NUTRI CONNECT

Issue - 11
April 2024

SPECIAL ANNUAL EDITION

Exploring Experiences through CLINICAL STUDIES

INDEX

From Editor's Desk

In the realm of healthcare, particularly in clinical nutrition, the significance of evidence-backed products cannot be overstated. For those who rely on enteral nutrition, whether due to medical conditions or as part of recovery processes, the quest for optimal products is paramount.

In this Special Annual Edition of our newsletter, we delve into the world of clinical enteral nutrition brands, focusing on experience studies and testimonials that shed light on their efficacy and impact on patients' lives.

Experience Studies:

Experience studies serve as vital benchmarks for assessing the effectiveness and usability of clinical enteral nutrition brands. These studies provide valuable insights into real-world scenarios, offering a comprehensive understanding of how these products perform in various clinical settings. From hospitals to long-term care facilities, experience studies highlight the practical applications and outcomes associated with different brands.

Through meticulous data collection and analysis, these studies not only evaluate the nutritional content but also consider factors such as ease of administration, patient tolerance, and overall satisfaction. By synthesizing these findings, healthcare professionals can make informed decisions regarding the selection and integration of enteral nutrition products into patient care plans.

Testimonials:

Beyond experimental data, testimonials provide a human touch to the narrative surrounding clinical enteral nutrition brands. Hearing firsthand accounts from patients, caregivers, and healthcare providers offers a glimpse into the tangible benefits and challenges associated with these products.

In this edition, we spotlight studies on different therapy areas. Through expert insights, readers will gain a deeper understanding of the unique attributes and value propositions of these brands.

As the landscape of clinical nutrition continues to evolve, the role of experience studies and testimonials in shaping healthcare practices cannot be underestimated. By amplifying the voices of those directly impacted by enteral nutrition brands, we aim to empower Healthcare Professionals with the knowledge and resources needed to optimize patient care and promote holistic well-being.

We look forward to addressing more issues through NutriConnect with evidence-based case studies, research backup and insights from Healthcare Professionals.

- Dr. Nikhil Kelkar
Jt. Managing Director

Dr. Daphnee.D.K
Chief Clinical Dietitian & Head - Department of Dietetics,
Apollo Hospitals, Greams Road, Chennai

Customized Nutrition Intervention and Personalized Diet Counselling in Liver Transplant: A Case Report

Nutritional therapy is an integral part of care in all phases of liver transplantation (Ltx). However, there are several factors that make it a challenge to manage malnutrition in these patients including, but not limited to, loss of appetite, dietary restrictions and dietary habits. Dietary habits are guided by personal choice, social, cultural and regional background with vegetarianism being predominant in Indian population. Therefore, it is difficult to improve nutritional intake of patients with standard dietary recommendations.

Case Study:

A 44 year old male, a K/C/O ethanol related decompensated chronic liver disease was referred to Clinical Dietitian on 22.06.2016 for detailed nutrition assessment, as part of evaluation of LTx. The subjective and objective assessment revealed that he was moderately malnourished.

Baseline anthropometric measurements:

Height: 172cms; Actual Body Weight (ABW): 69kg; Ideal Body Weight (IBW): 67.7kg;
BMI: 23.3kg/m2; MAC: 22.5cms; Triceps: 8.3mm; Handgrip Strength (HGS): 18.7kg

Nutrition requirement calculated (As per ESPEN Guidelines)

- Energy: 35calories /Kg /IBW - 2369 calories
- Protein: 1.2g /Kg - 81g per day.

Pre-opertive Phase:

Since he was a vegetarian and the baseline intake was only 52% calories & 35%protein as per the 24 hour dietary recall, an aggressive customized nutrition careplan was prepared with a personalized diet counselling. His decision to adopt aova-lacto vegetarian diet, compliance to a very high protein and high calorie (VHPHC) oral nutrition supplement (ONS) to meet the nutrition targets that would maintain or augment the lean mass despite the liver disease and avoid protein breakdown in the perioperative phase and a weekly follow-up helped to enhance his nutritional intake to >90% of the requirement during the pre-operative waiting period of 3months. The improvement in muscle strength was evident with an increased HGS of 24kg in 3months.

Peri-operative Phase:

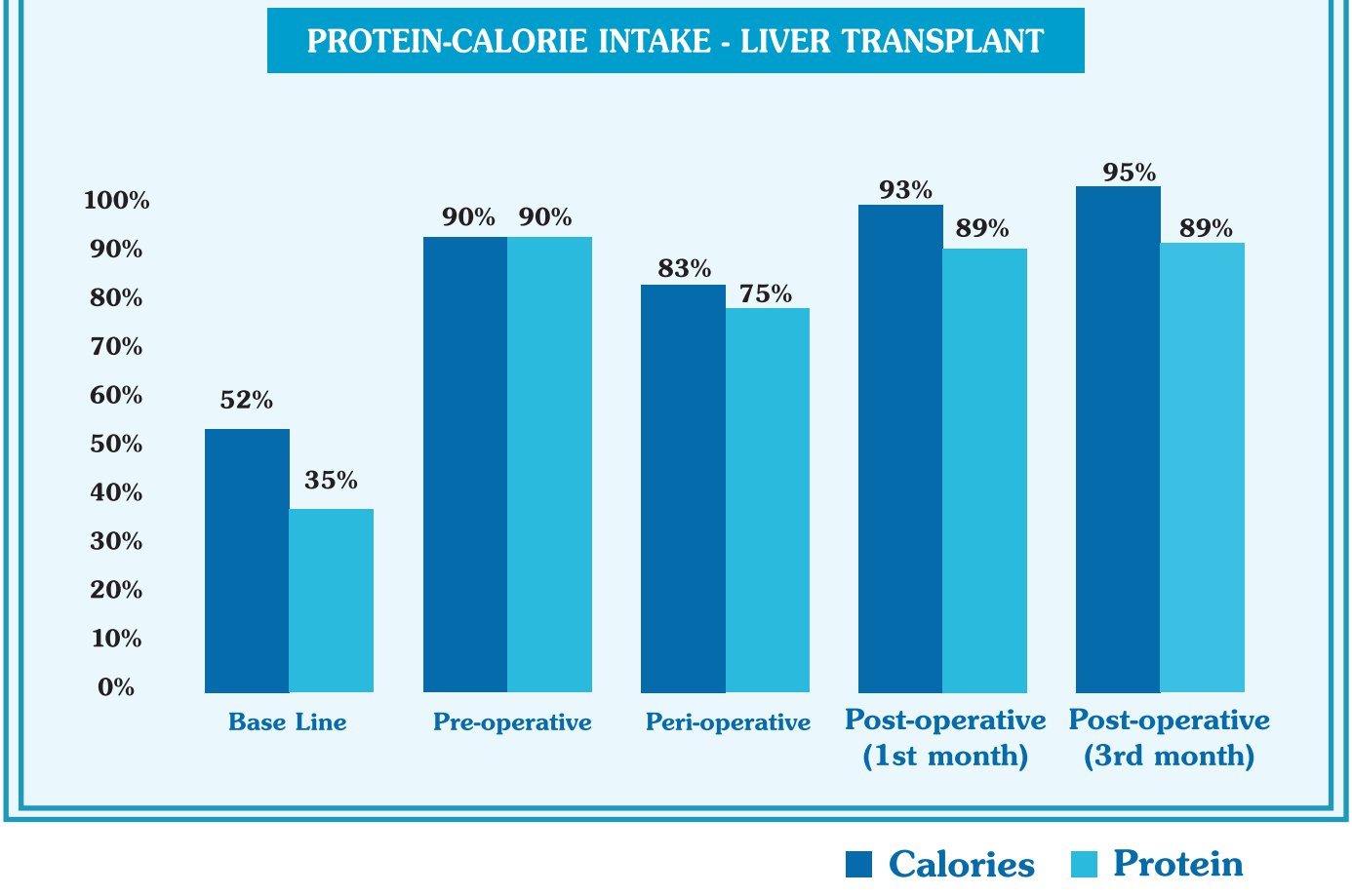
During the perioperative phase the protein requirement was calculated using 1.5g /Kg - 101g per day with similar calories as in pre-operative phase. He was initiated on VHPHC ONS once liquid diet was tolerated on post-op day 1 and the Clinical Dietitian monitored his oral intake daily using calorie counting and suggested modifications in care plan as required. This helped in achieving an aver nutritional intake of 83% calories and 75% protein during the perioperative hospitalization. He required minimum ventilation of 7.5hrs during LTx and was discharged after 9 days of hospitalization for LTx with no infectious complications.

Post-operative Phase:

In the post-operative follow-up, the nutritional intake improved to 93% calories & 89% protein in the first month and 95% calories and 89% protein in the third month as per dietary recall. At the end of three months, he weighed 80kg and HGS increased to 28kg.

SUMMARY OF PROTEIN-CALORIE INTAKE (PHASES OF LIVER TRANSPLANT)*

*Customized Nutrition Planning (VHPHC ONS) & Personalized Counselling



Conclusion:

An individualized protocol to diagnose, stratify early the degree of malnutrition and follow up by Customized nutrition planning and personalized counselling helped to achieve nutritional targets more effectively. Inspite of patients' diversity in nutritional habits and reluctance to accept change in dietary pattern, it is clear that a qualified and dedicated transplant nutrition team can successfully help achieve better nutritional targets in LTx patients.

#Data on file

HGS-Handgrip Strength
VHPHC - Very High Protein High Calorie
LTx - Liver Transplant

Dt. Anam Golandaz
Sr. Officer Dietician,
Head & Neck Cancer Institute of India
Mumbai

Impact of High Calorie High Protein ONS on Patients after Coronary Artery Bypass (CABG) Surgery

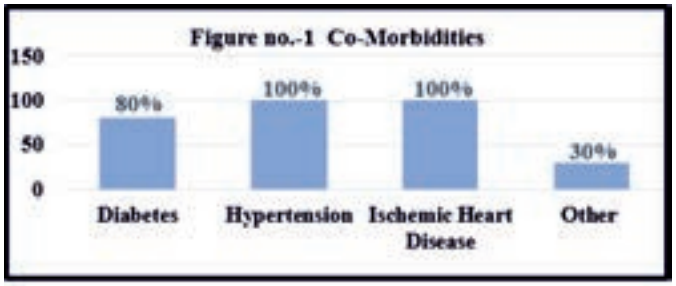
Background: Maintaining good nutritional status during hospitalization is vital, as under-nutrition in patients is associated with increased risk of hospital infections, delayed wound healing, longer hospital stay, increased cost of treatment and higher morbidity and mortality risk. Nutrition support is recognized as a clinically relevant aspect of the intensive care treatment of cardiac surgery patients.

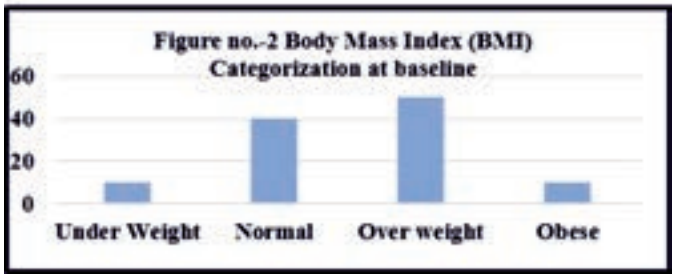
Oral Nutrition Supplements can improve nutrition status and clinical outcomes in hospitalized patients. We examined the impact of a high calorie & protein Oral Nutrition Supplement **(ONS)** on nutrient intake.

Objectives:

- To assess nutritional status of patients undergoing to coronary artery bypass surgery
- To analyze the effect of Oral Nutritional Supplement on nutritional of patients after surgery.
- To monitor biochemical parameters and food intake.

Methods: The present study was conducted on 10 patients randomized to control (n = 5) or ONS- (n = 5) after post Coronary artery by-pass surgery (CABG) admitted at Masina Hospital for 3weeks. **PentaSure 2.0** was given to **ONS** group as it is high calorie & protein formula, consist Medium Chain Triglycerides, safe for diabetic patients and dilute in less water. **ONS** were prescribed daily as per patient's requirement. The primary outcome was weight maintenance during hospitalization and length of hospital stay. Other outcomes included change in body mass index (BMI), biochemical parameters, calorie & protein intake, mid upper arm circumference, calf circumference and activity level at discharge and follow up. Adequate energy and protein intake were defined as 30-35 kcal/kg/d and 1.2-1.5 g/kg/d, respectively (ESPEN guideline 2017).





