

Original article:

Study of nutritional intervention and assessment in surgical patient

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Abstract

Introduction: The philosophy of nutritional support in the surgical patient has evolved greatly over the past two to three decades. Whereas dextrose-containing intravenous fluids or waiting until a patient was able to take an oral diet was considered adequate in years past, early aggressive nutritional support within the first 12-24 hours post-injury is now recognized as being essential to improving patient outcome. There is no uniform consensus on a reliable nutritional assessment method. This study attempts to integrate nutritional evaluation with appropriate interventional techniques to achieve optimal outcomes in patients undergoing treatment for surgical illnesses. **Aims-** To assess the various modes of nutritional intervention and to identify the best way of nutritional intervention and evaluate their outcomes regards to nutrition.

Methodology: There were 38% of patients in **Type Ia** nutritional intervention group who received parenteral supportive therapy in addition to enteral feeds and they stayed for 15 days in the hospital on an average. Another 38% of patients with the same length of hospital stay were in group **Type Ib** —requiring forced oral feeds through tubes. **Type II** patients receiving total parenteral nutrition were 24% of them with an average stay of 13.25 days. On an average, 42% of patients showed a gain in BMI, 40% recorded a net loss and 18% of them remained stationary and 40% of patient shows gain in Mid-arm circumference (MAC), 34% patient loss and 36% remained stationary during the study period. The ease was different with Sr. protein levels 40% showed a net gain, 34% a net loss and 36% remained stationary.

Results and conclusion: Nutritional deficiency is very much prevalent among surgical patients irrespective of age, sex and disease conditions, both before and after the surgical procedures. Patients should be categorized according to the needs as to who will perceive enteral or parenteral nutrition. Both these modalities are equally effective when used under appropriate circumstances and for adequate duration. Early introduction of these is also very important. Anthropometry and biochemical parameters are both effective and sufficient to assess the nutritional status of the patients and also to evaluate adequacy of nutritional therapy.

Introduction

Malnutrition has for long been linked to surgical outcomes and has been associated with muscle wasting , impaired respiratory function , impaired cardiac function , atrophy of smooth muscle in GI tract , impaired immune function , impaired healing

and increased risk of post-operative morbidity and mortality.^{1,2}

Nutritional support is now recognized as being more than simply a source of protein, fat, or carbohydrate calories.³ The philosophy of nutritional support in the surgical patient has

evolved greatly over the past two to three decades. Whereas dextrose-containing intravenous fluids or waiting until a patient was able to take an oral diet was considered adequate in years past, early aggressive nutritional support within the first 12-24 hours post-injury is now recognized as being essential to improving patient outcome. There is no uniform consensus on a reliable nutritional assessment method. This study attempts to integrate nutritional evaluation with appropriate interventional techniques to achieve optimal outcomes in patients undergoing treatment for surgical illnesses.

Objectives

To assess the various modes of nutrition intervention.

And to identify the best way of nutritional intervention and evaluate their outcomes.

Materials and methods

This is an observational study and 100 surgical patients admitted to NIMS Hospital. Age between 20 to 60 years, those who require IV support for more than 7 days following surgery and those with major diseases like pancreatitis were included in this study. Age less than 20 or more than 60 years, those requiring IV support for less than 5 days , comatose patients and patients whose surgery took

place before nutritional assessment were excluded in this study. Appropriate nutritional intervention was started and assessment was carried out at regular intervals to know the adequacy of intervention based on predefined anthropometric and biochemical parameters.

Results

There were 38% of patients in Type Ia nutritional intervention group who received parenteral supportive therapy in addition to enteral feeds and they stayed for 15 days in the hospital on an average. Another 38% of patients with same length of hospital stay were in group Type Ib -requiring forced oral feeds through levines tubes. Type II patients receiving total parenteral nutrition were 24% of them with an average stay of 13.25 days. This apparent discrepancy may be attributable to the less no. of patients in the TPN group. On an average, 42% of patients showed a gain in BMI, 40% recorded a net loss and 18% of them remained stationary and 40% of patient shows gain in Mid-arm circumference (MAC), 34% patient loss and 36% remained stationary during the study period. The ease was different with serum protein levels 40% showed a net gain, 34% a net loss & 36% remained stationary.

