



ORIGINAL RESEARCH PAPER

Nutritional Science

IMPACT OF NUTRITION COUNSELLING ON DIETARY INTAKE AND MANAGEMENT IN CHRONIC KIDNEY DISEASE

KEY WORDS: Chronic kidney disease; nutrition counselling; low protein; low potassium

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ABSTRACT

The aim of the study was to assess the impact of nutritional counselling on dietary practices and biochemical parameters in patients with chronic kidney disease (CKD). Twenty subjects diagnosed with CKD stage 3 or 4 were randomly selected from Nephrology department of ASCOMS Hospital, Jammu. Dietary intake, nutritional indices, and renal functions were evaluated while they followed their regular unrestricted diets. All the subjects were then counselled and prescribed individualised low protein, low sodium (Na⁺), and low potassium (K⁺) diets. After intensive nutrition counselling, and personalised diet plans, the biochemical investigations were repeated after one month and the results were analysed. A significant reduction in serum urea and serum creatinine levels was observed ($P < 0.01$). Sodium levels showed moderate decrease ($P > 0.05$), and potassium levels showed a statistically significant decrease ($P < 0.05$). The study demonstrated that intensive nutrition counselling enhanced dietary awareness, protein restricted diets alleviate uremic symptoms and slow the progression of the disease. Due to improved nutrition status and correction of uremic symptoms, the initiation of dialysis was deferred in these patients.

INTRODUCTION

Counselling is one of the most useful methods for assisting an individual to arrive at a solution of the problems. Nutrition is one of the most important but often one of the least stressed aspects of counselling. Nutrition counselling is a dynamic, client-centred process that involves a two-way interaction between the patient and healthcare provider, aiming to support dietary behaviour change through personalised guidance (Gillis et al., 2001). Through nutrition counselling, individuals receive guidance tailored to manage their dietary and nutrient related challenges. In the process, the principles of food and nutritional science are translated into practices that are appropriate and acceptable to the patients. Nutrition interventions are purposely planned actions; designed with the intent of changing a nutrition related behaviour, risk factor, environmental condition, target group or community at large. Nutrition therapy is a nutritional diagnostic therapy and it starts with the assessment of nutritional status of a patient with a condition, disease that puts them at risk. Based on the assessment, a nutrition care plan, most appropriate to manage the condition or treat the disease nutrition care process is a standardised, systematic approach utilised by dietetics professionals to deliver high-quality, individualised nutrition care, encompassing assessment, diagnosis, intervention, and monitoring, and evaluation, effective and successful nutrition intervention (Delomen et al., 2019).

Nutrition counselling is an important component of treatment for patients with kidney disease. The goals of medical nutrition therapy in CKD are prevention of malnutrition, slowing of renal disease progression, and control of uremic symptoms. In chronic kidney disease, much effort has been put into identifying the best interventions both nutritional and non-nutritional, to control the factors involved in the progression of kidney disease and delay the need of renal replacement method. A dietary pattern that is adequate in calories, moderate in proteins, and slightly modified in vitamins and minerals supplementation ensures optimal growth, development and quality of life controlling the disease (Beto et al., 2004). Evidence from large multi-centre trials initialising nutrition intervention indicates that frequent nutrition counselling results in compliance with intervention and improved outcomes. It has been well documented that dietary protein restrictions can be safely used if individuals are compliant to dietary advice given by a professional, adequate calories are supplied and are monitored carefully. Low protein diets are difficult to adhere to and their limited use is probably attributable chiefly to difficulties in obtaining compliance (Yu et al., 2019). The aim of present study is to evaluate the effectiveness of nutrition counselling, degree of compliance and adherence of the patients to the nutrition

therapy. The goal is to evaluate the chemical and nutritional outcomes of the patients put on low protein diets.

MATERIALS AND METHODS

For the present study, twenty non-diabetic subjects in the age group of 40-60 years, with stage 3 and 4 chronic kidney disease, were randomly selected from nephrology department of Acharya Sri Chander College of Medical Sciences and Hospital, Jammu. The relevant data was obtained using the interview method, which included 24 hours dietary recall, a food diary, and the questionnaire method. The questionnaire consisted of thirty-five questions related to personal information, socio-economics status, dietary patterns, daily intake, nutrition knowledge, food choices and preferences. All the subjects were individually asked to fill the questionnaire. The information provided by them through the questionnaire was interpreted and relevant data was obtained.

