DOI: https://doi.org/10.61427/jcpr.v4i3.2024.126.
Vithanala Srinivasa Rao et al., J.Clin.Pharm.Res., 2024; 4(3): 4-8.

Journal of
Clinical and Pharmaceutical Research

RESEARCH OPEN ACCESS

Assessment of Quality of Life in Patients with Chronic Kidney Disease Undergoing Hemodialysis based on Physical, Social, Emotional and Mental Statuses

Vithanala Srinivasa Rao*, Pragada Rajeswara Rao, Gummalla Akanksha

Department of Pharmacy Practice, Lydia College of Pharmacy, Ravulapalem, Andhra Pradesh, India.

ARTICLE INFO

Article History:
Received: 25.05.2024
Revised: 28.06.2024
Accepted: 23.07.2024

Keywords :
Chronic Kidney Disease
Glomerular Filtration Rate
Hemodialysis
Quality of Life

Corresponding Author:
Mr. Vithanala Srinivasa Rao
Associate Professor
Department of Pharmacy Practice
Lydia College of Pharmacy
Ravulapalem
Andhra Pradesh-India.
Email: svvithanala@gmail.com

ABSTRACT

Aim: To assess the quality of life in patients with Chronic Kidney Disease (CKD) who were undergoing hemodialysis based on their physical, social, emotional and mental statuses.

Methods: This was a prospective observational study. Patients of both the genders with an age of above 35 years who were diagnosed with Chronic Kidney Disease (CKD) especially with stage III, IV, V and with a glomerular filtration rate of <30ml/min were included in this study whereas, patients with acute kidney disease were excluded from the study. In this study, SF-36 questionnaire was used for the assessment of quality of life among the patients with ESRD who is undergoing haemodialysis. The score may ranges from 0-100 and the interpretation includes higher the score indicates favorable health state and lower the score indicates more the disability. The patients were interviewed twice, with a time gap of 45 days from the date of first interview and were represented as V_0 (Day-1) and V_1 (Day-45).

Results: A total of 117 subjects were recruited in this study. The mean PCS value at V_0 was observed to be 42.9 which was reduced to 40.3 at V_1 with a mean difference score of 2.6. The mean MCS value at V_0 was observed to be 49.3 which was reduced to 43.3 at V_1 with a mean difference score of 6. The PCS scores were observed to be increased among 31.6% study participants whereas it was observed to be decreased among 65%. No change in the aspect of PCS scores were observed among 3.4% study participants. The MCS scores were observed to be increased among 32.5% whereas it was observed to be decreased among 66.7%. No change in the aspect of MCS scores were observed among 0.8% study participants.

Conclusion: Based on the mean scores observed, the quality of life was slightly decreased among the study participants who were undergoing hemodialysis because of the changes in PCS & MCS at V_0 and V_1. Proper patient education must be provided by the clinical pharmacists will help the patient in the better management of CKD and also regarding the health related quality of life.

Introduction

Chronic kidney disease (CKD) is characterized by the presence of renal damage or an estimated glomerular filtration rate (eGFR) of less than 60 mL/min/1.73 m², that exists for three or more months [1,2]. Globally, adults above the age of 30 years can be estimated with 7.2 % prevalence of chronic kidney disease which is a major concern among the non-communicable diseases [3,4]. The health-related quality of life (HRQOL) in patients with chronic kidney disease (CKD) & end stage renal disease (ESRD) can be poorer when comparing the general population along with other chronic diseases. This can lead to increase in the mortality rate and the duration of hospital stay [5]. In patients with CKD who is receiving dialysis, therapeutic management plays a significant role by impacting the QOL in various aspects like physical, mental and social wellbeing [6].

Patients with ESRD, can be observed with the most common psychological symptom of depression which should also be monitored along with the other physical aspects [7]. Various factors like genetic, environmental, psychosocial, stress, emotional and co-morbidities can affect the quality of life [8,9]. Hypotension, muscle cramps, itching, sleep disorders, anaemia, fluid overload and depression can be the major risks that can be associated in patients receiving hemodialysis [10]. Due to these risk factors the patients might develop fear and agony which affect the social wellbeing and can be one of the major reasons leading to poor QOL.

In the previous decade, greater attention was kept for the regular nephrology checkups in the pre-dialytic stage of CKD. In some studies, it was reported that the timing of the referral can also impact the mortality, duration of hospital-stay, type of dialysis and medication costs [11]. Early referral might be helpful for identifying the reversible cause, providing the specialized therapy and optimal preparation of the patient education in the aspect of the dialysis which is especially important [12]. In one study it was reported that, if dialysis was initiated in an unplanned manner, there will be no benefits observed even the referral was planned early. So, planned diagnosis might be beneficial. In patients with CKD & ESRD, the impact of early referral and planned dialysis on the patients

HRQOL or depression has not yet been assessed thoroughly [13,14]. Hence, we made an attempt to assess the quality of life in patients with Chronic Kidney Disease (CKD) who were undergoing hemodialysis based on their physical, social, emotional and mental statuses.

