

Assessment Of Clinical Aspects Of Health-Related Quality Of Life In Chronic Kidney Disease Patients In Kolkata: A Cross-Sectional Study

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Abstract

Background: The illness known as chronic kidney disease, or CKD, causes damage to the kidneys that prevents them from filtering blood as effectively as they should.

The purpose of this study was to correlate, among CKD patients in Kolkata, the clinical features of health-related Quality of Life (HRQoL).

Hypothesis: The purpose of this study was to correlate, among CKD patients in Kolkata, the clinical features of health-related Quality of Life (HRQoL) among the CKD patients in Kolkata.

Method: A community based cross-sectional study has been conducted in Kolkata in West Bengal state, India. The target population of the study was people above 50 years of age. 40 samples were collected. Data were collected from the samples by modified Kidney Disease Quality of Life-SF (KDQOL-SF) questionnaire. Statistical analysis was done by the STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES (SPSS) SOFTWARE version 16.0. Chi-square was determined to find the statistical association between variables.

Results: In this study it was seen that out of 40 patients, 20 and 12 patients were suffering from Stage IV and Stage V of Chronic Kidney Disease (CKD). The mean distribution of the domain score of Kidney Disease Summary Component (KDSC), Physical Component Summary (PCS) and Mental Component Summary (MCS) to be 52.91 (S.D 1.17), 57.35 (S.D 4.54) and 49.78 (S.D 7.96) respectively. The Pearson Chi-square value declared a Statistically significant associations present between BMI status and Stages of Kidney Disease, Creatinine status and Stages of Kidney Disease and Blood Pressure and Stages of Kidney Disease respectively.

Conclusion: The HRQoL of the CKD patients in Kolkata was found to be Average. Screening of Stress, Depression and Anxiety of the CKD patients should be carried out and the measures should be implemented properly to improve the overall quality of life of the patients. For the patients suffering from Hypertension, should implement DASH diet for a healthy life and to reduce the blood pressure to normal. Assessing the HRQoL in the early stages of the disease will be helpful in leading an active and healthy life.

Keywords: Chronic Kidney Disease (CKD), Quality of life, Kolkata, HRQoL, Modified KDQOL-SF.

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I. Introduction

The illness known as chronic kidney disease, or CKD, causes damage to the kidneys that prevents them from filtering blood as effectively as they should. Different CKDs have different severity levels. Kidney failure and early cardiovascular disease can result from untreated chronic kidney disease (CKD). When a sickness or ailment affects kidney function, kidney damage worsens over a period of months or years, leading to chronic kidney disease.

Chronic kidney disease is a debilitating and degenerative illness that significantly lowers an individual's quality of life. From the beginning to the end of the illness, the patient's everyday life is impacted in different ways by incapacitating symptoms, different dietary restrictions, social life limitations, fluid limits, and related stigma and taboos.

Chronic kidney disease is caused by a number of illnesses and disorders, such as type 1 or type 2 diabetes, elevated blood pressure, an inflammation of the kidney's filtration units, or glomeruli, is known as glomerulonephritis. Anaemia, or a low red blood cell count, A rise in the frequency of infections, The blood's low calcium, high potassium, and high phosphorus levels, appetite loss or reduction in eating. (3,4)

The prevalence of chronic kidney disease (CKD) varies by location and was recently reported to be 17% according to data from the Kidney Disease Data Center Study of the International Society of Nephrology. There

are wide regional variations in the etiology of CKD in India. (14) Globally, CKD affects 700 million to 1 billion people, with a 9.1% to 13.4% prevalence. According to reports, 15.14 percent of Iranians have CKD.

Some studies introduced heavy metals as possible risk factors of CKD. (15)

Quality of life (QOL) is described as "an individual's perception of their position in life in the context of culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns" by the World Health Organization Quality of Life Group (WHOQOL) in 1994. HRQOL, on the other hand, discusses QOL in relation to health and illness. Since the concept of health is thought to be multidimensional, so is HRQOL, which includes domains pertaining to social, mental, emotional, and physical functioning. As a result, HRQOL is a subjective phenomenon that is typically impacted by beliefs, experiences, and expectations. (6) Three steps are included in prevention: Primary Prevention: controlling the CKD risk factors as necessary.

