Nutrition Profile and Quality of Life of Chronic Kidney Disease Patients on Maintenance Hemodialysis in India

Nutritional imbalances are common in chronic kidney disease (CKD) patients due to disrupted renal regulation of systemic homeostasis. Protein-energy malnutrition is a particularly severe complication of CKD, worsening with advancing CKD stages and having significant consequences for patients on dialysis, including reduced quality of life, increased morbidity, hospitalization, and mortality.[1]

Nutritional management poses a significant challenge in dialysis patients. The presence of comorbidities, including diabetes and hypertension, as well as complications associated with CKD, such as mineral bone disease, electrolyte imbalances, fluid disorders, and inflammatory status, complicates the management of nutrition in this diverse patient population.

The prevalence of malnutrition among individuals receiving hemodialysis (HD) ranges from 20% to 60%.[2] Studies conducted by various researchers have revealed a substantially high prevalence of malnutrition in HD patients from India. For instance, Janardhan *et al.* reported malnutrition in 91% of a cohort comprising 66 HD patients, while Tapiawala *et al.* observed it in 58% of a cohort comprising 28 HD patients.[3,4]

Nutritional status significantly impacts the quality of life (QOL). Malnutrition is linked to higher morbidity rates, reduced functional capacity, and more frequent and prolonged hospital admissions, ultimately leading to a lower health-related quality of life. Therefore, early diagnosis and treatment of malnutrition are crucial.

Assessing nutritional status accurately remains a problem. Various methods are commonly employed, including dietary recall, anthropometric measurements such as height, weight, body mass index (BMI), subcutaneous fat (measured by triceps skin fold thickness), mid-arm circumference (MAC), and mid-arm muscle circumference (MAMC). Biochemical parameters such as albumin, pre-albumin, and transferrin are also used. Additionally, Subjective Global Assessment (SGA) is a simple, reliable, and dynamic tool offers a reasonable estimation of nutritional status. It is important to note that despite being a subjective tool, SGA has been found to be reliable.[5]

Considering the importance of the issue and the intricacy of the situation, it is evident that evaluating nutritional status, as well as preventing and managing malnutrition in patients undergoing hemodialysis, is of paramount importance. Table 1 shows some of the common cases of malnutrition in dialysis patients.

This journal issue presents the findings of a cross-sectional study by Ekbote *et al.*,[6] which focuses on assessing the dietary intake and quality of life of 107 adult patients undergoing MHD in dialysis centers across India. This study includes data on sociodemographic profiles, anthropometric measurements, biochemical parameters, dietary habits, and QOL, utilizing tools such as the Euro QoL EQ-5D-3L, and compared dietary intake with Kidney Disease Outcomes Quality Initiative (KDOQI) Guidelines.

Table 1: Reasons for poor nutritional profile among hemodialysis patients

Decreased nutritional intake	Increased losses	Increase in protein catabolism
Overzealous dietary restriction	Intradialytic nitrogen losses (hemodialysis, 6–8 g amino acid per procedure; peritoneal dialysis, 8–10 g protein per day)	Catabolism associated with hemodialysis (due to activation of proinflammatory cytokines)
Inadequate dialysis	Gastrointestinal blood loss (100 mL blood = 14–17 g protein)	Intercurrent illnesses and hospitalizations
Delayed gastric emptying		Dysfunction of the growth hormone–insulin growth factor endocrine axis
Intercurrent illnesses and hospitalizations		Insulin resistance
Medications causing dyspepsia (phosphate binders, iron preparations)		Catabolic effects of other hormones (parathyroid hormone, cortisol, glucagon)
Inadequate dialysis		Other medical comorbidities, including diabetes mellitus, cardiovascular disease
Monetary restrictions		
Depression		

The study findings reveal significant deficiencies in both energy and protein intake among patients undergoing hemodialysis, with averages falling below recommended levels (energy ~21 kcal/kg vs. 30–35 kcal/kg body weight and protein ~0.7g/kg vs. 1–1.2 g/kg body weight). A majority of the participants (>75%) had inadequate energy and protein intake. Furthermore, sodium intake was higher than the suggested limit. Although overall quality of life was satisfactory, more than one-third of the participants faced moderate problems with pain, discomfort, mobility, and usual activities.

This research unequivocally suggests that patients undergoing hemodialysis are plagued by numerous complications. Malnutrition is especially pervasive among this population, resulting in a negative impact on their quality of life. To address this issue effectively, it is imperative to conduct individualized nutritional evaluations and provide counseling. Collaboration with renal dietitian, combined with ongoing nutrition education and support from healthcare teams, are crucial to enhancing dietary adherence and ultimately improving quality of life for patients on maintenance hemodialysis. However, the study has a few limitations: convenience sampling may restrict the generalizability of the findings, the dietary recall was conducted for only one day and may not reflect usual intake patterns, and the study population included a higher proportion of males and participants from higher-income groups, which may skew the results.

A few general recommendations can be made – the need for tailored dietary advice and regular follow-up, crucial for better dietary compliance, regular monitoring of nutritional status and dietary intake to identify and address gaps, and continuous motivation and support from dietitians and medical care teams to enhance adherence to dietary recommendations.

A renal diet imposes numerous restrictions, which can make adherence challenging and stressful. Therefore, the diet must be individualized to account for each patient's unique circumstances, including palatability, cost, comorbid medical conditions, and cultural eating habits. It is essential to provide regular nutrition education, encourage and motivate patients and their families to follow the dietary advice to achieve a healthy life with improved quality. The recommended dietary protein and calorie intake for MHD patients are 1.2 – 1.4 g/kg and 25–35 kcal/kg, respectively.[7]

In chronic dialysis patients who are unable to meet their dietary needs, additional nutritional support must be considered. These can include oral supplements, tube feeds (if medically appropriate), intradialytic parenteral nutritional supplements, resistance exercise combined with nutritional supplementation, anabolic steroids and appetite stimulants such as megestrol acetate, dronabinol, melatonin, thalidomide, and ghrelin.

Non-medical factors that hinder nutritional optimization must be rectified. These include identifying and mitigating barriers to proper nutrition, such as poor appetite, dietary restrictions, and financial constraints. This may involve providing financial assistance, food subsidies, and palatable, nutrient-dense food options. Much of this effort requires access to trained nutritionists, which are scarce in India.

In conclusion, the nutritional management of patients undergoing hemodialysis in India is a multifaceted challenge that requires a comprehensive and individualized approach. The high prevalence of malnutrition among these patients significantly affects their quality of life, morbidity, and mortality. To effectively address these issues, it is essential to conduct individualized nutritional evaluations and provide continuous dietary counseling. Collaborating with renal dietitians and the healthcare team, alongside ongoing education and support, is crucial for improving dietary adherence and enhancing the quality of life for hemodialysis patients. Despite the limitations of the study, the general recommendations underscore the necessity for tailored dietary advice, regular monitoring, and continuous motivation to ensure better dietary compliance. Addressing non-medical barriers such as financial constraints and access to trained nutritionists is also essential for optimizing the nutritional status of these patients.

Conflicts of interest

There are no conflicts of interest.

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