

Addressing Disease-Related Malnutrition in Healthcare: A Latin American Perspective

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Abstract

Alarming high rates of disease-related malnutrition have persisted in hospitals of both emerging and industrialized nations over the past 2 decades, despite marked advances in medical care over this same interval. In Latin American hospitals, the numbers are particularly striking; disease-related malnutrition has been reported in nearly 50% of adult patients in Argentina, Brazil, Chile, Costa Rica, Cuba, Dominican Republic, Ecuador, Mexico, Panama, Paraguay, Peru, Puerto Rico, Venezuela, and Uruguay. The tolls of disease-related malnutrition are high in both human and financial terms—increased infectious complications, higher incidence of pressure ulcers, longer hospital stays, more frequent readmissions, greater costs of care, and increased risk of death. In an effort to draw attention to malnutrition in Latin American healthcare, a feedM.E. Latin American Study Group was formed to extend the reach and support the educational efforts of the feedM.E. Global Study Group. In this article, the feedM.E. Latin American Study Group shows that malnutrition incurs excessive costs to the healthcare systems, and the study group also presents evidence of how appropriate nutrition care can improve patients' clinical outcomes and lower healthcare costs. To achieve the benefits of nutrition for health throughout Latin America, the article presents feedM.E.'s simple and effective Nutrition Care Pathway in English and Spanish as a way to facilitate its use. (*JPEN J Parenter Enteral Nutr.* 2016;40:319-325)

Keywords

malnutrition; nutrition; hospital; community; screening; assessment; oral nutrition supplement

All too often, patients are malnourished when they are admitted to hospitals around the world^{1,2} and likewise in Latin America.^{3,4} Alarming high rates of disease-related malnutrition have persisted in hospitals of both emerging and industrialized nations over the past 2 decades, despite marked advances in medical care over this same interval.^{3,5–12} In Latin American hospitals, the malnutrition numbers are particularly striking; disease-related malnutrition has been reported in nearly 50% of adult patients in Argentina, Brazil, Chile, Costa Rica, Cuba, Dominican Republic, Ecuador, Mexico, Panama, Paraguay, Peru, Puerto Rico, Venezuela, and Uruguay.^{3,8,13–16} Risk of malnutrition is highest among older people—in Latin America and worldwide.^{17–20}

During hospitalization, patients often have experiences that further worsen their nutrition status (eg, traditional preparation for surgery, missed mealtimes for medical procedures, and nil per os [nothing by mouth] orders).²¹ As a result, weight loss and nutrient deficits can slow recovery and raise the risk for disability.^{1,21} Unfortunately, hospital malnutrition is often overlooked and undertreated.^{3,22,23} Clinicians do not consistently follow best nutrition practices because barriers—lack of awareness, time, money, and training—stand in the way.^{24–26} While some malnourished patients are undertreated because their condition is unrecognized by clinicians, other very ill hospital patients are difficult to treat. Patients may arrive at the

hospital with acute or chronic conditions complicated by a history of poor nutrition, which may require specialized

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Table 1. Prevalence of Malnutrition in Latin America.

Study	Population	Prevalence of Malnutrition
Waltzberg et al (2001) ¹⁵	Cross-sectional, multicenter study of adult patients in Brazilian hospitals in the public healthcare system, n = 4000	48.1% by SGA
Correia and Campos (2003) ³	Cross-sectional, multicenter study of adult patients in hospitals of 13 Latin American countries, n = 9348	50.2% by SGA
Wyszynski et al (2003) ⁸	Study of adult patients in 38 hospitals of Argentina, n = 1000	47% by SGA
Baccaro and Sanchez (2009) ¹³	Study of adult male patients in the internal medicine service of an Argentina hospital, n = 152	48.7% by SGA
Lara-Pulido and Guevara-Cruz (2012) ¹⁷	Patients ≥65 years of age hospitalized in Mexico, n = 769	53.6% by MNA-SF
Veramendi-Espinoza et al (2013) ¹⁴	Cross-sectional study of adult patients in surgery and medicine wards of a Peruvian general hospital, n = 211	46.9%
Gallegos Espinosa et al (2014) ¹⁶	Cross-sectional, multicenter study of adult patients in hospitals of Ecuador, n = 5355	37.1% by SGA

