Identifying Malnutrition in Pediatric Population

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Background

- Pediatric malnutrition is defined as an imbalance between nutrient requirements and intake that results in cumulative deficits of energy, protein, or micronutrients that may negatively affect growth, development, and other relevant outcomes (Wolff, 2016).
- Children who are born with or acquire a disability often face significant issues related to nutrition. A high incidence/prevalence of malnutrition is often reported in children with disabilities, and this may result in poorer health and development, leading to a perpetuating cycle of suboptimal nutrition, disability and worsening health status.
- Children with disabilities are especially at-risk for malnutrition for a variety of reasons and a tool like this would allow dietitians to better assess the child and provide more focused nutrition intervention and improve quality of treatment.
- The research is still new and limited, but malnutrition in children with disabilities can lead to more complicated hospitalizations due to progression of the underlying disease or condition, poor wound healing, or slow return to previous level of activity, complications that can significantly increase the length of stay and cost of hospitalization. A comprehensive assessment, using the American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) indicators can help identify the need for nutritional intervention and address nutrient deficiencies thus reducing the cost of hospitalizations and improve health outcomes overall for pediatric patients.

Aims

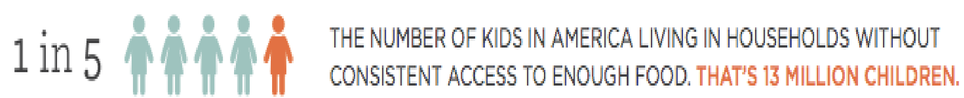
- My primary goal is to create a tool for registered dietitians, nurses, physicians, and other health professionals to use more frequently to assess nutritional status in children, both with and without disabilities. My hope is that this tool will help create awareness around pediatric malnutrition.
- For the assessment tool, I chose to use the updated indicators in A.S.P.E.N 2016 Consensus Statement because it is based on the most current evidence-based research. I wanted to create an assessment that covers a head-to-toe physical exam including: anthropometrics (height; weight; skinfold thickness; waist circumference, hip, and chest), growth parameters (height-for-weight; height-for-length; weight gain velocity), and common micronutrient deficiencies for health care providers to look for.

Methods

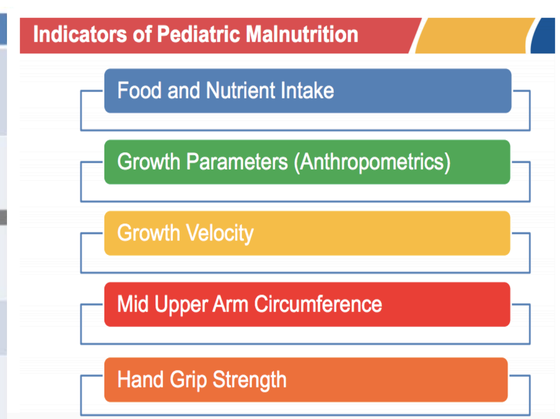
- **Design**: The design of this project included 1) an overview and literature review of current assessment tools which thus informed 2) the development of my assessment tool for La Rabida Children's Hospital.
- **Procedures for data collection:** I performed a literature review on malnutrition in pediatrics, malnutrition in children with disabilities, and effective assessment tools used in pediatric clinical settings. In addition to the literature review, the A.S.P.E.N 2016 Consensus Statement influenced the assessment tool developed for La Rabida Children's Hospital.
- **Procedures for implementation**: The literature review gave insight to the prevalence of malnutrition in children, with and without disabilities. Additionally, the A.S.P.E.N indicators gave the most current set of standards for hospitals to implement in their health and physical assessments, based off evidence-based research.

Results

The assessment tools most frequently used in clinical settings have both pros and cons. The table below shows an overview of the five current assessment tools for malnutrition in pediatrics: Pediatric Nutrition Risk Score (PNRS), Subjective Global Nutrition Assessment (SGNA), Pediatric Yorkhill Malnutrition Score (PYMS), Screening Tool for the Assessment of Malnutrition in Pediatrics (STAMP), and Screening Tool for Risk on Nutritional Status and Growth (STRONGkids). In 2016, A.S.P.E.N recommended that a standardized set of diagnostic indicators be used to identify and document pediatric malnutrition (undernutrition) in routine clinical practice (Becker, 2016). The purpose is to help identify a basic set of indicators that can be used to diagnose and document undernutrition in the pediatric population ages 1 month to 18 years old, with or without disabilities. The indicators are intended for use in multiple settings (acute, ambulatory care/outpatient, residential care). In the United States, undernutrition frequently occurs in hospitalized acute and/or chronically ill patients, and patients with special health care needs. Below are the assessment tools currently used in clinical settings, as well as the new indicators of pediatric malnutrition. Additionally, I have copies of the assessment tool developed in addition to the A.S.P.E.N. Pediatric Nutrition Care Pathway.