Table no: 1 Duration of nutritional intervention

Duration	No. of Pt.	Percentage
7-10 days	40	40%
11-15 days	38	38%
16-20 days	18	18%
>20 days	4	4%
Total	100	100%

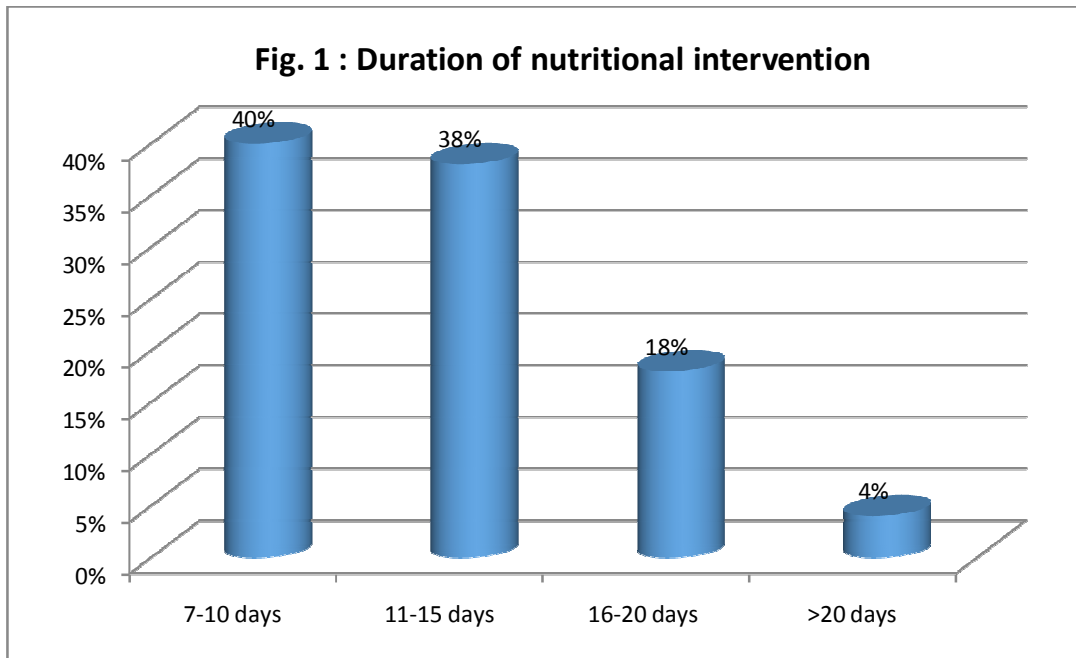


Table2 Distribution of Pt. according to types of nutritional intervention

Type of nutritional intervention	No. of Pt.	Percentage
Type I A	38	38%
Type I B	38	38%
Type II	24	24%
Total	100	100%

