

## Evaluation of nutritional status of patients admitted in critical care unit by subjective global assessment: A hospital based study

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### Abstract

**Objective:** To evaluate the nutritional status of patients in critical care unit during treatment by scored Patient-Generated Subjective Global Assessment (PG-SGA).

**Design:** An observational study assessing the nutritional status of patients in critical care unit.

**Setting:** Critical Care Unit of Shree Krishna Hospital, Karamsad, Gujarat.

**Subjects:** Ninety Eight patients of ICU (60 males and 38 female) 27- 89 aged years.

**Results:** The findings of PG-SGA showed that 59.1% (58) of 98 patients were well nourished, 9.18% (9) of patients were malnourished and 31.6% (31) of patients were overweight.

**Conclusions:** The findings of present study showed that the prevalence of malnutrition (9.18%) was found in patients of critical care unit during the period of admission.

**Keywords:** Nutritional status, Malnourished, Critical care unit, Scored patient-generated subjective global assessment.

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### Introduction

The significance of nutrition in the hospital setting (and especially the ICU) cannot be overstated. Critical illness is typically associated with a catabolic stress state in which patients demonstrate a systemic inflammatory response coupled with complications of increased infectious morbidity, multiple organ dysfunction, prolonged hospitalization, and disproportionate mortality. Over the past three decades exponential advances have been made in the understanding of the molecular and biological effects of nutrients in maintaining Homeostasis in the critically ill population. Traditionally nutrition support in the critically ill population was regarded as adjunctive care designed to provide exogenous fuels to preserve lean body mass and support the patient throughout the stress response.

The consequences of malnutrition may include an increased risk of complications, decreased response and tolerance to treatment, impaired quality of life and decreased survival rate.<sup>8-10</sup> Factors affecting a person's food intake, such as difficulties swallowing and loss of appetite play an important role in quality of life.<sup>11</sup>

The prevalence and magnitude of a diminished nutritional status varies with individual treatment regimens. It is widely accepted that the principal causes related to therapy are the result of commonly experienced side effects such as nausea, vomiting, anorexia, lethargy, diarrhoea, esophagitis, and dysphagia.<sup>12,13</sup>

Hence having the right knowledge is vital to enable cope with the symptoms as the treatment goes on and even after treatment to prevent relapse.

**Problem Statement:** All patients in critical care unit undergo wide ranges of treatment carry nutrition risk

and may lead to malnutrition and poor patient outcomes over time. The trends malnutrition in the developing countries are worrying due to a combination of late stage diagnosis and limited access to standard treatment. Thus malnutrition can lead to decreased treatment effectiveness.

### Study Justification

The population of critically ill patients in an intensive care unit (ICU) is not homogeneous. Many of the studies on which the guidelines are based are limited by sample size, patient heterogeneity, variability in disease severity, lack of baseline nutritional status, and insufficient statistical power for analysis.

### Study Objectives

The main objective of the study is the evaluation of nutritional status of critical care unit patients on admission.

### Materials and Methods

**Study Design:** Present study was an observational study in which the standard questionnaire of PG-SGA (Ottery, FD 2001) has been used to evaluate the nutritional status of the patient. The participants enrolled in the study comprised of critical care unit patients who were receiving wide range of treatments or passing their last treatment stages and follow-up care.

**Study setting:** The study was carried out in Shree Krishna Hospital which is located in Karamsad a city and a municipality in Anand district in the Indian state of Gujarat. It is part of the Chhagaam Gol ("circle of six villages"). Its elevation is around 41,461,142 ft. The area boasts of a large medical institute that is also a center of undergraduate as well as postgraduate learning. The name is Pramukh Swami Medical College.

**Sample size:** The number of patients interviewed for the study were 98 and among them 38 were females and 60 were males.

**Inclusion Criteria:** Patients who were admitted in Critical Care Unit aged at least 18 years were eligible for inclusion in the study.

**Exclusion Criteria:** Those patients who were admitted in Critical Care Unit, aged below 18 years, patients who were critically ill hence incapable of responding to questions, those who did not want to participate in the study and were admitted to medical facility were excluded from the study.

**Data Collection Tool:** PG-SGA (Ottery, FD 2001) was used for data collection to evaluate nutritional status of the patients. This questionnaire evaluates variables such as weight loss occurs in one or six months, nutritional impact symptoms, food intake, physical activity and function, physical examination.

**Data Collection Procedures:** Information was obtained from respondents by probing with questions in the questionnaire. To ensure that the respondent confidentiality, the interview took place in their respective cabins. A face to face interview was conducted where the questions were administered. Responses given were written in the questionnaire for each respondent and tagged with a reference number. At the end of each interview the respondent was thanked for his/her cooperation.

**Data Analysis:** All the information after collecting stored in the form of data in a computer software viz. Microsoft office Excel Worksheet and then carefully analyzed.