Materials and Methods

This was a prospective observational study conducted for a period of 6 months. Patients of both the genders with an age of above 35 years who were diagnosed with Chronic Kidney Disease (CKD) especially with stage III, IV, V and with a glomerular filtration rate of <30ml/min were included in this study whereas, patients with an age of below 35 years and patients with acute kidney disease were excluded from the study.

In this study, SF-36 questionnaire was used for the assessment of quality of life among the patients with ESRD who is undergoing hemodialysis. This questionnaire can be useful for planning and to measure the clinical & social interventions. It includes 8 scale profile based on which the functional health and wellbeing along with the psychological health can also be measured. The 8 scales of SF-36 form are categorized into 2 components scores which determine the quality of life namely physical component score (PCS) and mental component score (MCS). Under the physical component score, the components such as physical functioning, role limitations due to physical health, bodily pain and general health were included and under mental component score, the components such as vitality (energy/fatigue), social functioning, role limitations due to emotional problems and emotional well being were included. These two components give a summary score of the patient condition [15].

The score may ranges from 0-100 and can be interpreted as higher the score indicates favorable health state and lower the score indicates more the disability. The patients were interviewed twice, with a gap of 45 days from the date of first interview and were represented as V_0 (Day-1) and V_1 (Day-45).

Results and Discussion

A total of 117 subjects were recruited in this study out of which 69 (59%) were males and 48 (41%) were females.

Table 1: Gender wise categorization of the total study population

Gender	Total (%)
Males	69 (59)
Females	48 (41)
Total	**117 (100)**

According to age wise categorization, majority of the patients were found between the age groups of 41-50 years (35.9%) followed by 35-40 years (30.8%).

Table 2: Age wise categorization of the total study population

Age (in years)	Males (%)	Females (%)	Total (%)
35-40	15 (21.7)	21(43.7)	36 (30.8)
41-50	28 (40.6)	14 (29.2)	42 (35.9)
51-60	19 (27.5)	11(22.9)	30 (25.6)
61-70	7 (10.2)	2 (4.2)	9 (7.7)
Total	**69 (100)**	**48 (100)**	**117 (100)**

V_0 indicates the initial scores that have been taken on the first day from the patient and V_1 indicates the values or scores of the patients taken on the 45th day. For each scale, the sum of the scores was divided by total number of the questions present in that scale for both V_0 and V_1 respectively. Role limitations due to physical health and vitality levels have been decreased more when compared to the other scales in the questionnaire. Physical functioning (10 item sub-scale) was calculated by the sum of 10 question scores. It measures the physical activity of the patient such as lifting objects, climbing stairs, bending, kneeling and walking more than a mile (V_0=33.7; V_1=31.8). Role limitations due to physical health **(**4 item subscale) were calculated by the sum of 4 question scores. It determines the how much pain interferes with the patient while he/she is doing normal activities (V_0=37.2; V_1=27.1). Bodily Pain (2 item sub-scale) was calculated by the sum of 2 question scores. In the patients undergoing dialysis, the pain will be higher, so the improvement condition of the patient will only be determined by the pain score. So the bodily pain is very important to assess the intensity and severity of the pain (V_0=52.1; V_1=51.7). General Health (5 item sub-scale) was calculated by the sum of 5 question scores. The purpose of scoring of the general health is to know about final health condition of the patient (V_0=53.4; V_1=51.5). Vitality (4 item sub-scale) was calculated by the sum of 4 question scores. Under vitality, energy levels of the patient were determined. Generally, the patient's energy levels used to be low when they are undergoing hemodialysis. So to determine the energy levels of the patient, the vitality sub-scale was included in the study (V_0=54.9; V_1=39.2).

Social Functioning (2 item subscale) was calculated by the sum of 2 question scores. It measures the extent the patients' social activities such as attending functions or get-together occasions that has been affected due to his/her physical and mental problems (V_0=42.7; V_1=40.8). The Role limitations due to emotional problems (3 item sub-scale) plays a key role in SF-36 questionnaire form assessment because whenever the patient is suffering with any disease such as with ESRD or when he/she is undergoing hemodialysis, definitely the patient's emotional levels will be high when compared to a normal person (V_0=43.3; V_1=34.2). Mental Health (5 item sub-scale) was calculated by the sum of 5 question scores. It was mainly used to know about the mental condition of the patient based upon the nervousness, depression, happiness and changes in mood that he/she might have been experiencing (V_0=56.9; V_1=49.9).