As per Subjective Global Assessment all patients were well nourished (SGA- A) at baseline.

Study Type	Observational study
Selection	10 patients admitted at Masina Hospital for Coronary Artery By Pass Surgery (CABG)
Intervention	Oral Nutrition Supplement after CABG - ONS (n=5) & not to Control group (n=5)
Nutritional Assessment	Subjective Global Assessment (SGA), Body Mass Index (BMI), weight at the time of admission, discharge and follow up, MUCA, CC
Other Assessment	Biochemical parameters, SARC F Score (before CABG and at follow up)
Nutritional Counseling	Daily for all patients
Follow up	Before CABG, after CABG and follow up after 10 days

Results: The mean age of patients was 56 .5 years. Fifty percent were males and majority were overweight as per BMI categorization at baseline. Diabetes and ischemic heart disease were observed in all patients. All patients lost weight after CABG procedure. Less than half of patients met the requirements for calorie and protein during the study. After adding **ONS** calorie and protein intake was improved ($p<0.05$). Additionally, patients on **ONS** who were more functionally impaired at baseline had significantly greater weight gain or maintained weight and improved functional status. Biochemical parameters and anthropometric measurements also improved in **ONS** group as compared to control group.

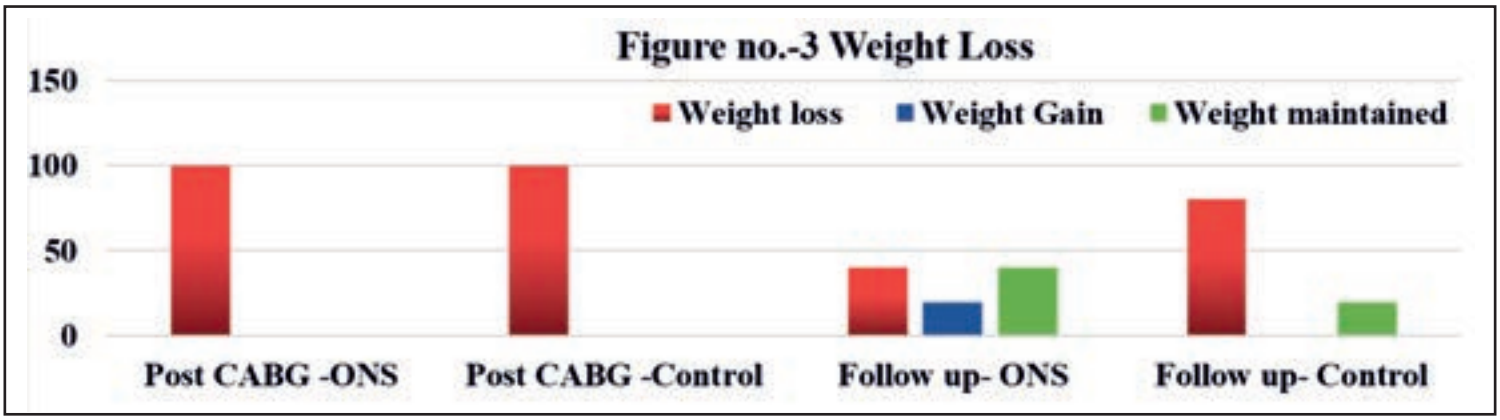
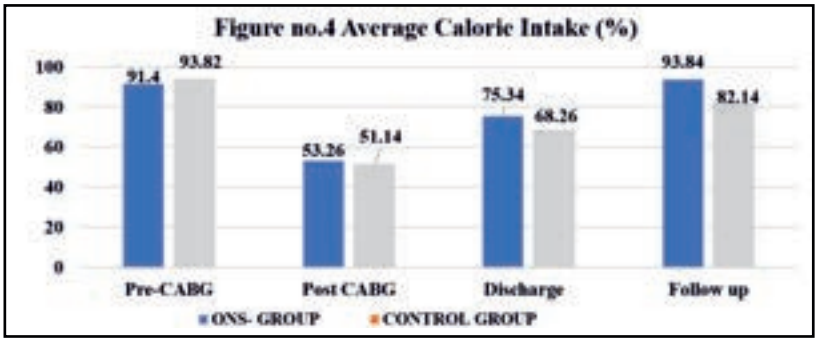
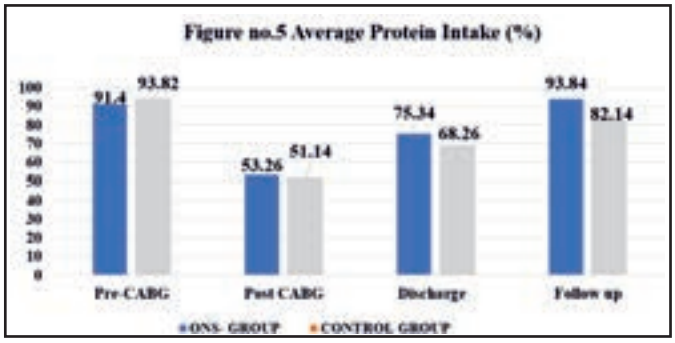


Figure no.3 shows the weight loss in patients post CABG and after 10 days of follow up





Calorie & protein intake decreased significantly after CABG in both groups, Whereas after CABG and on follow up ONS group calorie & protein intake was more than a control group (Fig. no. 4 & 5)

Conclusions: **Oral Nutrition Supplement (PentaSure 2.0)** use throughout hospital stay and post- hospital discharge significantly improved calorie & protein intake and helped in maintaining weight, which might positively affect patient's recovery.

#Data on file

K Sowmya
Sr. Dietician,
Apollo Hospitals,
Secunderabad

Evaluation of Malnutrition in the Geriatric Patients with Interstitial Lung Disease (ILD), using the MUST tool and administration of Oral Nutritional Supplements.

AIM:

The study aimed to investigate malnutrition in old age with Interstitial Lung Disease (ILD) using the MUST tool and administration of Oral Nutritional Supplement.

MATERIALS AND METHOD:

A questionnaire was used to gather data for five patients with Interstitial Lung Disease (ILD) from November 2022 to May 2023 in In-patients of Apollo Hospitals, Secunderabad. The study used the MUST tool screening to measure malnutrition prevalence. A **Hypercaloric and Polymeric-based Oral Nutritional Supplement (ONS)** was administered to improve nutritional status.

Inclusion criteria:

- The study included men and women who were diagnosed with Interstitial Lung Disease.

Exclusion criteria:

- The study excludes the men and women below 60 years of age.
- The study excludes the initial diagnosis other than Interstitial Lung Disease.

RESULTS AND DISCUSSION:

Malnutrition is linked to sarcopenia and cachexia conditions, causing physical changes and worsening clinical outcomes in geriatrics. The research involved collecting data from five individuals diagnosed with the disease, aged 75-85. The study used an experimental research approach, with a questionnaire for data collection. The results showed that malnutrition was prevalent among the sample, with one sample scoring high risk and four scoring medium risk. During hospital stays, recommended dietary allowances were calculated and prescribed, and discharge diet counselling and oral nutritional supplements were prescribed to improve nutritional status. Following discharge, there was a three-month follow-up every month to find out how ONS was being used. Following a regular diet and a three-month ONS regimen, nutritional indicators were assessed. The data showed a range of values from 0 to 167.92, with a mean of 980 and a standard deviation of 4.658. The intervention met the individual's calorie, and protein requirements of the patients and observed a positive change in the nutritional markers.

CONCLUSION:

The study highlights the importance of understanding and addressing malnutrition in older adults with ILD. The study suggests that supplementation can improve nutritional status and markers like albumin levels in the geriatric population as these indicate delay of mortality rates.

#Data on File
https://www.bapen.org.uk/pdfs/must/must_full.pdf

MUST - Malnutrition Universal Screening Tool

Dt. Ekta S. Kinger
Certified Diabetes Educator

Second meal effect of Diabetes Specific Oral Nutrition Supplement PentaSure DM on post prandial blood sugar and satiety.

Dt. Ekta Kinger[1], Dr. Sharad Deshmukh[2], Dr. Nikhil Kelkar[3], Ms. Jyoti Nunse[4]

ICNC IAPEN 2023, Chennai

1 Consultant Dietitian, Mediliv Multispecialty Hospital & Fin&Fit, Nashik, India 2 Consultant Gastroenterologist, Mediliv Multispecialty Hospital, Nashik, India, 3 Jt Managing Director, Clinical Nutrition Excellence Academy, Hexagon Nutrition Limited, Mumbai, India. 4 Asst Product Manager, Clinical Nutrition Excellence Academy, Hexagon Nutrition Limited, Mumbai, India.

Background: The second meal effect is the ability of food to lower postprandial glycaemia not only after the meal at which they are consumed but also at a subsequent meal. This effect may have an application in ameliorating macrovascular complications associated with postprandial hyperglycaemia.

Objective: The objective of the study was to study the second meal effect of (with Low GI, High Fibre & 22.6g Protein) DS-ONS) on the post prandial blood sugar in people with type 2 diabetes.

Methods: A pilot OPD study was conducted in Nashik to understand the second meal effect of high protein with 22.6g, high fibre, low glycaemic index of **PentaSure DM** About 10 patients were recruited by purposive sampling and prescribed 2 scoops of **PentaSure DM** as an evening snack for 4 weeks. The diet prescribed was moderate complex carbohydrate diet with 20-25 kcal/kg body weight, high fiber and moderate sodium by restricting processed junk food. Additionally, a low-moderate intensity exercise was recommended for at least 30 mins every day. The PPBS along with perceived satiety using the Hunger Scale[1] was measured before and after the intervention.

Results: The mean height was 164.85 ± 8.8 cm; the mean weight was 77.82 ± 13.2 kg. After the 4-week intervention period the mean weight loss was 2.84 ± 1.7 kg (Range -1 to 5 kg, BMI changed from 29.3 ±. 5.6 to 27.7 ± 5.7). Patients also reported improvement in their GI symptoms like constipation and satiety post the snack time, leading to lesser intake at dinner time. The PPBS before intervention was 194 ± 55 mg/dl and after the intervention went down by 41 ± 27 points to 153 ± 32 mg/dl. The hunger scale also showed improvement from feeling VeryHungry **(Hunger Scale = 3)** with a regular snack to a Neutral **(Hunger Scale = 5)** or Satisfied **(Hunger Scale=6)** feeling after consuming the supplement.

Conclusion: Diabetes Specific Oral Nutrition Supplement (with Low GI, High Fibre & 22.6g Protein) **PentaSure DM**) at snack time may have a second meal effect at dinner leading to overall improved glycaemic control.

PentaSure® DM DIABETES CARE

#Data on File

DS-ONS - Diabetes Specific Oral Nutrition Supplement
PPBS - Post Prandial Blood Sugar

http://advanceddiabetescentre.com/blog/hunger-scale-coping-with-your-hunger-pangs/#:~:text=The%20Hunger%20Scale&text=Before%20you%20start%20to%20eat,6%2C%20or%207%20%E2%80%93%20Stop%20eating

Dt. Priya Chitale
Clinical Dietician
Head Department of Dietetics and Nutrition
Apollo Hospitals, Indore

MEDICAL NUTRITION THERAPY IN PATIENT WITH POST CORROSIVE INJURIES OF ESOPHEGOUS

***Oral presentation in ICNC IAPEN 2023, Chennai**
Awarded for - Outstanding Research Award

Background: Consuming a corrosive substance can cause serious damage to the digestive system and even cause death[1]. The type of material, the agent's morphology, the quantity, and the intent are only a few of the variables that affect the degree and scope of damage. Perforation and necrosis may occur during the acute period. Esophageal strictures, antral stenosis, and esophageal cancer development are examples of long-term consequences.

Objectives: This paper's objective was to share our knowledge of nutritional support in patients with acute caustic poisonings that interfere with regular nutrition.