Contingent Prevention: First, CKD is diagnosed in its early stages. then implementing the CKD preventative measures.

Tertiary prevention involves controlling the course of chronic kidney disease (CKD), halting the deterioration of renal function, and managing the disease to lower the morbidity and death rate. (4)

The stages of chronic kidney disease are as follows:

STAGE 1: The Glomerular Filtrate Rate or GFR rate is 90ml/min or more.

STAGE 2: The Glomerular Filtrate Rate or GFR rate is 60-89 ml/min.

STAGE 3: The Glomerular Filtrate Rate or GFR rate is 30-59ml/min.

STAGE 4: The Glomerular Filtrate Rate or GFR rate is 15-29 ml/min.

STAGE 5: The Glomerular Filtrate Rate or GFR rate is less than 15ml/min or on dialysis. (5)

In Sri Lanka's North Central Province (NCP), in the district of Anuradhapura, a population-based descriptive cross-sectional study was carried out. The research population's average age was 58.3 years (standard deviation (SD) = 10.7). The median scores for the Mental Component Score (MCS) (58.4; IQR 54.2–63.4) and Physical Component Score (PCS) (35.0; IQR 26.2–41.9) were lower than the median for the Kidney Disease Score Component (KDSC) (58.4; IQR 54.2–63.4). Low income, advanced stages of CKD, symptom load, testing positive for depression, and psychological distress were found to be substantially correlated with low health-related quality of life (HRQOL) by multiple linear regression analysis. (6) Research has demonstrated a noteworthy decline in HRQOL between hypertensive patients and normotensive participants. Both CKD's etiology and its consequence are hypertension.

Using a cross-sectional methodology, 200 Indian patients with CKD stages 1–5 had their HRQoL evaluated using a 36-item short form and biomarkers. Across renal function levels and stages of chronic kidney disease, HRQoL scores in all dimensions are gradually and severely reduced(8).

The purpose of this study is to evaluate the quality of life among CKD patients in Kolkata that is connected to disability and the associated factors. to ascertain the relationship, if any, between blood pressure, creatinine level, and BMI status and the various stages of kidney disease. Additionally, knowing how much CKD patients' HRQOL is impacted would make it easier to implement interventions that will positively benefit the patients' life quality.

II. Materials And Methods

Type of Study: Community based cross-sectional study.

Study Population: Male and female patients with age group of 50-70 years.

Patient Profile: Includes information such as age, gender, height, weight and medical history. The patients were asked to fill up the modified KDQOL-SF questionnaire for the better assessment of the quality of life. Total 40 patients were used as subjects here.

Patient Selection Criteria: The inclusion criteria for selecting the subjects included that the patients above the age of 50 years were chosen. Those who were present on the day of data collection were only allowed to participate in this study. Those who were willing to participate in the study were encouraged.

The exclusion criteria included; those were not present on the day of data collection. Those who were not willing to participate in the study. Thus, at the end of the data collection procedure, the sample size reduced to 50 (25 female patients and 25 male patients).

Data Collection

Study Tools: The study tools used for this study were as follows:

Questionnaire: the questionnaire that was used for the data collection was:

Modified KDQOL-SF kidney disease Questionnaire ⁽¹⁶⁾: These included finding out what stage of kidney illness the patient was in as well as the underlying health issues and lifestyle choices that were keeping them from engaging in their regular activities. health-related. The modified KDQOL-SF was used to measure quality of life. Thirty-four of the questionnaire's seventy-six items dealt specifically with kidney disease, twenty-eight asked about physical health, and fourteen asked about mental health.

In the general health question, participants were asked to rank their current state of health from 0 to 10. For each of the six question types, there were many answer choices available, with some giving the choice "Yes" or "No," accordingly. When assigning a score, the score scale displayed.

Kidney Disease Summary Component (KDSC)

1. Physical Component Summary (PCS), and
2. Mental Component Summary (MCS)

The summary scores ranged between 0 to 100, the higher the score, the better the Health or Health related Quality of Life (HRQOL). ^(6, 17)

Data Administration

Data collection has been done solely by me from a Nephrology Clinic located in South Kolkata region. Data collection was mostly done on weekdays (mainly on Mondays, Wednesdays and Fridays) considering the fact that most of the participants visited the clinic on these days.

