

## REFLECTION PAPER

## Nutrition model at the Hospital Universitario Nacional de Colombia: Contributions made by the Department of Human Nutrition of the Faculty of Medicine of the Universidad Nacional de Colombia

*Modelo de nutrición en el Hospital Universitario Nacional de Colombia: aportes desde el Departamento de Nutrición Humana de la Facultad de Medicina de la Universidad Nacional de Colombia*

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### Abstract

Every person who is admitted as a patient to a healthcare institution has the right to receive adequate nutritional care. Appropriate nutritional support has positive effects such as reducing the length of hospital stay, reducing healthcare costs associated with the management of complications related to malnutrition, and improving nutritional status. Therefore, healthcare institutions must generate mechanisms to provide nutritional care that includes the nutritional screening, assessment and diagnosis of patients, as well as their nutritional monitoring and follow-up after the prescription of a specific diet and/or nutritional support technique.

In this sense, a nutritional care model aims to prevent malnutrition through coordinated actions between clinical nutrition and food service teams to ensure that inpatients receive adequate, balanced, diverse and safe food, thus meeting their nutritional needs according to their medical and nutritional diagnosis. Consequently, recognizing the importance of this model within the hospital dynamics is essential.

Considering the above, the objectives of this reflection article are to analyze the impact of malnutrition in inpatients, to show the importance of university hospitals and the nutrition process in the healthcare context, and to describe the contributions made by the adult clinical nutrition and food services areas of the Department of Human Nutrition of the Faculty of Medicine of the Universidad Nacional de Colombia in the creation and development of the Nutrition Department of the Hospital Universitario Nacional de Colombia.

### Resumen

Toda persona que ingresa como paciente a una institución de salud tiene derecho a recibir una adecuada atención nutricional. Un acompañamiento nutricional apropiado tiene efectos positivos como disminuir la estancia hospitalaria, disminuir los costos de la atención asociados al manejo de complicaciones propias de la desnutrición y mejorar el estado nutricional. Por lo tanto, las instituciones de salud deben generar mecanismos que permitan ofrecer un cuidado nutricional que incluya la tamización, evaluación y diagnóstico nutricional de los pacientes, así como su monitoreo y seguimiento nutricional luego de la prescripción de la dieta y/o técnica de soporte nutricional.

En ese sentido, un modelo de atención nutricional busca prevenir la desnutrición mediante acciones coordinadas entre los equipos de nutrición clínica y de servicios de alimentación realizadas para asegurar que los pacientes hospitalizados reciban una alimentación adecuada, equilibrada, diversa e inocua, y, de esta forma, satisfacer sus necesidades nutricionales según el diagnóstico médico y nutricional. Por lo tanto, es fundamental reconocer su importancia dentro de la dinámica hospitalaria.

Teniendo en cuenta lo anterior, los objetivos de este artículo de reflexión fueron analizar el impacto de la desnutrición en el paciente hospitalizado; evidenciar la importancia del hospital universitario y del proceso de nutrición en el contexto asistencial en salud, y presentar los aportes de las áreas de nutrición clínica de adultos y de servicios de alimentación del Departamento de Nutrición Humana de la Facultad de Medicina de la Universidad Nacional de Colombia en la construcción del modelo del Servicio de Nutrición del Hospital Universitario Nacional de Colombia.

## Introduction

The purpose of hospital diet is to prevent malnutrition and to contribute to the well-being and recovery of the sick patient during their hospital stay.<sup>1-4</sup> Therefore, nutritional care is not an option, but a necessity that must be ensured to every person who is admitted to a health institution.<sup>5</sup>

In this regard, it has been described that nutritional care provided with clinical expertise, compassion and humanity is essential for patients to recover from the disease that afflicts them and remain healthy. Achieving this requires assessing and meeting patients' nutritional needs, frequently assessing care plans and creating an optimal environment for the best possible nutritional care practices.<sup>6</sup>

The Council of Europe, through the 2003 ResAp Resolution on food and nutritional care in hospitals,<sup>1</sup> defines disease-related undernutrition as "A state of insufficient intake, utilisation or absorption of energy and nutrients due to individual or systemic factors, which results in recent or rapid weight loss and change in organ function, and is likely to be associated with a worse outcome from the disease or the treatment", a situation that should be avoided at all costs.

