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Anthropometric and biochemical assessment of selected haemodialysis patients in Salem district

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Abstract
Background: Individual diet prescriptions are determinably residual kidney function, dialysate components, duration of dialysis, and rate of blood flow through the artificial kidney. The meal plan was designed, monitored and revaluated by the dietician. The main objectives of medical nutrition therapy are to attain or maintain good nutritional status, and prevent excessive accumulation of water products and fluid between treatments and minimize the effects of metabolic disorders that occur as a result of End Stage Renal Disease. Anthropometric factors of weight, height, and body mass index (BMI) have been associated with Haemodialysis patients.
Objectives: The present article aims to study the anthropometrical and biochemical assessment of the selected patients in Salem.
Materials and Methods: A hospital based Case control study was conducted at Salem government hospital. The anthropometrical measurement such as height, weight, body mass index (BMI) were recorded with the standard equipment and the biochemical parameters such as blood and urine report was collected from secondary source**.**
Results: majority of the Haemodialysis patients had underweight and anaemic because of their poor dietary intake.

Keywords: haemodialysis patient, anthropometric, biochemical assessment

Introduction

Dialysis is a greek word, dialysis means dissolution, 'dia' meaning through and 'lysis' meaning loosening or splitting. It is a process for removing waste and excess water from the blood and is used primarily as an artificial replacement for lost kidney function. Dialysis may be used for those with an acute disturbance in kidney function or progressive but chronically worsening kidney function, a state known as chronic kidney disease stage five. The latter form may develop over months or years, but in contrast to acute kidney injury is not usually reversible and dialysis is regarded as a "holding measure".

Protein energy malnutrition and inflammation are frequently both present in renal replacement therapy patients, and the association between the two condition has been called malnutrition inflammation complex syndrome (MICS) patients with high levels of c-reactive protein have lower albumin concentrations, greater weight loss, and a reduced response to nutritional interventions and dialysis treatment furthermore MICS may be responsible for increased risk of cardiovascular atherosclerotic disease, erythropoietin hypo responsiveness and higher hospitalisation and mortality rates. (Dowsett J. *et al*, 2005)

Materials and methods

The present study was a hospital-based study conducted in the year 2018. Fifty newly diagnosed hemodialysis patients (all consecutive cases) from the in & out-patient of the Departments of Nephrology at the Government hospital Salem.

The nutritional anthropometry is the measurement of body at various age and levels of nutritional status. It has been recognized as a reliable tool to identify the nutritionally vulnerable groups. Primary data was used for anthropometric assessment. (Geetha, 2014)

Height: The samples should on bare foot in a flat floor against wall, with their feet parallel comfortably and a mark made on the wall. By using stadiometer reading were recorded in centimetres.

Weight: Weight may be recorded in pounds or kilograms. Weight measurement is the best indicators of growth failure in all the age groups. Ordinary simple clothes must be worn while weighing. (Joshi S.A., 2012). The researcher were asked to stand on a weighing balance. The reading were recorded in kilograms.

Body Mass Index: By using height and weight Body Mass Index was calculated**.** Body Mass Index is a measurement of body fat based on height and weight that applies to both men and women. (Behnke A.R., 2002) The BMI was calculated by using formula and to know the obesity and under Nutrition grades.

Biochemical assessments

The researcher collected the biochemical parameters such as blood and urine from the secondary source.

Results and discussion

1. Anthropometric measurement of the haemodialysis patients

Table 1: Mean anthropometric assessments of haemodialysis patients

Measurements	Mean value of Haemodialysis patients (n= 50)	Mean value of Control patients (n=50)
Weight (kg)	51	60
Height(cm)	161	161
BMI	16	23

Table 2: Body mass index of the respondents

Body Mass Index (BMI)	Haemodialysis patient Percentage (N=50)
Under weight	76
Normal	10
Overweight	8
Obesity	6
Total	100

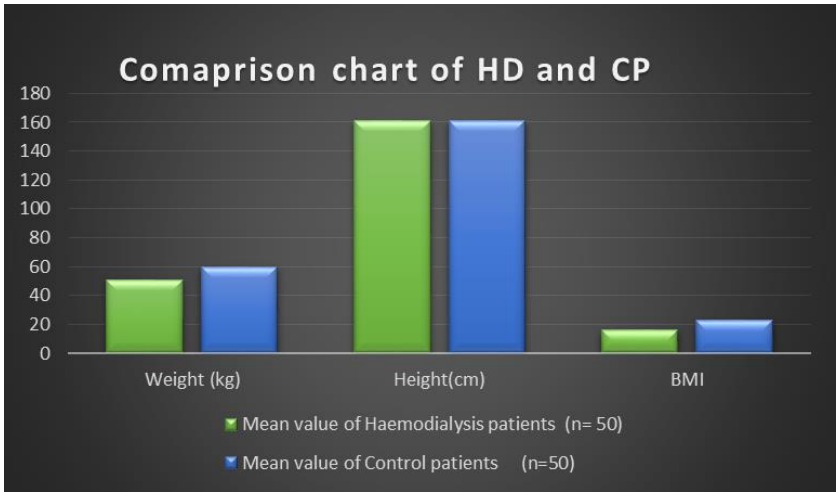

Fig 1: Comaprison chart of HD and CP

Totally 50 participants affected with haemodialysis were studied. The cases were selected from Governmental Hospital, Salem. The participants were interviewed with the help of a structured questionnaire and the information regarding age, religion, education, residence, diet, and history of kidney diseases in family. All the study participants were between 50-85 years of age group. The distribution of patients according to their mean anthropometric measurements is depicted in Table 1. It was observed that the patients had a statistically lower mean weight as compared to the control group. The patients and controls had no significant difference with respect to their mean height. The mean BMI and waist hip ratio were also found to be significantly lower in patients as compared to the controls. It was observed that 50% of the patient's controls were under nutrition according to their BMI. It was observed that the risk of haemodialysis (kidney disease) decreased within increasing levels of BMI.

2. Biochemical assessment of the haemodialysis patient

Table 3: Biochemical value of the haemodialysis patient

S. No	Particulars	Haemodialysis patient values	Reference values
1.	Urea	78.64±62.26	10-50mg/dl
2.	Creatinine	384.14±o.614	0.5-1.4mg/dl
3.	Sodium	160.546±18.0348	135-145 m mol/L
4.	Potassium	6.6504±2.3648	3.5-5 m mol/L
5.	Red blood cells	2.6932±1.20148	4.5-5.5 MI/109
6.	White blood cells	7732±3474.36	4000-11000cells/cu mm
7.	Platelets	327992.06±83651.32 6.923±2.1205	14000-40000 cells/cu mm Women12-15g/dl
8.	Haemoglobin	7.7436±5.0927	Men 12-17g/dl

Table 3 shows that platelet, haemoglobin, red blood cell, level were very low compared with normal values. Due to less amount of red blood cells in blood which is a common complication of haemodialysis, poor absorption of iron and frequent blood test. Similarly urea, creatinine, sodium, potassium levels of the samples were found to be high when compared with normal values due to diet restrictions and removal of micronutrients during haemodialysis.

Conclusion

Anthropometric and biochemical profile of Haemodialysis patients needs more attention in their diet. Regular periodical assessment of anthropometric and biochemical parameters helps to prevent patient's mortality and morbidity. In conclusion, right way of taking good nutrition helps to minimize the nutritional deficiency diseases especially underweight and anaemic condition in Haemodialysis patients. This assessment tool is also beneficial for haemodialysis patients who are at a greater risk of nutrition-associated mortality.

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