

Self-management in Chronic Kidney Disease Patients in a Tertiary Care Hospital in Rawalpindi: A Cross-Sectional Study

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Abstract

Objectives: To investigate self-management practices of chronic kidney disease (CKD) patients, patient's perception regarding self-efficacy on its self-management and determine relation between self-management and disease control.

Study type, settings & duration: This Cross-sectional study was conducted at Nephrology Department of Tertiary Care Hospital in Rawalpindi from October 2019 to July 2020.

Methodology: A purposive sample of 169 CKD patients was recruited after taking informed consent. The data regarding patient's demographic and disease profile including blood urea, creatinine and random Glucose levels was collected along with self-care intervention and management information using validated questionnaires i.e. Perceived Kidney Disease Self-Management Scale (PKDSMS) and Kidney Disease Behaviour Inventory (KDBI). Written informed consent was taken prior to the data collection.

Results: Among 169 patients, 84% had stage V of CKD. The mean age of patients was 53.1±16.2 years. PKDSMS showed mean item score of 3.41±0.437 reflecting better perception of patients on how they manage their kidney disease. Self-management of the participants assessed using the KDBI scored with a mean score of 2.43±0.29, which is low score as compared to PKDSMS. This finding indicate that disease managing behaviour of CKD patients is not adequate. Further PKDSMS has positive correlation with KDBI, however, it was not statistically significant with patients' disease profile.

Conclusion: The patients generally had better perception about their disease, but self-management practices were not adequate. However, there was a positive significant relationship between self-perception and self-management. As practice was poor so no positive relation was found between self-care practices and clinical outcomes.

Key words: Chronic kidney disease, self-management, self-efficacy, patient perception.

Introduction

Kidneys play a highly significant role in the body that is insurmountable, necessary for maintaining body homeostatic functions. Kidneys

are vital organs involved in excretion of metabolic waste products and foreign substances, regulation of water, electrolyte and acid-base balance, maintenance of normal arterial pressure and optimal production of red blood cells.¹ Maintaining kidney health is therefore extremely important for overall normal homeostatic functioning of human body. By giving due importance to kidney health, conditions with significant mortality and morbidity such as chronic kidney disease or failure can be avoided.²

Chronic kidney disease (CKD) is a fairly common kidney disorder that refers to a long term, usually progressive loss of kidney functions. It has a worldwide prevalence of 11% to 13%.^{3,4} Prevalence of CKD is on a constant rise in many countries around the globe. Its impact in world mortality can be realized through the fact that in 1990 it was ranked 27th in the list of causes of total death

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Authors Contribution

SM & MS conceptualized the project. SK, FRK, & RK did the data collection. SK, FRK, & MS did the literature search. SM, SFM & RK performed the statistical analysis. Drafting, revision & writing of manuscript were done by SM, SFM & SK.

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worldwide, however, in 2010, it emerged as the 18th commonest cause of global deaths.⁵ In developing countries, kidney disease with mild symptoms mostly appear as a sequelae to diabetes and hypertension, affects 5-7% of the world population commonly underprivileged and minority groups.⁶ Increase in prevalence has been seen in developing countries like Nepal (10.6%), India (10.2%) and Bangladesh (17.3%) compared to the developed world.⁵ The CKD prevalence was reported as 21.2% among Pakistani adults. However, not many studies have been conducted in the country and literature is devoid of good number of hospital-based studies.⁷

Old age coupled with poor control of chronic kidney disease have been held responsible for high mortality and morbidity. For patient's dependent on long term dialysis for sustenance of life, this modality can be highly costly for the patient and the healthcare system. This comes with a great burdening impact on patients' lives and their families. CKD is considered incurable as yet; however, with sufficient self-management, appropriate medications and lifestyle modifications, the progression and complications can be kept on a standstill and can be delayed.⁸

