

Promoting Health Equity for the Hispanic Population through Improved Access to Malnutrition Screening and Intervention

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ABSTRACT

Malnutrition can lead to worse health outcomes and inequities. The risk for malnutrition is higher in communities of color, young children, and older adults. This Commentary defines malnutrition and its impacts as well as the impacts of health equity on nutrition and nutrition access. Also included are recommendations and practice tips specific to identification and intervention for malnutrition. The Commentary concludes by summarizing a physician action plan to address improved nutrition quality via improved access to nutrition care.

1. Introduction

Good nutrition is fundamental for health. What is less recognized is that malnutrition can contribute to worse health outcomes¹ and health inequities.² Malnutrition is often underrecognized by physicians, which may reflect limited medical education on nutrition.³ In one cross-sectional survey of medical, surgical, and obstetrical interns, 71% reported they believed medical school had not sufficiently exposed them to clinical nutrition.⁴ All segments of the population may be at risk for malnutrition, but the threat is higher in communities of color and in young children and older adults, particularly those of lower socio-economic status. The objectives of this Commentary are to define malnutrition, its potential impacts, and prevalence as well as describe the impact of health equity on nutrition and nutrition care access, including food insecurity. The Commentary also identifies current malnutrition and food insecurity screening and intervention recommendations, particularly for children (<18 years of age) and older adults (≥65 years of age). Finally, the Commentary outlines a physician action plan for improved malnutrition care for the Hispanic population.

2. Definition of Malnutrition and Its Impacts

Defined broadly, malnutrition refers to deficiencies, excesses, or imbalances in intake of energy and/or nutrients. It includes undernutrition (such as stunting, wasting, underweight, and micronutrient deficiencies/insufficiencies) and overweight, obesity, and diet-related noncommunicable diseases.⁵ Pediatric malnutrition is categorized by etiology as non-illness related (behavioral, socioeconomic or environmental factors) or illness related (acute or chronic) that result in nutrient imbalance, decreased intake and/or delivery.⁶ Similarly, there are etiologic-based definitions of adult malnutrition; these consider both time and degree of inflammatory response in an acute or chronic illness or injury⁷ and are termed disease-related malnutrition. In older adults, two conditions frequently related to malnutrition are sarcopenia and sarcopenic obesity, which are characterized by progressive loss of muscle mass and strength/physical function with age.⁸

Diagnosing and documenting malnutrition in clinical practice requires a multidisciplinary approach with standardized tools. Patients are first screened for malnutrition risk and a nutrition assessment (which may include a nutrition-focused physical exam⁹) is then completed for those at risk. If a nutrition assessment identifies malnutrition or risk for malnutrition, the diagnosis should be recorded in the medical record. The American Society for Parenteral and Enteral Nutrition (ASPEN) and Academy of Nutrition and Dietetics (Academy) have recommended specific characteristics for the identification of pediatric¹⁰ and adult⁷ malnutrition. Indicators used to identify pediatric malnutrition are related to:

Food/nutrient intake
Assessment of energy/protein needs
Growth parameters
Weight gain velocity
Mid-upper arm circumference
Handgrip strength¹⁰

Adult malnutrition indicators are similar; the ASPEN/Academy recommend malnutrition should be suspected if two or more of the following characteristics are present in adult patients:

Insufficient energy intake
Unintentional weight loss
Decreased muscle mass
Decreased subcutaneous fat
Fluid accumulation
Decreased functional status (e.g. hand grip strength⁷)

ASPEN offers Pediatric Care Resources¹¹ and a Malnutrition Solution Center¹² that include screening and assessment tools and their scoring, care pathways, and patient education materials, as well as resources specific to care settings and patient populations.

Nutrition is critical to support growth, development, basic metabolism, immunity, and other body systems and thus malnutrition can have multiple health impacts (Table 1). Current evidence also suggests that nutrition status, whether positive or negative, can have correspondingly positive or negative impacts on organ systems involved in body homeostasis and development, thereby influencing the health risks of both children and adults.¹³ Analysis and analytic modeling of US Medicare administrative claims data have shown the value of nutrition and its potential for reducing Medicare spending. These studies have included how nutrition support therapy positively impacts hospital-acquired infections and health outcomes in critically ill patients¹⁴ and in-hospital complications and lengths of hospital stay in patients with gastrointestinal cancer.¹⁵

Young children (15-19)	Adults (20-27)
Increased mortality	Increased mortality
Increased complications	Increased complications, such as incidence of healthcare-acquired conditions (including pressure ulcers)
Delayed wound healing, increased Infections	Delayed wound healing, increased infections
Increased morbidity	Increased morbidity, decreased respiratory function, cardiac function
	Functional loss, muscle wasting, increased risk for falls
Increased hospital length of stay	Increased hospital length of stay
	Higher hospital readmission rates
Increased treatments/procedures, costs	Higher treatment costs
Decreased quality of life	Decreased quality of life
Poor attention and cognition	
Decreased motor and communication skills development	
Altered homeostasis and metabolic dysregulation	

Table 1: Malnutrition-related impacts on growth, development, and health outcomes

3. Prevalence of Malnutrition

Malnutrition is common across all ages, care settings and is a long-standing public health issue.²⁸ The condition can include undernutrition and overweight/obesity and at the population level there is also recognition of the double burden of malnutrition, for example in pediatrics overweight/obesity along with stunting/wasting are seen as interconnected.²⁹

4. Pediatric and Adult Malnutrition in the Community

Globally, 194 million children under age 5 have been estimated to be stunted (too short for age) or wasted (too thin for height) and nearly 40 million overweight/obese.³⁰ In the outpatient setting, 5-10% of the pediatric population is at risk for failure to thrive/undernutrition.³¹ The United States Census Bureau uses the term Hispanic or Latino to refer to a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race.³² Malnutrition research in the US Hispanic population is limited and there is a need for further nutrition care and health disparities research.³³ Yet research by Iriart et al provides evidence that for US Hispanic children the proportion of stunting is three times the proportion of non-Hispanic White children.³⁴ Further, these researchers documented that Hispanic children

living at lower socioeconomic levels experience a higher prevalence of stunting compared to children who are not at lower socioeconomic levels.³⁵ They concluded ethnicity/race and social determinants of health had a direct impact on malnutrition risk.