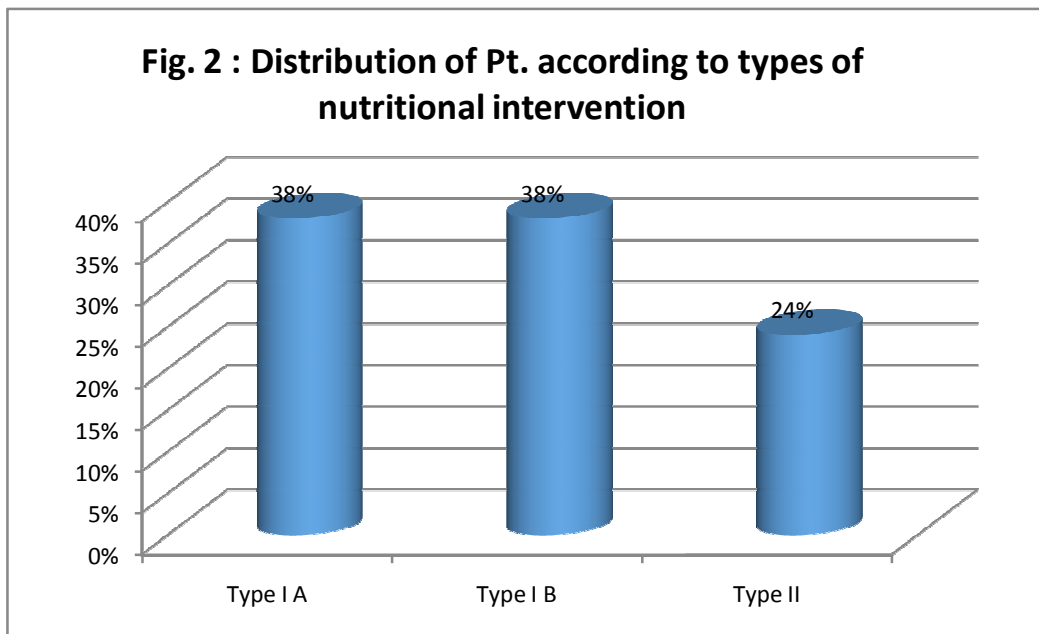


Table 3 Average duration of hospital stay according to type of nutrition therapy

Type of nutrition intervention	No. of Pt.	Avg. duration of hospital stay
Type I a	38	15
Type I b	38	15.1
Type II	24	13.25
Total	100	14.45

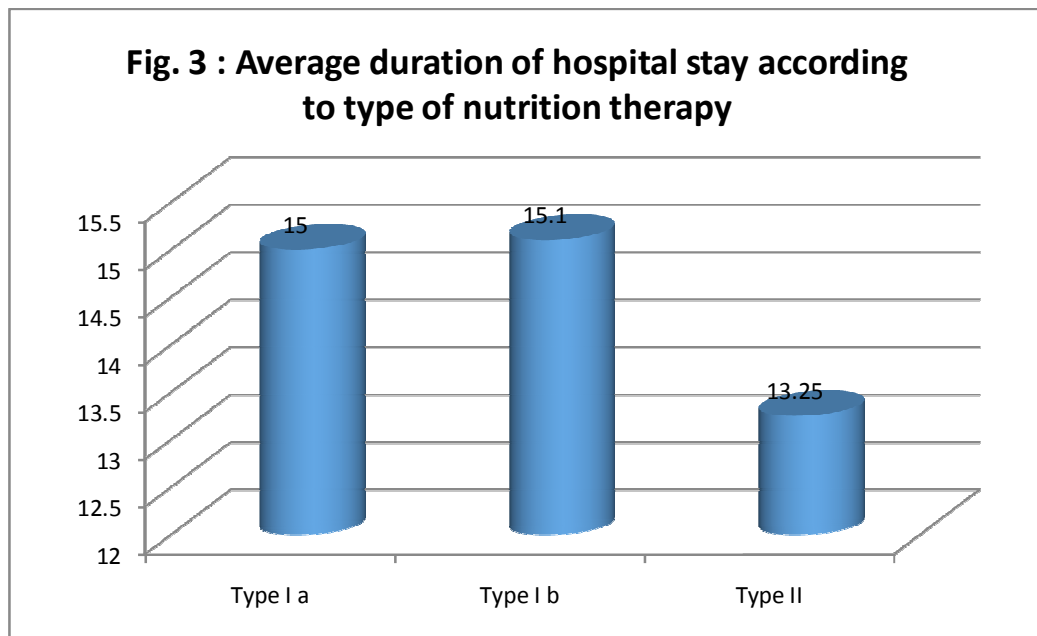


Table 4 Change in Parameters during the period of Hospitalization – BMI

Net change in BMI	No. of Pt.	Percentage
Gain	42	42%
Loss	40	40%
Stationary	18	18%
Total	100	100%

