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Research Article

Study Of Nutritional Status And Haematological Changes In Patients Undergoing Haemodialysis

Janvi Kachhia[1]*, Amee Upadhyay[1], Saraswati Thapa[1], Jignasa Mansuriya[2]

[1]*Sardar Patel University*
[2]*Assistant professor of BN Patel institute of paramedical and science affiliated to Sardar Patel University, vallabh vidhya nagar -388120 Gujarat, India*

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ABSTRACT

Nutrition is one of the most important aspects for health specially in the patients on haemodialysis (HD). Nutrition in haemodialysis patients is very important for decreasing complication and increasing the standard of life of patients, due to this reason providing enough amount of nutrition should be essential part for the treatment in HD patients. This study aims to investigate the nutritional status and haematological changes in patients undergoing haemodialysis. The research was conducted at the dialysis department of B.N Patel Institute of Paramedical and Science College, Anand, Gujarat. The study involved 30 stable chronic haemodialysis patients, aged between 23 to 86 years, over a period of three months.

INTRODUCTION

When the kidneys can no longer work effectively, a medical technique called dialysis can assist carry out their tasks. The kidneys are essential organs that filter waste materials and extra fluid from the blood, controlling blood pressure and electrolyte levels. These processes are hampered by renal failure, which can result in a potentially fatal accumulation of fluids and poisons in the body. The waste products in the blood are kept from rising to dangerous levels by dialysis.[1] The kidneys are essential organs of the body that are essential to maintaining overall wellness.[2] Diabetes, hypertension, anaemia, heart disease, genetics, family history, and certain medications are among the factors that may raise the risk of kidney failure. The two options for managing renal failure are dialysis and kidney transplantation. Your damaged kidneys will be partially replaced by dialysis treatments or kidney transplants, which will remove waste products and excess fluid from your body.[3] In haemodialysis, diet plays a

***Corresponding Author:** Janvi Kachhia
Address: *Sardar Patel University*
Email : janvip.2804@gmail.com

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crucial part in reducing complications and enhancing patient health. An essential part of the therapy procedure for dialysis patients with chronic kidney disease is the nutritional plan. Among dialysis patients, protein energy deficiency is very common (25–50%) and has been related to higher rates of morbidity and death. Increased levels of serum albumin indications, evidence of a high protein diet, have been associated to a lower risk of CKD complications, higher energy levels, and enhanced mental health.[4] The majority of dialysis patients who suffer from malnutrition also have other medical problems, especially inflammation and cardiovascular disease, so evaluating these conditions is a crucial component of evaluating the nutritional status of dialysis patients.[4] According to study, individuals receiving dialysis may have less appetite, which can cause them to consume fewer calories and lose weight. malnutrition and low protein levels may result from this. Protein is vital for people's well-being and overall health, and haemodialysis patients require special monitoring in their protein needs. Patients receiving haemodialysis are at the risk of developing protein-energy malnutrition or muscle wasting as a result of the amino acids lost during dialysis. It is also necessary for the regeneration and repair of tissues, including wounds. The synthesis of haemoglobin, a molecular structure that carries oxygen throughout the blood, requires protein. Consuming a sufficient amount of protein is necessary for preserving bone health and avoiding bone diseases. Patients on haemodialysis frequently have low albumin levels, which are linked to a higher risk of death. Maintaining ideal albumin levels can be facilitated by eating enough protein. significance of globulin in the context of haemodialysis patients and nutrition requires taking into consideration its functions and potential effects from the dialysis procedure. Maintaining a suitable albumin-globulin ratio is essential for evaluating nutritional status and detecting potential protein deficiencies in haemodialysis patients. Maintaining normal haemoglobin levels is important in preventing anaemia, oxygen transport, decreasing cardiovascular risks, Erythropoiesis-Stimulating Agents (ESA) Management and improving haemodialysis efficiency in patients.

MATERIALS AND METHODS:

The study design involved obtaining the patients' informed approval. Data was collected after each 10-dialysis session over a period of three months. The study involved the measurement of anthropometric parameters (hight, weight and BMI) of the patient, estimation of biochemical (total protein, albumin, globulin and A:G ratio) test from the collected sample, estimation of haematology (haemoglobin and red cell count) test from the collected sample, and providing awareness about nutrition and diet plan. For the purposes of the haematological and biochemical studies, blood samples were taken from the median cubital vein and placed in an EDTA-coated vacutainer (4ml) and a plain-clot activated tube (4ml). Separating the serum by centrifuging it for five minutes at 1500 rpm. Before starting haemodialysis, the anthropometric measurement had been taken. In Addition, height, body weight, and body mass index are included in the measurement. Nutrition guidelines from WHO were followed during calculation of BMI. blood sample taken without fasting before starting haemodialysis treatments. Biochemical analysis included globulin, total protein (biuret method), and serum albumin (Alb) estimation using the BCG kit method. Every test was conducted in accordance with the manual given along with the appropriate kit biochemistry semi - auto analyser (RX-50). Haematology aspects included red blood cell count and haemoglobin, which were measured using an automated three-part cell counter.