All subjects received intensive counselling three times a week for one month. Each subject was prescribed an individualised diet plan based on age, biochemical parameters, progression of disease, current nutrition status, and food preferences. Patients were prescribed 0.5gms-0.6gms of protein/kg of body weight with 30-40 calories/kg/day. Sodium intake was restricted to 500 mg-2.0gms/day and Potassium intake was kept below 1500mg/day. Biochemical investigations were repeated after one month of dietary compliance. The impact of nutrition counselling on the biochemical markers and improvement in the overall nutritional status of the subjects was studied after one month. Results were statistically analysed by applying paired t-test for biochemical investigations, and Z-test with correction factor for questionnaire responses, to assess the significance level on the dietary changes.

RESULTS

The findings of the present study highlight the effectiveness of individualised nutrition counselling in improving dietary habits, biochemical markers, and overall nutritional awareness among patients with chronic kidney disease. Improvements were noted following one month of dietary intervention, with most participants showing better compliance and significant changes in clinical parameters.

After counselling, awareness regarding nutritive value increased in 80% of the patients. In 15% of the patients, awareness increased to some extent, while it remained same in 5% of the patients (Fig no-1). The increase was statistically highly significant. ($P < 0.01$)

Before counselling 45% of patients were aware about dietary restrictions. However, after counselling, awareness significantly increased in all the patients. Statistically, the increase was significant. ($P<0.05$)

Awareness regarding nutritive value after counselling

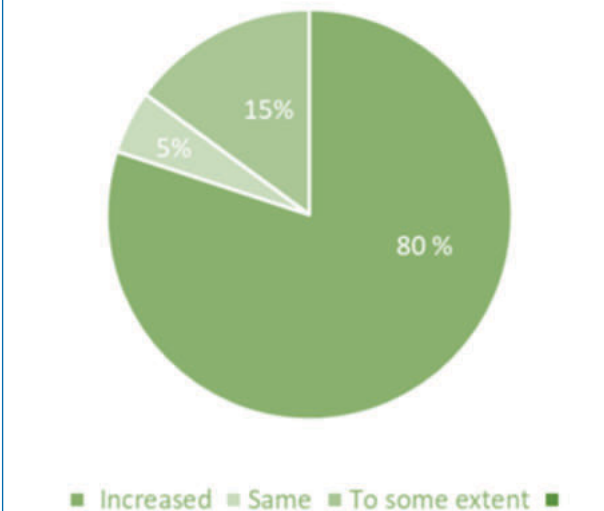


Figure 1: Awareness regarding nutritive value after counselling (n=20)

Improvement in Nutritional status after counselling

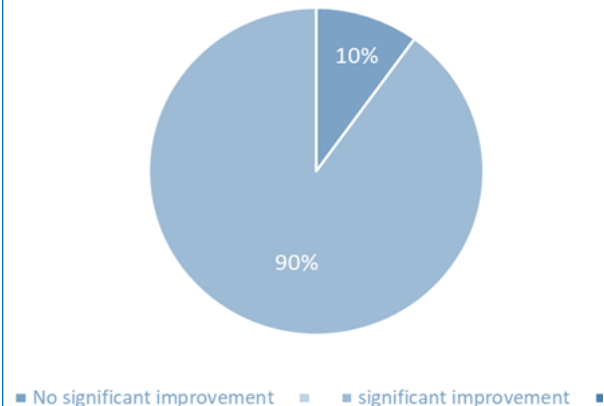


Figure No. 2: Improvement in nutritional status after counselling (n=20)

Improvement in the nutritional status was seen in 90% of the patients post counselling. (Fig no-2). The overall improvement was statistically highly significant. ($P<0.01$)

Before counselling, 56.6% of non-vegetarians consumed chicken once a week, but after counselling, weekly consumption was seen in 100% of the patients. Daily consumption of eggs was increased from 66.6% to 86.6% in non-vegetarian patients, after the importance of high biological value proteins was highlighted during counselling. Before counselling, 90% of the patients consumed variety of fruits daily. But after counselling, daily consumption dropped to 50%. The change was statistically significant. ($P < 0.01$) Before counselling, 60% of the total patients were having pulses on daily basis where as 30% consumed once a week. After counselling, daily consumption was seen only in 5% while in 25% of the patients, the consumption was once a

week. The decrease was statistically highly significant. ($P < 0.01$)

