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A Quasi Experimental Study on Effectiveness of Individualized Diet Plan On Nutritional Status of Critically ILL Patients in A Selected Hospital, Mangalore

KEYWORDS: Nutritional status, Critically ill patients, Individualized diet plan

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ABSTRACT *The aim of the study is to determine the effect of individualized diet plan on nutritional status of critically ill patients. An evaluatory approach with two group pre test post test time series design study was conducted among 40 critically ill patients who met the inclusion criteria (experimental group 20 and control group-20) using purposive sampling and were assessed using baseline proforma, anthropometric measurements and Subjective Global Assessment Scale. The experimental group was provided with individualized diet plan approved by dietician. The pretest and post test scores were compared and analyzed through descriptive and inferential statistics. The findings of the study revealed that the critically ill patients admitted to the hospital were having various level of nourishment which was determined by SGA scales were 13 (32.5%) of the subjects mildly malnourished, 17 (42.5%) were moderately malnourished and 10 (25%) were severely malnourished. The study also shows that administration of individualized diet plan to the malnourished patients has shown an improvement in the nutritional status. Assessing nutritional status and providing each individual specific nutrition helped the patient to meet their nutritional requirements accurately and improve their nutritional status.*

Introduction

Nutrition is essential for health but is particularly important at times of critical illness when the body undergoes extreme physiological stress. As a result of this stress, the basal metabolic rate rises and demands an increase in energy and particularly, protein requirements. The critically ill patients quickly develop malnutrition, or pre – existing malnutrition is aggravated due to inflammatory response, metabolic stress and bed rest which causes catabolism[1].Daily assessment may help in identifying patients for whom nutritional interventions are needed. The concept of therapeutic nutrition has replaced supportive nutrition in critically ill patients[2]

Objectives

1. To determine the nutritional status of critically ill patients in experimental and control group.
2. To compare the nutritional status of patients in experimental and control group.
3. To determine association between the nutritional status of critically ill patients and demographic variables.

Hypotheses

The hypothesis will be tested at 0.05 level of significance.

H_{01}: There will be a significant difference in the nutritional status of critically ill patients in experimental and control group.

H_{02}: There will be significant association between nutritional status of subjects and demographic variables.

Method

An evaluatory study was conducted from 7th January to 1st March 2016 among 40 critically ill patients admitted to ICUs and ACUs of the selected hospital. The inclusion criteria of the study was adult critically patients who are above 20 years and are confined to bed with tube feeding. Exclusion criteria of the study was critically ill patient confined to bed with oral feedings. A purposive sampling technique was used to select 40 patients who met inclusion criteria, and alternatively assigned 20 to the experimental group and 20 to the control group. An evaluatory approach with two group pre test post test time series design was used. Data collection instruments used were Baseline proforma, Anthropometric measurements and Subjective Global Assessment Scale(Detsky A S.et.al). The tool consisted of three parts:

Section 1: It is comprised of baseline proforma that consisted of 10 items for such as age in years, gender, religion, educational status, occupation, family income per month (in Rs), past dietary pattern prior to hospitalization, food allergies, diagnosis and length of hospital stay.

Section 2: Anthropometric Measurements consisted of 6 items obtaining anthropometric changes of the body including height, weight, body mass index, mid arm circumference, mid arm muscle area and triceps skin fold thickness.

Section 3: Subjective Global Assessment Scale. (Detsky A S.et.al) determined by medical history and physical examination, which is divided into 5 parts: weight change, dietary intake change, GI symptoms that have persisted for more than 2 weeks, functional impairment, and physical examination (loss of subcutaneous fat, muscle wasting, edema and ascites).

Data collection process: Formal permission was obtained from the concerned authority prior to the data collection. The subjects with nasogastric tube and bed ridden, who

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were critically ill and who fulfilled the sampling criteria were identified. The investigator introduced herself to the bystanders and the purpose of the study was explained to them and written consent was obtained. 40 critically ill patient who met inclusion criteria were selected by purposive sampling and were alternatively assigned 20 to experimental and 20 to control group. Both the groups are assessed by using baseline characteristics, subjective global assessment and anthropometric measurements on the 1st, 3rd and 5th day of admission. The experimental group was provided an individualized diet plan approved by the dietician and a 24 hrs nutritional dietary diary was maintained to monitor daily calorie taken by the experimental group. The control group continued the routine diet plan.