MNA-SF, Mini Nutritional Assessment—short form, specifically used to detect nutrition status of people older than 65 years²⁹; SGA, Subjective Global Assessment for adult populations.²⁸

feeding ingredients, formulas, and techniques. In some cases, ideal therapies for each condition are not yet known.

feedM.E. is a medical education (M.E.) initiative developed by international nutrition experts. The feedM.E. Global Study Group sought to heighten awareness of malnutrition in hospitals and at other healthcare sites, to educate hospital staff and patients about nutrition's role in recovery from illness and injury, and to provide practical guidance for clinicians to take action and improve nutrition care.¹ A feedM.E. Latin American Study Group was recently formed to support and extend the international call to action for awareness and treatment of disease-related malnutrition. Study group participants were selected for their experience and expertise in clinical nutrition and for their representation of countries with hospital nutrition care programs. This Latin American feedM.E. initiative has been endorsed by the Federación Latinoamericana de Terapia Nutricional, Nutrición Clínica y Metabolismo (FELANPE), the principal organization for nutrition professionals in Latin America. The feedM.E. initiative follows the nutrition practices and principles put forth in the *Declaration of Cancun*, known as *Declaración Internacional Sobre el Derecho a la Nutrición en los Hospitales*, which was developed and published by FELANPE and partners in 2008.²⁷ The objectives of this declaration were to ensure that all patients admitted to public- and private-sector hospitals in Latin America receive complete, adequate, quality, and timely nutrition care; to ensure that this care is provided by health professionals who are trained to prevent the risks associated with hospital malnutrition; and to use nutrition to improve patients' quality of life and survival and also to reduce costs of hospitalization.

This article from the feedM.E. Latin American Study Group compiles evidence of the high prevalence of disease-related malnutrition in Latin American hospitals. It also shows that malnutrition incurs excessive costs to healthcare systems, and it shows that attention to nutrition can improve patients'

clinical outcomes and lower healthcare costs. As an online supplement to this article, we provide feedM.E.'s simple and effective Nutrition Care Pathway translated into Spanish to facilitate its use throughout Latin America. This Pathway can be followed as a guide to identify and treat patients at risk of malnutrition in the community, to diagnose and treat malnutrition in hospitalized patients, and to follow up with postdischarge nutrition care in the community.

Hospital Malnutrition in Latin America: Prevalent and Persistent

From prevalence studies conducted since 2000, results show that nearly 50% of all people admitted to hospitals in Latin America are malnourished (Table 1).^{3,8,13,15-17} Malnutrition is determined by use of validated and reliable assessment tools, such as the Subjective Global Assessment tool for all adult populations and the Mini Nutritional Assessment (MNA) for patients older than 65 years.^{28,29} While the reported prevalence of malnutrition may vary according to the criteria used (serum albumin or other blood tests, assessment tools, anthropometric measures) and the population studied (elderly, critically ill, country), the conclusions are disturbingly consistent. Disease-related malnutrition is highly prevalent throughout Latin America, and this high prevalence has changed very little over more than a decade.