Methods: A 24 years old male ingested Acid unintentionally resulted into corrosive oesophageal injury. A soft, plastic tube placed through the skin of the abdomen into the midsection of the small intestine. Food and Medicines were delivered via this tube until the patient was healthy enough to eat by mouth. Patient was also counselled emotionally to convince him for the optimum food intake.

Results: He had consumed sulphuric acid, according to the toxicological analysis report resulted into corrosive injury of esophegous. Before surgical procedure, weight was 31.5kg. Patient was given PEG feed of 50-250ml/2 hr before surgeries contained **Peptide formula Semi Elemental** for 3 days. Feeds planned were prepared by using home foods with a target of at least 5kg weight gain to prepare him for surgery. After surgery, patient was given feeds orally with the progression from clear fluid to soft diet. At the time of discharge, we noticed 42kg weight by following just **Medical Nutrition Therapy.**

Conclusion: Caustics cause the most serious poisonings in clinical practise, and they typically affect younger adults. We were able to keep our patients' body weight, protein and albumin levels, nutritional status, and nitrogen balance by providing **Disease Specific Semi Elemental Nutritional Support, PentaSure Critipep (100% Whey Peptide, 70% MCT, High in TGF-ß.**

#Data on File

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3633385/

Dt. Gargee Rai
Consultant Onco Dietician
National Cancer Institute, Nagpur

CHALLENGING NUTRITIONAL REHABILITATION OF AN ADULT WITH ACUTE LYMPHOBLASTIC LEUKEMIA COMBINED WITH NEUTROPENIC SEPSIS WITH LIVER PARENCHYMAL DISEASE AND STOMATIS WITH HYPOALBUMINIA WITH LUNG INFECTION

PMID: CAN4293
ICNC IAPEN 2024
Mumbai

Abstract : Cancer Nutrition

Background:
On intensive Chemotherapy the adult developed Neutropenic sepsis with liver toxicity due to chemotherapy drugs causing hepatomegaly and acute liver parenchymal disease with gall bladder edema, severe stomatitis, hypoalbuminia hypoglycemia and lung infection, it was a rare finding which made the patient nutritionally compromised with feeding difficulties[1].

CASE DETAILS:
64years old female with no comorbidities underwent chemotherapy (CT) for B cell ALL. Post Chemotherapy she developed multiple complication.
- Acute lymphoblastic leukemia with Anemia and pancytopenia
- Acute Liver parenchymal disease (liver toxicity)
- Acute lower respiratory lung infection with pleural effusion
- Hypoalbuminia
- Neutropenic sepsis
- Severe mucositis

Methodology:
ASSESSMENTS:
- Weight: 57kg(dry weight)
- Height:155cm
- SGA-B

Nutritional Needs And Planning: ESPEN/IAPEN nutritional guidelines for Cancer were used for calculating Nutritional requirement
- Calorie: 25-35/kcal/kg/day
- Protein: 1.5-2.5gm/kg/day
- Carbohydrate :(50-65%)
- Fat :25-30%
- Adequate micronutrients and electrolyte correction was given

Result:
NUTRITIONAL MANAGEMENT: Central line TPN containing without lipid chamber acid was planned 1000ml @56m l/hr over 18hrs +10ml MVI in each TPN bag and 3 ml trace elements(chromium, zinc, copper, manganese) after that 8% Aminovein Hepa 500ml @ 83ml/hr over 6 hrs, when shifted to NGT, **Disease Specific Scientific Hepatic formula (100% Whey Protein, enriched with BCAA and 70% MCT), PentaSure Hepatic, feeding was started from small volume of 100ml/2hr -200ml/2hrly to soft diet on discharge. Patients albumin improved** mucositis decreased overall blood count improved overall clinical parameter improved.
Glutamine, Carnitine, Zinc, BCAA and Omega 3 supplement were added for better results and healing.

Conclusion:
FOLLOW UP- On 1st follow up patient gained 2 kg weight and other clinical parameter improved.

#Data on File

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6469653/

ESPEN : European Society for Parenteral and Enteral Nutrition
ASPEN: Indian Association for Parenteral and Enteral Nutrition
SGA: Subjective Gobal Assessment
TPN: Total Parenteral Nutrition
MVI: Multi-Vitamin Injection
MCT: Medium Chain Triglycerides
BCAA: Branched Chain Amino Acid
NGT: Nasogastric Tube

Dr. Neeraja
Care Hospital,
Visakhapatnam

Effect of Resistant Maltodextrin in Diarrhoea in Critically Ill.

Background : Intensive care units (ICU) are paying more and more attention to nutritional support therapy. Due to its safety, effectiveness, ease, and adherence to physiological patterns, enteral nutrition is being employed more and more frequently in clinics. According to studies, enteral nutrition preserves the integrity of the gastrointestinal mucosa, lessens the likelihood that toxins from the intestinal tract enter the bloodstream, which lowers the risk of sepsis and multiple organ failure, and is linked to a shorter hospital stay and lower mortality rates[1]. Critically ill patients, however, frequently have intolerance during enteral nutrition implementation, including abdominal distension, diarrhoea, reflux, and constipation, especially diarrhoea, which is the most typical gastrointestinal symptom with a prevalence of 14-36%[2]. The abnormal increase in intestinal peristalsis and stool frequency is referred to as diarrhoea.It is generally agreed upon that enteral feeding is the best option for seriously unwell individuals. One of the most frequent consequences, diarrhoea, has the tendency to delay or even prevent the absorption of nutrients.As a result, it may not only lessen the therapeutic impact and lengthen the hospital stay, but it may also cause electrolyte disturbance, changes to the internal environment, and it may even be fatal.

Objectives: To know the effect of Resistant Maltodextrin has any significant effect to control and reduce the condition of diarrhoea in Critically Ill Patients.

Methods: 15 subjects who are admitted in MICU and are on tube feeding ,and passed more than 3 episodes of loose stools were selected.
5gm of commercial Resistant Maltodextrin twice a day within 150ml of buttermilk through tube is given for three days.

Results: Diarrhea is controlled in three subjects on the second day after, continue with three feeds of 5gm of maltodextrin, and **2 of had reduced the number of stools passed from three to one time. One patient took only one feed to stop the diarrhea.** This shows that the Resistant Maltodextrin has a positive effect on treating the diarrhoea in tube feed in ICU patients.

Discussion: The prevalence of diarrhoea in the ICU has not previously been described in our study. Diarrhoea was often reported (12.9% prevalence), and it was linked to longer crude ICU stays and mortality. These associations persisted even after taking into account the severity of the illness and other potential cofounding variables. **Adding Soluble fiber in butter milk will act as a prebiotic and probitic to improve the condition diarrhoea in Critically Ill Patients.**

Conclusion: Even though it showed positive effect on controlling diarrhoea in ICU patients.Further more large scale scientific research need to be done on this topic to know the effect of Resistant Maltodextrin in treating the diarrhoea in hospitalized patients .

PentaSure® FIBER

#Data on File

MICU - Medical Intensive Care Unit

1) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9092582/
2) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6833384/

Indian Journal of
Nutrition

Open Science Publications

Volume 10, Issue 2 - 2023

www.opensciencepublications.com

Effect of Nutritional Support and Intradialytic Physical Activity on Protein-Energy Wasting, Physical Functioning, and Quality of Life: The NutriVity® Pilot Study

Research Article

Parekh J, Usulumarty D, Kothari J, Bichu S and Billa V

Apex Kidney Care Pvt. Ltd., Sushrut Hospital and Research Centre Mumbai India

Corresponding author: Jill Parekh, Apex Kidney Care Pvt. Ltd., Sushrut Hospital and Research Centre Chembur, Mumbai, Maharashtra, India. E-mail id: jill.mehta47@gmail.com

Article Information: **Submission:** 21/07/2023; **Accepted:** 18/08/2023; **Published:** 21/08/2023

Abstract

Patients with end-stage renal disease (ESRD) undergoing hemodialysis (HD) therapy often experience a decline in skeletal muscle mass and strength, leading to protein-energy wasting. This significantly affects their daily activities, rendering many of them reliant on caregivers. Furthermore, malnutrition is a predominant predictive risk factor for mortality in HD patients. This pilot study investigated the effects of a 3-month intradialytic nutritional support and exercise program on lean tissue index (LTI), fat tissue index (FTI) and quality of life in 30 Indian ESRD patients undergoing HD. The exercise program included resistance and strength training during thrice weekly dialysis sessions. Additionally, each patient received a personalized high protein diet prescription. During each dialysis session, protein supplements were administered to supplement the protein intake of every patient. Body composition measurements were taken at baseline, at 6th week, and at the end of the study, while quality of life was assessed using the Kidney Disease Quality of Life-36 (KDQOL-36) questionnaire[1].

Results showed a mean LTI change of 2.95 ± 5.78 kg/m², a mean fat tissue index (FTI) change of -1.2 ± 4.48 kg/m². The mean KDQOL-36 score change of 11 ± 20.8 demonstrates a substantial and meaningful improvement in the quality of life. Although the study did not show a statistically significant improvement in LTI due to a small sample size, the results suggest that intradialytic physical activity with focused nutritional support can improve nutritional indices and enhance the quality of life of HD patients.

Keywords: End-Stage Renal Disease; Hemodialysis; Nutritional Support; Physical Activity; Protein-Energy Wasting; Quality of Life; Lean Tissue Index; Kidney Disease Quality OfLife-36

Introduction

Patients with end-stage renal disease (ESRD) undergoing hemodialysis (HD) therapy often experience a decline in skeletal muscle mass and strength, leading to protein-energy wasting and decreased quality of life[2]. This phenomenon occurs because HD treatment does not provide an adequate replacement for the loss of nutrients that occurs in these patients. Furthermore, HD patients generally fail to consume the recommended protein intake, which further exacerbates their nutritional status. As a result, HD patients may experience diminished physical functioning, increased morbidity and mortality, and a reduced quality of life [3].

Objective

The objective of this pilot study was to investigate the effects of a 3-month intradialytic nutritional support and exercise program on lean tissue index (LTI), Fat Tissue Index (FTI) and quality of life in 30 Indian ESRD patients undergoing HD.

Materials and Methods

A total of 30 Indian ESRD patients undergoing HD were enrolled into the study for 3 months. The inclusion and exclusion criteria for this study included patients aged over 18 years, with a hemodialysis (HD) vintage of more than 6 months, ambulatory, not pregnant, absence of active infections, and no hospitalization within the last 3 months. The exercise regimen comprised of resistance and strength training, including triceps curls with a 1kg dumbbell in each hand,

leg raises, and ankle flexion, with each exercise performed in sets of 5 repetitions. These exercises were conducted before each dialysis session, three times a week.

Patients were prescribed a high protein diet including protein supplements (2 scoops of PentaSure DLS) during dialysis. Biological markers of nutrition and body composition measurements were taken at baseline, during intervention **(6th week)**, and at the end of the study **(12th week)**. Quality of life was assessed using the Kidney Disease Quality of Life-36 (KDQOL-36) questionnaire.

Results

The mean age of the enrolled patients was 55.5 ± 11.5 years, with 65% being male. The mean HD vintage was 26 ± 18 months, and diabetes was comorbidity in 39% patients.

Their mean baseline BMI was 19.5 ± 9 kg/m^2. Their mean baseline Lean Tissue Index (LTI_0) was 8.2 ± 2.3 kg/m^2 & mean Fat Tissue Index (FTI_0) was 15.4 ± 3.5 kg/m^2. Their mean **Quality of Life score at baseline ($KDQOL\text{-}36_0$) was 61.5 ± 17.** (Fig. 1)

The survey done at the 12^h week showed the mean Lean Tissue Index (LTI_f) was 11.15 ± 5.3 kg/m^2 and mean Fat Tissue Index (FTI_f) was14.2 ± 2.8 kg/m^2. Their 12^h week mean Quality of Life score ($KDQOL - 36_f$) was 72.5 ± 12. (Figure 1)

The mean LTI change during the study was 2.95 ± 5.78 kg/m^2 (LTI_f– LTI_0), mean FTI change was -1.2 ± 4.48 kg/m^2(FTI_f– FTI_0), mean KDQOL – 36 score change was 11 ± 20.8 ($KDQOL - 36_f$ - $KDQOL - 36_0$) **(p value = 0.02)**. (Figure 1)

Discussion

Hemodialysis (HD) is a life-saving treatment for patients with end-stage renal disease (ESRD). However, it comes with its own set of challenges, one of which is protein-energy wasting (PEW), a condition characterized by a loss of muscle mass and increased adipose tissue deposition. PEW is associated with adverse outcomes, such as higher morbidity and mortality rates, as well as a reduced quality of life (QoL) for HD patients[4]. Addressing this issue is crucial to improve the overall well-being of individuals undergoing HD.