Initially, the eligibility of the selected participants for the study were assessed and if found eligible, they were informed the purpose of the study and were invited for their participation. The voluntary nature of participation and the opportunity to decline participation eventually at any time of the survey, in spite of having agreed to participate was emphasized to them.

Anthropometric Measurements:

Height (in cms): This was measured with the subject in standing position without footwear to nearest to 0.1cms with the help of a stadiometer.

Weight (in kgs): The weights were measured using a standard weighing machine with minimum clothing, to nearest to 0.1kgs.

Body Mass Index or BMI (kg/m²): The BMI was calculated from the height and weight taken for each of the participants using the formula-

$$\text{BMI} = \frac{\text{Weight (in Kg)}}{\text{Height (in m}^2\text{)}}$$

Measurement of Blood Pressure(mmHg): The Blood Pressure of all the subjects were measured using a digital Sphygmomanometer.

Collection of reports for the serum creatinine level (mg/dl): The latest report (within 3 months) of Serum creatinine value was collected from the reports.

Once the patient fulfils the inclusion criteria, the data were collected from them like Age, Gender, Height, weight, Blood Pressure. Clinical information was collected from the patients' medical records. The latest report (within 3 months) of Serum creatinine value was collected from the reports. The modification of Diet was prescribed depending on the criticality of the disease. The data was collected from a Nephrology clinic in Kolkata.

WHO South Asian BMI Classification:

Analysis:

Data Analysis: The data was entered in Microsoft Excel and was presented in the form of pie charts. Appropriate statistical methods were used for proper analysis of collected data. The data was distributed using pie charts and the inferences were drawn. Pearson Chi-square was used to show the association between different variables.

Statistical Analysis: The statistical analysis of the data was done using the software SPSS version 16.0. A Chi square test was carried out to determine the association between –

- Creatinine Status and Stages of Kidney Disease.
- Blood Pressure and Stages of Kidney Disease.
- BMI and Stages of Kidney Disease.

If *p* value is less than 0.05, then it is considered to have a statistically significant association between the variables. The following variables were analyzed – age, gender, height, weight, BMI, BMI status, Stages of Kidney Disease, Creatinine level and Creatinine status.

III. Results

Table I: Socio Demographic Characteristics & Stages of Kidney Disease:

Feature	Frequency (N=40)	Percentage
<i>Age Categories</i>		
50-55	17	21.6
55-60	13	23.5
>60	15	25.8
<i>Gender</i>		
Female	18	35.3
Male	22	25.8
<i>CKD Stages</i>		
Stage II	5	9.8
Stage III	3	5.9
Stage IV	12	23.5
Stage V	20	39.2

Table II: Anthropometric and Biochemical Characteristics:

Feature	Frequency (N=40)	Percentage
<i>Blood Pressure (mmHg)</i>		
Normal	11	21.6
Hypertension Stage I	8	11.6
Hypertension Stage II	21	42.5
<i>BMI Status (kg/m²)</i>		
Obese I	25	49.0
Obese II	13	23.5
Overweight	5	5.9
<i>Creatinine Status</i>		
High	18	35.3
Very High	4	9.8
Severely High	18	35.3

Table III: Distribution of “Quality-of-Life domain scores of the study participants as Measured by KDQOL SF

<u>DOMAIN</u>	<u>MEAN (+ STANDARD DEVIATION)</u>
Kidney Disease Summary Component (KDSC)	52.91(+1.17)
Physical Component Summary(PCS)	57.35(+4.54)
Mental Component Summary(MCS)	49.78(+7.96)

Table IV: Association between Creatinine Status and Stages of Kidney Disease:

<u>Creatinine Status</u>	<u>Stages of Kidney Disease</u>					<u>Total</u>	<u>P Value</u>
	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>		
High	0	5	3	8	2	18	0
Severely High	0	0	0	0	18	18	
Very High	0	0	0	4	0	4	
Total	0	5	3	12	20	40	

Table V: Association between Blood Pressure and Stages of Kidney Disease:

<u>Blood Pressure (mmHg)</u>	<u>Stages of Kidney Disease</u>				<u>Total</u>	<u>P Value</u>
	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>		
Above 120mmHg	1	2	8	0	11	0
Above 140mmHg	3	0	1	4	8	
Above 160mmHg	1	1	3	16	21	
Total	5	3	12	20	40	

The Pearson Chi-square value or *p* value was obtained as 0.00.