Fig. 4 : Change in Parameters during the period of Hospitalization – BMI

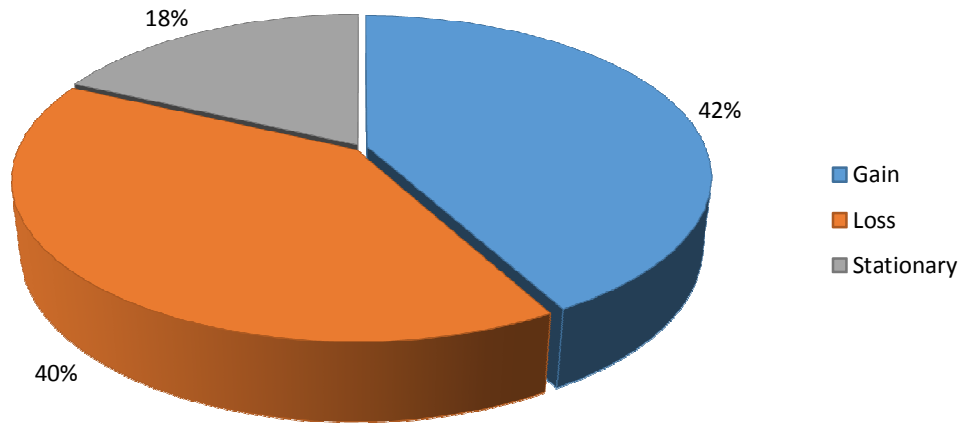


Table no :5 Change in TSF parameters during the period of hospitalization

Net change in TSF	No. of Pt.	Percentage
Gain	42	42%
Loss	40	40%
Stationary	18	18%
Total	100	100%

Fig. 5 : Change in TSF parameters during the period of hospitalization

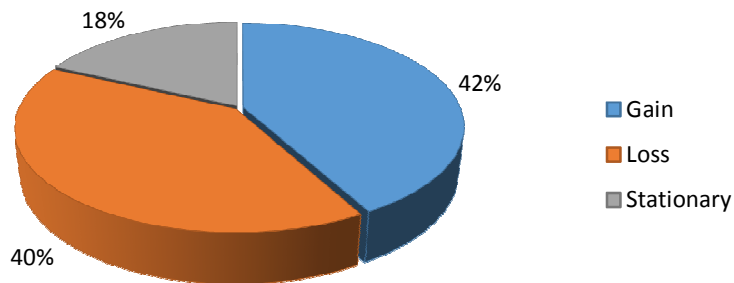


Table 6 Change in MAC parameters during the period of hospitalization

Net change in MAC	No. of Pt.	Percentage
Gain	40	40%
Loss	34	34%
Stationary	36	36%
Total	100	100%

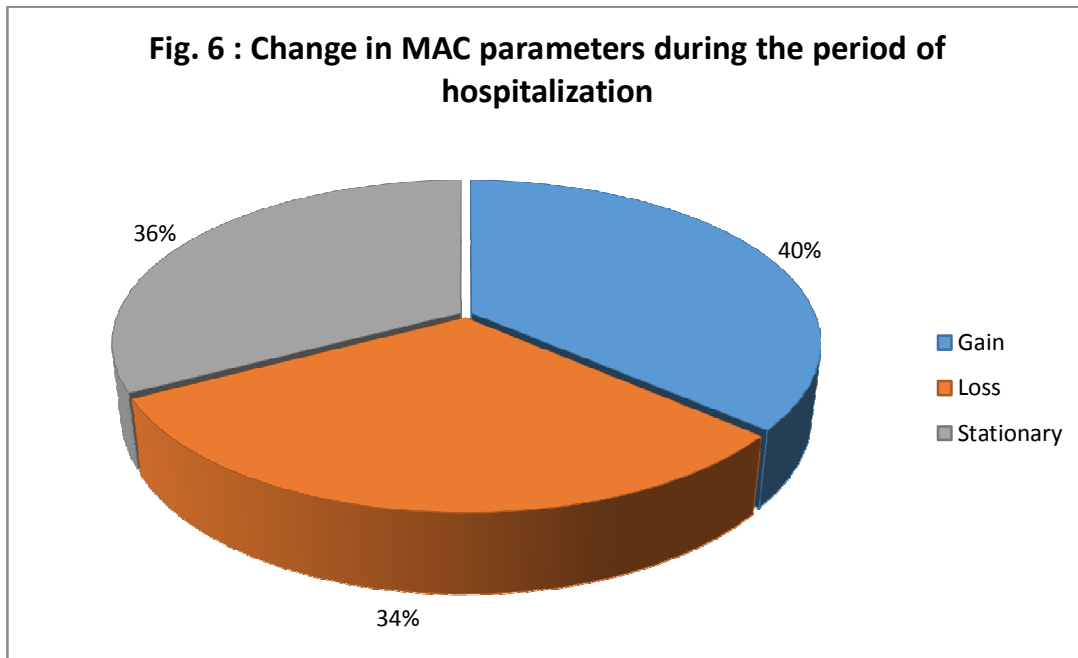
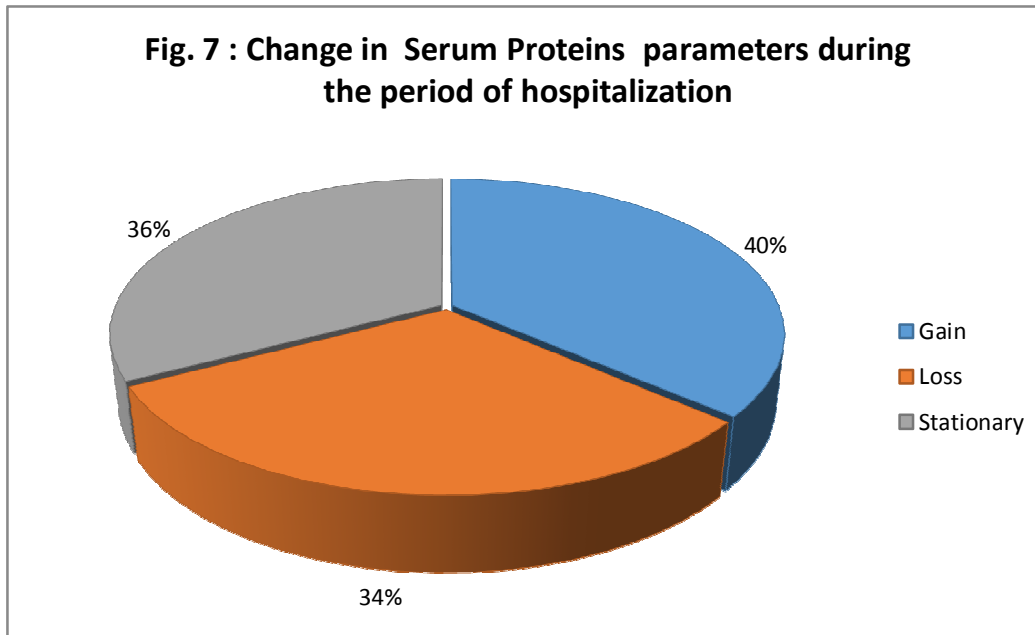