Previous studies have highlighted the potential benefits of exercise and nutritional interventions in HD patients [5]. Nevertheless, there is a need to explore the specific impact of intradialytic exercise and a high protein diet on lean tissue index (LTI), fat tissue index (FTI), and QoL in the Indian HD population.

The Impact of Intradialytic Exercise on LTI and FTI:

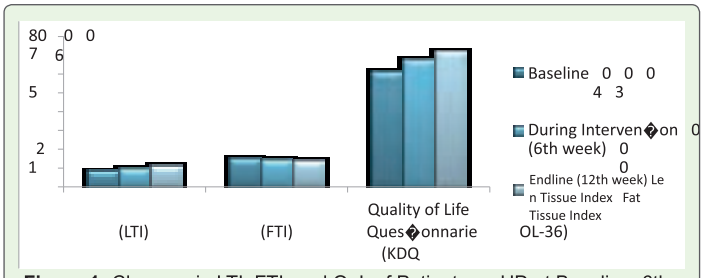


Figure 1: Changes in LTI, FTI, and QoL of Patients on HD at Baseline, 6th Week, and 12th Week of Intervention.

Exercise has been shown to have a positive effect on the physical and mental health of HD patients. It can help combat muscle wasting and increase muscle strength, leading to improvements in LTI [6], [7]. In our study, we carefully designed an intradialytic exercise program that incorporated resistance and strength training. The participants engaged in these exercises during their dialysis sessions, providing a safe and controlled environment for physical activity.

The results were encouraging, demonstrating a significant improvement in LTI among HD patients who followed the exercise regime. The mean LTI change of 2.95 ± 5.78 kg/m^2 showed a promising trend towards increased muscle mass, which can be instrumental in ameliorating the negative effects of PEW. Moreover, the intradialytic exercise program also influenced FTI positively. A mean FTI change of -1.2 ± 4.48 kg/m^2 indicated a reduction in adipose tissue, which is crucial for patients with PEW, as excessive fat accumulation is detrimental to their health.

Enhancing Quality of Life through Intradialytic Nutritional Support:

Recognizing the significance of adequate nutrition for HD patients, our study implemented a personalized high protein diet, complemented by supervised protein supplement administration during dialysis sessions. **The goal was to mitigate protein loss experienced during dialysis and promote better overall nutritional status among participants.**

The findings were remarkable, revealing a significant impact on both LTI and FTI through the adoption of a high protein diet. Patients experienced improved body composition, better muscle mass retention, and reduced adipose tissue deposition. These changes translated into a notable increase in the participants' QoL, as assessed by the KDQOL-36 questionnaire.

Comparing Results with Other Populations

The positive outcomes observed in our Indian HD population were on par with previous studies conducted on different populations. [5] This strengthens the evidence supporting the generalizability of exercise and nutritional interventions as valuable tools for addressing PEW and enhancing QoL in HD patients worldwide.

Synergistic Effect: Exercise and Nutrition Working Hand in Hand:

One of the most intriguing aspects of our study was the synergistic effect of combining intradialytic exercise and a high protein diet. By incorporating both approaches, we observed a more pronounced improvement in LTI, FTI, and QoL. This highlights the potential of an integrated approach in optimizing patient outcomes and encouraging better compliance with treatment regimens.

Our study underscores the importance of intradialytic exercise and nutritional support as effective strategies for countering PEW and enhancing the QoL of HD patients. The positive impact on LTI and FTI, along with improvements in overall health and well-being, reinforces the value of a holistic approach to patient care.

This research contributes to the growing body of evidence supporting the benefits of exercise and nutritional interventions

Citation: Parekh J, Usulumarty D, Kothari J, Bichu S, Billa V. Effect of Nutritional Support and Intradialytic Physical Activity on Protein-Energy Wasting, Physical Functioning, and Quality of Life: The NutriVity® Pilot Study. Indian J Nutri. 2023;10(2): 279.

in HD management. Implementing these interventions in the intradialytic setting offers a convenient and safe means to enhance patient outcomes, and the results are transferable to diverse HD populations worldwide.

Future research could delve further into optimizing exercise and nutritional programs, exploring different exercise modalities and diet compositions to tailor interventions based on individual patient needs. By continuously advancing our understanding, we can continue to improve the lives of HD patients and offer them a brighter, healthier future.

Limitations of this study include the small sample size and the short duration of the intervention. A larger, randomized controlled trial with a longer follow-up period is needed to confirm the findings of this pilot study.

Conclusion

In conclusion, the NUTRIVITY® pilot study showed that intradialytic physical activity with focused nutritional support plays an important role in improving the nutritional indices and quality of life of Indian HD patients. The combination of exercise and nutritional interventions has the potential to improve clinical outcomes in these HD patients and should be considered in the management of this patient population. Future studies with larger sample sizes and longer durations are needed to confirm these findings.

Acknowledgements

We would like to express our gratitude to **Hexagon Nutrition for providing their PentaSure DLS supplements for our patients during this study**. Without their generous support, this research would not have been possible. We greatly appreciate their contribution to our efforts to improve patient care and outcomes.

We would also like to extend our sincere appreciation to Sunita sister and Shireen sister for their invaluable assistance in collecting all the raw data for this research. Their dedication and hard work were essential to the success of this project, and we are grateful for their contributions. We also acknowledge their professionalism and commitment to patient care, which made them an indispensable part of our team.

References

1. Peipert JD, Nair D, Klicko K, Schatell DR., Hays RD (2019) Kidney Disease Quality of Life 36-Item Short Form Survey (KDQOL-36) Normative Values for the United States Dialysis Population and New Single Summary Score. Journal of the American Society of Nephrology: JASN 30: 654-663.
2. Carrero JJ, Stenvinkel P, Cuppari L, Ikizler TA, Kalantar-Zadeh K, et al. (2013) Etiology of the protein-energy wasting syndrome in chronic kidney disease: a consensus statement from the International Society of Renal Nutrition and Metabolism (ISRNM).Journal of renal nutrition: the o翻□cial journal of the Council on Renal Nutrition of the National Kidney Foundation 23: 77-90.
3. Bergström J (1995) Nutrition and mortality in hemodialysis. Journal of the American Society of Nephrology: JASN 6: 1329-1341.
4. Fouque D, Kalantar-Zadeh K, Kopple J, Cano N, Chauveau P, et al. (2008) A proposed nomenclature and diagnostic criteria for protein-energy wasting in acute and chronic kidney disease. Kidney international, 73: 391-398.
5. Magnard J, Deschamps T, Cornu C, Paris A, Hristea D (2013). Effects of a six-month intradialytic physical ACTIvity program and adequate NUTritional support on protein-energy wasting, physical functioning and quality of life in chronic hemodialysis patients: ACTINUT study protocol for a randomized controlled trial. BMC nephrology 14: 259.
6. Saitoh M, Ogawa M, Dos Santos MR., Kondo H, Suga K, et al. (2016) Effects of Intradialytic Resistance Exercise on Protein Energy Wasting, Physical Performance and Physical Activity in Ambulatory Patients on Dialysis: A Single-Center Preliminary Study in a Japanese Dialysis Facility. Therapeutic apheresis and dialysis: o翻□cial peer-reviewed journal of the International Society for Apheresis, the Japanese Society for Apheresis, the Japanese Society for Dialysis Therapy 20: 632-638.
7. Gomes Neto M, de Lacerda FFR, Lopes AA, Martinez BP, Saquetto MB (2018) Intradialytic exercise training modalities on physical functioning and health-related quality of life in patients undergoing maintenance hemodialysis: systematic review and meta-analysis. Clinical rehabilitation 32: 1189-1202.

Citation: Parekh J, Usulumarty D, Kothari J, Bichu S, Billa V. Effect of Nutritional Support and Intradialytic Physical Activity on Protein-Energy Wasting, Physical Functioning, and Quality of Life: The NutriVity® Pilot Study. Indian J Nutri. 2023;10(2): 279.

Dt. A Rajeswari
Senior Clinical Dietician,
Apollo Cancer Hospitals, Chennai

Impact of Enteral Immunonutrition Supplement (ENIS) on clinical outcomes in patients with head and neck cancer.

A.Rajeswari[1*], S.Nandhini[2]

[1]Senior Clinical Dietitian, Apollo Cancer Center, No.320, Anna Salai, Teynampet, Chennai – 600035, India.
[2] Clinical Dietitian, Apollo Cancer Center, No.320, Anna Salai, Teynampet, Chennai – 600035, India.
Clinical Nutrition Excellence Academy, Hexagon Nutrition Limited, Mumbai 400053, India.

Patients with head and neck cancer have compromised intake and poor nutritional status. Balanced enteral immunonutritional supplements (EINS) with immune nutrients like arginine, dietary ribonucleic acid, omega-3-fatty acids may lead to better clinical outcomes in these patients.

Method : Subjects with head and neck cancer were recruited in the observational trial using purposive sampling. The patients received PentaSure Immunomax ,a whey protein based EINS containing Arginine, Dietary Ribonucleic Acid and Omega-3-fatty acid as a sole source of nutrition within 24 to 48 hours (Avg 46 ±14 hours).

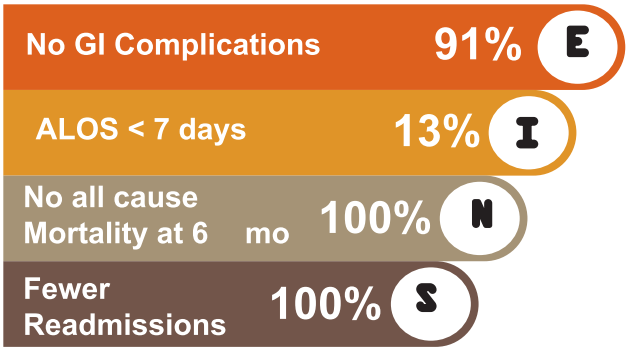
Observational Study: (n=100) Head and Neck Cancer	**Primary Outcome-** SGA score, average length of hospital stay (ALOS), tolerance of feeds/adverse events, gastrointestinal (GI) complications, and hospital readmissions
	Secondary Outcome- All cause mortality at 6 months & Readmissions due to fever/complications at 6 months.
	Data collected over 2 years. The patients were prescribed individualized EINS (Avg 28 ± 5 kcal/kg body weight and 1.4 ± 0.3 g of protein).

Result: The average age of the patients was 55 ±12 years with an average height of 164± 8 cm and weight of 66± 11 kg. The mean SGA score of the patients was 13 ± 2. About 91% of the subjects did not show any GI complications, 3% felt satiated after the feed, while 6% had abdominal discomfort or constipation.

The ALOS was 15± 7 days with 13% having their ALOS below 7 days.

The overall rate of readmissions due to reduced immunity were low. Readmissions were mainly for chemo at 3 month and 6 months (9% and 2% respectively). The other reasons for readmissions were fever 3% at 1 month and 2% at 3 months, and procedures like wound debridement or reconstruction surgery which was about 5% at 3 months. There were no readmissions due to fever at 6 months.

There was no mortality reported in these patients during the 6-month period.



Conclusion: A whey based EINS containing arginine, omega-3-fatty acids and dietary ribonucleic acid within 24-48 hours may have an impact on reduced length of hospital stay, therefore reduced hospital expenditure, lower rates of readmissions and improved nutritional status in patients with head and neck cancer.