Disease-related malnutrition is believed to be prevalent among the general US adult population³⁶ with up to 1 out of 2 older adults either at risk of becoming or currently malnourished.³⁷ Hispanic race/ethnicity has been significantly associated with high nutrition risk scores in community-living older adults.³⁸ Another study found US Hispanics had the highest prevalence of sarcopenia and sarcopenic obesity compared to other groups.³⁹

5. Pediatric and Adult Malnutrition in Clinical Care Settings

Since the early 1970s malnutrition has been documented as a common pediatric condition as well as a contributor to prolonged hospitalizations and increased morbidity.⁴⁰ Today 6-51% of hospitalized pediatric patients are diagnosed with malnutrition⁶ however, many remain undiagnosed. Encouragingly, US hospital diagnosis rates for pediatric malnutrition have improved from 3.9% in 2012 to 6.4% in 2019,⁴¹ in part because of efforts to prioritize malnutrition screening, assessment, diagnosis, and intervention training. Malnutrition prevalence in hospitalized pediatric intensive care patients has been documented as highest in US Hispanic children (42.5%) compared to prevalence rates among Caucasian children and African American children of 29.4% and 19.6%, respectively.³⁵

In considering adult malnutrition in care settings, a Congressional Research Service Report documented “malnutrition affects 35-60% of older residents in long term care facilities and as many as 60% of hospitalized older adult patients.”⁴² In addition, malnutrition occurs in 20-50% of adult patients on hospital admission⁴³ but as in pediatric care, it often remains unrecognized. Malnutrition is documented in less than 9% of hospital stays⁴⁴ and 1% of emergency department visits.⁴⁵ There is little data specific to malnutrition in US Hispanic hospitalized adults.

6. Impact of Health Equity on Nutrition and Nutrition Care Access

Health equity gives all people, regardless of race, education, gender, identity, sexual orientation, disability, or geography, the individual resources, and opportunities to reach overall health.⁴⁶ Nutrition and nutrition care access are social determinants of health and are important for health equity, as outlined in the 2022 White House Conference on Hunger, Nutrition, and Health. This 2022 Conference was a milestone because it was the first time in over 50 years that the White House had hosted such a Conference. The Conference’s call to action—which includes integrating nutrition and health—will be far-reaching with the potential to significantly impact the future frameworks and policies that define US government food and nutrition programs and how they may support underserved populations.⁴⁷

Ending nutrition care access disparities was a primary focus of the 2022 White House Conference *National Strategy*,⁴⁸ more broadly advancing health equity is part of the US Centers for Medicare and Medicaid (CMS) quality strategy.⁴⁹ In recent years, CMS has begun to include nutrition in its quality programs. Weight assessment and nutrition counseling for children and adolescents was in the initial core set of children’s health care quality measures for Medicaid and the Children’s Health Insurance Program (CHIP)⁵⁰ and have continued to remain in the core set for more than a decade.⁵¹ CMS in 2021 approved nutrition risk assessment as part of a health equity-related improvement activity for office-based physicians and clinicians reimbursed under the Merit-based Incentive Payment System (MIPS).⁵² In 2022, CMS adopted the Global Malnutrition Composite Score as a health equity-focused measure in its Inpatient Hospital Quality Reporting Program for 2024 reporting.⁵³ While CMS quality metrics are generally not reported by race, ethnicity, or socioeconomic factors, CMS’ inclusion of nutrition and malnutrition-related measures in its quality programs will increase provider attention on the importance of identifying and addressing malnutrition⁵⁴ and initiating malnutrition quality improvement.⁵⁵

Closely linked to the issues of nutrition and nutrition care access is food insecurity. The United States Department of Agriculture defines food insecurity as a household-level economic and social condition of limited or uncertain access to adequate food.⁵⁶ Food insecurity is associated with low dietary quality in children⁵⁷ and adults⁵⁸ and can contribute to malnutrition.⁵⁹ It is for this reason that it is recommended that clinicians screen for both food insecurity risk as well as malnutrition risk.⁶⁰

The 2022 White House Conference *National Strategy*,⁴⁸ described multiple impacts of food insecurity and diet-related diseases on individual and societal costs, including poorer mental and overall health as well as increased healthcare costs. Food insecurity is an ongoing problem for the US Hispanic population who is 2.5 times more likely to experience food

insecurity than white non-Hispanic Americans.⁶¹ For Hispanic households with children, food insecurity is over 14% compared to less than 5% in non-Hispanic counterparts with children.⁶² Food insecurity has been associated with poorer health outcomes in Hispanic adults, including increased risk of Type 2 diabetes⁶³ and serious psychological distress.⁶⁴

 *Practice tip: physicians can help improve the US Hispanic population’s access to nutrition care and equity by recognizing food insecurity as a risk factor for malnutrition.*

7. Identification of and Intervention for Malnutrition and Food Insecurity

Identifying and intervening for malnutrition with evidence-based nutrition support can positively impact clinical outcomes, including through enhanced survival. It is in this context of improved outcomes and survival that nutrition care is now viewed as a human right.⁶⁵ The disconnect between potentially high rates of malnutrition/risk for malnutrition but low rates of malnutrition diagnosis should be given priority, including in the US Hispanic population, and addressed by implementing recommended malnutrition and food insecurity screening, assessment, documented diagnosis, and intervention practices.

8. Screening for Malnutrition and Food Insecurity

In the clinical setting two common, validated tools for screening for malnutrition in young children are the Pediatric Yorkhill Malnutrition Score (PYMS), and Pediatric Nutrition Screening Tool (PNST), due to their high sensitivity.⁶⁶ The Malnutrition Screening Tool (MST) is recommended to screen adults for malnutrition regardless of patient age, medical history, or setting.⁶⁷ The MST is a simple screening tool (addressing weight loss and appetite) that is designed to quickly identify potential malnutrition and can be included in the EMR.⁶⁸⁻⁶⁹ Once patients are identified as at risk for malnutrition, they should be referred to a registered dietitian nutritionist (RDN).⁷⁰ The RDN can complete a nutrition assessment--instrumental for a malnutrition diagnosis--and implement a nutrition care plan which may include evidence-based medical nutrition therapy.

The Hunger Vital Sign™ is a 2-question, validated tool for screening for household food insecurity in families with children and it is readily being incorporated into electronic medical records (EMRs).⁷¹ The tool has been shown to be effective for pediatric food insecurity screening across multiple care settings, including in emergency departments,⁷² primary care,⁷³ and clinics serving low-income families.⁷⁴ The Hunger Vital Sign™ screening tool has also been found to be highly sensitive and specific for screening older adults for food insecurity.⁷⁵ Most food insecurity screening programs are still in the early stages of linking food insecurity screening and interventions with health outcomes. Effective tracking will likely require integration within EMR systems or using Fast Healthcare Interoperability Resources (FHIR) technology to allow exchange of patient data between multiple data collection systems⁷⁶ In addition, since systematically identifying and addressing social needs such as food insecurity have not traditionally been part of medical practice there can be barriers to successful implementation.⁷⁷ Table 2 describes some of the reported barriers to food insecurity screening and intervention and potential strategies to overcome them, although none of the strategies are specific to the Hispanic population.

