



EFFECT OF NUTRITIONAL COUNSELING ON NUTRIENT INTAKE AND OSND IN MAINTENANCE HEMODIALYSIS PATIENTS.

Trishita Issar

M.Sc., Department of Foods, Nutrition and Dietetics, College of Science and Technology Andhra University.

Dr. B.V Sandeep

Department of Foods, Nutrition and Dietetics, College of Science and Technology Andhra University. Co-ordinator

Dr. M. Rajeswari

Asst. prof, Department of Foods, Nutrition and Dietetics, College of Science and Technology Andhra University.

ABSTRACT

Chronic kidney disease (CKD) is a worldwide public health problem and is now recognized as a common condition that is associated with an increased risk of malnutrition. Proper dietary knowledge and management is a key to good quality of life for patients on maintenance hemodialysis. This study was conducted to see the effect of diet management and nutritional counseling on the nutrient intake and nutritional status of maintenance hemodialysis patients. A total of 130 patients were enrolled and were given extensive nutritional counseling and dietary management for a period of 9 months. A malnutrition marker score called the OSND (objective score of nutrition on dialysis) along with 24 hour recall was collected at regular intervals (on enrollment, 3 months, 6 months and 9 months) to assess the results. A statistically significant improvement was seen in both the nutrient intake as well as the nutritional status.

KEYWORDS : Chronic kidney disease, nutritional status, dietary intake, hemodialysis, OSND, malnutrition, diet management

INTRODUCTION

Chronic kidney disease (CKD) is a worldwide health problem, affecting millions of people (Di Angelantonio et al., 2007). Incidence of CKD had doubled in last 15 years. In India 90% patients cannot afford the cost. Over 1 million people worldwide are alive on dialysis or with a functioning graft (Lysaght, 2002). Over the course of last decade, chronic renal failure in relation to nutritional deficiency is becoming a major issue in nutritional studies among the health professionals (Ogun et al. 2000).

Reviewed literature pointed to the fact that hemodialysis has different effects on both catabolic rate and clearance of toxins, and also have different effects on the nutritional status of the patients. While different studies have examined various aspects of nutrition and health of patients, there are scanty studies in the developing countries. This study focuses on the effect of diet management and nutritional counseling on the nutritional status of patients with chronic kidney disease, who are on maintenance dialysis.

METHODOLOGY

The study was set in the dialysis unit of a super specialty hospital in Visakhapatnam, Andhra Pradesh. A total of 130 patients visiting the dialysis unit in the hospital for dialysis were enrolled in the study. An initial questionnaire with general information and medical history was collected along with the 24-hour recall, post which the OSND (objective score of nutrition on dialysis) was calculated. The dietary management recommendation of 30-35kcal/kg body weight of total energy, 1.2gm/ kg body weight of protein and energy coming from fat should be equal or less than 20% of total energy, was explained to the patients along with a diet management booklet. The 24 hour recalls and the OSND scores were collected at regular intervals post the nutritional counseling (on enrollment) at 3 months, 6 months and 9 months.

The 24 recall is a relatively easy tool to collect and assess the dietary intake of the participants. From the collected recall total energy, carbohydrates, protein and fats were calculated using the exchange list made using the book called 'Nutritive value of Indian foods' by the National Institute of Nutrition, Hyderabad, India. The means

were obtained of all the 130 participants and the results were computed (figure 1).

Objective Score of Nutrition on Dialysis (OSND), was calculated by combining anthropometric measurements (the change in end-dialysis dry weight in the past 3-6 months, body mass index, skinfold thickness and mid-arm circumference) with three laboratory tests: albumin, transferrin and cholesterol levels. The sum of all seven components of OSND results in a score from 5 (severely malnourished) to 32 (normal) (Beberashvili et al., 2010). The means were obtained of all the 130 participants and the results were computed (figure 2).

The statistical analysis was done using repeated measure ANOVA-Wilks's lambda test (Parametric tests) for nutrient intakes of total energy, carbohydrate, protein, fat and OSND scores. While for the fluid intake Mann-Whitney U test and Friedman's ANOVA were used as it was not a normal distribution (non-parametric test).

RESULTS AND DISCUSSION

Over the follow up months a gradual increase in the dietary intake and the OSND score was observed.

The recommend total energy based on the mean of the ideal body weight was 1847 kcal per day while protein was 74 gm per day and fat was 20gm per day. It was clear that there was a 32% increase in the total energy consumption at the end of the study while 84% increase in the protein consumption. Stress was laid on the consumption of high biological value protein which was noticed in the follow up 24 hour recalls of the participants showing increased intake of egg whites and fish. The fat intake was in the recommended range throughout the study period.

Figure 2 depicts the fluid intake of the maintenance hemodialysis patients, it was clear that it decreased through the study period and the recommendation of below 2 liters was well maintained by the participants. A mean reduction of 143 ml was noticed from enrollment to the end of the study.

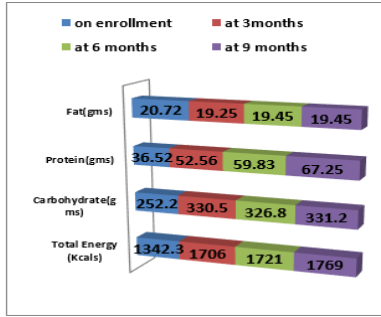


Figure 1: Change in dietary intake

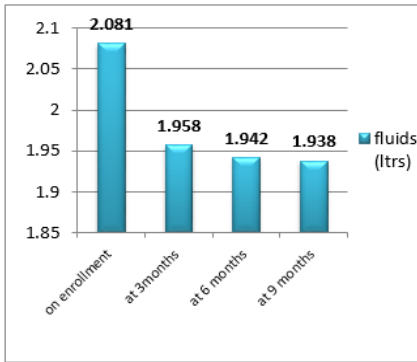


Figure 2: Fluid intake

The OSND score showed an increase at every study period thus depicted an improved nutritional status of the participants post diet management and nutritional counseling. The score increased from 18 to 27, which was very close to the normal score of 32. (Figure 3)

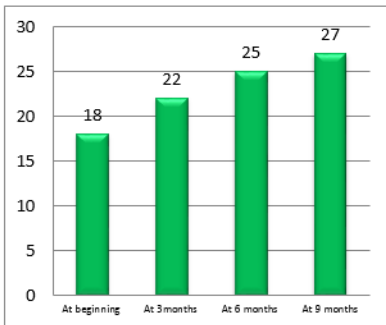


Figure 3: OSND scores obtained

The statistical results showed significance of 0.000 for total energy, carbohydrate, protein and OSND scores where p-value is <0.05 was considered statistically significant. While for fat intake the variance was not significant (t-value of 0.670). For the fluid intake also the variance was not statistically significant with a t-value of 0.616.

CONCLUSIONS

Nutritional intervention in maintenance hemodialysis patients has a positive effect on the dietary intake and the malnutrition status.

Dietary intake was improved with continuous follow nutritional counseling, with a statistically significant increase in total energy and protein the participants learned the importance of dietary intervention and applied the same in their day to day lifestyle.

Considering the Indian food intake patterns and daily meals plans it can be noticed that less protein and low biological value protein is consumed. The participants were enlightened on the importance of high biological value protein and thus showed marked improvement.

The results of this study also indicate the scored OSND can provide a diagnosis of malnutrition with fair accuracy and is also significantly related to reduction in malnutrition score over a period of time post nutritional intervention.

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