## Results and Discussions

### Subject Demographics

The study which was carried out involved a total of 98 patients were assessed by PG-SGA score questionnaire. Among them 38 (38.7%) were females and 60 (61.2%) were males and the youngest being 27 years and the oldest being 89 years of age.

And the wide range of disorders and injuries seen among the participants were Amenorrhea, Blunt Chest Injury, CA Cervix, Eclampsia, Ischemic Stroke, Leukaemia Myasthenia Gravis, Rheumatoid Arthritis, Sepsis, COPD, CA Buccal Mucosa, DD, CKD, HTN, CCF, PVD, ESRD, CA Alveolus, Burns, ARDS, Brain Tumor, Haemorrhagic Stroke, GBS, Fracture, Dyslipidaemia, Diverticular Perforation, Hypoglycaemia, Pre-Eclampsia, etc.

### Body Mass Index (BMI)

BMI of participants were classified as shown in the (Fig. 1.) 9.18% of whom were underweight, 59.1% were normal and 38.6% were overweight.

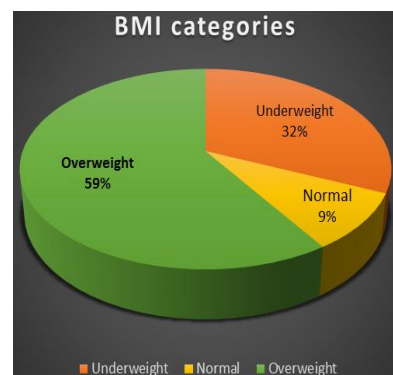


Fig. 1: BMI classification of participants.

### Nutritional Status by PG-SGA

**Weight Loss in One Month/Six Months:** Examining patient's weight loss revealed that about 43% did not lose weight and 57% had complained of weight loss during the last 6 month (Fig. 2). 55% of patients were still losing weight (Fig. 3).<sup>62,65</sup>

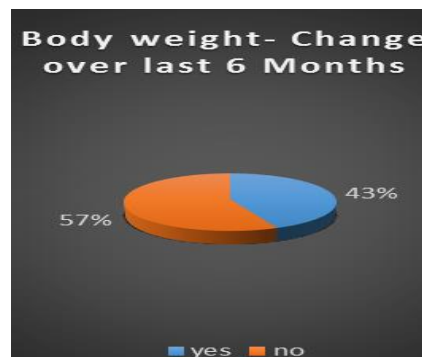


Fig. 2: Body weight- Change over last 6 Months and.



Fig. 3: Patients still losing weight.

### Dietary Intake

In the analysis of the information about the patient's dietary intake 96% of patients had changed in their diet in terms of low calorie, non-solid low calorie diet, liquid diet, fasting and persistent change (Fig. 4).<sup>62</sup>

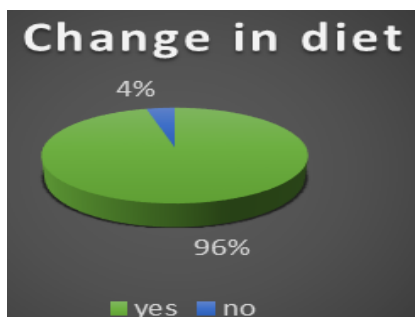


Fig. 4: Change in Dietary Intake.

**Nutrition Impact Symptoms (Gastrointestinal Symptoms)**

The study indicates that the most frequent nutrition symptoms causing food intake reduction or change in their diet were Dysphagia/ Odyphagia, Nausea, Vomiting, Diarrhoea, Anorexia, Bloating, Abdominal pain (Fig. 5).<sup>63,68</sup>

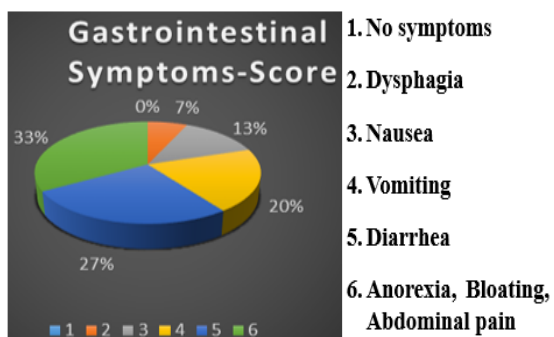


Fig. 5: Nutritional Impact Symptoms (Scoring of Gastrointestinal Symptoms).

**Functional Capacity (more than 2 Weeks)**

Fig. 6 represents the functional capacity of the patients for more than 2 weeks and it was found that 67% were less than normal and 33% were bed ridden out of the 98 participants.