Table 3: Mean scores of the study population at V_0 and V_1

Components	V_0	V_1	Mean Difference
Physical Functioning (PF)	33.7	31.8	1.9
Role of Physical Function (RP)	37.2	27.1	10.1
Bodily Pain (BP)	52.1	51.7	0.4
General Health (GH)	53.4	51.5	1.9
Vitality/ Energy (VT)	54.9	39.2	15.7
Social Functioning (SF)	42.7	40.8	1.9
Role of Emotions (RE)	43.3	34.2	9.1
Mental Health (MH)	56.9	49.9	7

Table 4 represents the values of PCS and MCS of the study participants at V_0 and V_1. The PCS values at V_0 was observed to be 42.9 which was reduced to 40.3 at V_1 with a mean difference score of 2.6. The MCS values at V_0 was observed to be 49.3 which was reduced to 43.3 at V_1 with a mean difference score of 6. The PCS and MCS both were observed to be decreased among the study participants.

Table 4: Mean PCS & MCS of the study population at V_0 and V_1

Score	V_0	V_1	Mean Difference
PCS	42.9	40.3	2.6
MCS	49.3	43.3	6

Table 5 represents the categorization of the study participants based on the change in the PCS scores. The PCS scores were observed to be increased among 31.6% study participants whereas it was observed to be decreased among 65%. No change in the aspect of PCS scores were observed among 3.4% study participants (Figure:1)

Table 5: Categorization of the study participants based on the change in the PCS scores

Gender	Increased	Decreased	No Change	Total
Males	15 (40.5)	52 (68.4)	2 (50)	69 (59)
Females	22 (59.5)	24 (31.6)	2 (50)	48 (41)
Total	37 (100)	76 (100)	4 (100)	117 (100)

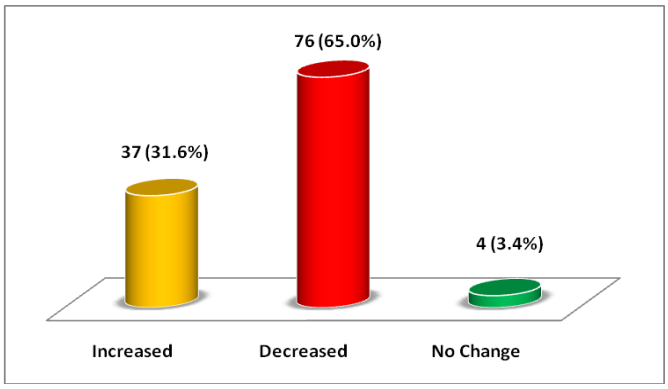

Figure 1: Categorization of the study participants based on the change in the PCS scores

Table 6 represents the categorization of the study participants based on the changes in the MCS scores. The MCS scores were observed to be increased among 32.5% whereas it was observed to be decreased among 66.7%. No change in the aspect of MCS scores were observed among 0.8% study participants (Figure:2). The detailed changes in the aspect of SF-36 scores based on various components were mentioned in the table no: 7.

Table 6: Categorization of the study participants based on the changes in the MCS scores

Gender	Increased (%)	Decreased (%)	No Change (%)	Total (%)
Males	19 (50)	49 (62.8)	1 (100)	69 (59)
Females	19 (50)	29 (37.2)	0 (0)	48 (41)
Total	38 (100)	78 (100)	1 (100)	117(100)

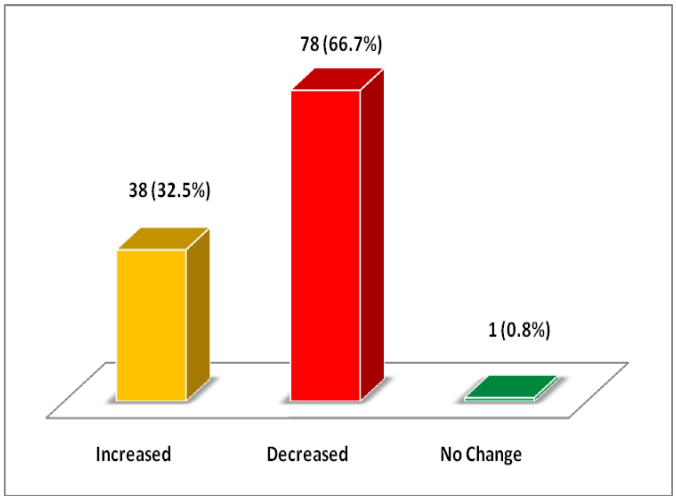

Figure 2: Categorization of the study participants based on the changes in the MCS scores