Barriers	Strategies to Help Overcome Barriers	Resources
Patient dignity, comfort	<ul style="list-style-type: none"> Use motivational interviewing/explain reasoning for food insecurity screening Include food insecurity screening questions as part of the initial nursing intake exam Use a written or electronic questionnaire for food insecurity screening vs face-to-face interaction Strengthen provider communication, cultural sensitivity, and empathy Involve patients in food insecurity interventions as part of the care planning process 	<p>Screening</p> <ul style="list-style-type: none"> https://frac.org/aaptoolkit https://childrenshealthwatch.org/public-policy/hunger-vital-sign/ https://malnutritionquality.org/food-insecurity-and-nutrition-risk-screening-resources/ http://seniorhealthandhunger.org/
Limited staff time, resources	<ul style="list-style-type: none"> Embed food insecurity screening into existing EMR screening workflows Integrate food insecurity referral/resource platforms for government enrollment sites/community organizations into EMR processes Embed social workers into clinical teams or partner with community specialists to facilitate referral/follow-up Train all staff on food insecurity screening/interventions to spread workload 	<ul style="list-style-type: none"> Community Partnerships www.rootcausecoalition.org/ https://prapare.org/ https://www.phi.org/our-work/issues/nutrition-food-security/ Research https://sirenetwork.ucsf.edu/

Limited staff buy-in, engagement	<ul style="list-style-type: none"> Initiate pilot test to reveal clinical prevalence of food insecurity and its links to clinical conditions and interventions; provide education highlighting results of pilot and community resources available Provide continuing medical education and case studies on food insecurity and health outcomes Provide skill-building exercises and written scripts to aid in conveying empathy Provide clinical algorithms to facilitate care processes 	
Limited patient and staff knowledge of resources, community organizations	<ul style="list-style-type: none"> Provide active referrals/warm handoffs to community-based organizations Provide assistance in navigating benefits applications Make referrals to multiple food resources Provide written handout/card with local food resources referral information Provide on-site emergency food boxes/food pantry to address immediate needs Maximize use of technology to facilitate information exchange between healthcare provider and community organizations and promote bidirectional communication 	

Figure 2: Reported barriers, strategies, and resources for food insecurity screening and intervention in health care settings^{76,78-84}

9. Interventions for Malnutrition and Food Insecurity

Acute care interventions for pediatric malnutrition include early detection, diagnosis, and treatment.¹⁰ In the community setting, pediatricians have a significant role in early identification and treatment of malnutrition. The three steps to consider for addressing pediatric malnutrition are 1) recognize and intervene by rapidly implementing nutrition support which may include standard or specialized diet; oral nutrition supplements (ONS) (e.g. to increase protein and energy); enteral nutrition; parenteral nutrition; and/or supplementation of vitamins, minerals, amino acids and/or bioactive metabolites, 2) tailor interventions to specific medical conditions, and 3) include a comprehensive discharge plan.⁸⁵ One study assessing the impact of ONS in children found a significant cost savings of \$56 million annually due to decreased hospital stay and hospital costs.⁸⁶ ONS has also been used in pediatric patients to help support catch up growth and has demonstrated significantly better growth outcomes.⁸⁷

For older adults, ONS with dietary advice is recommended to intervene for malnutrition.⁸⁸ Nutrition-focused quality improvement programs (QIPs) in the hospital setting that included systematic malnutrition screening on admission and provision of oral nutrition supplements have been associated with reduced readmissions and length of stay⁶⁸ and cost-savings of over \$4.8 million.⁸⁹ One of the broadest clinical, nutrition-focused QIP efforts to date is the Malnutrition Quality Improvement Initiative (MQii) which developed and launched clinical quality measures and an on-line toolkit specific to malnutrition. Pivotal to the MQii’s work is the “ability of interdisciplinary health teams to uptake, adopt, launch, and implement necessary quality-driven improvements through the MQii within their health care delivery system environment.”⁹⁰ Implementing the MQii in the acute care setting provides the foundation for continuing malnutrition care post discharge.⁹¹

Community-based interventions for malnutrition and food insecurity (whether individuals have one or both conditions) for young children and older adults include connecting individuals and their families with nutrition-assistance programs and local nutrition service providers and resources (Table 3).

Program	Eligible Population	Type of Assistance	Resources
Federal Programs			
Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)	Low-income pregnant, postpartum, breastfeeding women; infants; children up to age 5 who are at nutrition risk	Benefits to purchase specific foods	United States Department of Agriculture (USDA) website with search function by program, state, region:
National School Lunch Program (NSLP)	Low -income children	Low-cost or free lunches in public or nonprofit private schools	

School Breakfast Program (SBP)	Low -income children	Low-cost or free breakfasts in public or nonprofit private schools	https://www.fns.usda.gov/fns-contacts?f%5B1%5D=program%3A32
Summer Food Service Program (SFSP)	Low-income children/teens	Free healthy meals and snacks through community providers	
Supplemental Nutrition Assistance Program (SNAP)	Low-income households, including those with children and older adults	Benefits to purchase foods through participating retailers	
Child and Adult Care Food Program (CACFP)	Children (up to age 12) enrolled in a qualifying childcare program; adults who are physically/ mentally impaired or adults aged 60+ enrolled in adult day care program	Prepared meals provided in nonresidential childcare program or adult day care center	
Commodity Supplemental Food Program (CSFP)	Low-income adults aged 60+	Monthly supplemental package of shelf-stable foods and refrigerated cheese	
Senior Farmers' Market Nutrition Program (SFMNP)	Low-income households of adults aged 60+	Benefits to purchase locally grown fruits/vegetables from farmers' markets, roadside stands, community agriculture programs	
Home-delivered nutrition program (such as Meals on Wheels)	Adults aged 60+	Prepared meals delivered to homebound participants	Meals on Wheels website with search by zip code: https://www.mealsonwheelsamerica.org/find-meals Federal Administration on Community Living online eldercare locator with search by zip code, city, state to identify local agencies providing home delivered meals: https://eldercare.acl.gov/Public/Index.aspx
Congregate Nutrition Program	Adults aged 60+	Prepared meals provided in group settings, such as senior centers	Federal Administration on Community Living online eldercare locator with search by zip code, city, state to identify local agencies providing congregate meals: https://eldercare.acl.gov/Public/Index.aspx
Medicare Medical Nutrition Therapy Benefit	Adults enrolled in Medicare with diabetes or kidney disease or recent kidney transplant	Nutrition assessment and counseling	Medicare explanation of benefit: https://www.medicare.gov/coverage/nutrition-therapy-services
Medicare Advantage Home Delivered Meals following Hospital Discharge	Various, depending on Medicare Advantage program's defined eligibility requirements	Hot and/or frozen meals for specified time-period following hospital discharge	Benefit may vary by local provider, contact Medicare Advantage provider
Community Programs			
Medically Tailored Meal Providers	Various, depending on local provider's defined eligibility requirements	Disease-specific hot and/or frozen meals	Food is Medicine Coalition website with local providers listed by state: https://www.fimcoalition.org/partners
Food Pantries and Food Banks	Various, depending on local provider's defined eligibility requirements	Fresh and/or shelf-stable foods	Feeding America website with search function by zip code, state to find local food banks: https://www.feedingamerica.org/find-your-local-foodbank