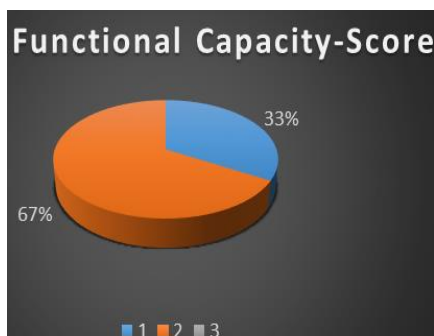


Fig. 6: Functional capacity score of the participants.

The participants were diagnosed in terms of Low stress, Moderate stress and High Stress and it has been found that 17% were low stressed, 33% were

moderately stressed and 50% of the participants were highly stressed during the stage of treatment (Fig. 7).

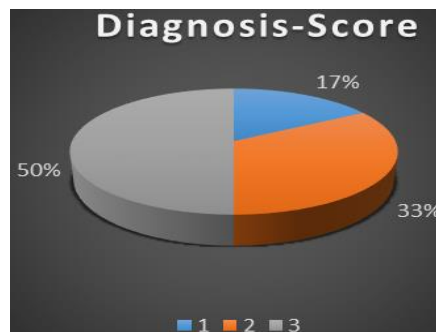


Fig. 7: Diagnosis of the participants.

**Physical Examination**

The physical examination score of the participants were assessed in terms of Normal, Slightly or moderately depleted (+1) and severely depleted (+2) by using the various parameters such as loss of subcutaneous fat (Triceps, chest), striated muscle, sacral muscle, ascites, ankle oedema. (Fig. 8).

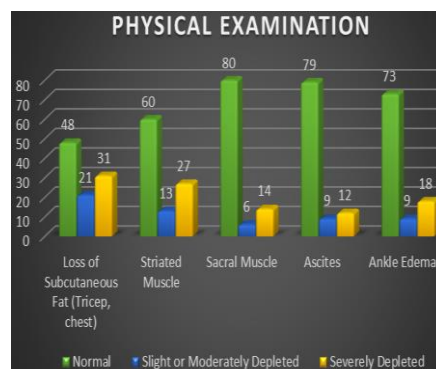
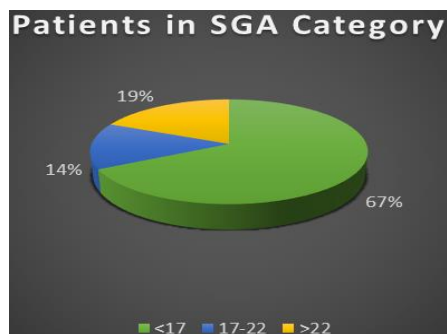


Fig. 8: Physical examination rated by degree of deficit of fat stores, muscle status and fluid status.

**Prevalence of Malnutrition**

According to PG-SGA score (Fig. 9) 67% of patients were well-nourished or <17; 14% of patients had moderate or suspected malnutrition 17-<22; 19% of patients were severely malnourished. Thus, the prevalence of malnutrition in the study population was 33% which is quite on the higher side. These findings may suggests that high attention should be paid to the patients in critical care unit and regular nutritional screening and intervention should be paid to them both during and after treatment.<sup>7,53,66,67,71,72</sup>



**Fig. 9: Classification of 98 patients in Critical care unit according to the Patient-Generated Subjective Global Assessment (PG-SGA) score.**

#### Co-Relation between PG-SGA Score and BMI

The prevalence of moderate and severe malnutrition in the patients was 33% (PG-SGA) and the prevalence of undernutrition was 9.1% (BMI). From the nutrition assessment tool of PG-SGA, the result we get has indicated that BMI alone cannot be a reliable indicator of nutritional status of an individual admitted in critical care unit.<sup>69,70</sup>

#### Conclusion

This observational study highlights the fact that nutritional issues are prevalent among patients in critical care unit during treatment. Quite high prevalence of malnutrition (33%) was observed among patients critical care unit, and this was significantly associated with clinical symptoms directly related to the eating process. Nutritional screening is an important step needed to help intervene the patients in critical care unit. Earlier detection of nutritional risk symptoms will result in thorough nutritional assessments and interventions that may help prevent further or pending malnutrition and weight loss during treatment and ultimately improve the quality of life of the patient.

**Limitations:** This study has some limitations such as the small number of patients. We studied a heterogeneous group of patients with various diagnosis, with varying outcomes. The study lacks serial assessment of patients that will change in the PG-SGA score which may be used to demonstrate subtle changes in nutritional status. Subjects presented with different diagnosis and different levels of nutritional status during the study.

**Future Research:** Further research needs in this regards with the PG-SGA applied at multiple time points with larger number of patients and appropriate nutrition interventional treatment plan and protocols need to be generated and applied to the cancer patients before treatment, during treatment and after treatment to combat nutrition related nutritional complications which effects patient's treatment and its outcome, quality of life, morbidity, mortality and cost of treatment.

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