Before counselling, 40% of the patients were taking less salt in their diet while salt intake of 60% of the patients was normal. After counselling, 80% of the patients reduced their salt intake. The reduction was statistically significant. ($P < 0.05$)

Significant changes were seen in the biochemical investigations in about 85% of the patients while there was slight change in 15% of the patients. This positive change was highly significant statistically. ($P < 0.01$) After counselling 95% of the patients started taking dietary precautions as compared to 75% before counselling. The increase was statistically significant. ($P < 0.05$)

Table No. 1: Statistical Analysis Of Biochemical Parameters

Biochemical Parameters	Mean Value (Before counselling)	Mean value (After Counselling)	Increase/Decrease in mean value	Calculated t value	Degree of freedom (Df)	Statistically Significant/Insignificant
Urea mg/dl	157	101.5	-55.5	4.29	19	$P<0.01$ (significant)
Creatinine mg/dl	6.6	3.6	-3.00	5.42	19	$P<0.01$ (significant)
Potassium m Eq/L	93.5	92.9	-0.55	2.14	19	$P<0.05$ (significant)
Sodium m Eq/L	2618.8	2614.4	-4.4	2.07	19	$P>0.05$ (insignificant)

Biochemical investigations such as serum urea, creatinine, Na^+ , K^+ levels of all the patients were analysed statistically by applying paired t-test (Table no-1).

The mean urea before counselling was 157 mg/dl which was reduced to 101.5 mg/dl after counselling. The mean decrease was statistically highly significant. ($P<0.01$)

The mean creatinine was 6.6 mg/dl before counselling which was reduced to 3.6 mg/dl after counselling. Statistically, the mean decrease was highly significant. ($P<0.01$)

Before counselling the mean K^+ was 93.5 mEq/L which was reduced to 92.9 mEq/L after counselling. The mean decrease was statistically significant. ($P<0.05$)

Before counselling the mean Na^+ was 2618.8 mEq/L but after counselling it was reduced to 2614.4 mEq/L. The mean decrease was statistically insignificant. ($P>0.05$)

DISCUSSION

In CKD, dietary counselling helps tailor nutrition to reduce complications, delay disease progression, and enhance patient well-being. The study evaluated the impact of individualised nutrition counselling on dietary knowledge, compliance, and biochemical parameters in non-diabetic patients with stage 3 and 4 chronic kidney disease. Post-counselling, 80% of patients showed enhanced awareness of nutritive value and the understanding of dietary restrictions improved in all the patients. These findings were similar to the studies which reported that tailored nutritional counselling significantly increased CKD patients' knowledge and adherence to dietary guidelines (Chaturvedi et al.,2022, Beto et al.,2016, Lee et al.,2021).

There was a significant increase in the consumption of eggs and chicken after the importance of high biological proteins

(HBV) was highlighted. Similarly, a reduction in consumption of red meat was seen, which was replaced by chicken and fish. The substitution could be beneficial for CKD patients aiming to slow disease progression (Combe et al.,1993). The renal effects of consuming egg white and chicken protein in healthy individuals found similar increases in glomerular filtration rate after ingestion (Burodom et al.,2010). Research indicates that replacing red meat with poultry, including chicken, is associated with a reduced risk of end-stage renal disease (Tallman et al.,2018).

Significant reductions were observed in the consumption of fruits, pulses and salt. Daily pulse consumption decreased significantly from 60% to 5%, and 80% of patients reported reduced salt intake after counselling. These changes are consistent with findings which demonstrated that intensive nutrition counselling effectively reduced sodium, and protein intake among CKD patients, leading to improved dietary compliance (Cliffe et al.,2001). After counselling, 85% of patients showed significant improvements in biochemical markers, including reductions in serum urea, creatinine, sodium and potassium levels. These findings corroborate with the results of other studies, which observed that intensive individualised nutrition counselling led to significant improvements in kidney function markers (Lee et al.,2021, Kang et al., 2020). There were notable decreases in serum creatinine and blood urea nitrogen levels following nutritional counselling in CKD patients (Chaturvedi et al.,2022,Kang et al.,2020).

CONCLUSION

The present study concludes that nutritional counselling is a vital component in management of patients with chronic kidney disease. Compliance with the low protein diet can be achieved through intensive counselling, and a moderately low protein diet can be prescribed safely with an adequate energy intake.

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