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EDITORIAL

Beyond pediatric nutritional diagnosis and care

*Jimena Fuentes-Cummings[1], Viridiana M. Mendoza-Martinez[2], and Nallely Bueno-Hernández[2]**

[1]Pediatric Nutrition, Nutrition Division; [2]Proteomics and Metabolomics Laboratory, Research Division. Hospital General de México Dr. Eduardo Liceaga, Secretaría de Salud, Mexico City, Mexico

Nutritional overview in Mexico

In Mexico, the National Health and Nutrition Surveys (ENSANUT) have highlighted key trends in childhood malnutrition, dietary habits, the role of family members in nutrition, and the nutritional status of hospitalized children. According to the 2023 ENSANUT reported a prevalence of chronic malnutrition of 13.9% in children under five, while overweight affected 7.7% of this group. Among school-aged children and adolescents, the combined rates of overweight and obesity reached 37% and 40%, respectively. This epidemiological landscape presents a significant challenge for healthcare institutions, requiring structured nutritional monitoring and treatment in general and hospitalized pediatric populations. This process begins with a Nutritional Status Evaluation (NSE)[1,2].

NSE consists of identifying patients' nutritional status through assessment using anthropometric, biochemical, clinical, dietary, lifestyle, and pharmacological measures[3]. Poor nutritional status increases the risk of complications, chronic infections, and worse disease outcomes.

The American Society for Parenteral and Enteral Nutrition and the European Society for Clinical Nutrition and Metabolism recommend routine nutritional screening to identify patients at risk of malnutrition. This is a fundamental component of the Nutrition Care Process (NCP). This process is established as a universal, structured, and systematic cycle that should be conducted in any nutritional assessment. The first step in the NCP is nutritional screening, a tool that allows for the early identification of patients at nutritional risk, especially in hospital settings. This enables prioritization of care and timely interventions[3,4].

An NSE is performed, during which detailed objective and subjective information are collected from the patient. This comprehensive assessment establishes a nutritional diagnosis, documented using the PES acronym (problem, etiology, signs, and symptoms). Establishing a nutritional diagnosis will allow for the design of an appropriate intervention, with clear goals and specific actions to improve the patient's nutritional status.

Once the nutritional diagnosis has been identified, a nutritional intervention is conducted based on the energy and protein requirements, which vary significantly according to age. To establish these requirements in the pediatric population, it is recommended to follow the FAO/WHO guidelines, which are widely recognized for their applicability in different clinical and population contexts. Finally, patients are monitored and followed up, during which specific time points are established to evaluate the factors targeted for improvement through the intervention.

NCP is a dynamic process that allows for patient reassessment based on the goals established during the intervention. Its guidelines always seek to utilize evidence-based nutrition, clinical thinking, adherence to the code of ethics, and collaboration within public health, private practice, and social and economic systems (Fig. 1).