Table 3: US Federal and local food and nutrition programs and resources

Clinicians should consider and address structural factors that can impede access to food resources for lower-income populations such as lack of awareness about programs, confusion about eligibility, and stigma.^{78,84} Potential strategies to help address these and other barriers are outlined in Table 2. There may also be factors unique to the US Hispanic population to consider, including concerns about citizenship⁹² and differences in reporting food insecurity among Latino fathers and mothers.⁹³ There appears to be limited research specific to adapting malnutrition and food insecurity risk and intervention programs for the Hispanic population. However, studies on determinants of food insecurity among Hispanic households⁹⁴ and adaptation of nutrition education programs for Hispanic populations⁹⁵ offer several insights. These include consideration of:

Individual factors (i.e. gender, age, intergenerational poverty, education, transportation, Acculturation, immigration status, language)

Interpersonal factors (i.e., household composition, social support, cultural beliefs)

Organizational factors (i.e., interagency collaboration, structure, communication)

Community factors (i.e., food deserts, stigma)

Public policy/societal factors (i.e., nutrition assistance programs and food resources⁹⁴⁻⁹⁵).

Further, it has been identified that power and social inequalities must be addressed prior, during, and after interventions to best meet minority populations' needs and improve the quality of nutrition education and services⁹⁵ they receive.



***Practice tip:** physicians can help improve the US Hispanic population's access to nutrition care and equity by viewing nutrition care as a human right and working with the interdisciplinary care team to implement appropriate nutrition interventions and connect individuals and their families with nutrition-assistance programs and local nutrition service providers.*

10. Physician Action Plan to Improve Malnutrition Care

Physicians can play a pivotal role in addressing malnutrition and promoting health equity through improved access to nutrition care (Figure 1). This starts with understanding the barriers to quality nutrition care, particularly for groups at risk like young children and older adults in the Hispanic population. In the clinical setting, physicians often lead and support nutrition support teams.⁹⁶ Physicians have also been specifically called on to champion recognition of and intervention for malnutrition, with the increased awareness that while malnutrition and its complications are not “never events,” lack of “provider recognition of risk and absence of efforts to minimize it should be.”⁹⁷ This advocacy could in part take the form of working to ensure the needs of the Hispanic population are addressed as the broader community of nutrition stakeholders implements actions from the 2022 White House Conference *National Strategy*.⁴⁰ Earlier in this Commentary, it was identified there is a limited focus on nutrition in medical training.³ Thus, learning about the fundamentals of nutrition and malnutrition and food insecurity screening and interventions is important to support effective nutrition care. The many tools and resources identified in this Commentary provide a starting point for self-education, although further research is needed to identify how these tools and resources can best support Hispanic patients specifically. Finally, communicating with administrators about the benefits of malnutrition quality improvement can increase provider attention on why it is critical to identify and address malnutrition,⁵⁵ particularly for underserved populations.

Physician Action Plan to Address Malnutrition

- Fundamental requirements of appropriate nutrition during fed, starved, stress, and inflammatory states (both acute and chronic)
- Available screening and assessment tools for malnutrition and food insecurity risk identification
- Appropriate malnutrition and food insecurity interventions across care settings
- Need to consult with nutrition support teams and refer patients to registered dietitian nutritionists for medical nutrition therapy

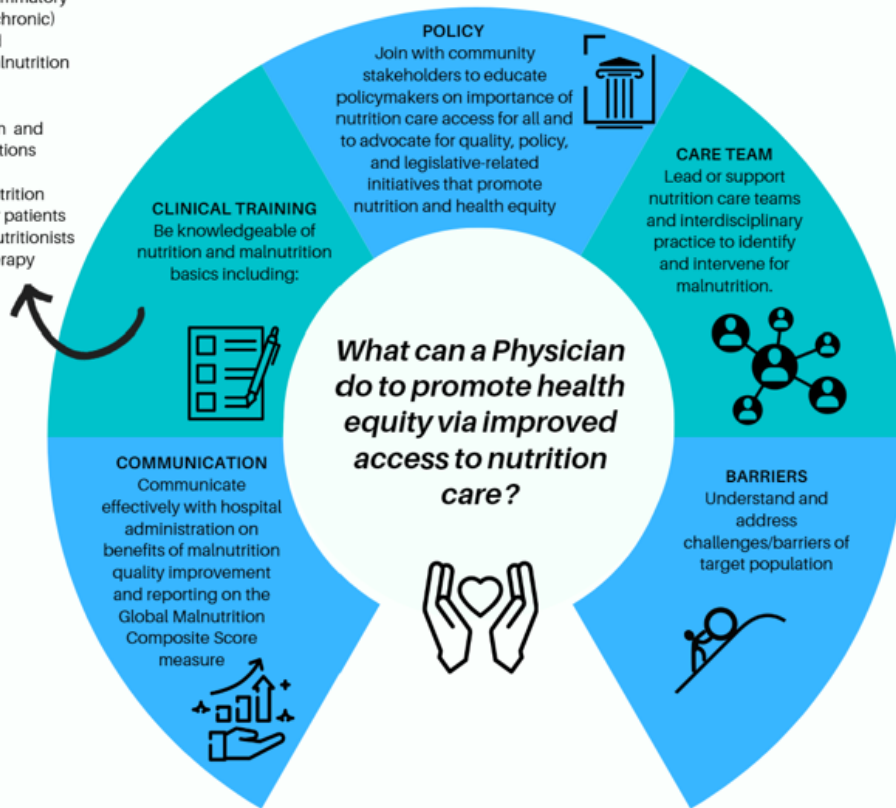


Figure 1: Physician leadership is essential to improve nutrition care access and address malnutrition in the US Hispanic population.