While malnutrition prevalence is high, physician awareness is low; as a result, nutrition therapy is underprescribed. In a classic survey, one-third of hospitalized Brazilian patients were not fed for more than 3 days, only 19% of patients' medical records noted nutrition status, and only 10% of patients received oral nutrition or enteral nutrition (EN) by tube feeding.¹⁵ Similarly, a study of Argentinian hospital patients found that <40% of charts contained any nutrition information, and fewer than 15% of charts recorded usual and current

weight and height.⁸ In Ecuador, a large, recent study in public hospitals showed a 37% prevalence of malnutrition among admitted patients, yet Ecuador lacks policies, resources, and educational programs to identify and address disease-related malnutrition.¹⁶

Malnutrition Leads to Poor Clinical Outcomes and Higher Costs of Care

Disease-related malnutrition takes high tolls on patients and on healthcare systems, too; malnutrition is associated with increased risks for morbidity and mortality and higher costs of care.¹ Results of numerous clinical studies show that malnourished patients in the hospital are at increased risk for complications such as pressure ulcers, infections, falls, and death. In a Brazilian hospital survey, malnutrition was directly associated with greater frequency and severity of pressure ulcers; nearly 100% of patients with stage II or worse pressure ulcers were malnourished.³⁰ In another Brazilian study, malnourished patients had hospital stays 7 days longer and hospital episode costs up to 3-fold higher, and they were more than twice as likely to die compared with their adequately nourished peers.⁴ Malnourished Brazilian patients admitted to the intensive care unit (ICU) were twice as likely to be readmitted and 8 times more likely to die than were their nourished comparators.³¹ In Cuban hospitals, malnutrition was prevalent and associated with infections and longer length of hospital stay.³² Among Brazilian patients recovering from hip fracture, poor nutrition status predicted mortality.³³ Even in the community, undernutrition is a major risk factor for death in older Latin Americans.³⁴

Nutrition Care Is Associated With Improved Outcomes and Lower Costs

What is the evidence that attention to nutrition care has value? A major objection to implementing hospital nutrition programs is cost—the cost of training as well as the added costs of specialized nutrition such as oral nutrition supplements. To answer the important question—“Is the cost worth the expenditure?”—results of health economic studies are needed.

The global medical literature now reports abundant data on outcome benefits from nutrition interventions across many patient groups.¹ For example, nutrition intervention during hospitalization was correlated with significantly improved patients' strength, lower incidence of infectious complications and pressure ulcers, enhanced quality-of-life scores, and even lower risk of death.^{35–40} Global evidence likewise shows the positive association of nutrition interventions and health economic outcomes. Patients who received nutrition-focused care during hospitalization had shorter lengths of stay by 2–10 days^{36,41,42} and a significantly lower likelihood of readmission.^{36,39,43} A keystone study from the United States reported significantly lower costs by nearly \$5000 per hospital episode for patients who received oral nutrition supplements during

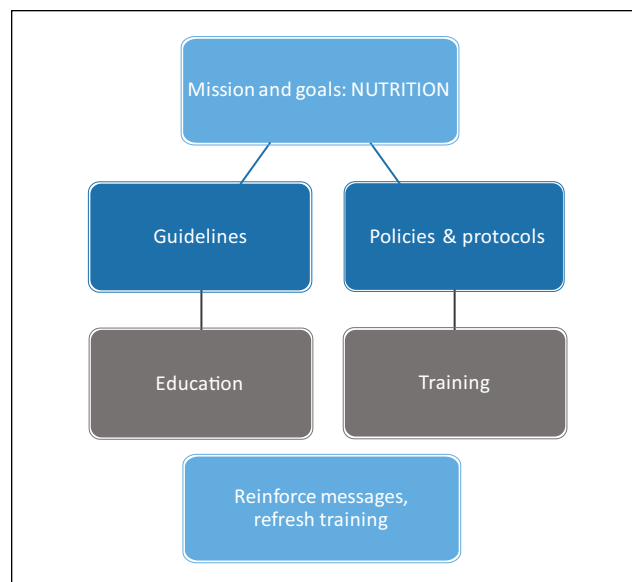


Figure 1. Create an institutional culture that values nutrition care.

their hospitalization compared with matched subjects with similar illness severity who did not receive oral nutrition supplements.⁴² A Brazilian study of digestive surgery patients compared those who received conventional in-hospital nutrition therapy (control group) with those who also received home-based nutrition therapy in the preoperative and posthospital discharge periods (study group). Patients in both groups achieved similar nutrition benefits, but those in the study group had significantly lower hospital episode costs, mostly due to needing fewer days of hospitalization.⁴⁴ Additional evidence associating nutrition intervention with improved health and financial outcomes has accumulated rapidly in the past year.^{42,45–48}