Hence, the *p* value is 0.00 which is less than 0.05 and so there is significant association found between Blood Pressure status and Stages of Kidney Disease as well as between stages of kidney disease and creatinine status.

The mean age of the study population, comprised of all 40 consenting volunteers, was found to be 63.75 + 5.86 years. Males made up the majority of the study population (43.1%, N = 40). Of the participants, the majority (23.5%, N=40) had stage IV or higher of CKD. Twenty individuals (39.2%, N = 40) had either hemodialysate or dialysis and were on Stage V of CKD. Stage II hypertension was the second most prevalent (42.5%, N =40). The KDQOL questionnaire yielded higher summary scores for Physical Component Summary (PCS) at 57.35(+4.54) than for Kidney Disease Summary component (KDSC), which was 52.91(+1.17), and Mental Component Summary (MCS), which was 49.78(+7.96).

IV. Discussion

A modified version of the KDQOL questionnaire was used in the current investigation to evaluate the HRQOL of the study population. Researchers from all around the world have evaluated the HRQOL of CKD patients using the well-liked KDQOL. The HRQOL of these CKD patients was found to be average, as shown by the Kidney Disease Summary Component (KDSC), Physical Component Summary (PCS), and Mental Component Summary (MCS) in the current study, which were 52.91(+1.17), 57.35(+4.54), and 49.78(+7.96), respectively. There is a correlation between the variables, as indicated by the p value of 0.00 found between the creatinine status and the stages of kidney disease. Statistically significant association was found between blood pressure and kidney disease stages, which shows that with increasing blood pressure the stages of kidney also progresses. Study done in rural Sri Lanka, that evaluated the HRQOL of CKD patients found that the mean scores for KDSC, PCS, and MCS were, respectively, (58.4; IQR 54.2–63.4), (35.0; IQR 26.2–41.9), and (58.4; IQR 54.2–63.4). It was discovered that the HRQOL of the CKD patients in this rural Sri Lankan population was low. (6), this was similar to the result of the present study. Patients with chronic kidney disease experience both psychological and physical symptoms, which might appear at various points as the illness progresses. (18,6) When Jang et al. (2019) used the SF 36 study instrument to evaluate the HRQOL of patients with severe chronic obstructive pulmonary disease (COPD), the PCS and MCS results were 56.7 and 69.5, respectively, demonstrating that the HRQOL of CKD patients is significantly poorer than that of COPD patients. (19) .The maximum average score for the PCS is 100 and the observed mean value was 52.91 in the present study. Therefore, it may be concluded that the participants' answers to the health-related Quality of Life were Average. There is a statistically significant correlation between the creatinine status and the stages of kidney disease, as indicated by the p value of 0.00. Out of the forty patients, eighteen had both Stage V kidney disease and a severely high creatinine status. The blood pressure and the stages of kidney disease were found to be associated. Among 40 participants, 21 participants were suffering from High Blood Pressure or Hypertension (Above 160mmHg) and 16 out of 21 were in the Stage V of Kidney Disease.

V. Conclusion

It was discovered that the HRQOL of the CKD patients in the present study was average. Numerous actions are suggested by the study to raise these individuals' HRQOL. It is recommended that CKD patients undergo periodic screening for psychological distress and depression in order to enhance their overall quality of life. It was discovered that the health-related quality of life, or HRQOL, of the CKD patients in Kolkata was mediocre. The Mental Component Summary (MCS) revealed that the health of CKD patients was impacted by stress and depression. It is important to adequately evaluate CKD patients for stress, depression, and anxiety as well as to correctly apply the strategies recommended for improving their quality of life.

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