Table 7 Change in Serum Proteins parameters during the period of hospitalization

Net change in Sr. Proteins	No. of Pt.	Percentage
Gain	40	40%
Loss	34	34%
Stationary	36	36%
Total	100	100%

Fig. 7 : Change in Serum Proteins parameters during the period of hospitalization



Discussion

Among the patients studied, the average duration of hospital stay was 1-2 weeks in nearly half of the patients. A third of them stayed for 3 weeks and nearly a fifth of them stayed for 20 days or more. Judy Dowd et al⁴ evaluated the nutritional management among patients undergoing surgery for an average duration of two to three weeks. This shows that most surgical patients need hospital care for an average 1-2 weeks. 40% of the patients needed nutritional intervention during the first 10 days of their stay at hospital, another 18% needed for 20 days and only 4% of the patients needed support for more than 20 days. Marco Braga et al⁵ concluded a study in which the average duration of nutritional support was 2 weeks. The inference is that the period between 1st and 2nd weeks of disease surgery was critical with regards to nutrition.

There were 38% of patients in **Type Ia** nutritional intervention group who received parenteral supportive therapy in addition to enteral feeds and they stayed for 15 days in the hospital on an average. Another 38% of patients with the same length of hospital stay were in group **Type Ib** — requiring forced oral feeds through tubes. **Type II**

patients receiving total parenteral nutrition were 24% of them with an average stay of 13.25 days. This apparent discrepancy may be attributable to the less no. of patients in the TPN group.

On an average, 42% of patients showed a gain in BMI, 40% recorded a net loss and 18% of them remained stationary and 40% of patient shows gain in Mid-arm circumference (MAC), 34% patient loss and 36% remained stationary during the study period. The ease was different with Sr. protein levels 40% showed a net gain, 34% a net loss and 36% remained stationary. Mary Hise et al⁶ reported a study group data which showed similar inferences with regard to net BMI changes which were influenced by the disease states and the length of hospital stay.

Conclusion

Nutritional deficiency is very much prevalent among surgical patients irrespective of age, sex and disease conditions, both before and after the surgical procedures. Patients should be categorized according to the needs as to who will perceive enteral or parenteral nutrition. Both these modalities are equally effective when used under appropriate circumstances and for adequate

duration. Early introduction of these is also very important. Anthropometry and biochemical parameters are both effective and sufficient to assess the nutritional status of the patients and also to evaluate adequacy of nutritional therapy.

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