Malnutrition in inpatients arises because nutritional demand increases and appetite and food intake decrease during the hospital stay.<sup>7-10</sup> In some patients, this may be associated with inflammatory processes,<sup>11</sup> reduced nutrient bioavailability, increased nutritional requirements,<sup>10</sup> and excessive nutrient losses.<sup>12</sup> In this sense, a nutritional care model should allow for the identification of the risk of malnutrition through nutritional screening, a process that allows for early diagnosis, the establishment of appropriate treatment, and the identification of suitable systems to facilitate the provision of nutritional care in the hospital setting.<sup>5,13-15</sup>

Considering the above, the objectives of this reflection article are to analyze the impact of malnutrition in inpatients, to show the importance of university hospitals and the nutrition process in the healthcare context, and to describe the contributions made by the adult clinical nutrition and food services areas of the Department of Human Nutrition of the Faculty of Medicine of the Universidad Nacional de Colombia (DNH-FM-UN) in the creation and development of the Nutrition Department of the Hospital Universitario Nacional de Colombia (HUN).

## Malnutrition in the hospital setting

Malnutrition is a complex and multifactorial condition with clinical and economic implications that negatively impact healthcare systems and the quality of life of patients.<sup>7,16</sup>

It has been demonstrated that malnutrition makes the healthcare process more expensive because its occurrence increases morbidity and mortality and postoperative complications, makes patients require additional treatments, increases the frequency of readmissions, and leads to a greater use of drugs, among others.<sup>1,8,9,17,18</sup>

In a study conducted in 11 Asian countries, Inciong *et al.*<sup>16</sup> used country-specific prevalence and cost data to estimate the cost of hospital malnutrition and found that it had an estimated annual economic burden of more than \$30 billion dollars and that increased hospital stay accounted for 89% of the additional cost. Likewise, Ruiz *et al.*,<sup>19</sup> in a study carried out in a university hospital in Malaga (Spain) with 266 oncology patients, found that errors in the diagnosis of malnutrition in patients with this condition caused a 10.63% loss of resources from the total reimbursement that the hospital should have received for treating malnourished patients.

In Latin America, disease-related malnutrition in inpatients is common. A systematic review of studies conducted in the region by Correia *et al.*<sup>18</sup> found that the prevalence of this condition was between 40% and 60% at the time of admission, and that it occurred mainly in older adults and patients in critical condition or undergoing surgical procedures. Furthermore, compared to studies conducted in countries in other continents, the prevalence of malnutrition in the Latin American studies was higher, even reaching 73.2% in Brazil.<sup>18</sup>

Considering the high prevalence of patients with malnutrition and its impact on morbidity and mortality rates and healthcare costs, it is necessary to create a nutritional care system focused on the prevention of this condition that adapts to the needs of the sick patient and generates benefits in their nutritional status to improve their quality of life and healthcare efficiency.<sup>1,5,20</sup> The creation of this system is motivated by its economic impact, since the cost of care for the malnourished is higher than that of non-malnourished people.<sup>17,21-23</sup>

In this regard, the Cancun Declaration,<sup>17</sup> issued in 2008 by the American Association for Parenteral and Enteral Nutrition and the European Society for Clinical Nutrition and Metabolism, supports that patients have the human right to receive timely and optimal nutritional care and establishes that “[...] every sick person should be guaranteed a nutritional assessment upon admission to primary, secondary and tertiary healthcare services in the public, private or social assistance sectors of the world, especially in Latin America [...]”.<sup>17, p414</sup> In that sense, inpatients should receive quality nutritional care by trained health professionals in order to avoid the risk of hospital malnutrition and reduce the complications related to the disease that led to hospitalization.<sup>2,17</sup> The significance of the foregoing is reaffirmed by the provisions of Article 25 of the Universal Declaration of Human Rights regarding the right to food, which states that “Everyone has the right to a standard of living adequate for the health and well-being of himself and his family, including food, clothing, housing and medical care and necessary social services [...]”.<sup>24</sup>

Likewise, the Cartagena Declaration,<sup>14</sup> signed in May 2019 by the societies that comprise the Latin American Federation for Nutritional Therapy, Clinical Nutrition and Metabolism, exalts that nutritional care should be provided in conditions of dignity to every sick person; that respecting the right to nutritional care can contribute to the enjoyment of other human rights such as the right to health, the right to food and the right to life; and that, consequently, violating the right to nutritional care can disrupt the enjoyment of these other rights.

