



Nutritional Assessment Of Patients Suffering From Chronic Renal Failure With Complications

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ABSTRACT: Chronic renal disease is generally referred as impaired functioning of kidneys. Occurrence of kidney damage, increased loss of albumin in urine and a decreased glomerular filtration (GFR) rate are the clinical manifestations of chronic renal disease. It is a major health issue worldwide and the rate of this disease is increasing day by day. **Objective:** To find out the nutritional status of patients suffering from chronic renal failure with complications. **Methods:** A cross-sectional study performed in Sir Ganga Ram Hospital for a period of 4 months and 100 patients of chronic renal failure with complications were selected by non-probability sampling to conduct the study. **Results:** Analysis of data revealed that the mean age of participants was 51.22±12.899 and mean BMI was 21.03 kg/m² ± 5.053. Results showed that constipation, pain in back, bad taste and insomnia have positive and significant association with BMI as P value < 0.05. Hence underweight patients were having worse symptoms of disease. The mean hemoglobin was 8.50 ±2.194, mean blood urea was 108.35 ±38.089, mean serum creatinine was 7.20 ±2.799 whereas mean serum sodium was 135.31 ±8.160. The mean of total calories consumed by patients was 726.85±232.168 Kcal. **Conclusion:** The study concluded that chronic renal failure was more prevalent in adult patients and majority of patients were having a healthy body weight. The levels of blood urea, serum creatinine, serum uric acid, and serum phosphate were quite high in patients and majority of patients were anemic. Participants were consuming a low caloric and underweight patient were having worse symptoms of disease. BMI and symptoms of disease have a positive association as P value < 0.05. This shows that patients having low BMI have worse symptoms of disease.

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INTRODUCTION:

Chronic renal disease is generally referred to as impaired functioning of kidneys. Occurrence of kidney damage, increased loss of albumin in urine and decreased glomerular filtration (GFR) rates are the clinical manifestations of chronic renal disease¹. Reduced GFR and elevated levels of albumin in urine are usually linked. Patients having decreased GFR have increased albumin losses². Kidney plays a role in regulation of the acid-balance, water and electrolyte balance, calcium and phosphorus metabolism, and nitrogen balance. Acute renal failure (ARF) or chronic renal failure (CRF) effect the nutritional metabolic state of patients^{3,4}. Patients with CRF have a high prevalence of protein-calorie malnutrition, with an impaired fat and protein compartment, as well as a marked change in serum proteins^{5,6}. Even if patients are well nourished, they should be strictly monitored after every 6 months if they are younger than 50 years and every 3 months if older than 50 years⁷. In order to achieve adequate

protein and calorie intake and adequate nutritional state, appropriate assessment tools are required⁸.

High sodium intake can lead to high blood pressure and loss of protein in urine. A reduction in albuminuria has been seen in CRF patients by restricting sodium intake. Weight reduction is recommended for patients with obesity as obesity is a risk factor for CRF, diabetes mellitus and hypertension as well. Excessive belly fat puts a burden on kidneys that leads to increased oxidation and deposition of harmful substances in the organ. These substances cause impaired functioning and the damage of the organ⁹. A moderate exercise of 30-60minutes can help in lower blood pressure and blood sugars level. Exercise can help in maintain blood glucose levels¹⁰.

A low protein diet is recommended for CRF patients but long-term restriction can bring a rise in nutritional deficiencies and muscle wasting^{11,12}. Recent studies suggest that 0.6-0.8g protein/ kg/day for patients of renal failure is recommended to avoid

muscle wasting¹³. Mineral and electrolyte requirements are marked by the nutritional status and the degree of renal failure of the patient. In highly malnourished patients, mineral requirements may be increased due to the anabolism they experience¹⁴. CRF patients suffer from various nutritional deficiencies. Patients on hemodialysis mostly suffer from Vit B6, B12, folate and iron deficiencies. The supplements of these nutrients are necessary to compensate the deficiencies and repair the stores¹⁵. Main causes that lead to severe anemia are: deficiency of hormone erythropoietin produced by kidneys that has a key role in the production of red blood cells, malnutrition, inflammation, iron deficiency and according to some recent studies Vitamin D deficiency^{16,17}. Intravenous supplements of iron can improve the iron levels in hemodialytic patients. Similarly, administration of oral supplements of Vit B₆ leads to an improvement in its levels¹⁸.

A study was done by Fouque D *et al.*, which states that in the recent years no reliable work has been done on the malnutrition symptoms in renal patients. Only a few studies have been done that have highlighted the importance of nutrition and have given some results that can be implemented on daily basis to improve the nutritional status of renal patients. The results of this study showed that inflammation is most common symptom in renal patients and leads to muscle wasting and lack of appetite in renal patients. Catabolism is also fast in inflamed patients. An adequate number of calories and protein should be ensured in the early stages of

treatment after diagnosis to prevent muscle wasting, inflammation, anorexia and negative metabolic state in CRF patients. Nutritional supplements also work effectively in improving the nutritional status of renal patients¹⁹.

The researchers tried to find out the nutritional status of patients suffering from chronic renal failure with complications.

METHODS:

A cross-sectional study was conducted in Sir Ganga Ram Hospital for a period of 4 months to assess the dietary patterns of renal failure patients. 100 adult patients of both genders of chronic renal failure also having diabetes mellitus and hypertension were selected by non-probability convenient sampling. The study was conducted during December 2018. Data were collected from pre-tested questionnaire. Data were tabulated and analyzed with the help of SPSS version 21.0. The quantitative variables like age, income, etc. was assessed by using mean standard deviation and standard errors. The qualitative variables were reported using percentages and frequencies.