11. Conclusion

One pillar of the 2022 White House Conference is to integrate nutrition and health, specifically to “Prioritize the role of nutrition and food security in overall health—including disease prevention and management—and ensure that our health care system addresses the nutrition needs of all people.”⁴⁸ For the US Hispanic population, physician leadership is essential to help make this a reality. It starts with an understanding of health inequity and food insecurity and their impact on malnutrition as well as an awareness that adequate nutrition and quality nutrition care includes more than assuring food access. Tools and resources exist to identify and intervene for malnutrition and food insecurity, yet additional research is needed on how to adapt these specifically for the needs of the Hispanic population. Ultimately it is the individual practitioner’s recognition of nutrition as part of routine clinical care and multimodal treatment that will make the biggest difference in helping advance health equity through improved access to nutrition care for the Hispanic population. By so doing, practitioners will assure that not only the right nutrition is accessible, but also provided in an effective and efficient manner to the right individual, in the right way, and at the right time.

References

1. Kabashneh S, Alkassis S, Shanah L, et al. A complete guide to identify and manage malnutrition in hospitalized patients. *Cureus*. 2020;12(6):e8486. doi:10.7759/cureus.8486
2. Blankenship J, Blancato RB. Nutrition security at the intersection of health equity and quality care. *J Acad Nutr Diet*. 2022;122(10):S12-S19. doi:10.1016/j.jand.2022.06.017
3. Vest MT, Papas MA, Shapero M, et al. Characteristics and outcomes of adult inpatients with malnutrition. *JPEN J Parenter Enteral Nutr*. 2018;42(6):1009-1016. doi:10.1002/jpen.1042
4. Frantz DJ, McClave SA, Hurt RT, et al. Cross-sectional study of U.S. interns' perceptions of clinical nutrition education. *JPEN J Parenter Enteral Nutr*. 2016;40(4):529-535. doi:10.1177/0148607115571016
5. World Health Organization. Malnutrition. <https://www.who.int/news-room/questions-and-answers/item/malnutrition>. 2020. Accessed December 20, 2022.
6. Mehta NM, Corkins MR, Lyman B, et al. Defining pediatric malnutrition: a paradigm shift toward etiology-related definitions. *JPEN J Parenter Enteral Nutr*. 2013;37(4):460-481. doi:10.1177/0148607113479972
7. White JV, Guenter P, Jensen G, et al. Consensus statement: Academy of Nutrition and Dietetics and American Society for Parenteral and Enteral Nutrition: characteristics recommended for the identification and documentation of adult malnutrition (undernutrition). *JPEN J Parenter Enteral Nutr*. 2012;36(3):275-283. doi:10.1177/0148607112440285
8. Wagenaar CA, Dekker LH, Navis GJ. Prevalence of sarcopenic obesity and sarcopenic overweight in the general population: The lifelines cohort study. *Clin Nutr*. 2021;40(6):4422-4429. doi:10.1016/j.clnu.2021.01.005
9. Hummell AC, Cummings M. Role of the nutrition-focused physical examination in identifying malnutrition and its effectiveness. *Nutr Clin Pract*. 2022;37(1):41-49. doi:10.1002/nep.10797
10. Becker P, Carney LN, Corkins MR, et al. 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). *Nutr Clin Pract*. 2015;30(1):147-161. doi:10.1177/0884533614557642
11. American Society for Parenteral and Enteral Nutrition. Pediatric Care Resources. https://www.nutritioncare.org/Guidelines_and_Clinical_Resources/Pediatric_Care_Resources/. Accessed February 23, 2023.
12. American Society for Parenteral and Enteral Nutrition. Malnutrition Solution Center. https://www.nutritioncare.org/guidelines_and_clinical_resources/Malnutrition_Solution_Center/#QualityMeasures. Accessed February 23, 2023.
13. Carneiro L, Pellerin L. Nutritional impact on metabolic homeostasis and brain health. *Front Neurosci*. 2022;15:767405. doi:10.3389/fnins.2021.767405.
14. Bechtold ML, Regunath H, Tyler R, et al. Impact of a nutrition support therapy on hospital-acquired infections: A value analysis. *Nutr Clin Pract*. 2021;36(5):1034-1040. doi:10.1002/nep.10729
15. Pimiento JM, Evans DC, Tyler R, et al. Value of nutrition support therapy in patients with gastrointestinal malignancies: a narrative review and health economic analysis of impact on clinical outcomes in the United States. *J Gastrointest Oncol*. 2021;12(2):864-873. doi:10.21037/jgo-20-326
16. Norman K, Pichard C, Lochs H, et al. Prognostic impact of disease-related malnutrition. *Clin Nutr*. 2008;27(1):5-15. doi:10.1016/j.clnu.2007.10.007
17. Allaudeen N, Vidyarthi A, Maselli J, et al. Redefining readmission risk factors for general medicine patients. *J Hosp Med*. 2011;6(2):54-60. doi:10.1002/jhm.805
18. Peter CJ, Fischer LK, Kundakovic M, et al. DNA methylation signatures of early childhood malnutrition associated with impairments in attention and cognition. *Biol Psychiatry*. 2016;80(10):765-774. doi:10.1016/j.biopsych.2016.03.2100
19. Loeffen EAH, Brinksma A, Miedema KGE, et al. Clinical implications of malnutrition in childhood cancer patients--infections and mortality. *Support Care Cancer*. 2015;23(1):143-150. doi:10.1007/s00520-014-2350-9
20. Calcaterra V, Zuccotti G. Metabolic, endocrine, and cardiovascular risks in children with overnutrition and undernutrition. *Children*. 2022;9(7):926. doi:10.3390/children9070926
21. Tappenden KA, Quatrara B, Parkhurst ML, et al. Critical role of nutrition in improving quality of care: an interdisciplinary call to action to address adult hospital malnutrition. *JPEN J Parenter Enteral Nutr*. 2013;37(4):482-497. doi:10.1177/0148607113484066
22. Ishida Y, Maeda K, Nonogaki T, et al. Malnutrition at admission predicts in-hospital falls in hospitalized older adults. *Nutrients*. 2020;12(2):541. doi:10.3390/nu12020541
23. Sharma Y, Miller M, Kaambwa B, et al. Malnutrition and its association with readmission and death within 7 days and 8-180 days post discharge in older patients: a prospective observational study. *BMJ Open*. 2017;7(11):e018443. doi: 10.1136/bmjopen-2017-018443
24. Lee JH, Hutzler LH, Shulman BS. Does risk for malnutrition in patients presenting with fractures predict lower quality measures? *J Orthop Trauma*. 2015;29(8):373-378. doi:10.1097/BOT.0000000000000298
25. Zellner HK, Moss OA, Peterson SJ, et al. Differences in respiratory muscle strength measures in well-nourished and malnourished hospitalized patients. *J Acad Nutr Diet*. 2019;119(5):831-839. doi:10.1016/j.jand.2019.01.004
26. Bellanti F, Buglio AI, Quiete S, et al. Malnutrition in hospitalized old patients: screening and diagnosis, clinical outcomes, and management. *Nutrients*. 2022;14(4):910. doi:10.3390/nu14040910
27. Norman K, Hass, Pirlich M. Malnutrition in older adults—recent advances and remaining challenges. *Nutrients*. 2021;13(8):2764. doi:10.3390/nu13082764
28. World Health Organization. Malnutrition. https://www.who.int/health-topics/malnutrition#tab=tab_1. Accessed December 20, 2022.