Individual's acceptance and adaptation to the disease are strongly linked to self-management behaviours. In this regard, self-efficacy originated as an independent predictor of self-management in patients with end stage kidney disease. Self-efficacy is defined as a patient's confidence in their ability to adhere to the treatment and manage their disease.⁹ In the context of CKD, self-management is considered very practical and includes activities like treatment adherence, compliance, self-perceived health status and effect on quality of life. It caters for solving problems, managing medication regimens with daily life, and modelling their behaviours and practices for health promotion.¹⁰

Self-management as a well-established treatment strategy for some chronic conditions such as diabetes and hypertension has been profoundly recognized, however, recognition of its association with CKD remains inadequate.¹¹ This study aims to play a part in filling the void created by lack of appropriate self-efficacy researches in CKD patients in Pakistan.

The purpose of this study was to evaluate the self-management practices adopted by patients and their perceived self-efficacy for managing their disease and to find any possible association that may assist patients with better self-efficacy standards to improve patients' kidney profile. The rationale of our study was to get an insight into the role of self- management practices for disease control that will help patients with chronic disease to

efficiently manage their disease independently in the post covid era to come where homes will serve as clinics and frequent follow ups in hospitals will not be in vogue.

Methodology

A cross-sectional study of 10 months duration was conducted at outpatient and inpatient departments of Nephrology in a tertiary care hospital Rawalpindi from October 2019 to July 2020. A sample size of 169 was calculated using WHO sample size calculator, at 95% confidence level with 5% as margin of error and anticipated population proportion of 29.9%.¹⁰ Conscious, stable diagnosed cases of CKD were recruited using non-probability convenience sampling technique. Both genders, aged 10–90 years were included. However, unstable patients who were unable to respond were excluded.

The data collection tools included the validated questionnaires Perceived Kidney/Dialysis Health Management Scale (PKDSMS) and Kidney Disease Self-Management Behavior Index (KDBI).¹¹ The research tools were obtained and used with the authors' consent.

The items for PKDSMS were coded on Likert scale from 1 to 5 with 1 being 'strongly disagree' and 5 being 'strongly agree'. The score ranged from 8 to 40. The items for KDBI were coded as 1=Not at all, 2=A little, 3=Most of the time, 4=All of the time with an individual score range from 1 to 4 total score ranged from 16 to 64.

All the questionnaires were interviewer-administered. The participants were given a detailed explanation about the study before asking them to sign the informed consent form. The ethical approval was taken prior to data collection. Data was analysed using SPSS version 25. Categorical data were expressed as frequency and percentages and mean values were calculated for continuous variables. *p* value less than 0.05 was considered to be statistically significant.

The Ethical approval was obtained from Ethical Review Committee of Army Medical College, Rawalpindi.

Results

The mean age of participants was 53.1±16.2 years. Out of total of 169 participants, majority had education up to secondary level. Most patients 37.9% (64) had diabetes mellitus as shown in Figure-1. The mean systolic blood pressure of the participants was 146.21±23.72 mmHg and the mean diastolic blood pressure was 86.02 mmHg ±11.88.

The mean time since diagnosis of CKDs was 3.79 ± 4.33 years. Majority 142 (84%) were in stage 5. Figure-2 shows gender wise distribution.

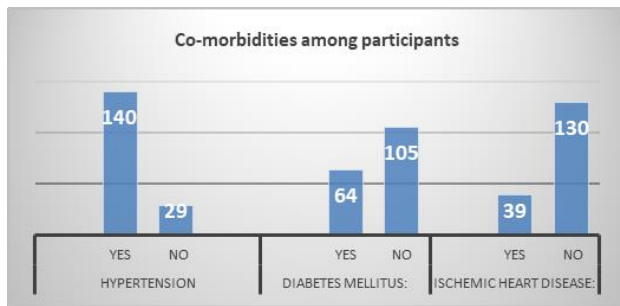


Figure 1: Bar chart showing comorbidity data.