Keywords: Enteral Immunonutrition Supplement, EINS, Immunonutrition, Head and Neck Cancer

Enteral Immunonutrition Supplement (ENIS)
(Whey Protein, Arginine, Dietary RNA, Omega 3 fatty acids)

#Data on File

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6469653/

ALOS : Average Length of Hospital Stay
SGA : Subjective Global Assessement

PentaSure® IMMUNOMAX

Effect of Perioperative Immunonutrition Supplementation in Patients Undergoing Living Donor Liver Transplantation

Department of Vascular Surgery and Liver Transplantation, Amrita Institute of Medical Science and Research Centre, Kochi, Kerala, India

Introduction

Patients with end-stage liver disease (ESLD) characteristically suffer from hypermetabolism due to primary and secondary protein–energy malnutrition (PEM). The causes of malnutrition in patients with ESLD are inadequate nutrient and caloric intake, decreased intestinal absorption and metabolic disturbances.[1,2] Following transplantation as in any major surgery, a biphasic response with an early hyperinflammatory state followed by an excessive compensatory immune suppression is often seen.
This systemic inflammatory response exerts high metabolic demands and leads to depletion of essential nutrients.[3,4] This is particularly predominant for patients with ESLD and concomitant malnutrition who following transplantation have prolonged mechanical ventilation, hospital stay and increased mortality.[5] Although most nutritional deficiencies and metabolic disturbances prevalent in patients with ESLD rapidly improve following liver transplant (LT), the need for early nutritional support after transplantation cannot be overemphasised.[4] This early nutrition is not only aimed at correction of PEM but also can be additionally targeted to mitigate the hyperinflammation and immunosuppression.[6]

Immunonutrition (IMN) can be defined as modulation of either the activity of the immune system, or modulation of the consequences of activation of the immune system, by interventions with nutrients or specific food items given in amounts above those normally encountered in the diet.[4-6]
IMN results in notable reductions in infections and in length of stay (LOS) in hospital.[6] **Perioperative administration of immune-enhancing formulas** has shown to improve gut function and positively modulate post-surgical immunosuppressive and inflammatory responses. They can modulate the immune system
and improve host defence mechanisms after major surgery.[7]

Our study focused on the effect of **perioperative IMN supplementation using PentaSure Immunomax®** on recovery after living donor LT in Indian population. The aim of this study was to assess the effect of **perioperative IMN** supplementation in adult patients undergoing living donor liver transplantation (LDLT). The primary endpoint was to assess the effect of **IMN** supplementation on combined length of intensive care unit (ICU) and hospital stay. The secondary endpoints were to understand the effect of **perioperative IMN**
supplementation on rate of infection, where presence of infection is defined as positive blood, drain and urine culture and anthropometrical parameters such as triceps skinfold thickness (TST), mid-upper arm circumference (MUAC) and weight loss percentage and liver function test (LFT).

Materials and Methods

Consecutive adult patients (above 18 years) admitted for pre-transplant workup for LDLT were included. All patients were provided with dietary counselling on food choices and their required nutrient intake. Patients in IMN were provided with **PentaSure Immunomax®** and those in CON were given Accumax Advance®. **PentaSure Immunomax® by Hexagon Nutrition is a hypercaloric (1.25 kcal/ml) solution enriched with L-arginine (3.11 g/serving), ribonucleic acid sodium salt (0.38 g/serving) and omega-3 fatty acids (0.86 g/serving).** Accumax Advance® by Resergene Biosciences contains 1.19 kcal/ ml calorie and contains L-glutamine (1.5 g/serving) and omega-3fatty acids (0.006 g/serving) in negligible amounts. The **IMN group consumed 1 sachet (61 g) of PentaSure Immunomax® twice a day in warm water** and the CON group consumed 3 scoops (30g) in warm water twice a day. This is to maintain similar caloric intake. **The supplements were provided from pre-operative day 7 and restarted postoperatively as soon as oral intake was resumed till post-operative day (POD) 14.** Anthropometric status (TST, MUAC and weight) was assessed the day before transplantation and on POD 30.Since no study could be located in existing literature with respect to the effect of

perioperative IMN support following LDLT on combined length of ICU stay and hospital stay, the pilot study was done with n = 20, i.e., 10 samples in each group (CON and IMN). $P < 0.05$ was considered as statistically significant.

Results

The demographic data of the participants are summarised in Table 1.From Table 2 and Graphs 1 and 2, it is unequivocally evident that the **weight loss percentage in respect of pre-and post-operative assessment was significantly low in the IMN group in comparison to the CON group** ($P = 0.050$).

Table 1: Demographic data of the participants

Variable	Group		*P*
	IMN (n=10)	CON (n=10)	
Age	44.10±12.07	40.30±10.31	0.545
Sex:Male:Female	9:1	9:1	1.00

Table 2: Comparison of effect of periopertaive immunonutrition on length of stay, infection rate, liver function test and weight loss percentage between two groups

Variable	Group		*P*
	IMN (n=10)	CON (n=10)	
ICU stay (days)	6.60±0.84	7.20±1.62	0.345
Total LOS (days)	15.40±4.40	17±4.16	0.383
Occurrence of infection (N:Y)	7:3	8:2	1.000
Liver function			
TB	2.24±2.42	0.53±2.75	0.112
DB	2.01±1.79	1.05±1.85	0.273
AST	194.04±112.07	193.76±149.70	0.821
ALT	264.80±166.87	241.21±147.75	0.762
ALP	48.56±27.89	56.20±39.42	0.597
Total proteins	1.11±0.60	0.99±0.77	0.519
Albumin	0.32±0.41	0.33±0.77	0.732
Globulin	0.86±0.36	0.74±0.31	0.384
Weight loss percentage	10.09±6.01	15.56±4.39	**0.050***

Data are represented as mean±SD of number of days or as number of patients, *Statistically significant, LOS: Length of stay, TB: Total bilirubin, DB: Direct bilirubin, AST: Aspartate aminotransferase, ALT: Alanine aminotransferase, ALP: Alkaline phosphatase, SD: Standard deviation, ICU: Intensive care unit, IMN: Immunonutrition, CON: Control, LFT: Liver function test Comparative analysis of ICU stay and hospital stay, respectively, exhibited no statistical significance amongst the two groups. We found a statistically significant difference for TST in the IMN group compared to the CON group.

Discussion

This study is a randomised controlled assessor-blinded pilot

Table 3: Effect of perioperative immunonutrition supplementation on pre- and post-operative anthropometric measurement

Group	Variable	POD1	POD 30	P
IMN	TST (mm)	7.45±5.45	9.20±6.12	**0.049***
	MUAC (cm)	27.40±3.85	26.93±2.86	0.414
CON	TST (mm)	5.40±2.27	5.00±3.02	0.438
	MUAC (cm)	24.75±3.66	24.94±3.85	0.905

Data are represented as mean±SD. *Statistically significant, TST: Triceps skinfold thickness, MUAC: Mid-upper arm circumference, SD: Standard deviation, IMN: Immunonutrition, CON: Control, POD: Post-operative day trial comparing immunonutrient supplements (omega-3 fatty acids, arginine and nucleotides) with a standard protein supplement following LT. **We found significant improvement in TST from POD 1 to POD 30** in both the groups. However, **the increase was significantly more in the IMN group**. This suggests that **peripheral storage of fat increased with immunonutrient supplementation.** Our finding is similar to the study by Plank et al.[8] which showed that the gain in total body fat was significant in the IMN group (P = 0.009) but not in the CON group (P = 0.08).

It is well established that subsequent to all major surgeries, there is significant weight loss. In our study, significantly lower weight loss percentage was observed in the IMN group compared to the CON group. Given that the caloric intakes in both the groups are similar, this effect is probably related to IMN. It is evidently an encouraging factor, as the restoration of normal weight LT would then take much shorter time with IMN supplementation. **Surrogate markers of nutritional improvement such as improved TST and lower weight loss percentage are seen in the IMN group.**

Conclusion

In patients undergoing LDLT, perioperative IMN supplementation provided enhancement in the anthropometrical parameters, although this did not translate into lesser hospital or ICU stay. A larger sample size will help in providing more insight into the beneficial effects of the IMN supplementation.

Dt. Anam Golandaz
Sr. Officer Dietician,
Head & Neck Cancer Institute of India,
Mumbai

A Case Report on the Outcomes of Medical Nutrition Therapy in Pre and Post Pediatric Cardiac Transplant

PMID: NLI9156
ICNC IAPEN 2024
Mumbai

Abstract

Nutrition in Lifecycle (Child, adolescent, adult, pregnancy and lactation, elderly)

Background:
Heart failure in pediatric can lead to growth failure from malnutrition because of anorexia, hyper metabolism, and side effects of poly-pharmacy, which leads to muscle atrophy, decreased functional capacity, reduced immune function, and prolonged hospital stay[1]. A 9 year old Girl presented with breathlessness, DCMP, poor LVEF, loss of appetite & weight and suggested for Heart Transplant. Nutritional status was assessed by WHO growth chart. Height-for-age growth chart indicated that child is "mildly stunted" and "severely malnourished" as per weight for age. BMI for age is < 3rd percentile (12.9kg/m2); that again indicates patient is malnourished.

Methodology:
The patient had undergone cardiac transplant on 16th June, 2019. During hospital stay, the patient was given an adequate calorie, high protein (mainly high biological value sources) and moderate fat diet in order to prevent cardiac cachexia. On POD-3 patient was extubated and clear liquid was started. Post-transplant patient weight was 18.3k g & MUAC-14cm. Gradually Semi elemental Formula (PediaGold Plus) started by continuous Naso-Gastric (NG) feed at 30ml/hour with a goal to provide 45-50kcal/kg body weight/day calories and 0.9-1gms/kg body weight/day protein. Significant caloric supplementation in children with CHD could lead to improved growth and, in some, improved growth could be achieved using continuous enteral feeds. The patient was monitored and evaluated post discharge and the improvements were reported.

Results:
On POD-4 because of high residual volume and diarrhea, NG and oral feed stopped. Total Parenteral Nutrition (TPN) s tarted @ 30ml/hour. On POD-8 diarrhea and aspiration started reducing therefore tapered TPN and emphasis on oral diet. Gradually increased calorie and protein also to 50- 55kcal/kg BW/day and 1.5-1.8 gms/kg BW/ Day. Innovative food items were added in the diet along with fluid restriction (1000ml/ day). Since patient was on immunosuppressant and at risk of food-borne infections. Therefore advised Neutropenic dietary instructions to avoid food borne illness. **On POD-10th patient was taking full high protein low fat cardiac Iron Rich diet with ONS (PediaGold Plus) Patient compliance was 100% as her appetite improved.** On POD-13th improvement in hemoglobin -11.5gms/dl and reduced CRP-5.7 level were noticed. Healthy weight gain also observed during patients hospital stay. At the time of discharge patient weight was 20kgs and advised Full High Protein low Fat diet.

Conclusion:
Individualized nutrition support using a standard feeding algorithm should be the paradigm to be follow in the care of the postoperative cardiac surgical child. Although case presented weaned to an oral diet after transplantation,catch-up growth remains a concern. Improvements in immunosuppressant therapies with reduction or elimination of corticosteroid usage will result in improved growth and quality of life in this medically challenging population.