Need for Enhanced Nutrition Awareness and Training

The high prevalence of disease-related malnutrition in Latin America, paired with low awareness of what to do about disease-related malnutrition, represents an opportunity to improve nutrition care by increasing education and training. Healthcare administrators, clinical leaders and educators, and bedside clinicians all need to know and believe in the importance of nutrition in health care.^{1,26} In fact, 2 recent studies in Canadian hospitals found that nurses and doctors alike recognized benefits to nutrition care and wanted to increase their education and training on nutrition management.^{49,50}

To this end, healthcare system leaders need to create a culture that values nutrition by making good nutrition a part of their system's mission and goals (Figure 1).⁵¹ To build a culture of nutrition value, healthcare professionals must first understand current evidence-based nutrition guidelines, such as those to be newly

published by FELANPE in early 2015. Hospital leaders can develop their own policies and protocols to reflect nutrition practice guidelines, or they may prefer to adopt or adapt ready-made protocols and practice algorithms from published guidelines.

Next, staff training and education programs are essential to transfer policies and guidelines to everyday practice.²⁵ Many teaching-learning models are available to meet the unique needs and resources of each hospital. Hospital nutrition programs can be formal or informal, such as grand rounds presentations, in-service training classes, bedside instruction for small groups, one-on-one training sessions, computer-based learning, and visual reminders such as posters and checklists. The feedM.E. initiative includes resources such as an educational monograph on disease-related malnutrition, a clinical handbook, and teaching slide sets (www.nutritionmatters.com). The development of these materials was supported by Abbott Nutrition (Abbott Laboratories, Abbott Park, IL), as is the ongoing updating and maintenance of the website.

A New Nutrition Care Pathway: *Detectar, Nutrir y Vigilar*

Developed by the feedM.E. Global Study Group, the Nutrition Care Pathway is a simple and efficient strategy that can be tailored for use in various healthcare settings (Figure 2; also see online Supplemental Figure S1 in Spanish). With this pathway, feedM.E. guidance uses *screen*, *intervene*, and *supervene* as reminders to improve identification and treatment of malnutrition and to promote routine follow-up care.¹ In Spanish, such guidance can be stated as *detectar, nutrir y vigilar*. The Latin American feedM.E. Study Group recognizes the importance of engaging dietitians, nurses, and physicians to play complementary roles in achieving optimal nutrition care.^{52,53} We invite further studies to compare use of this Nutrition Care Pathway with other methods for screening, assessment, treatment, and monitoring of nutrition status as part of quality improvement initiatives across various hospital settings.

Detectar

The first step is to screen each patient's nutrition status on hospital admission or on initiation of care and use a validated tool to identify risk of malnutrition. The feedM.E. Nutrition Care Pathway begins with 2 questions from the Malnutrition Screening Tool (MST): Has your food intake decreased? and Have you lost weight recently?⁵⁴ These initial screening questions are simple enough to be used by health caregivers at all levels and even by patients themselves or their family members as a way to identify risk of malnutrition.

The appetite loss and weight loss questions are paired with a quick clinical judgment about whether the patient's illness or injury adds risk of malnutrition.⁵⁵⁻⁵⁷ A contemporary definition of malnutrition defines the condition as 3 clinical syndromes: (1) *starvation-related malnutrition*, undernutrition in the absence of