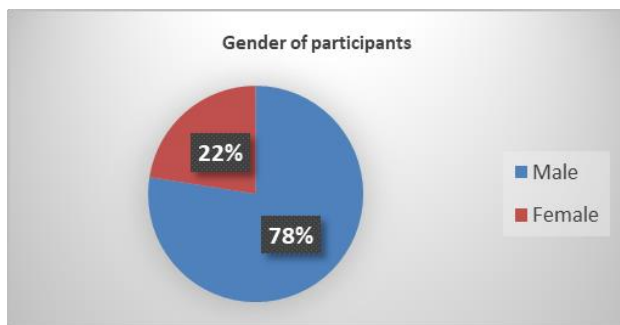


Figure 2: Pie chart showing gender wise distribution of participants.

The Blood Urea Nitrogen (BUN), blood creatinine levels and Blood Sugar Random (BSR) of the participants were recorded. The mean BUN was 25.897 ± 77.44 mmol/L, mean blood creatinine level was 597.28 ± 290.32 μ mol/L and mean BSR was 154.45 ± 64.70 gm/dL.

The perception of participants regarding self-efficacy on self-management of disease was assessed using the Perceived Kidney Disease Management Scale (PKDMS) while self-management practices employed by the participants was assessed using the Kidney Disease Behaviour Inventory (KDBI).

On, PKDSMS, the highest score observed (3.76) was for the item 'I handle myself well with respect to my kidney disease (dialysis)' while the lowest (2.74) was observed for the item 'Typically, my plans for managing my kidney disease (dialysis) do not work out'. The total score for all items came out to be 27.34 with mean score of 3.41 and a standard deviation of 0.437 which shows that most of the participants believed that they can manage their disease. The results are shown in Table-1.

On KDBI, the highest score (3.69) was observed for the item 'Taken medications as

prescribed' while the lowest (1.17) was observed for 'Not taken a prescribed Medication'. This indicates that the most common method of self-care among the participants was good adherence to prescribed medications. Also, a low score (1.24) for the item "Missed visits with your doctor" indicates that the participants mostly do not maintain their regular follow up routine. A high score (3.46) for item 'Checked your weight between dialysis' indicates that most participants had a good weight check practice. The total score for all items was 37.4 with a mean score of 2.43 ± 0.29 , as shown in Table-2. This is low score compared to PKDSMS, which showed their disease managing behaviour is not adequate.

Table 1: Item wording and descriptive statistics for the perceived kidney disease self-management scale (PKDSMS).

PKDSMS item wording	Kidney Disease Item Mean
It is difficult for me to find effective solutions for problems that occur with managing my kidney disease (dialysis).	3.71 $\pm$ 1.30
I find efforts to change things I don't like about my kidney disease (dialysis) are ineffective.	3.12 $\pm$ 1.36
I handle myself well with respect to my kidney disease (dialysis).	3.76 $\pm$ 1.19
I am able to manage things related to my kidney disease (dialysis) as well as most other people.	3.58 $\pm$ 1.25
I succeed in the projects I undertake to manage my kidney disease (dialysis).	3.67 $\pm$ 1.18
Typically, my plans for managing my kidney disease (dialysis) don't work out well.	2.74 $\pm$ 1.29
No matter how hard I try, managing my kidney disease (dialysis) doesn't turn out the way I would like.	3.14 $\pm$ 1.32
I'm generally able to accomplish my goals with respect to managing my kidney disease (dialysis).	3.62 $\pm$ 1.17
Total score	27.34 $\pm$ 3.50
Mean item score	3.41 $\pm$ 0.437

Pearson product moment correlation showed a positive and significant relationship between perceived self-efficacy (PKDSMS) and self-management behaviours (KDBI). ($r=0.205$, $p=0.008$, CI (0.055-0.354). Better the PKDSMS, better the index of self-management behavior. However, PKDSMS and KDBI does not depict significant relationship with patient's age, systolic blood pressure, blood urea nitrogen and creatinine levels in our study sample as shown in Table-3.

Table 2: Item wording and item means of the kidney disease behaviour inventory (KDBI).