PediaGold® Plus

#Data on File

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6776449/

DCMP : Dilated Cardiomyopathy
LVEF : Left Ventricular Ejection Fraction
BMI : Body Mass Index
POD : Postoperative Day
MUAC : Mid-Upper Arm Circumference

Dt. Gargee Rai
Consultant Onco Dietician,
National Cancer Institute, Nagpur

Longterm Graft Versus Host Disease Management Post Allogenic Bone Marrow Transplant

CASE REPORT

Introduction of the study - A 13 years old boy Ht-129cm and Wt -30kg who was suffering from Ph B cell acute lymphoblastic leukemia, underwent Allogenic bone marrow transplant. The donor was his father, post transplant after 3 months the patient developed loose stools of greenish colour of increased frequency, he was admitted for the same and went for colonoscopy for the suspected gut GVHD. The colonoscopy and gut biopsy report confirm the suspension of gut GVHD. The patient was put on Budez CR steroid for the treatment of gut GVHD. Further the stool frequency and consistency improved from liquid to semi soild motion the patient was put on GVHD diet and gradually increades diet from NBM with TPN to Phase 1 diet(clear liquid) to gradually to Phase 2 diet (full liquid) to Phase 3 diet (starch base no fibre no lactose, no residue diet). The patient was in hospital for 3 months for the treatment the steroid and Phase 3 diet was continuing but there was no further improvement. The stool was semisolid and atleast 3-4 times in a day.
After 3months the patient was referred to dietician for further management till that time patient lost 4kg weight and patient was anorexic and severaly malnourished and Ht was129cm, Wt was 26kg. According to WHO scale child was MAM(-2SD) after closely looking to the pattern of their diet for 1 week I got to know that whenever we give anything which is wheat based patient has semisolid motion, when we stopped it for 3 days patient started having the normal stools,hypothesis was because of longterm GVHD there is loss of lots of enzyme from the gut which digest certain food including gluten and lactose

Medical Nutrition Therapy - As the patient was on Phase 3 diet, which consist of low fibre no lactose, no residue diet, which has limited food option for the child eg- maida chapathi, rice, moongdal, potato, padwal pumpkin, vegetable and curd because of so much restriction patient is not able to eat enough so to feed the patient nutritional counseling was very important and to make the diet more palatable and intresting for the patient is more important to achieve the results, stool binders in the diet was add to stop loose stool and a gluten free diet was recommended. The patient was given gluten free lactose free Phase 3 GVHD diet which included foods such as raw banana vegetable, twice a day and arrowroot halwa twice a day, apple stew pieces once a day and only rice based food, 2tsp of ghee, no biscuits, no breads and rava. **For Lactose Free, Gluten Free to achieve Protein calorie goal Semi elemental formula; PediaGold Plus was added. After 1month of the diet, there was a good nutritional compliance by the child.**

Result - The compliance of the diet was well tolerated and adhered. The stool normalize with the restriction of gluten from the diet, Doctor started to tapered down the steroids. Patient gained back 3kgs within 1 month with the help of the diet and supplement (PediaGold Plus) and was discharged with the same diet instructions for 6 months.

Conclusion - A logterm GVHD cases can have certain food intolerance it should be closely monitored, and addressed as soon as possible, the food should be made more interesting and palatable. **Semi Elemental Formula with 100% Whey Peptide, Easy to absorb, digest, tolerated, 100% Gluten Free, Helps to achieve the Nutritional Goal.**

PediaGold® Plus

#Data on File

GVHD: Graft-versus-host disease
WHO- MAM : Moderate Acute Malnutrition

Dr. Vivek Bindal,
Associate Director & Head Institute of Minimal Access,
Bariatric & Robotic Surgery, Max Super Specialty Hospital Delhi

ROLE OF MEAL REPLACERS IN SUSTAINABLE WEIGHT MANAGEMENT

Aim: To check the effectiveness of a Meal Replacement Supplement-**Obesigo**, in comparison with only Food based calorie-restricted diet for weight loss.

Methods: Participants with BMI 26- 40, age group of 24 to 55 years old, were randomized to **Obesigo** and a food-based restricted diet for 16 weeks. They were also following lifestyle modifications, along with 30 mins of walking daily. Complete food recall follow-up, along with BMI, weight, and body composition analysis was done every 15 days, under the supervision of Healthcare Professionals. Individuals consuming **Obesigo** had substituted their two meals, twice per day with **Obesigo**.

Results: A total of 50 participants (randomized; 25 **Obesigo** meal replacement consumers, 25 Food Based diet consumers) made up the Trial population. The average age was between 28-34 years, 78% were female and 22% were male. The baseline BMI was 33. At 16 weeks, the individuals following the **Obesigo** weight management program showed 48% higher weight loss, as compared with Individuals following the food-based calorie-restricted diet. Fat percentage loss was greatly improved, in **Obesigo** consuming individuals.

Food based calorie-restricted diet:

Age / Sex	Pre intervention weight/ BMI	Weight at 1st week	Weight at fourth week	Weight at eight week	Weight at post-op twelfth week	Weight at post op sixteen week
45/ male	102/39	101.5	99.6	98	96	94
36/ female	100/40	99.4	96	95	94	93.1

Obesigo:

Age / Sex	Pre intervention weight/ BMI	Weight at 1st week	Weight at fourth week	Weight at eight week	Weight at post-op twelfth week	Weight at post op sixteen week
45/ male	104/36	101	99.4	96	93.8	90
36/ female	99/40	97.7	95	93.6	88.1	87

Conclusions: Compared with an Food based restricted calories diet approach, Obesigo weight management plan was more effective with greater sustainable weight loss.

obesigo®
WEIGHT MANAGEMENT PLAN

Dr. Anita Gupta,
AharaYogam, Mumbai.

Meal Replacement Effective Strategy for Optimal Weight Loss

Experience studies with Obesigo

Case 1:- Male. Age 42 Yrs, Jeweller,
Kco-Type II DM Since 8 Year, High Cholesterol, Hypertension, Obesity

Prescription: He was prescribed **Obesigo** for a period of 3 months along with a Calorie restricted diet.

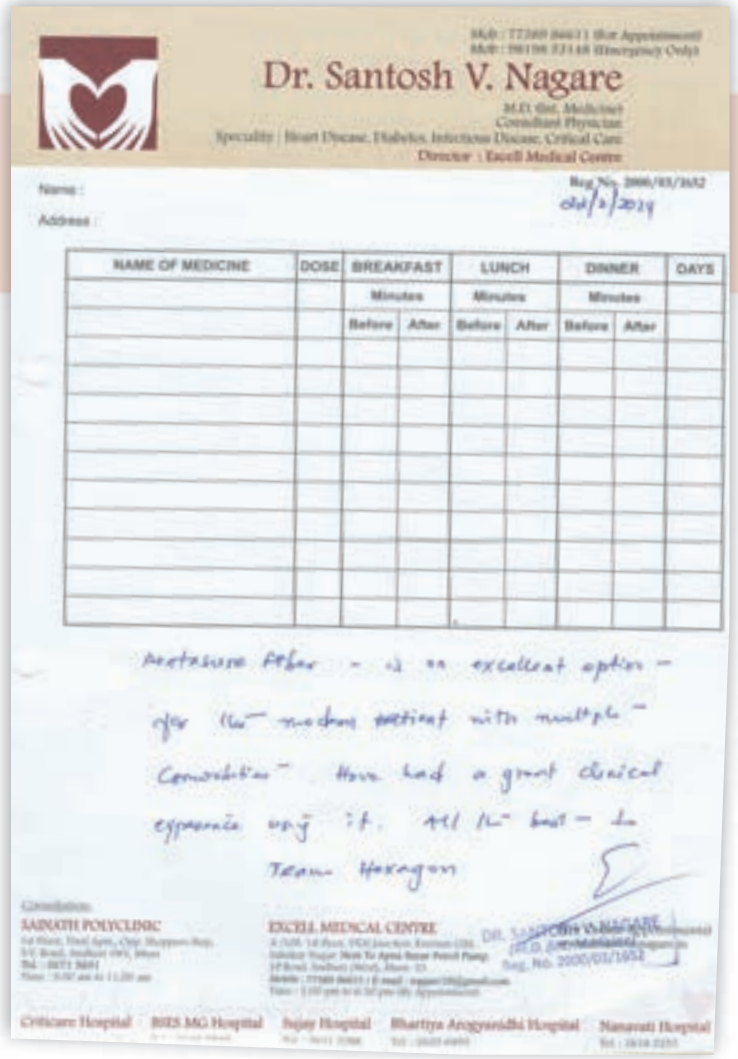
Parameters	Before Obesigo	After Obesigo
Weight	99.7	94.4
Fasting	116	91
Post Prandial (2hrs)	164	118
HbA1C	7.0	5.8
Cholesterol	200	168
Triglyceride	148	92
HDL	35	40
LDL	142	96.6
SGOT	49.4	25
SGPT	51.4	22

Results : Results: The above measurements were taken 2 months after his prescription started, during which he has lost 5.3 kgs of weight. His fasting blood sugar levels have dropped by 25 mg/dl. Not only this but there were visible improvements in Post Prandial levels, HBa1c, as well as Cholesterol levels. Overall his lipid profile showed great improvements. He was advised to reduce hypoglycemic agents.

Case 2 :- Female Age:- 25 Yrs: Hairfall, Irregular menses, Obese
Kco: PCOD, fatty liver & bulky uterus

Parameters	Before Obesigo	After Obesigo
Date	Jan 2021	July 2021
Weight	84.3	73.9
FBS	90	84
Serum Insulin (Fasting)	18	11.9
Hba1C	5.9	5.3
Cholesterol	209	160
Triglyceride	160	128
SGOT	45	20
SGPT	60	18
B12	155	468
D	10.2	29.5

Results: In the span of 4 months she has lost 10.4 kgs, with improved Lipid profile and FBS, serum Insulin & HBa1C Levels. In this case, the patient after the weight reduction, could regularize her monthly menstrual cycle.


Dr. Santosh V. Nagare

Speciality : Heart Disease, Diabetes, Infectious Disease, Critical Care

Director : Excell Medical Centre

Name :

Address :

NAME OF MEDICINE	DOSE	BREAKFAST		LUNCH		DINNER		DAYS
		Minutes		Minutes		Minutes		
		Before	After	Before	After	Before	After	

Pentasure Fiber - is an excellent option - for the medical patient with multiple - Comorbidities - Have had a great clinical experience using it. All the best - Team Hexagon

SAINATH POLYCLINIC

EXCELL MEDICAL CENTRE

Criticare Hospital | BSES MG Hospital | Sujay Hospital | Bhartiya Arogyanidhi Hospital | Nanavati Hospital

Dr. Santosh V. Nagare

MD,(Intl. Medicine)
Consultant Physician
Director : Excell Medical Centre
Mumbai

PentaSure Fiber is an Excellent Option for Multiple Co-morbidities

- Metabolic Syndrome
- Constipation
- Fatty Liver
- Weight Management

PentaSure® FIBER

Dr. Nishi Shah

MBBS, MD, DNB MEDICINE
Diabetologist,
Consultant Physician
Mumbai

PentaSure DM

↓

IPD Patients

↓

Stress Induced Hyperglycemia

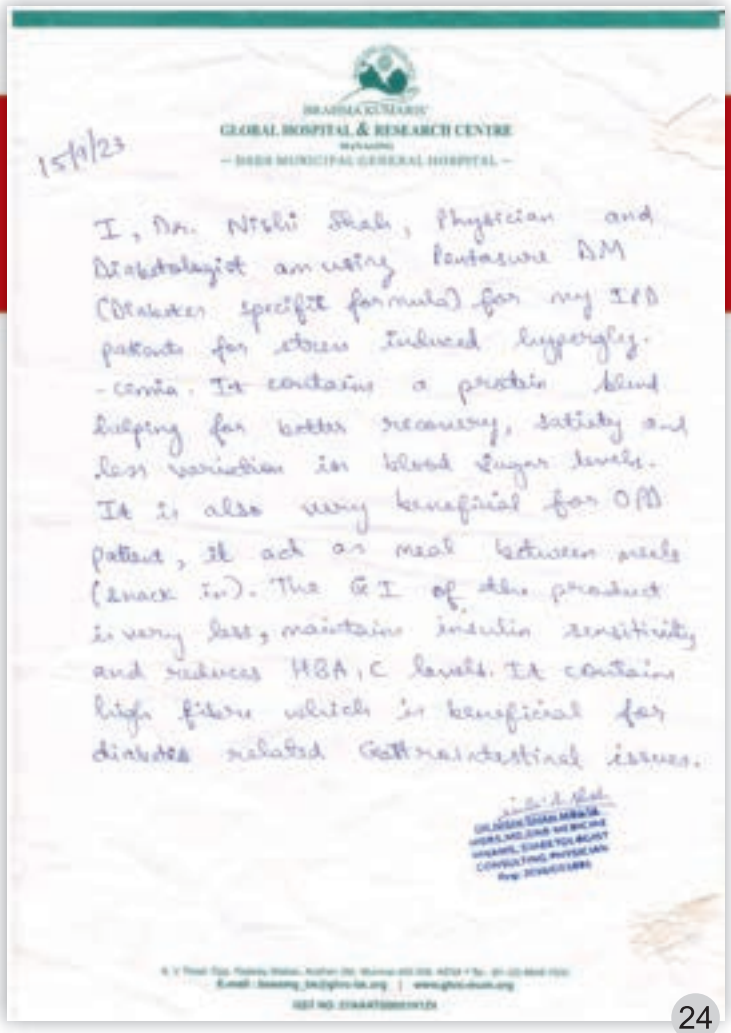
↓

Blend of Protein
- Less Variations in Blood Sugar Levels
- Maintains Satiety
- Faster Recovery

OPD Patients

↓

Meal between Meals
- Low GI
- Maintains Insulin Sensitivity
- Reduces HbA1C Levels


GLOBAL HOSPITAL & RESEARCH CENTRE

15/1/23

I, Dr. Nishi Shah, Physician and Diabetologist am using Pentasure DM (Diabetes specific formula) for my IPD patients for stress induced hyperglycemia. - cortia. It contains a protein blend helping for better recovery, satiety and less variation in blood sugar levels. It is also very beneficial for OPD patient, it act as meal between meals (snack in). The GI of the product is very less, maintains insulin sensitivity and reduces HBA1C levels. It contains high fibre which is beneficial for diabetes related Gastrointestinal issues.