Correspondence:
Nallely Bueno-Hernández
E-mail: nallely_bh5@yahoo.com.mx

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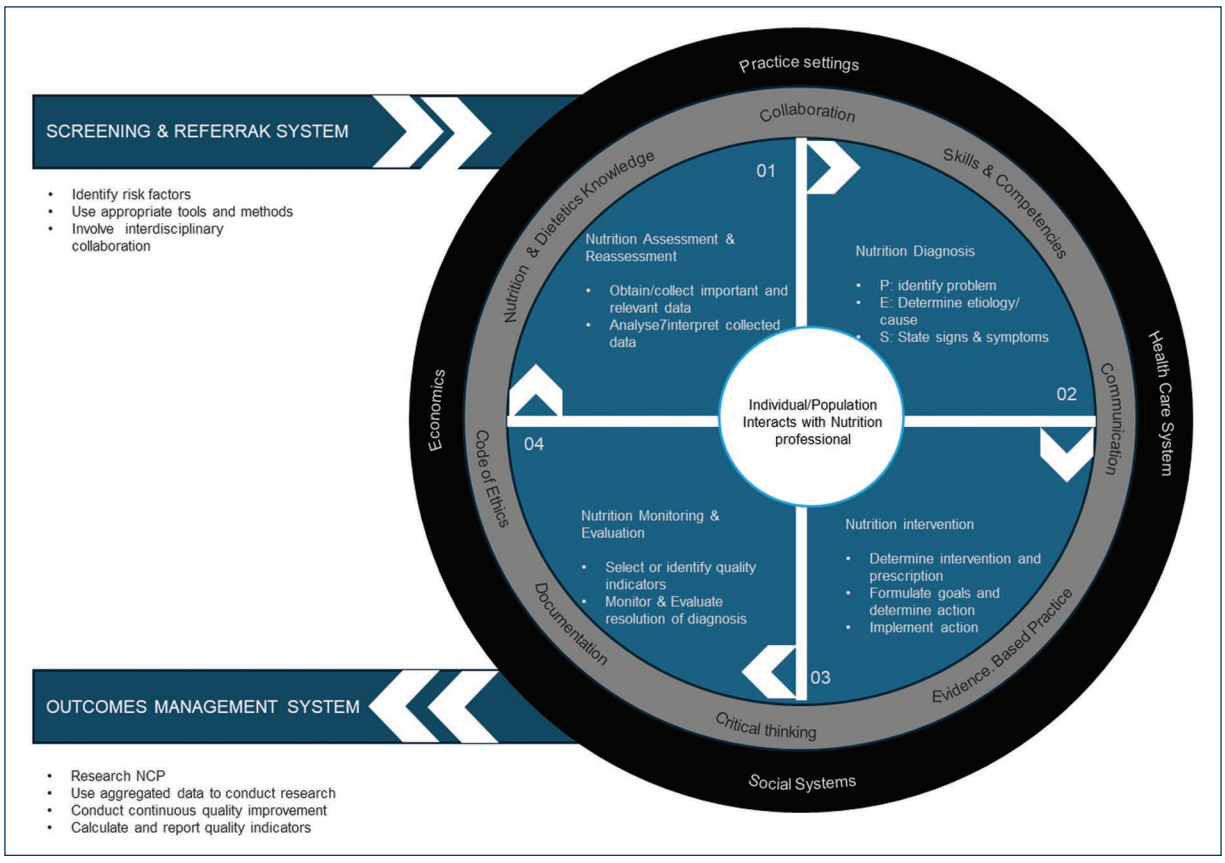

Figure 1. Diagram of the nutrition care process. *Last updated by Swan et al., 2017.*

Furthermore, childhood malnutrition can have long-term consequences such as growth retardation, wasting, underweight, micronutrient deficiency or insufficiency, overweight, or obesity. These conditions alter screening scores, and on admission, the patient presents a high nutritional risk, exacerbated by acute illnesses or physiological stress.

Proper nutritional screening can predict a child's nutritional and medical prognosis. Poor or negative nutritional status can affect morbidity and mortality, hospital stay, growth, costs, and readmission rates. However, this is not currently a mandatory or routine process in most health institutions in Mexico.

The screening tool for the assessment of malnutrition in pediatrics (STAMPs) as a nutritional screening tool for children in Mexico

The STAMP is designed to assess the general nutritional status of pediatric patients. It identifies nutritional risk on hospital admission using three key questions related to anthropometric measurements, dietary intake, and medical diagnosis. Most importantly, the score provides an action plan for the patient[5].

Various pediatric nutritional screening tools have been developed and validated internationally; however, the STAMP is one of the most reproducible. Studies in Mexico using this tool have reported that up to 48% of admitted patients present with some degree of malnutrition. It has shown a sensitivity of 97.88% (95% CI, 94.67-99.42) and a specificity of 45.05% (95% CI, 35.59-54.78) for detecting nutritional risk in Mexican population.