Item Wording	Dialysis Sample Item Mean
Checked your blood sugar levels	2.09±1.58
Checked your blood pressure at home	2.40±1.082
Checked your weight between dialysis	3.46±1.07
Kept track of laboratory results related to your kidney disease	3.45±0.81
Kept track of symptoms related to your kidney disease	3.30±0.83
Kept track of thoughts and feelings about your health	2.93±1.01
Taken medications as prescribed	3.69±0.68
Taken a medication in different ways than prescribed	1.37±0.74
Not taken a prescribed medication	1.17±0.48
Taken herbs, non-prescribed vitamins, or other natural remedies	1.32±0.62
Followed your kidney diet plan	3.24±1.00
Chosen healthier food to eat	3.30±0.88
Exercised or stretched for 20 minutes or more	1.66±0.97
Taken time to unwind and feel better	2.83±0.99
Missed dialysis treatments	1.30±0.52
Missed visits with your doctor	1.24±0.61
Total score	37.4±4.62
Mean score (SD)	2.43±0.29

Table 3: correlations of PKDSMS and KDBI with age, SBP, BUN and creatinine.

Variable	PKDSMS	p value	KDBI mean score ¹⁸	p value
Age	0.065	0.399	0.066	0.397
BUN	0.045	0.558	-0.065	0.398
Creatinine	1.151	0.05	0.120	0.119
SBP	-0.007	0.932	-0.031	0.687

Discussion

Our study showed that most of the participants believed that they could manage their disease well themselves, but the disease managing behaviour was not as adequate as the perception. Still, however, there was a positive and significant relationship between perceived self-efficacy and self-management behaviours. However, PKDSMS does not depict significant relationship with patient's age, systolic blood pressure, serum creatinine and blood urea. This is in accordance to a study conducted at Virginia¹² and Japan¹³ which showed that there was a more consistent correlation between patient's perceived self-efficacy and self-management of disease, than with health indicators. A study done in Seoul, South Korea, also showed results similar to our study. It also found no significant relation between physiological indicators of kidney function (BUN, Serum Creatinine, Sodium,

Potassium, Calcium, Phosphate, Haemoglobin and GFR) and improved self-care practices.¹⁴

Studies conducted in Australia,¹⁵ Iran¹⁶ and China^{17,18} however are contradictory to our results. They displayed significant improvement in kidney physiological parameters with self-care practices. Whereas others detail the delaying of the need of dialysis by 4 to 6 months, through educational intervention among CKD patients.¹⁹

According to our study, the most common method of self-care was adherence to prescribed medication, followed by regular follow-up visits to the doctor. Another study done in Cebu assessed self-efficacy of CKD patients using three behavioural domains; one being adherence to prescribed medication. It also showed that most of the patients were able to adhere to the prescribed medications.²⁰

The least employed method for self-care was a minimum of 20-minute exercise. The disparity seen in results can possibly be attributed to unwillingness and minimum adoption of exercise by most patients since exercise has been found to be a crucial part of self-care practices for CKD patients.^{21,22}

Overall, the analysis highlights positive attitude of CKD patients in adopting self-care practices and behaviour. However, delay and difficulty in identifying early-stage CKD patients has been identified as an important issue that might needs to be intervened, as most of the participants were in late stage CKD. Future studies and programs need to aim at initiating CKD education at an initial point that might reap better clinical outcomes.

The limitation of our study was that, the sample was obtained from a single hospital, where majority of patients were on dialysis or later stage of disease. The questionnaire was interviewer-based which provides liability to self-report bias. Moreover, desirability bias can also be present. Also, self-care behaviours were reported by patients, and were accepted without evidence.

The patients generally had better perception about their disease, but self-management practices were not adequate. However, there was a positive significant relationship between self-perception and self-management. As practice was poor so no positive relation was found between self-care practices and clinical outcomes. Our study indicates the need to refine the self-management practices employed by CKD patients, and the need to incorporate institutional and community-based participation in improving the outcome.

Conflict of interest: None declared.

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