Results

The study shows that the critically ill patients admitted to the hospital were having various level of nourishment which was determined by SGA scales were 13 (32.5%) of the subjects mildly malnourished, 17 (42.5%) of the subjects moderately malnourished and 10 (25%) of the subjects severely malnourished. The study reveals that administration of individualized diet plan to the malnourished patients has shown improvement in the nutritional status as determined by the mean and standard deviations of anthropometric measurements of each subjects.

There was no association between the anthropometric measurement and demographic variables. However there is significant an association between the length of hospital stay and overall SGA score of day1 ($\chi 2 > 9.49$, $p<0.05$) at 0.05 level of significance. Whereas there is no association between other demographic variables of the subjects. (shown in table 1)

Table 1:Association of demographical variables with overall SGA score of day1
N=20+20

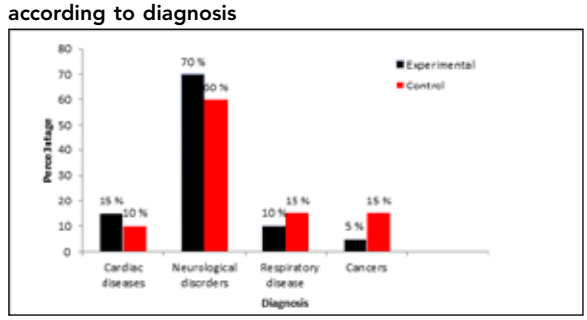
Variables	Overall SGA Day 1			χ^2	P
	Mild	Moderate	Severe		
Age in years					
≤50	5	4	3	5.999	0.18
51-60	6	6	1		
≥ 60	2	7	6		
Gender					
Female	5	9	5	.653	0.72
Male	8	8	5		
Religion					
Christian	5	4	3		
Hindu	4	8	4	1.04	.927
Muslim	4	5	3		
Education status					
Primary	1	4	3		
Secondary	1	6	2		
Pre university/ diploma	6	2	1	9.187	.021
Graduate	5	5	4		
Occupation					
Skilled	4	3	1		
Unskilled	3	2	2	2.926	0.84
Professional	2	4	3		
Unemployed	4	8	4		
Family income /month (in Rs)					
≤5000	4	4	4		
5001 -10,000	5	7	1	4.74	0.60
10,001-15,000	2	3	4		
Past diet pattern prior to hospitalization					
Vegetarian	1	2	1	.136	1.00
Mixed	12	15	9		
Variables	Overall SGA Day 1	χ^2	P	Variables	Overall SGA Day 1
	Mild	Moderate	Severe		
Diagnosis					
Cardiac diseases	2	3	0		
Neurological disorders	8	9	9	4.88	.60
Respiratory disease	2	3	0		
Cancers	1	2	1		
Length of stay					
≤10 days	11	10	1		
11-20 days	1	4	4	18.01	.000*
21-30 days	1	3	2		
≥31 days	0	1	3		

*significance,p=<0.05

Discussion

The study has been congruent to different studies in various aspects. In the present study, majority [14 (70%)] of the subjects in experimental group and in the control group [12 (60%)] were having neurological problems (shown in figure:1). This findings congruent to a study conducted by Pactricia A Higgins, Assessing nutritional status in chronically critically ill patients showed the majority (24%) of patients were suffering from neurological problems.[1] The majority [10(50%)] of subjects in experimental group, were having ≤ 10 days where as in control group [12 (60%)] were having ≤ 10 days of hospital stay. This is in contrast to a study conducted by Dr. Mayur M Kadam, on Nutrition In Severely Ill Patients in Intensive Care Units showed that the majority (55.6%) of subjects had ≤ 7days length of hospitalization.[3] The study reveals that administration of individualized diet plan to the critically ill patients has shown improvement in the nutritional status as determined by the anthropometric measurements of subjects which was consistent with study conducted by Huang et al., which showed malnourished person who received nutritional supplement had a better outcome as compared to those who did not, with a trend towards change in anthropometric measurements.[4]

Figure 1: Bar graph representing distribution of subjects according to diagnosis



Conclusion

The nutritional requirement of each individual patient varies according to the severity of illness and rate of metabolism. A thorough daily assessment of nutritional status will help to determine the nutritional requirement of each individual and to determine the essential therapeutic diet. Unless such critically patients are provided with macro nutrients in the form of enternal or parenteral nutrition; they accumulate an energy deficit that rapidly reaches propor-

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tions that contribute to lean- tissue wasting and that are associated with adverse outcomes.

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