87.9(12.3)	0.03*
Patient Satisfaction	4.46	1.02	4.53	1.06	4.39	0.99	0.31	4.6(1.1)	4.4(1)	4.6(1.2)	0.44

Table 3: General Health Variables Analysis

SF-36	Mean	SD	18- 30 Years	31- 60 Years	61- 70 Years	p-value	Male (n=105)	Female (n=105)	p-value
			Mean (SD)	Mean (SD)	Mean (SD)		Mean(SD)	Mean (SD)	
Physical Functioning	49.33	24.00	56.3(29.2)	49.7(21.8)	38.4(26.5)	0.01*	50.62(23.42)	48.05(24.61)	0.43
Role Physical	42.26	39.92	49(41.4)	41.4 40.2)	39.5(38.1)	0.64	40.71(40.62)	43.81(39.34)	0.57
Pain	54.94	26.70	62.9(24.3)	54.3(25.1)	50.4(33.1)	0.20	56.74 (25.65)	53.15 (27.71)	0.33
General Health	47.21	11.41	48.5(11.7)	46.7(10.8)	47.7(12.9)	0.72	46.90 (10.52)	47.52 (12.27)	0.69
Emotional Well-being	59.31	20.04	62.9(20.4)	58.9(19.5)	56.8(21.7)	0.52	58.86 (20.48)	59.76 (19.68)	0.74
Role Emotional	41.43	42.18	48.6(39.3)	40.5(42.5)	37.6(43.7)	0.61	40.32 (43.04)	42.54(41.47)	0.70
Social Functioning	57.56	22.48	62(24)	56.9(21.4)	58.5(27.3)	0.59	56.90 (23.00)	58.21(22.05)	0.67
Energy Fatigue	46.17	16.60	51.3(18.6)	46.3(16.5)	40.2(14.9)	0.04*	46.86 (16.12)	45.48 (17.12)	0.54

Table: 4 Analysis of Background Information:

Item		n	%
Causes of kidney disease	Don't know	56	26.7
	Hypertension	75	35.7
	Diabetes	27	12.9
	Chronic Glomerulonephritis	10	4.8
	Other (please specify)	16	7.6
	Hypertension and Diabetes	20	9.5
	Hypertension, Diabetes and Polycystic kidney disease	2	1.0
	Hypertension, Diabetes and Chronic Glomerulonephritis	1	0.5
	Hypertension, Diabetes, Chronic Glomerulonephritis and others	1	0.5
	Hypertension and other	2	1.0
Prescription medications (4 or more days a week) excluding OTC medications.	No	18	8.6
	Yes	192	91.4
Number of prescription medications	1 to 5	111	57.8
	6 to 10	77	40.1
	11 to 15	4	2.1
Hospital stay overnight or longer, in last 6 months.	None	154	73.3
	1 to 30 days	47	22.4
	31 to 60 days	5	2.4
	91 to 120 days	1	0.5
	181 to 210 days	3	1.4
	31 to 60 days	17	8.1
	181 to 210 days	2	1.0
Hospital visits without hospitalization, in last 6 months.	None of days	163	77.6
	1 to 30 days	28	13.3
	31 to 60 days	17	8.1
	181 to 210 days	2	1.0

DISCUSSION

In this study, majority of the patients was of age less than 60 years which indicates that mostly of the middle age population of Pakistan is on compromised renal function and require maintenance hemodialysis 2 to 3 times per week. Contrarily Anees et al (2009) reported that older age patients were more at risk of developing end stage renal disease[5]. Another study conducted in Peshawar by Amin et al (2022) reported that majority 64% of patients were having age less than 60 years, similar to our study[6]. Most of the study participants were having a low educational level this might be due to the very poor resources of education or less income. According to the report of human development index 60.3% population of Pakistan is living their lives under 1$/day[7]. In our study most of the patients have low-income. Pakpour et al. (2011) mentioned that poverty affects quality of living standards which can also lead to life threatening health related complications as can be seen in our neighboring countries like Iran[8].

Disease specific outcomes also gave us a view about the quality of life of renal failure patients. Details of the outcomes on ESRD of KDQOL-SF36, with low standard deviation value of 'Patient Satisfaction' provides positive outcome that most of patients were satisfied with the care and treatment provided to them. Symptom problems, effects of kidney disease, burden of kidney disease, cognitive function, social interaction, sexual function, sleep, and social support and dialysis staff encouragement results of all participants of study were also reliable. This is a good sign of better quality of life in hemodialysis modality in Lahore Pakistan.