Tool	Group	Age	Content Items
PNRS	Medical & Surgical	1 m – 18 y	• Food intake • Difficulty retaining food • Pain • Ability to eat • Medical condition
SGNA	Surgical	1 m – 18 y	• Weight history, Parental height • Dietary intake, GI symptoms • Functional capacity, Physical exam. • Underlying condition
PYMS	Medical & Surgical (exceptions)	1 – 16 y	• BMI • Recent weight loss • Nutrition intake • Medical condition
STAMP	Medical & Surgical	2 – 17 y	• Clinical diagnosis • Nutrition intake • Anthropometry
STRONGkids	Medical & Surgical	1 m - 18 y	• Subjective Assessment • High-risk disease • Nutritional intake • Weight loss



Conclusion

- The universal use of a single set of diagnostic parameters will expedite the recognition of pediatric undernutrition, lead to the development of more accurate estimates of its prevalence and incidence, direct interventions, and promote improved outcomes. A standardized diagnostic approach will also inform the prediction of the human and financial responsibilities and costs associated with the prevention and treatment of undernutrition in this vulnerable population and help to further ensure the provision of high-quality, cost-effective nutritional care.
- The most important takeaway from this project is that malnutrition evaluation should be incorporated into the routine clinical appointment. The assessment tool developed for this project can be used in many pediatric settings. The tool is simple, two-sided, and captures the A.S.P.E.N updated indicators.
- Previous pediatric assessment tools have not been updated since the new indicators were released. Although they are good sources and recommendable, research has shown that a more complete, updated, and standardized tool will be more beneficial, for the patient and the hospital.
- To conclude, pediatric malnutrition assessments are not performed as frequently or as in-depth as they should be. Creating a new tool using the A.S.P.E.N. guidelines takes time, collaboration, and expertise. I have created a tool that has filled in the gaps of previous assessments, and can be implemented in hospitals today. La Rabida Children's Hospital will be the first to test this tool out.

References

American Society of Parental Enteral Nutrition. (n.d.). *Study Confirms Malnutrition Linked to Longer Stays and Higher Healthcare Costs for Hospitalized Children*. Retrieved April 03, 2017, from: https://www.nutritioncare.org/News/General_News/Study_Confirms_Malnutrition_Linked_to_Longer_Stays_and_Higher_Healthcare_Costs_for_Hospitalized_Children/

Becker, P. J., Nieman, L., Corkins, M. R., Monczka, J., Smith, E., Smith, S. E., . . . White, J. V. (2014, December). Consensus statement of the Academy of Nutrition and Dietetics/American Society for Parenteral and Enteral Nutrition: indicators recommended for the identification and documentation of pediatric malnutrition (undernutrition). Retrieved April 01, 2017, from https://www.ncbi.nlm.nih.gov/pubmed/25458748

Bouma, S. (2016). Diagnosing Pediatric Malnutrition. *Nutrition in Clinical Practice,32*(1), 52-67. doi:10.1177/0884533616671861

Groce, N., Challenger, E., Berman-Bieler, R., Farkas, A., Yilmaz, N., Schultink, W., . . . Kerac, M. (2014). Malnutrition and disability: unexplored opportunities for collaboration. *Paediatrics and International Child Health,34*(4), 308-314. doi:10.1179/2046905514y.0000000156

Huysentruyt, K., Vanderplas, Y., & Schepper, J. D. (2016). Screening and assessment tools for pediatric malnutrition. *Current Opinion in Clinical Nutrition and Metabolic Care,19*(5), 336-340. doi:10.1097/mco.0000000000000297

Huysentruyt, K., Alliet, P., Muyshont, L., Rossignol, R., Devreker, T., Bontems, P., . . . Schepper, J. D. (2013). The STRONGkids nutritional screening tool in hospitalized children: A validation study. *Nutrition,29*(11-12), 1356-1361. doi:10.1016/j.nut.2013.05.008

Joosten, K. F., & Hulst, J. M. (2014). Nutritional screening tools for hospitalized children: Methodological considerations. *Clinical Nutrition,33*(1), 1-5. doi:10.1016/j.clnu.2013.08.002

Wolff, J. (2016). What's new with pediatric malnutrition? *University Hospitals and Rainbow Babies & Children's Hospital*. Retrieved April 01, 2017.

Acknowledgements

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