RESULTS:

The study aim to assess and maintain the nutritional status of individuals undergoing hemodialysis. Anthropometric, biochemical, and hematological data were measured at intervals of almost three months to examine the nutritional health of HD patients. Data from 30 stable chronic haemodialysis patients, varying in age from 23 to 86, was collected after each 10dialysis session over a period of three months. The data was then retrospectively evaluated. Among all patients, 9 patients suffered from diabetic nephropathy and 21 had hypertensive nephrosclerosis. Three weekly sessions made up the dialysis therapy. Depending on the degree of liquidation, the dialysis time varied from three to five hours.

Table: 1 Distribution of subjects based on gender

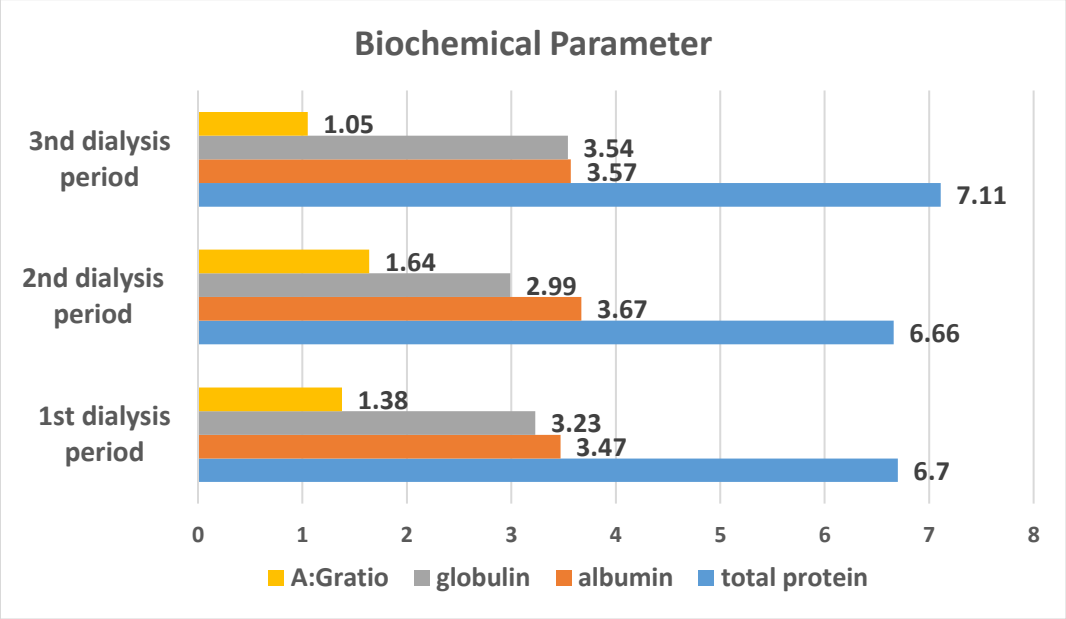
	Number (n)	Percentage (%)
Male	16	53%
Female	14	47%
Total	30	100%

Table:1 illustrate, Distribution of subjects based on gender. total of 30 pateints were participated, in which 16 were male (53%) and 14 were female (47%).