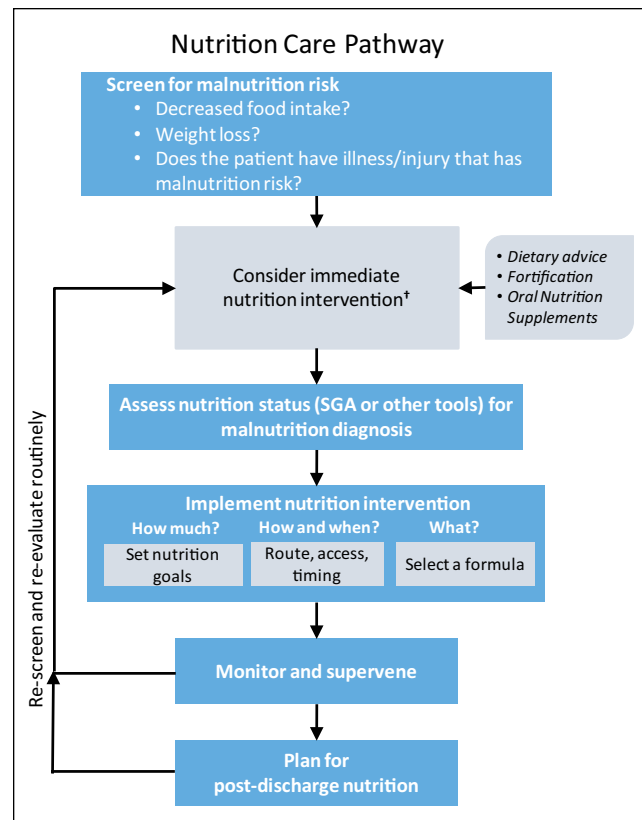


Figure 2. The Nutrition Care Pathway, reprinted with permission from Elsevier from Correia M, Hegazi R, Higashiguchi T, et al, Evidence-based recommendations for addressing malnutrition in healthcare: an updated strategy from the feedM.E. Global Study Group, *J Am Med Dir Assoc.* 2014;15: 544-550. †For individuals who can tolerate oral feeding.

inflammation; (2) *chronic disease-related malnutrition*, nutrition inadequacy associated with chronic conditions that cause mild to moderate inflammation; and (3) *acute disease- or injury-related malnutrition*, undernutrition associated with conditions that elicit marked inflammatory responses.⁵⁸ Chronic conditions, such as heart failure or kidney disease, have moderate inflammation as a disease component, which raises the risk of malnutrition. Severe acute health crises, such as surgery, burns, or sepsis, cause marked inflammation, which worsens nutrition status quickly.

If nutrition screening identifies risk for malnutrition, quick action is key to better health outcomes. The feedM.E. Study Group recommends that health professionals consider immediate intervention with nutrition advice for increased oral intake of regular or fortified food or early initiation of oral nutrition supplements. In addition, the study group recommends use of additional validated tools to make a malnutrition diagnosis and to assess the severity of nutrition shortfalls. There is no single measure or tool capable of adequately assessing the risk of poor outcomes in all hospital patients.⁵⁹ At present, many investigators are examining ways

to combine tools for more accurate identification of malnutrition in specific populations, such as using SGA, prealbumin, and anthropometrics for nondialyzed patients with kidney disease⁶⁰; including C-reactive protein (CRP), a measure of inflammatory status, for patients with cancer⁶¹; and adding physical function tests such as handgrip strength or 6-minute walking for older hospitalized patients.⁶² More studies are needed comparing different malnutrition assessment tools within single patient populations. In the interim, clinical judgment and the SGA tool are most frequently used to identify disease-related malnutrition,²⁸ and the MNA is an effective alternative for older people.^{20,63}

In Latin America, the SGA²⁸ and the MNA²⁰ tools are commonly used in practice. Such tools rely on clinical judgment, which includes awareness that malnutrition is possible even in people who are obese. In fact, obese individuals commonly experience sarcopenia (ie, loss of muscle mass, strength, and/or function), a condition that is managed with nutrition and exercise.⁶⁴ More studies are needed comparing different malnutrition assessment tools within single patient populations. In the interim, clinical judgment and the SGA tool are most frequently used to identify disease-related malnutrition,²⁸ and the MNA is an effective alternative for older people.^{20,63}