29. The Lancet. A future direction for tackling malnutrition. *Lancet*. 2020;395(10217):P2. doi:10.1016/S0140-6736(19)33099-5
30. World Health Organization. Malnutrition Key Facts. <https://www.who.int/news-room/fact-sheets/detail/malnutrition>. 2021. Accessed December 20, 2022.
31. Lezo A, Baldini L, Asteggiano M. Failure to thrive in the outpatient clinic: a new insight. *Nutrients*. 2020;12(8):2202. doi:10.3390/nu12082202
32. United State Census Bureau. American Community Survey B03001, Hispanic or Latino Origin by Specific Origin. <https://data.census.gov/table/?y=2020&d=ACS+5-Year+Estimates+Detailed+Tables&tid=ACSDT5Y2020.B03001>. 2020. Accessed December 20, 2022.
33. Brown A, Shi S, Adas S, et al. A decade of nutrition and health disparities research at NIH, 2010–2019. *Curr Dev Nutr*. 2021 Jun 7;5(Suppl 2):1263. doi: 10.1093/cdn/nzab056_001
34. Iriart C, Handal AJ, Boursaw B, et al. Chronic malnutrition among overweight Hispanic children: understanding health disparities. *J Immigr Minor Health*. 2011;13(6):1069-1075. doi:10.1007/s10903-011-9464-7
35. Desai, Y, Marroquin A, Hong Zhu P, et al. P0141/#1770: Malnutrition, race, and socioeconomic indicators in critically ill children. *Pediatric Crit Care Med*. 2021;22(Supplement 1 3S):98. doi:10.1097/01.pcc.0000738908.51183.19
36. Malnutrition Quality Collaborative. *National Blueprint: Achieving Quality Malnutrition Care for Older Adults, 2020 Update*; Defeat Malnutrition Today: Washington, DC, USA, 2020. https://www.defeatmalnutrition.today/sites/default/files/National_Blueprint_MAY2020_Update_OnlinePDF_FINAL.pdf. Accessed December 20, 2022.
37. Kaiser MJ, Bauer JM, Räsmsch C, et al. Frequency of malnutrition in older adults: a multinational perspective using the mini nutritional assessment. *J Am Geriatr Soc*. 2010;58(9):1734-1738. doi:10.1111/j.1532-5415.2010.03016.x
38. Sheean P, Farrar IC, Sulo S, et al. Nutrition risk among an ethnically diverse sample of community-dwelling older adults. *Public Health Nutr*. 2019;22(5):894-902. doi:10.1017/S1368980018002902-
39. Du K, Goates S, Arensberg MB, et al. Prevalence of sarcopenia and sarcopenic obesity vary with race/ethnicity and advancing age. *Divers Equal Heal Care*. 2018;15(4):175–83.
40. Merritt RJ, Suskind RM. Nutritional survey of hospitalized pediatric patients. *Am J Clin Nutr*. 1979;32(6):1320-1325. doi:10.1093/ajcn/32.6.1320.
41. Carvalho-Salemi J, Phillips W, Wong Vega M, et al. Malnutrition among hospitalized children in the United States: A 2012-2019 Update of Annual Trends. *J Acad Nutr Diet*. 2023;123(1):109-116. doi:10.1016/j.jand.2022.05.021
42. Dabrowska A. Congressional Research Center: Malnutrition in Older Adults. 2017. http://defeatmalnutrition.today/sites/default/files/documents/CRS_Memo_Malnutrition_in_Older_Adults.pdf. Accessed December 20, 2022.
43. Barker LA, Gout BS, Crowe TC. Hospital malnutrition: prevalence, identification and impact on patients and the healthcare system. *Int J Environ Res Public Health*. 2011;8(2):514-527. doi:10.3390/ijerph8020514
44. Barrett ML, Bailey MK, Owens PL. Non-maternal and non-neonatal inpatient stays in the United States involving malnutrition, 2016. U.S. Agency for Healthcare Research and Quality. August 30, 2018. https://www.hcup-us.ahrq.gov/reports/atagance/HcupMalnutritionHospReport_083018.pdf. Accessed December 20, 2022.
45. Lanctin DP, Merced-Nieves F, Mallett RM, et al. Prevalence and economic burden of malnutrition diagnosis among patients presenting to United States emergency departments. *Acad Emerg Med*. 2021;28(3):325-335. doi:10.1111/acem.13887
46. Msoro-Kasago C. Understanding and promoting nutrition and health equity. *Food & Nutrition*. 2020;9(4). <https://foodandnutrition.org/from-the-magazine/understanding-and-promoting-nutrition-and-health-equity/>. Accessed December 20, 2022.
47. Psota T, Maniscalco S, Kijek M, Ohlhorst SD. Driving transformative change to end hunger and reduce diet-related diseases and disparities: The White House Conference on Hunger, Nutrition, and Health. *Am J Clin Nutr*. Available on-line ahead of publication. 2023. doi:10.1016/j.ajcnut.2023.01.013
48. The White House. Biden-Harris Administration National Strategy on Hunger, Nutrition, and Health. <https://www.whitehouse.gov/wp-content/uploads/2022/09/White-House-National-Strategy-on-Hunger-Nutrition-and-Health-FINAL.pdf>. September 2022. Accessed December 20, 2022.
49. Centers for Medicare and Medicaid Services. The CMS Equity Plan for Improving Quality in Medicare. https://www.cms.gov/About-CMS/Agency-Information/OMH/OMH_Dwnld-CMS_EquityPlanforMedicare_090615.pdf. 2015. Accessed December 20, 2022.
50. Department of Health and Human Services. Children’s Health Insurance Program Reauthorization Act 2011 Annual Report on the Quality of Care for Children in Medicaid and CHIP. September 2011. https://www.medicaid.gov/medicaid/quality-of-care/downloads/2011_statereporttocongress.pdf. Accessed February 23, 2023.
51. 2023 and 2024 Core Set of Children’s Health Care Quality Measures for Medicaid and CHIP (Child Core Set). 2023. <https://www.medicaid.gov/medicaid/quality-of-care/downloads/2023-child-core-set.pdf>. Accessed February 23, 2023.
52. Centers for Medicare and Medicaid Services. Medicare Program; CY 2022 Payment Policies under the Physician Fee Schedule and Other Changes to Part B Payment Policies; Medicare Shared Savings Program Requirements; Provider Enrollment Regulation Updates; and Provider and Supplier Prepayment and Post-payment Medical Review Requirements, Final Rule. <https://public-inspection.federalregister.gov/2021-23972.pdf>. November 2021. Accessed December 20, 2022.
53. Centers for Medicare and Medicaid Services. Medicare Program; Hospital Inpatient Prospective Payment Systems for Acute Care Hospitals and the Long-Term Care Hospital Prospective Payment System and Policy Changes and Fiscal Year 2023 Rates; Quality Programs and Medicare Promoting Interoperability Program Requirements for Eligible Hospitals and Critical Access Hospitals; Costs Incurred for Qualified and Non-qualified Deferred Compensation Plans; and Changes to Hospital and Critical Access Hospital

