ABSTRACT

“Assessment of Nutritional Status and Outcomes of Nutrition Support in Paediatric Patients admitted to an Intensive Care Unit”

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Background: Malnutrition is common at hospital admission and tends to worsen during hospitalization. Despite its significant effect on clinical outcome, malnutrition is seldom recognized by health care professionals in hospitalized children. As critical illness has a major impact on nutritional status of children it is imperative to be aware of the nutritional status of the children at admission in order to direct the health care strategies towards the overall improvement of these little lives. Planning and implementation of appropriate nutrition support helps the patient to recover faster, prevent iatrogenic malnutrition and reduce length of hospitalization. Inadequate feeding leads to malnutrition and may increase the patient’s risks of morbidity and mortality. The lack of systematic research and clinical trials on various aspects of nutritional assessment and nutrition support in the PICU is striking and makes it challenging to compile evidence based practice guidelines. Aim: The aim of the study was “To assess the nutritional status, implement a protocolized nutrition support and evaluate its effect on the nutritional outcome of subjects admitted to a paediatric intensive care unit”. Materials and Methods: The study was carried out in 260 paediatric subjects admitted to the Paediatric Intensive care units (PICU) in a multispecialty tertiary care hospital at Chennai, India. In addition to the routine assessment parameters, the subjective global assessment tool was used to assess the nutritional status of the subjects and interpreted using IAP and WHO reference standards. Results: Evaluation of the nutritional status of the subjects using W/A, W/H and H/A criteria revealed that a total of 49 % of the children were underweight, 40% were wasted and 52% were stunted. Underweight and stunting was predominant among infants in the age group of 1-6 months of age. The toddlers were more wasted than their other counterparts. Subjective Global Assessment (SGA) also revealed that around 50 percent of our subjects were well nourished, 34 percent were moderately malnourished and 16 percent were severely malnourished. Nutritional support in these patients was started on an average of 1.20± 0.44 to 2.12± 2.98 days across all the four age groups. The average time taken for attainment of 100% goals was an average of 3.08±2.09 to 4.60±1.34 days after initiation of feeds. Transition to oral feedings was done on an average of 0.37±1.94 to 2.42±4.29 days after attainment of goals. The average length of hospitalization for these patients was 9.95±3.24 to 11.94±8.39 days. In our study, factors affecting adequate delivery of nutritional support were also identified. Overall it was observed that respiratory distress was the most common cause of interrupted delivery of nutrients in infants and toddlers. There was an improvement in nutrient intake, maintenance of body weight and biochemical parameters such as haemoglobin, total protein and albumin, reduced length of stay in the hospital and decreased gastrointestinal complication observed for these critically ill patients with early initiation and progression of nutritional support.

But, feeding interruptions significantly affected the time taken to attain 100% goals and length of hospitalization of these critically ill children. Therefore, feeding
interruptions should be minimized wherever possible. SGA was able to identify malnourished subjects with 86.71% sensitivity and specificity of 86.36% when compared with IAP weight for age criteria. **Conclusions:** The observation of this study reveals that there is a co-existence of undernutrition in greater percentages among hospitalized critically ill children, posing a serious challenge to their care and clinical prognosis. For the prevention and treatment of malnutrition among children in the critical care set up, screening for malnutrition should be an integral part universally. SGA is a sensitive and specific nutrition assessment tool useful in pediatric patients admitted in a critical care unit and hence can be used as a complimentary tool to the conventional assessment tools. Our study provides multiple evidences for implementation of quality nutrition support administration to the critically ill pediatric population and thereby improve the overall clinical outcome.

**Keywords:** Critically ill Paediatrics, Malnutrition, Nutritional support, Feeding Interruptions, Subjective Global Assessment