Dt. Nomi Mohan
Senior Dietician,
Assam Cancer care Foundation,
Guwahati, Assam

ASSAM CANCER CARE FOUNDATION

PATIENT DETAILS :

PRESCRIPTION

℞

Testimonials

Nutrients play a significant role in our life. They are very essential for physical and mental development of an individual. Nutrition is considered as an essential element for a healthy life. So, it is very much imperative for everyone to realize the importance of nutrients and balance diet to stay well. Lack of nutritional knowledge among patients may contribute to poor dietary practices and other health related issues. Cancer is a disease caused when cells divide uncontrollably and spread into surrounding tissues. It is a large group of diseases that can start in almost any organ or tissue of the body. Mainly it is caused by changes to DNA. Cancer itself causes decrease in dietary intake, weight loss, malnutrition , worse quality of life, infection and higher hospital readmission. Nutritional knowledge guide's a patient to make intellectual decisions on physical health. It is very necessary to get the right nutrition at the right time not only to maintain one's health but also important to protect our life in a very protective way. By considering the significance of nutritional knowledge on human health, poor nutritional knowledge among cancer patients, it is very much important to evaluate awareness level of cancer patients about nutritional knowledge. Because healthy eating habits are very important during and after cancer treatment.

Pentasure DM play an unique role in management of colorectal cancer along with diabetes. It helps to minimize blood glucose level and to improve the nutritional status. Nutritional counseling along with oral nutrition supplements benefits cancer patients to recover their quality of life and survival.

Ms. Nomi Mohan
B.Sc: Home Science (Food &Nutrition)
M.Sc: Dietetics and Food Service Management
Consultant Dietitian
Cancer Hospital, Barpeta
Assam

Dr. Nomi Mohan
Senior Dietician

Regd. Office: 3rd floor, VK Trade Centre, Opp. Downtown Hospital, Guwahati – 781022, Assam
Ph: +91-90852 02020 | E: info@accf.in | W: www.assamcancercarefoundation.org | CIN U74999AS2017NPL018256
For Cancer Related Query Call 18003454325 (Toll Free) | @94356 47725
Centres: Dibrugarh | Barpeta | Jorhat | Tezpur | Lakhimpur | Darrang | Kokrajhar

Lack of Nutritional Knowledge among Patients → Leads to poor dietary practices

↓

Cancer is a disease caused when cells divides uncontrollably and spreads into surrounding tissues

↓ Causes

- Dietary Intake ↓
- Weight Loss
- Malnutrition
- Reduces QOL
- Hospital readmission ↑ and Infection

=

Nutritional Counseling + ONS

↓

PentaSure DM

↓

- Management of Colorectal Cancer in Diabetes
- Minimize blood glucose levels
- Improve Nutritional Status
- Improve Quality of Life & Recovery

PentaSure® DM DIABETES CARE

Dt. Bhakti Samant
Chief Dietitian,
Kokilaben Dhirubhai Ambani Hospital, Mumbai

We use **PentaSure Fiber** as Prophylactic Treatment with dosage of **10g/1000 kcals** when patients are on complete scientific feeds. The dosage is reduced to half in transition diet when the patient is moved from enteral to oral feeds. The best feature we find about **PentaSure Fiber** is that it is completely miscible in isocaloric as well as hypercaloric formulations which makes it convenient to use in the enteral feeding method.

An intervention with soluble fibre

A patient got admitted to the hospital with the complaints of drowsiness and tachycardia. She was intubated and mechanically ventilated. ABG showed severe metabolic acidosis with high lactates. CT abdomen and pelvis showed multiple jejunal diverticular perforation with faecal peri cavity, for which she underwent diagnostic laparoscopy + exploratory laparotomy +segmental resection of jejunectomy with jejunostomy with distal mucus jejunal fistula. Post surgery, patient was started on feeding jejunostomy with semi elemental formula 30ml/hour. Gradually, feed volume was increased and patient started developing loose stools. 10g of commercial fibre was introduced at first and increased to 30g gradually due to multiple episodes of loose stool. Around 5 gm of fibre was given in the alternative feeds. It was observed that introduction of fibre in the feeds gradually reduced loose stool episodes. Along with the jejunostomy feeds, oral semisolid was introduced as per the tolerance. Calorie and protein requirement were met through jejunal feeds. Patient got discharged on FJ 100ml/hour + semisolid diet along with 30g of commercial fibre. Frequent follow-ups were done. She improved on her oral intake, feed volume was reduced and fibre supplementation was continued till the loose stool settled.

Dt. Shalini Arvind
RD, Chief Dietican,
Fortis Hospital
Bengaluru

Dt. Sthuthi
Fortis Hospital,
Bengaluru

Patient with drowsiness and tachycardia

↓ Mechanically Ventilated

ABG
CT
Laparoscopy
Segmental-
Resection
Jejunal Fistula

↓

Post Surgery 30ml/hr JT

↓

Semi Elemental Diet
+ 10g Soluble Fiber

↓

30g/day (5g in alternate feed)

↓

Gradually decrease loose stool in 3 days

↓

Calorie and Protein met through JT Feed
(100ml/hr + Semisolid diet + Soluble Fiber 30g/day)

↓

Discharge

↓

Improved oral intake,
Fiber supplementation continued

PentaSure® FIBER

Dt. Sandipa Sen

Dietitian,
Manipal Hospital, Bengarulu

Patient with Poly trauma with sever TBIs/p left upper limb amputation, sepsis

↓ ← NG Feed

Recommended **PentaSure 2.0**

↓ 16 days

After 16 days Improve Blood Parameters

↓

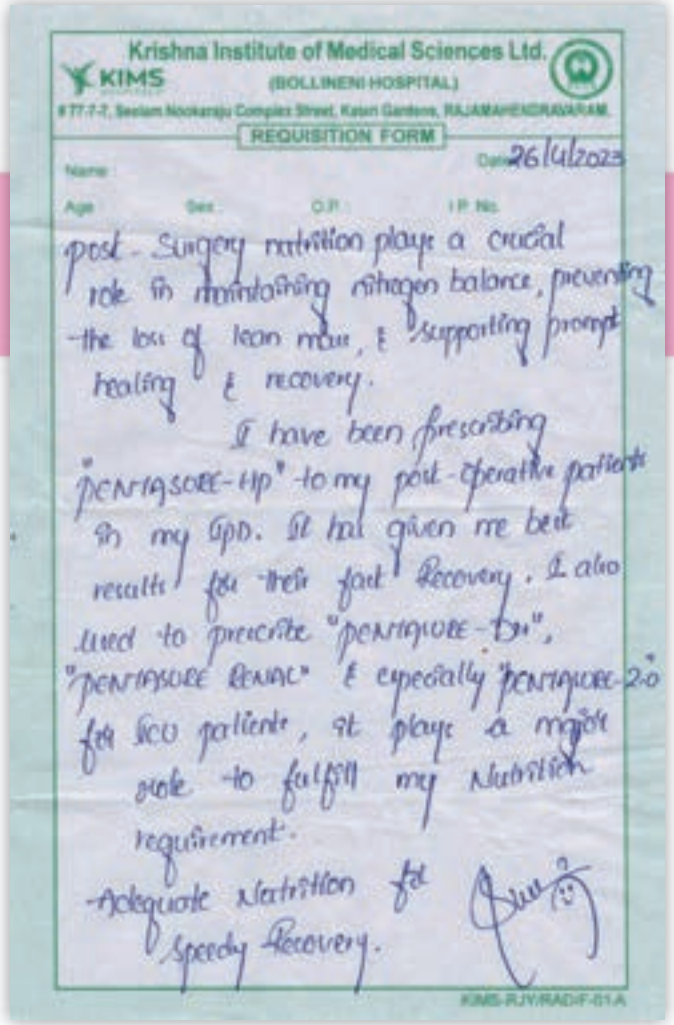
Discharge from Hospital and Continue **PentaSure 2.0** as ONS

manipalhospitals

Testimony

Nutrition plays a major role to cure critically ill patients. Now a days road accident are quite common. Some injuries will be mild to moderate; patient will get discharge within few days. But if it is severe, hospital stay will be longer. A patient came with poly trauma with severe TBI s/p left upper limb amputation and mandibular ORIF with tracheostomy acenatobater-secondary sepsis. Patient was admitted in ICU with nasogastric feed. He had undergone multiple surgeries and due to severe blood loss his haemoglobin level gone down. As per ERAS protocol body needs extra calories and protein for healing and recovery. Being a clinical dietician I recommended **Pentasure 2.0** which is high calorie and high protein. It contains whey protein which is easily absorbable. Also contains MCT and dietary fiber. It is sucrose free, gluten free and transfat free. After 16 days of NG feed patient started taking orally, his all blood parameters got improved and got discharged from hospital. So I would say right decision and implementation of right knowledge make a patient to lead a healthy life.

Sandipa Sen
Senior Dietitian
"GREENWAY"
DR. BALATHI MANIPAL HOSPITAL"



Krishna Institute of Medical Sciences Ltd.
KIMS (BOLLINENI HOSPITAL)
#77-7-7, Seeiam Nookaraju Complex Street, Kasun Gardens, RAJAMAHENDRAVARAM.
REQUISITION FORM
Date 26/4/2023
Name
Age Sex O.P. I.P. No.

post-Surgery nutrition plays a crucial role in maintaining nitrogen balance, preventing the loss of lean mass, & supporting prompt healing & recovery.

I have been prescribing "PENTASURE-HP" to my post-operative patients in my OPD. It has given me best results for their fast Recovery. I also used to prescribe "PENTASURE-DM", "PENTASURE RENAL" & especially "PENTASURE-2.0" for ICU patients, it plays a major role to fulfill my Nutrition requirement.

-Adequate Nutrition for Speedy Recovery.