- Conditions of Participation, Final Rule. <https://public-inspection.federalregister.gov/2022-16472.pdf>. August 2022. Accessed December 20, 2022.
54. Academy of Nutrition and Dietetics. Quality Reporting Will Improve Treatment for Malnutrition. August 2, 2022. <https://www.eatrightpro.org/about-us/for-media/press-releases/quality-reporting-will-improve-treatment-for-malnutrition>. Accessed February 23, 2023.
 55. Shanley ER. Malnutrition Quality Improvement Initiative: a fundamental part of our global impact. *J Acad Nutr Diet*. 2022;122(8):1423-1424. doi:10.1016/j.jand.2022.05.024
 56. United States Department of Agriculture, Economic Research Service. Definitions of Food Security. <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-u-s/definitions-of-food-security/>. Accessed February 23, 2023.
 57. Landry MJ, van den Berg AE, Asigbee FM. Child-report of food insecurity is associated with diet quality in children. *Nutrients*. 2019;11(7):1574. doi:10.3390/nu11071574
 58. Christian VJ, Miller KR, Martindale RG. Food insecurity, malnutrition, and the microbiome. *Curr Nutr Rep*. 2020;9(4):356-360. doi:10.1007/s13668-020-00342-0
 59. Sowards DB, McCauley SM, Munoz N. Impacting malnutrition, food Insecurity, and Health Equity: An Overview of Academy of Nutrition and Dietetics Priorities and Future Opportunities. *J Acad Nutr Diet*. 2022;122(10S):S7-S11. doi:10.1016/j.jand.2022.06.018
 60. Wahid N, Badaracco C, Valladares AF, et al. The role of inpatient malnutrition care to address health disparities among older adults. *J Acad Nutr Diet*. 2022;122(10S):S28-S33. doi:10.1016/j.jand.2022.06.015
 61. Feeding America. Latino Hunger Facts. <https://www.feedingamerica.org/hunger-in-america/latino-hunger-facts#:~:text=1%20in%206%20Hispanic%20individuals,individuals%20in%2099%25%20of%20counties>. Accessed December 20, 2022.
 62. United States Department of Agriculture Economic Research Service. Prevalence of child food insecurity increased significantly among Hispanic households with children in 2020. <https://www.ers.usda.gov/data-products/chart-gallery/gallery/chart-detail/?chartId=103630>. 2022. Accessed December 20, 2022.
 63. Fitzgerald N, Hromi-Fiedler A, Segura-Pérez S, et al. Food insecurity is related to increased risk of type 2 diabetes among Latinas. *Ethn Dis*. 2011;21(3):328-334.
 64. Becerra BJ, Sis-Medina RC, Reyes A, et al. Association between food insecurity and serious psychological distress among Hispanic adults living in poverty. *Prev Chronic Dis*. 2015;12:E206. doi:10.5888/pcd12.150334
 65. Cárdenas D, Davisson Correia MIT, Hardy G, et al. Nutritional care is a human right: translating principles to clinical practice. *Nutr Clin Pract*. 2022;37(4):743-751. doi:10.1002/ncp.10864
 66. Kurklu NS, Geyin F, Ceylan L, et al. Comparison of three different nutrition screening tools for pediatric inpatients. *Nutr Clin Pract*. 2022;37(3):698-704. doi:10.1002/ncp.10828
 67. Skipper A, Coltman A, Tomesko J, et al. Position of the Academy of Nutrition and Dietetics: malnutrition (undernutrition) screening tools for all adults. *J Acad Nutr Diet*. 2020;120(4):709-713. doi:10.1016/j.jand.2019.09.011
 68. Sriram K, Sulo S, VanDerBosch G, et al. Nutrition-focused quality improvement program results in significant readmission and length of stay reductions for malnourished surgical patients. *JPEN J Parenter Enteral Nutr*. 2018;42(6):1093-1098. doi:10.1002/jpen.1040
 69. Trujillo EB, Shapiro AC, Stephens N, et al. Monitoring rates of malnutrition risk in outpatient cancer centers utilizing the malnutrition screening tool embedded into the electronic health record. *J Acad Nutr Diet*. 2021;121(5):925-930. doi:10.1016/j.jand.2020.11.007
 70. Holmes RA. Role of dietitians in reducing malnutrition in hospital. *CMAJ*. 2019;191(5):E139. doi: 10.1503/cmaj.71130
 71. Feeding America. Addressing Food Insecurity in Health Care Settings. <https://hungerandhealth.feedingamerica.org/explore-our-work/community-health-care-partnerships/addressing-food-insecurity-in-health-care-settings/>. Accessed December 20, 2022.
 72. Gattu RK, Paik G, Wang Y, et al. The Hunger Vital sign identifies household food insecurity among children in emergency departments and primary care. *Children*. 2019;6(10):107. doi: 10.3390/children6100107
 73. Burkhardt MC, Beck AF, Conway PH, et al. Enhancing accurate identification of food insecurity using quality-improvement techniques. *Pediatrics*. 2012;129(2):e504-e510. doi:10.1542/peds.2011-1153
 74. Smith S, Malinak D, Chang J, et al. Implementation of a food insecurity screening and referral program in student-run free clinics in San Diego, California. *Prev Med Rep*. 2017;5:134-139. doi:10.1016/j.pmedr.2016.12.007. PMID: 27990340; PMCID: PMC5157787
 75. Gundersen C, Engelhard EE, Crumbaugh AS, et al. Brief assessment of food insecurity accurately identifies high-risk US adults. *Public Health Nutr*. 2017;20(8):1367-1371. doi:10.1017/S1368980017000180
 76. Lundeen EA, Siegel KR, Calhoun H, et al. Clinical-community partnerships to identify patients with food insecurity and address food needs. *Prev Chronic Dis*. 2017;14:170343. doi:10.5888/pcd14.170343
 77. Frazee TK, Brewster AL, Lewis VA, et al. Prevalence of screening for food insecurity, housing instability, utility needs, transportation needs, and interpersonal violence by US physician practices and hospitals. *JAMA Network Open*. 2019;2(9):e1911514. doi:10.1001/jamanetworkopen.2019.11514
 78. Bernhardt C, Hou S, King C, et al. Identifying barriers to effective patient-provider communication about food insecurity screenings in outpatient clinical settings in central Florida: a mixed-methods study. *J Public Health Manag Pract*. 2022;28(2):E595-E602. doi:10.1097/PHH.0000000000001449
 79. Kopparapu A, Sketas G, Swindle T. Food insecurity in primary care: patient perception and preferences. *Fam Med*. 2020;52(3):202-205. doi:10.22454/FamMed.2020.964431
 80. Palakshappa D, Goodpasture M, Albertini L, et al. Written versus verbal food insecurity screening in one primary care clinic. *Acad Pediatr*. 202;29(2):203-207. doi:10.1016/j.acap.2019.10.011