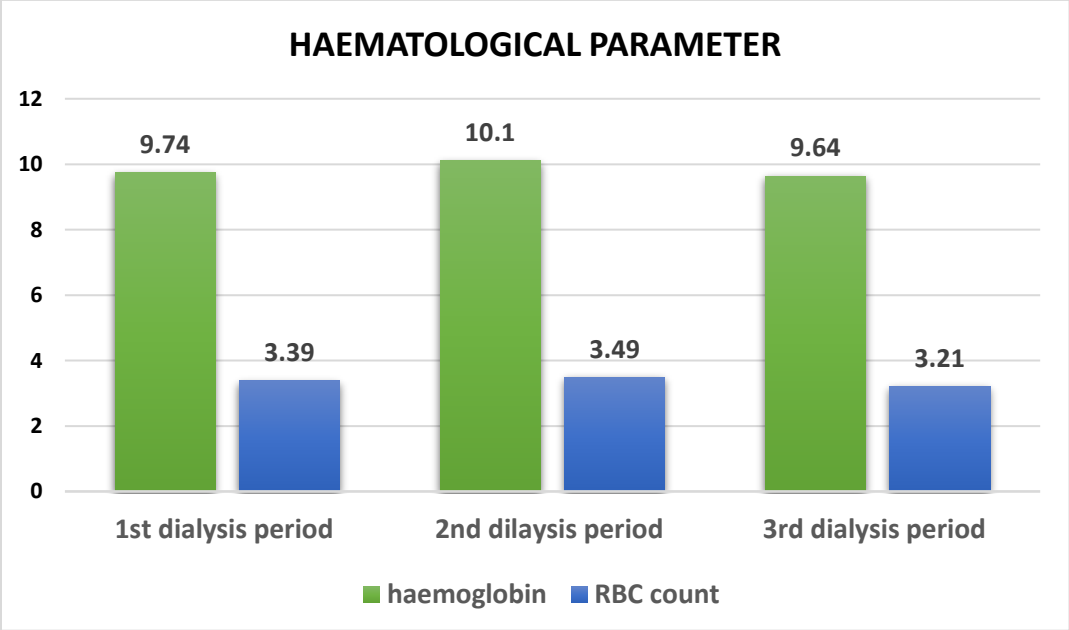
Table:2 Relationship Between Anthropomatric Parameter, Biochemical Paramters, Hematological Parameters And Dialysis Periods.

Parameters	1st dialysis period	2nd dialysis period	3rd dialysis period	Overall mean
Age (years)	56.33(±13.88)	56.33(±13.88)	56.33(±13.88)	56.33(±13.88)
Height	157.77(±4.99)	157.77(±4.99)	157.77(±4.99)	157.77(±4.99)
Weight	59.98(±19.72)	59.98(±19.72)	59.98(±19.72)	59.98(±19.72)
BMI	24.15(±7.74)	24.15(±7.74)	24.15(±7.74)	24.15(±7.74)
Total protein	6.70(±0.93)			
	6.66(±1.05)	7.11(±0.84)	6.82(±0.60)	
Albumin	3.47(±0.62)	3.67(±0.64)	3.57(±0.43)	3.57(±0.56)
Globulin	3.23(±1.13)	2.99(±1.00)	3.54(±0.74)	3.25(±0.95)
A:G ratio	1.38(±1.30)	1.64(±1.70)	1.05(±0.25)	1.35(±1.08)
Hemoglobin	9.74(±1.55)	10.10(±1.64)	9.64(±2.16)	9.82(±0.29)
RBC count	3.39(±0.58)	3.49(±0.60)	3.21(±0.60)	3.36(±0.59)

Table:2 shows, the relationship between anthropometric parameter, biochemical parameter, haematological parameter and dialysis periods. There were no changes in age and anthropometric parameter. The mean and SD of biochemical parameter such as total protein, albumin, globulin and A:G ratio was 6.82(±0.60), 3.57(±0.56), 3.25(±0.95) and 1.35(±1.08) respectively. Haemoglobin and RBC count mean and SD were 9.82(±0.29) and 3.36(±0.59) respectively.



Graph:1 Distribution of biochemical parameter based on dialysis period



Graph: 2 Distribution of haematological parameter based on dialysis period

DISCUSSION:

There are 30 patients in total in who are receiving haemodialysis; of them, 16 (53%) are male and the remaining 14 (47%) are female. In this study between 23-86 years age groups patients are included. For the purpose of to evaluate the nutritional status of haemodialysis patients, anthropometric data (body weight, BMI, height), biochemical markers (total protein, albumin, globulin, and A:G ratio), and haematological parameters (haemoglobin, red cell count) were taken into consideration.

CONCLUSION:

The study concludes that nutritional status and haematological changes are significant factors to consider in the treatment and management of patients undergoing haemodialysis. Anthropometric parameters were constant in all 3dialysis period. There was miner fluctuation seen in biochemical parameters like total protein,

albumin, globulin and A:G ratio. In haematological parameters such as Hb and RBC count, in which most of the patients are anaemic.

REFERENCES

1. Medically reviewed by Alana Biggers. Medical News Today. https://www.medicalnewstoday.com/articles/152902#what_is_dialysis
2. Kidney Health Australia - Better health channel, https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/kidneys#rpl-skip-link
3. National Kidney Foundation - Kidney Failure. https://www.kidney.org/atoz/content/KidneyFailure#:~:text=Dialysis%20and%20kidney%20transplant%20are,extra%20fluid%20from%20your%20body
4. Text book on renal dialysis technology, Dr. B.C Bhagavan, Dr. I. Clement, prof. P. V Rameshchandran – first edition.
5. Anil Kumar Bhalla, Vinant Bhargava, Priti Meena; Assessment and Management of Nutrition in haemodialysis Patients. IP: 157.32.111.213. DOI 10.4103/jrnm.jrnm_3_20

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