Nutritional support in the pediatric population

Nutritional support in pediatric patients is considered a fundamental therapeutic option when a child cannot meet their energy and nutritional requirements orally due to feeding difficulties, severe malnutrition, or neurological conditions that limit independent feeding. Multiple factors that influence energy requirements must be

Table 1. Comparison of enteral and artisanal formulas in composition and their main characteristics

Formula type	Protein	Carbohydrates	Lipids	Kcal/100 mL	Characteristics
Polymeric	Intact (non-hydrolyzed) protein	Easily digestible polysaccharides such as dextrins, sucrose	Vegetable oils and medium-chain triglycerides	1-1.2 kcal/mL	Suitable for patients with normal digestive function
Oligomeric	Short peptides and some free amino acids	Easily digestible polysaccharides such as dextrins	Medium-chain triglycerides	1-1.2 kcal/mL	For patients with malabsorption or digestion issues
Elemental	Free amino acids	May contain glucose	Medium-chain triglycerides	1-1.2 kcal/mL	For patients with severe malabsorption; easily absorbed
Homemade	Whole proteins	Poorly digestible polysaccharides (e.g., starch), disaccharides like lactose or sucrose	Vegetable oils	Approx. 0.7-1 kcal/mL	Requires hygienic preparation; proper knowledge and training needed for safe use.

The composition of enteral formulas allows their use in most pathologies, in contrast to homemade formulas, which require proper food safety and preparation training to ensure safe administration.

considered, such as nutritional status, fasting period, underlying pathologies, age, sex, degree of metabolic stress, and, unlike in adults, growth factor status. Growth factor status is essential to ensure adequate physical development, regardless of the child's clinical condition. To estimate energy requirements in this population, widely recognized formulas such as those proposed by the FAO/WHO or the Schofield formula are used.

The first step in providing nutritional support is to determine the integrity of the gastrointestinal tract. If it is in optimal condition, enteral nutrition is indicated, which offers metabolic advantages over parenteral nutrition. Depending on patient tolerance and treatment duration, enteral nutrition can be provided through a nasogastric tube or percutaneous endoscopic gastrostomy.

Step 2 in this approach involves choosing an appropriate formula based on its composition. Enteral formulas are classified according to the complexity of their nutrients, allowing for individualized use depending on the patient's clinical and digestive conditions (Table 1). Artisanal formulas, prepared with blended conventional foods, can be used in home settings with proper training and hygiene measures, but they present disadvantages in the hospital environment.

Several studies have compared artisanal diets with polymeric formulas, concurring that the former presents significant nutrient losses during preparation due to cooking, blending, and straining. This requires calculating higher requirements to meet nutritional goals, resulting in mixtures lacking the appropriate tube feeding consistency. For these reasons, polymeric formulas are favored in clinical settings, as they offer greater control, safety, and efficacy in meeting the nutritional requirements of pediatric patients.

Conclusions

The NCP is a universal and systematic process essential for the comprehensive management of pediatric patients. Nutritional intervention, along with medical treatment, is a fundamental pillar.

Due to its stressful nature and the presence of underlying pathologies, the hospital environment represents an additional risk factor for deteriorating nutritional status. The use of nutritional screening tools in the pediatric population allows for early detection of at-risk patients, facilitating timely interventions. In Mexico, nutritional screening should be mandatory; however, its use remains limited, leading to late nutritional assessments, hindering timely interventions, and compromising the clinical prognosis of the pediatric population.

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Conflicts of interest

The authors declare that they have no conflicts of interest.

Ethical considerations

Protection of humans and animals. The authors declare that no experiments involving humans or animals were conducted for this research.

Confidentiality, informed consent, and ethical approval. The study does not involve patient personal data nor requires ethical approval. The SAGER guidelines do not apply.

Declaration on the use of artificial intelligence. The authors declare that no generative artificial intelligence was used in the writing of this manuscript.

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