RESULTS:

1. Anthropometric Measurements:

Analysis of data revealed that the mean age of participants was 51.22±12.899 and mean BMI was 21.03 kg/m² ± 5.053 as shown in Table 1. Hence majority of patients were adult and were having healthy body weight.

Table 1: Anthropometric Measurements

Sr.no		Mean ± SD
1.	Age	51.22 ± 12.899
2.	BMI	21.03 kg/m ² ± 5.053

2. Biochemical Findings:

Mean of biochemical findings of patients is shown in Table 2. Data analysis showed that mean hemoglobin was 8.50 ±2.194, mean blood urea was 108.35 ±38.089, mean serum creatinine was 7.20 ±2.799 whereas mean serum sodium was 135.31 ±8.160. The results revealed that blood urea, serum creatinine, serum uric acid and serum phosphate of participants was quite high and anemia is prevailing in participants.

Table 2: Biochemical Findings

Sr.no.	Tests	Mean
1.	Hemoglobin	8.50 ±2.194
2.	Blood Urea	108.35 ±38.089
3.	Serum Creatinine	7.20 ±2.799
4.	Serum Uric Acid	7.67 ±2.705
5.	Serum Sodium	135.31 ±8.160
6.	Serum Potassium	5.99 ±2.179
7.	Serum Phosphate	5.68 ±2.730

3. Clinical Sign and Symptoms:

Data analysis showed that constipation, pain in back, bad taste and insomnia as mentioned in Table 3 have positive and significant association with BMI as P value < 0.05. Hence underweight patients were having worse symptoms of disease.

Table 3: Association between symptoms and Body Mass Index

Sr.no.	Symptoms	BMI				P-value
		Underweight	Healthy	Overweight	Obese	
1.	Constipation	28	13	22	2	.018
2.	Pain in Back	38	14	23	2	.010
3.	Bad Taste	23	10	20	2	.023
4.	Insomnia	43	15	23	4	.004

4. Dietary Assessment:

The analysis of data showed that mean of total calories consumed by patients was 726.85±232.168 Kcal, mean calories of breakfast was 240.77±84.325 Kcal, mean calories of lunch was 174.62±94.973 Kcal whereas mean calories of dinner was 228.86±86.690 Kcal. The results revealed that participants were consuming a low caloric diet.

Table 4: Dietary Assessment

Sr.no.	Meal	Mean
1.	Breakfast	240.77±84.325 Kcal
2.	Mid-Morning Snake	28.56±47.216 Kcal
3.	Lunch	174.62±94.973 Kcal
4.	Tea Time	40.87±80.683 Kcal
5.	Dinner	228.86±86.690 Kcal
6.	Bed-Time Snake	12.59±39.451 Kcal
7.	Total Calories	726.85±232.168 Kcal

DISCUSSION:

A healthy renal system is necessary for a quality life and unbalanced nutrient intake strongly effect kidneys. Decreased urine output is a major indicator of disturbed renal system. This study was designed to find out the nutritional status of patients of renal failure with complications. The current study showed that the mean age of patients of renal failure was 51.22 ± 12.9 years. A study was conducted by Rajapurkar MM *et al.*, in 2012 in India showed similar results i.e., the mean age of chronic renal failure patients was 51.0 ± 13.6 years²⁰. Malnutrition and low body weight in patients of renal failure can worsen the symptoms related to disease. Patients needed proper diet, supplements and metabolic drugs to replenish nutrient stores and to reverse the symptoms. The results of current study showed that 48% of total patients were underweight and the analysis showed an association between severity of

symptoms and low body weight and BMI. A study was conducted by Haase M *et al.*, in 2011 also showed that majority of patients were having a low body weight²¹. The current study showed a significant association between low BMI and bad taste (P < 0.05). During study it was seen that bad taste caused anorexia and poor appetite in patients. This led to low food intake and in turn low body weight. Poor appetite caused malnutrition and increased inflammation in patients. Current study also showed that men are more prone to anorexia. A study done by Carrero JJ *et al.*, also showed similar results. This study showed that anorexia is quit prevalent patients of last stage renal patients leads to low food intake, malnutrition and inflammation in patients. Moreover, this study also highlighted that anorexia is more prevalent in men²². Current study showed that mean BMI of patients was (21.79 ± 4.794 kg/m²) and the mean of blood hemoglobin,

serum creatinine and serum urea are (8.50 ± 2.194 g/dl), (7.20 ± 2.799 mg/dL), (108.35 ± 38.089 mg/dL) respectively. A study conducted by Bossola M *et al.*, showed that mean BMI, blood hemoglobin, serum creatinine and serum urea were (25.2 ± 4.4 kg/m²), (10.7 ± 1.3 g/dL), (10.8 ± 3.1 mg/dL), (78.3 ± 16.2 mg/dL) ²³. The results of current study showed that the mean of serum potassium and serum phosphate were (5.99 ± 2.179 mg/dL) and (5.68 ± 2.730 mg/dL) respectively. Another study conducted by Noori N *et al.*, also showed similar results. The mean of serum potassium was (5.1 ± 0.5 mg/dL) and mean of serum phosphate was (5.8 ± 1.4 mg/dL) ²⁴.

CONCLUSION:

The study concluded that chronic renal failure was more prevalent in adult patients and majority of patients were having a healthy body weight. The levels of blood urea, serum creatinine, serum uric acid, and serum phosphate were quite high in patients and majority of patients were anemic. Participants were consuming a low caloric and underweight patient were having worse symptoms of disease. BMI and symptoms of disease have a positive association as P value < 0.05. This shows that patients having low BMI have worse symptoms of disease.

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