# Assessment of Nutritional Status, Resuscitation Modalities of Malnutrition, and Enteral Feeding Products for Children with Neurological Disorders

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## INTRODUCTON

Children with neurological disorders frequently encounter additional problems leading to malnutrition:

- Decreased food intake related to the swallowing problems
- Increased caloric requirement due to special needs

Assessment of nutritional status and implementation of appropriate nutritional support are essential for **optimal care** in these patients with **multidisciplinary** feeding programs.

## OBJECTIVES

- To evaluate the nutritional status assessment, management modalities, and the spectrum of feeding products in children with neurological diseases in a tertiary unit.

## MATERIAL & METHODS

- A cross-sectional retrospective study
- Ege University Children's Hospital (2017-2022)
- 229 children with neurological disorders
- We evaluated;
  - The nutritional assessment methods
  - Nutritional resuscitation modalities
  - The selection of enteral feeding products
  - Malnutrition status
- All patients were consulted by the pediatric gastroenterology and nutrician departments.

## Malnutrition Definition and Classifications:

- Waterlow classification (Weight-for-Height)
- Body Mass Index
  - World Health Organisation (WHO) Z score in 0-2 years children
  - Centers for Disease Control and Prevention (CDC) Z score in 2-18 years children
    - (-1 SD) - (-2 SD); Mild Malnutrition
    - (-2SD) - (-3 SD); Moderate Malnutrition
    - < (-3SD); Severe Malnutrition

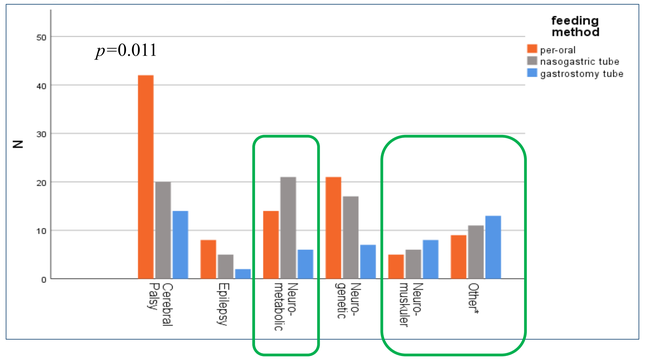
## RESULTS

**Table 1: Baseline Characteristics of the Patients (n=229)**

| | | |
|---|---|---|
| **Age (month) [Mean ± SD]** | | 82.16 ±62.43 |
| **Gender, N (%)** | **Female** | 97 (42.4%) |
| | **Male** | 132 (57.6%) |
| **Birth weight, gr [Mean ± SD]** | | 2986.32 ± 750.05 |
| **Gestational week [Mean ± SD]** | | 37.91 ± 3.03 |
| **Neurological disease, N (%)** | **Epilepsy** | 15 (6.6%) |
| | **Cerebral palsy** | 76 (33.2%) |
| | **Neuro-musculer disorders** | 19 (8.3%) |
| | **Neuro-metabolic disorders** | 41 (17.9%) |
| | **Neuro-genetic disorders** | 45 (19.7%) |
| | **Other*** | 33 (14.4%) |
| **Feeding Method, N (%)** | **Per-oral** | **99 (43.2%)** |
| | **Nasogastric Tube** | **80 (34.9%)** |
| | **Gastrostomy Tube** | **40 (21.8%)** |

*Other: Hypoxic / Infective / Structural Brain Damage

**Figure 1. Distribution of Feeding Methods according to the Subgroups of Neurological Disorders**




## Hypercaloric vs. Isocaloric products ($p$=0.012)

- 63.6% / 36.4 % for per-oral feeding
- 46.9% / 53.1% for tube feeding

**Table 2: Malnutrition classification of the patients**

| | | |
|---|---|---|
| **Waterlow / Weight-for-Height** | | |
| **Mild Malnutrition** (80-89 %) | | 68 (29.6%) |
| **Moderate Malnutrition** (70-79 %) | | 42 (18.4%) |
| **Severe Malnutrition** (< 70 %) | | 13 (5.6%) |
| **Body Mass Index (BMI) Z score** | | |
| **0-2 years n=57 (WHO)** | **Mild Malnutrition** | 10 (18.4%) |
| | **Modarate Malnutrition** | 9 (15.8%) |
| | **Severe Malnutrition** | 9 (15.8%) |
| **2-18 years n=172 (CDC)** | **Mild Malnutrition** | 30 (17.2%) |
| | **Modarate Malnutrition** | 24 (13.8%) |
| | **Severe Malnutrition** | 41 (24.1%) |

## CONCLUSIONS

- There was new trend in the rates and grades of malnutrition reduced rates of malnutrition and less severe malnutrition with 5.6 % in children with neurological disorders might be due to early interventional resusitation programs.
- A higher rate of children resuscitated with gastrostomy tube feeding compared to our previously reported results 21.8% versus 3.9%, respectively

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