Mean comparison of ESRD targeted areas shows statistically significant results p=0.04 about, "Effects of Kidney disease" on their daily life in both males and females as compared to other factors of this scale. Similarly, Jung et al. (2019) reported that kidney disease related effects in males are interferes a lot with their daily work as compared to females[9]. In our society males are dominant caretakers they have to earn for their families, may find less time to deal with their kidney disease as compared to females. When we compared the ESRD targeted areas with respect to age groups, results about problem list, Quality of social interaction, and dialysis staff encouragement are found significant. P=0.02 of the data on "symptoms/problem list" and their mean scores of data is high in the peoples of age group 18-30 years. The young

population of this area is showing high symptoms related issues as compared older population, also low symptom related problems are seen in old age[10]. Patients fear dialysis and believe dialysis myths. In our society, young adults are more stigmatized about dialysis than old age patients, which can lead to late diagnosis, late initiation of dialysis, decreased frequency of dialysis sessions during treatment due to its high cost, needle phobia, lack of availability, less availability of nephrologists, trend towards alternative medicines, Hakeem's, spiritual healers, and refusal of dialysis in young less educated adults.

Statistical analysis was conducted to compare the mean scores of ESRD targeted areas, which showed a significant difference (p=0.04) in the impact of kidney disease on daily life in both males and females as compared to other factors in the scale. The mean score for males was found to be higher than females, indicating that kidney disease-related effects interfere more with the daily work of males[9]. This could be attributed to the societal expectations of males as the primary breadwinners and caregivers for their families, which may leave them with less time to deal with their kidney disease as compared to females.

Further analysis of the ESRD targeted areas with respect to age groups revealed that the problem list, quality of social interaction, and dialysis staff encouragement were significant factors (p=0.02) in determining the impact of kidney disease. The data on symptom/problem list showed higher mean scores for individuals in the age group of 18-30 years, indicating that the young population is experiencing more symptoms related to kidney disease as compared to older populations, similar results were reported by Tong et al. (2013)[10]. This could be due to the fear of dialysis commonly seen in patients, along with false myths surrounding the procedure. Young adults in our society may be more stigmatized about dialysis, leading to late diagnosis, delayed initiation of dialysis, decreased frequency of dialysis sessions during treatment due to its high cost, needle phobia, lack of availability of dialysis, less availability of nephrologists, trend towards alternative medicines, Hakeem's, spiritual healers, all of which collectively result in refusal of dialysis in young, less educated adults. This, in turn, leads to more critical conditions with high symptoms lists of patients.

There was no significant difference between males and females in the mean score of "Quality of social interaction" (p-value=0.56). However, there was a significant difference in this parameter among different age groups, with the mean score being higher in the 18-30 years age group (56.9±29.9) compared to the older groups (p-value=0.01). These findings are consistent with those reported in previous study[11]. Elderly patients had less support and outdoor activities than younger patients, resulting in lower social engagement. Young adults' social connection boosts performance and helps them cope with despair from being unwell.

The mean score of "Dialysis staff encouragement" was similar between genders, but a significant difference was observed among different age groups. Patients aged above 60 years were more satisfied with dialysis staff care than those below 30 years, with a mean score of 87.9±12.3 versus 77.1±20.7. These results are consistent with previous literatures by Tong et al. (2013) and Salmi et al. (2021)[10,12]. In our society, there is intentional sympathy towards the elderly population to encourage and care for their disease compared to hostile behavior towards the younger population. The mean scores for "Physical Functioning" and "Energy Fatigue" variables among different age groups (p-value 0.01). The mean scores were higher for the 18-30 age group as compared to middle-aged and elderly individuals. This suggests that the physical functioning of young adults is more impaired than that of older adults. Tong et al., (2013) reported similar results[10].

In developed countries like the UK and USA, patients have three dialysis sessions each week, which improves health outcomes and reduces medication load. In Pakistan, a developing nation, dialysis patients experience worse health outcomes and consume more medication due to insufficient resources. "Energy

Fatigue" mean scores differed significantly between age groups (p=0.04). Younger patients (18-30 years) exhibited higher mean scores than middle and older patients, indicating a higher prevalence of energy tiredness difficulties in younger patients. Poor diet, especially in younger individuals, may explain these low energy levels. According to the study, this demographic works more and has poor nutrition knowledge, causing nausea and vomiting that may make it harder to eat a balanced diet.

While analyzing the background information of the participants, it was found that hypertension was the major cause of kidney disease, followed by diabetes, whereas Chronic Glomerulonephritis was not a significant cause. Additionally, a significant number of participants were unaware of the cause of their kidney disease.

CONCLUSION AND RECOMMENDATIONS

Regrettably, there is a dearth of dialysis facilities in our country. However, healthcare providers are striving to enhance the quality of life of hemodialysis patients through comprehensive disease management, including medications. To provide nutritional support, a qualified nutritionist should be available. For social rehabilitation, a trained social worker should be present, while an occupational therapist should be available for occupational rehabilitation. Access to psychological support from a psychologist should also be made available.

Conflicts of interest: none

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