Nutrir. Based on the nutrition assessment, nutrition targets are set for energy, protein, and other specific nutrients. Other decisions involve what to feed and how much to feed: feed to target with regular food, fortified food (especially high in energy and protein, as needed), oral nutrition supplements (ONS), tube-fed EN, or parenteral nutrition, as needed. In some cases, more than one method can be used to reach nutrition targets (eg, food plus oral nutrition supplements). In all cases, prompt interventions are advised to preserve and to prevent worsening of nutrition status. Among patients who were malnourished and in the hospital, results of a 1-day food intake audit showed that >50% ate less than half of the food offered to them, thus emphasizing a need for intensified nutrition planning and care.²² It is also important to treat other underlying causes (eg, chewing or swallowing problems)⁶⁵⁻⁶⁷ and consequences of malnutrition (eg, inflammation, muscle and/or weight loss)⁶⁸⁻⁷¹ that are identified during screening or assessment. Treatments may include specific nutrition strategies (eg, increasing protein⁶⁸ or adding ingredients with anti-inflammatory or immune enhancing properties,⁶⁹⁻⁷¹ such as eicosapentaenoic acid [EPA] and glutamine) and nonnutritive procedures such as increased physical activity or mobility for surgical patients,⁷² those with cancer,^{73,74} or patients recovering from critical illness.⁶⁹⁻⁷¹

Vigilar. As the patient's disease status changes, continue to monitor nutrition status routinely with rescreening, reassessment, and feeding adjustments as needed. Routine rescreening and follow-up adjustments are necessary during hospitalization. Even in patients who were adequately

nourished at the time of hospital admission, periodic screening and further assessment, when indicated, are advised during hospitalization.

Furthermore, nutrition care does not end when a patient is released from the hospital. The final step of the Nutrition Care Pathway is follow-up with continuing attention to meeting nutrition needs. Without treatment, poor nutrition status on discharge predicts hospital readmission within 30 days.⁷⁵ New focus on postdischarge nutrition planning⁷⁶ can lower costly hospital readmissions,⁷⁷ improve quality of life for patients,^{38,39} and, in some cases, even reduce risk of death.³⁷ Effective nutrition care necessitates development of a post-discharge nutrition plan and use of strategies to ensure the plan is implemented. Results of a systematic review of 6 randomized controlled trials (surgical and medical patients of older age) showed that postdischarge nutrition care with use of ONS had a positive effect on nutrition intake (energy) and nutrition status (weight) in all trials.⁷⁸ The feedM.E. Latin American Study Group thus recommends continued efforts to prevent and treat malnutrition for patients who have been discharged from the hospital into long-term care centers or into the community.

Call to Action for Nutrition Care in Latin America

Throughout Latin America, nutrition therapy in hospitals and long-term care centers still has a long way to go from current practice to evidence-based best practice. We, the members of the feedM.E. Latin American Study Group, recognize that nutrition care improves patient outcomes and reduces health-care costs. We now call on healthcare professionals throughout Latin America to take action with “*detectar, nutrir y vigilar.*” The simple and efficient feedM.E. Nutrition Care Pathway recommends screening all patients on admission or at initiation of care, providing supportive nutrition when needed, and giving routine follow-up care with postdischarge nutrition planning, treatment, and monitoring.

To meet goals of nutrition adequacy, we also emphasize the importance of educating all healthcare professionals to provide timely and effective nutrition care—including training for physicians, nurses, food technicians, medical and nursing students, and medical residents. We note that optimal nutrition care engages an interdisciplinary team of health professionals who provide a continuum of patient care from the community to the hospital, then back to a rehabilitation center or to the community again.

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Statement of Authorship

All authors contributed to the conception and design of the research as well as to the acquisition, analysis, and interpretation of the data; drafted and critically revised the manuscript; agree to be fully accountable for ensuring the integrity and accuracy of the work; and read and approved the final manuscript.

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