81. Bernhardt C, King C. Telehealth and food insecurity screenings: challenges and lessons learned. *Mhealth*. 2022;8:10. doi:10.21037/mhealth-21-31
82. Thomas MK, Lammert LJ, Beverly EA. Food insecurity and its impact on body weight, Type 2 diabetes, cardiovascular disease, and mental health. *Curr Cardiovasc Risk Rep*. 2021;15(9):15. doi:10.1007/s12170-021-00679-3
83. Stenmark SH. Lessons learned from implementation of the food insecurity screening and referral program at Kaiser Permanente Colorado. *Perm J*. 2018;22:18-093, doi:10.7812/TPP/18-093
84. Knowles M, Khan S, Palakshappa D, et al. Successes, challenges, and considerations for integrating referral into food insecurity screening in pediatric settings. *J Health Care Poor Underserved*. 2018;29:181-191.
85. Phillips W, Becker PJ, Wong Vega M, et al. Comprehensive application of the Malnutrition Quality Improvement Initiative (MQii) toolkit to pediatric malnutrition care. *J Acad Nutr Diet*. 2021;121(6):1021-1034. doi:10.1016/j.jand.2020.08.091
86. Lakdawalla DN, Mascarenhas M, Jena AB, et al. Impact of oral nutrition supplements on hospital outcomes in pediatric patients. *JPEN J Parenter Enteral Nutr*. 2014;38(2 Suppl):42S-9S. doi:10.1177/0148607114549769
87. Zhang Z, Li F, Hannon BA, et al. Effect of oral nutritional supplementation on growth in children with undernutrition: a systematic review and meta-analysis. *Nutrients*. 2021;13(9):3036. doi:10.3390/nu13093036
88. World Health Organization. Evidence Profile: Malnutrition—Integrated Care for Older People. Guidelines on community-level interventions to manage declines in intrinsic capacity. <https://www.who.int/publications/i/item/WHO-MCA-17.06.06>. 2017. Accessed December 20, 2022.
89. Sulo S, Feldstein J, Partridge J, et al. Budget impact of a comprehensive nutrition-focused quality improvement program for malnourished hospitalized patients. *Am Health Drug Benefits*. 2017;10(5):262-270.
90. McCauley SM, Barrocas A, Malone A. hospital nutrition care betters patient clinical outcomes and reduces costs: The Malnutrition Quality Improvement Initiative story. *J Acad Nutr Diet*. 2019;119(9 Suppl 2):S11-S14. doi:10.1016/j.jand.2019.05.027
91. Badaracco C, Bruno M, Mitchell K, et al. Advancing health equity through Malnutrition Quality Measurement Roundtable: practice applications. *J Acad Nutr Diet*. 2022;122(10S):S21-S27. doi:10.1016/j.jand.2022.06.016
92. Payán DD, Díaz Rios LK, Ramírez AS, et al. Structural barriers influencing food insecurity, malnutrition, and health among Latinas during and after Covid-19: considerations and recommendations. *J Acad Nutr Diet*. 2021;121(5):837-843. doi:10.1016/j.jand.2021.01.00
93. Nagao-Sato S, Druziako S, Baltaci A, et al. Differences in reporting food insecurity and factors associated with differences among Latino fathers and mothers. *BMC Public Health*. 2021;21:912. doi: 10.1186/s12889-021-10971-x
94. Valera EG, McVay MA, Shelnett KP. The determinants of food insecurity among Hispanic/Latinx households with young children: a narrative review. *Adv Nutr*. 2023;14(1):190-210. doi:10.1016/j.advnut.2022.12.001
95. Horner PS, Martinez RO, Ortiz DV, et al. Adapting a nutrition education intervention for Latinos in the midwest. *J Edu Human Dev*. 2015;4(4):84-90. doi:10.15640/jehd.v4n4a11
96. Barrocas A, Schwartz DB, Bistrrian BR, et al. Nutrition support teams: institution, evolution, and innovation. *Nutr Clin Pract*. 2023;38(1):10-26. doi:10.1002/ncp.10931
97. Kirkland LL, Shaughnessy E. Recognition and prevention of nosocomial malnutrition: a review and a call to action! *Am J Med*. 2017;130(12):1345-1350. doi:10.1016/j

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