KIMS-RJY/RADIF-01A

Dt. Shahida Sayed

Chief Dietitian,
KIMS Hospital,
Rajamahendravaram

Post Surgery Nutrition ∃ Maintaining Nitrogen Balance

↓

Recommended **PentaSure HP**

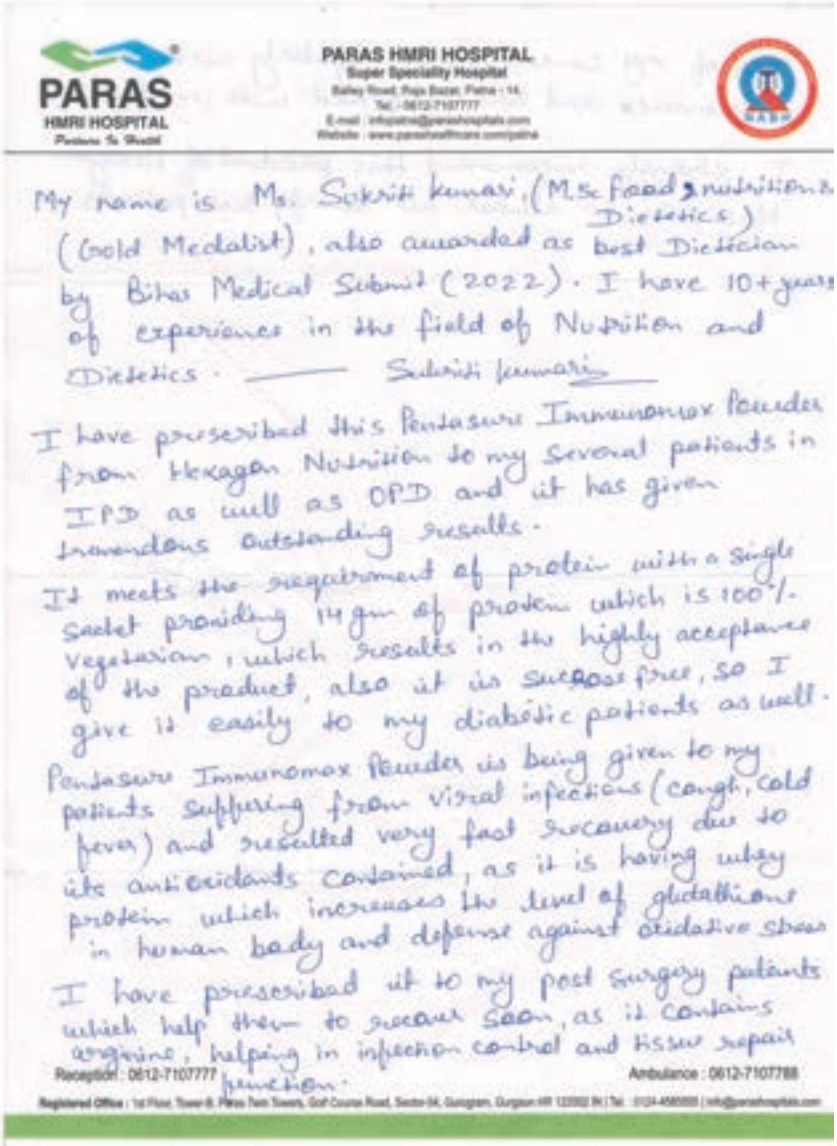
↓ ← IPD

Post operative Patients

↓

Faster Recovery, Prevent Loss of Lean Muscle Mass
Supports Healing and Recovery

Dt. Sukriti Kumari
Head Dietician,
Paras HMRI Hospital (Patna)



PARAS HMRI HOSPITAL
Super Speciality Hospital

My name is Ms. Sukriti kumari, (M.Sc Food & nutrition & Dietetics) (Gold Medalist), also awarded as best Dietician by Bihar Medical Submit (2022). I have 10+ years of experience in the field of Nutrition and Dietetics. — Sukriti kumari

I have prescribed this Pentasure Immunomax Powder from Hexagon Nutrition to my several patients in IPD as well as OPD and it has given tremendous outstanding results.

It meets the requirement of protein with a single sachet providing 14 gm of protein which is 100% vegetarian, which results in the highly acceptance of the product, also it is sucrose free, so I give it easily to my diabetic patients as well.

Pentasure Immunomax Powder is being given to my patients suffering from viral infections (cough, cold fever) and resulted very fast recovery due to its antioxidants contained, as it is having whey protein which increases the level of glutathione in human body and defense against oxidative stress

I have prescribed it to my post surgery patients which help them to recover soon, as it contains arginine, helping in infection control and tissue repair function.

Reception : 0612-7107777 Ambulance : 0612-7107788

Many of my cancer patients regularly use this Supplements and are benefitted with its effect.

I strongly recommend this product of Hexagon Nutrition to almost all severly sick patients.

06/05/2023

PentaSure Immunomax

↓

Viral Infection
(Cough, Cold, Fever,
Sick patients, Low immunity)

↓

Whey Protein

↓

↑Levels of Glutathione levels
and defense against oxidative stress

↓

Fast recovery
Decrease infection,
Improves tissue repair function

PentaSure®
IMMUNOMAX

Dt. Janhvi Priya
Dietician,
Veritas Hospital,Hyderbad

PentaSure Immunomax

↓

Rx **PentaSure Immunomax**
+ Kitchen Feed

↓

Improve Muscle Mass

↓

↑ Immune System
Faster Recovery

Dt. Rituparna. C
Sr. Clinical Dietician,
LivGastro Medical Clinic
Kolkata

PentaSure Immunomax

↓

50 Patients

↓

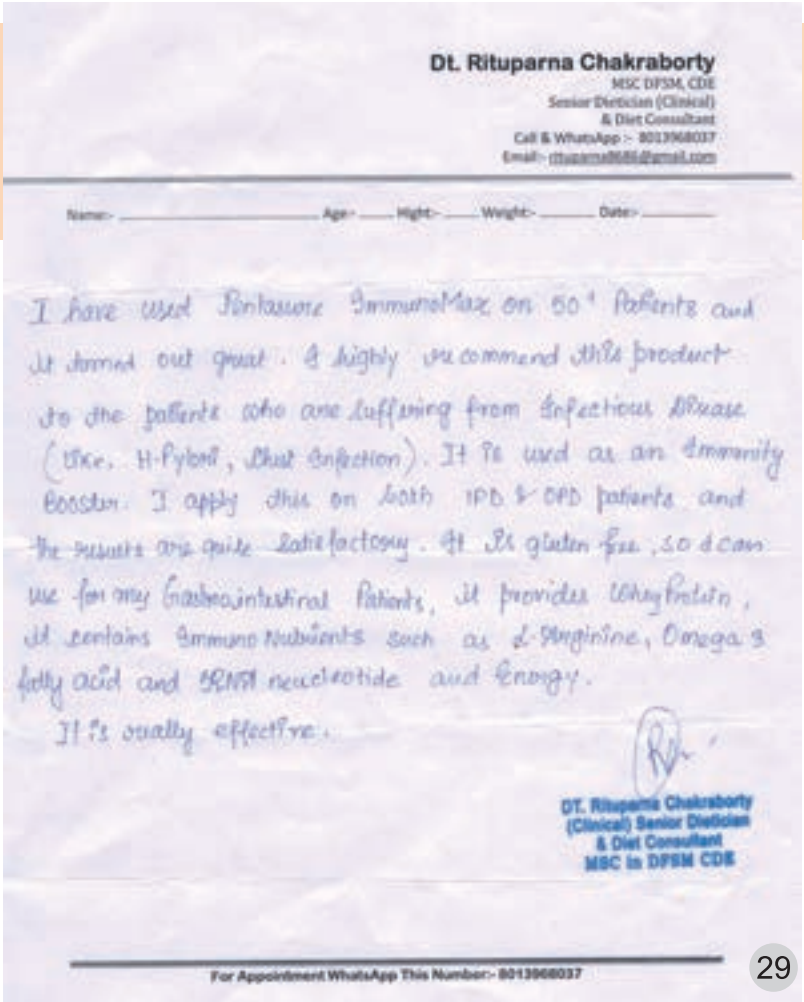
Infections Disease
(H. Pylori, Chest Infection)

↓

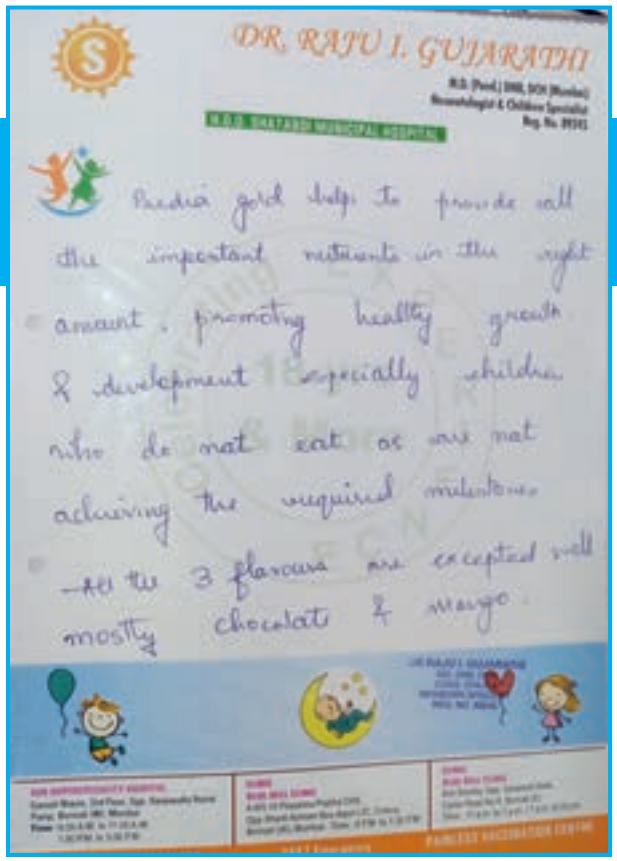
100% Whey Protein
+
Arginine, Omega 3 Fatty Acid
+ RNA Nucleotide

↓

Immunity Booster



Dr. Raju I. Gujarati
M.D.(Paed.) DNB, DCH (Mumbai)
Neonatologist & Children Specialist



A Trusted Product for Child's Comprehensive Growth & Development

PediaGold

↓

Important Nutrients in the Right Amount

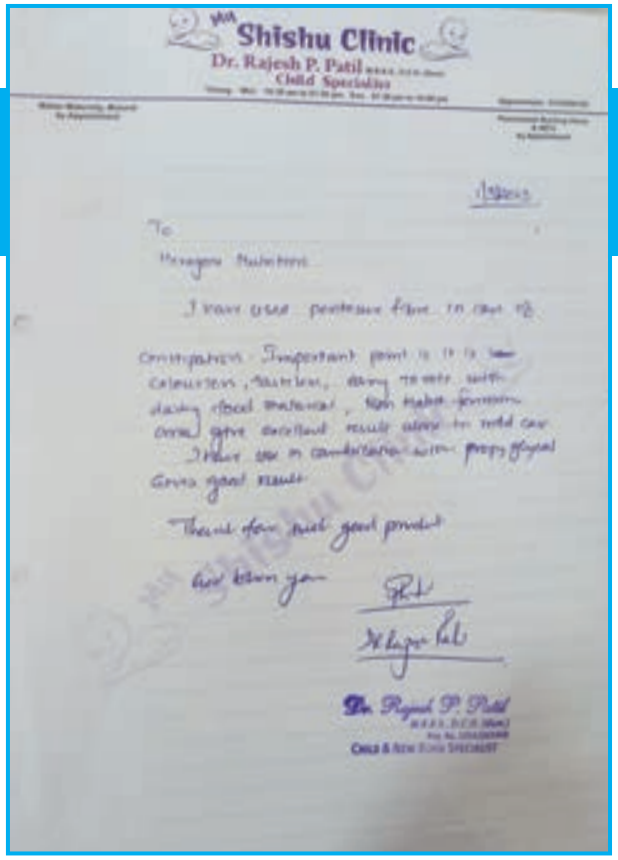
↓

Healthy Growth, Development in Children

↓

To achieve required Milestones

PediaGold®
✓ Complete Nutrition For Children



Dr. Rajesh P. Patil
M.B.B.S., D.C.H. (Sion)

Invisible Solution for Visible Results

PentaSure Fiber

↓

In Children

↓

Constipation

↓

Colorless, Tasteless, Easy to Mix

↓

Non Habit forming

↓

PentaSure Fiber + Propyglycol

↓

Good Result, Good Product

Connect With NutriConnect

If you feel you have interesting scientific/nutrition articles or case studies to share or certain clinical experiences which can benefit your fraternity, we welcome you to connect with us on the below mentioned Email ID

Email ID : jyoti.n@hexagonnutrition.com

We are also present on Facebook as a closed group called CNEA- Clinical Nutrition Excellence Academy. We are a 2570+ member group where we update about scientific facts, conduct nutrition quiz, hold competitions where you have an opportunity to win prizes and connect with health professionals with similar interest areas. You can scan the below QR-code to join the facebook group

Scan to Join our CNEA (Clinical Nutrition Excellence Academy) Group

Links to our website and social media pages :

https://www.hexagonnutrition.com

https://pentasurenutrition.com

https://www.obesigo.com

HEXAGON NUTRITION

Nutritionally Yours...