Table 7: Frequency of the study population based on the changes in SF-36 scores

Components	Increased (%)	Decreased (%)	No Change (%)	Total (%)
PF	34 (29.1)	57 (48.7)	26 (22.2)	**117 (100)**
RP	28 (23.9)	54 (46.2)	35 (29.9)	**117 (100)**
BP	52 (44.4)	41 (35.1)	24 (20.5)	**117 (100)**
GH	29 (24.8)	60 (51.3)	28 (23.9)	**117 (100)**
VT	38 (32.5)	64 (54.7)	15 (12.8)	**117 (100)**
SF	35 (29.9)	49 (41.9)	33 (28.2)	**117 (100)**
RE	20 (17.1)	46 (39.3)	51 (43.6)	**117 (100)**
MH	32(27.4)	76 (64.9)	9 (7.7)	**117 (100)**

Conclusion

Changes in quality of life are common among patients undergoing hemodialysis. The mean PCS value at V_0 was observed to be 42.9 which was reduced to 40.3 at V_1 with a mean difference score of 2.6. The mean MCS value at V_0 was observed to be 49.3 which was reduced to 43.3 at V_1 with a mean difference score of 6. The PCS and MCS both were observed to be decreased among the study participants. Based on the mean scores observed, the quality of life was slightly decreased among the study participants who were undergoing hemodialysis because of the changes in PCS & MCS at V_0 and V_1. It is the responsibility of the health care professionals such as doctors, clinical pharmacists and dieticians to create awareness regarding the lifestyle, mental and physical health modifications among patients undergoing hemodialysis to improve their quality of life. By strictly following the diet regimen and by avoiding the foods that may cause harm during the dialysis period, to some extent the physical discomfort can be relieved. Proper patient education must be provided by the clinical pharmacists will help the patient in the better management of CKD and also regarding the health related quality of life.

References

1. Vaidya SR, Aeddula NR. Chronic Kidney Disease. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024.

2. Chapter 1: Definition and classification of CKD. Kidney Int Suppl (2011). 2013 Jan; 3(1): 19-62.

3. Zhang QL, Rothenbacher D. Prevalence of chronic kidney disease in population-based studies: systematic review. BMC Public Health. 2008 Apr 11; 8: 117.

4. Varughese S, Abraham G. Chronic Kidney Disease in India: A Clarion Call for Change. Clin J Am Soc Nephrol. 2018 May 7; 13(5): 802-4.

5. Hakeem Ismael N, Omer Rashid A. Health-Related Quality of Life in End-Stage Renal Disease Patients and Healthy Individuals. Galen Med J. 2020 Dec 29; 9: e1987.

6. Abdel-Kader K, Myaskovsky L, Karpov I, Shah J, Hess R, Dew MA, Unruh M. Individual quality of life in chronic kidney disease: influence of age and dialysis modality. Clin J Am Soc Nephrol. 2009 Apr; 4(4): 711-8.

7. De Sousa A. Psychiatric issues in renal failure and dialysis. Indian J Nephrol. 2008 Apr; 18(2): 47-50.

8. Clarke TK, Zeng Y, Navrady L, Xia C, Haley C, Campbell A, Navarro P, Amador C, Adams MJ, Howard DM, Soler A, Hayward C, Thomson PA, Smith BH, Padmanabhan S, Hocking LJ, Hall LS, Porteous DJ; Major Depressive Disorder Working Group of the Psychiatric Genomics Consortium; Deary IJ, McIntosh AM. Genetic and environmental determinants of stressful life events and their overlap with depression and neuroticism. Wellcome Open Res. 2019 Jan 14; 3: 11.

9. Schneiderman N, Ironson G, Siegel SD. Stress and health: psychological, behavioral, and biological determinants. Annu Rev Clin Psychol. 2005; 1: 607-28.

10. Murdeshwar HN, Anjum F. Hemodialysis. [Updated 2023 Apr 27]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024.

11. Dhanorkar M, Prasad N, Kushwaha R, Behera M, Bhaduaria D, Yaccha M, Patel M, Kaul A. Impact of Early versus Late Referral to Nephrologists on Outcomes of Chronic Kidney Disease Patients in Northern India. Int J Nephrol. 2022 Jun 1; 2022: 4768540.

12. Chapter 5: Referral to specialists and models of care Kidney International Supplements. 2013; 3: 112-9.

13. Hassan R, Akbari A, Brown PA, Hiremath S, Brimble KS, Molnar AO. Risk Factors for Unplanned Dialysis Initiation: A Systematic Review of the Literature. Can J Kidney Health Dis. 2019 Mar 13; 6: 2054358119831684.

14. Brown PA, Akbari A, Molnar AO, Taran S, Bissonnette J, Sood M, Hiremath S. Factors Associated with Unplanned Dialysis Starts in Patients followed by Nephrologists: A Retrospective Cohort Study. PLoS One. 2015 Jun 5; 10(6):e0130080.

15. Lins L, Carvalho FM. SF-36 total score as a single measure of health-related quality of life: Scoping review. SAGE Open Med. 2016 Oct 4; 4: 2050312116671725.