Both the Cartagena and Cancun declarations stress the need to implement legislation, policies and strategic plans aimed at raising awareness of the magnitude of the malnutrition problem and strengthening nutritional care.<sup>14,17</sup> They call on health institutions to ensure the availability of mechanisms to consistently implement the nutritional care process (nutritional screening, assessment and diagnosis, prescription of diet and/or relevant nutritional support, follow-up and monitoring)<sup>13,25-27</sup> to improve the patient’s health and reduce the costs associated with the complications of malnutrition

In this sense, the nutritional care model should be oriented to prevent malnutrition<sup>5</sup> and to develop coordinated actions between clinical nutrition teams and food services to ensure the provision of an adequate, sufficient, balanced, diverse and safe diet in hospitals.<sup>17,27,28</sup> In particular, nutritional counseling for inpatients with malnutrition or at risk of malnutrition<sup>7</sup> should be mandatory to facilitate access to safe and adequate food and to achieve an optimal nutritional status.<sup>1,8,20</sup>

In order to achieve a nutritional care model like the one described above, it should also be considered that health professionals should always strive for the good of patients,

i.e., do no harm, be prudent in professional practice and take into account the patient's opinion when making decisions, as indicated by the principles of beneficence, nonmaleficence and autonomy, respectively.<sup>14,17</sup>

According to the *Comisión del Ejercicio Profesional de Nutrición y Dietética* (Commission for the Professional Practice of Nutrition and Dietetics) and the *Asociación Colombiana de Facultades de Nutrición y Dietética* (Colombian Association of Nutrition and Dietetics Faculties), in Colombia dietitians, both in clinical nutrition and in the food service, have a key role in the nutritional care of the sick person:<sup>29</sup> clinical nutritionists perform nutritional screening, evaluation and diagnosis, prescribe oral or enteral or parenteral nutritional support, and provide nutritional counseling and education,<sup>13,29</sup> while a food service nutritionist responds to the requirements of oral feeding by directing processes to provide a diet with excellent nutritional, sensory and safety quality, which has a direct impact on the nutritional status of the patient if the diet is fully consumed.<sup>5</sup>

Although dietitians, due to their professional training, are primarily responsible for nutritional support and care, they are not the only ones involved in this process and require the assistance of different levels of institutional management through administrative, health and support services personnel.<sup>28</sup> This is evidence that the nutritional care of inpatients has an inter- and multidisciplinary nature.

Coordinated action between clinical nutrition and food service teams is essential within hospital dynamics to meet the nutritional needs of patients according to their medical and nutritional diagnosis, to reduce hospitalization time and to complement patient care.<sup>6,17</sup>

Nutritional care involves the operation of the food service as a center for the production of diets medically adapted to the requirements of patients, taking into account their physical and mental status.<sup>1,30</sup> These diets are designed to meet the nutritional needs of patients and provide them with an excellent service,<sup>5,31</sup> so their development must be supervised by professionals trained in human nutrition and management.<sup>17</sup> Furthermore, health institutions should have a dietary manual with clear objectives and detailed and updated technical specifications to guide decision making among health personnel involved in dietary prescription, who should also be periodically trained to ensure the correct application of the manual.<sup>17</sup>

Hospitals, as organizations dedicated to the provision of healthcare services, should encourage the adoption of a healthy diet that helps patients to heal,<sup>32,33</sup> taking into account that, as stated by various actors in the hospital community, "food is medicine".<sup>32</sup>

On the other hand, the development of an efficient and responsible nutritional care process should not only reduce hospital stay and malnutrition, but also provide conditions for a healthier lifestyle for health personnel, patients, and their families and caregivers. In this sense, health institutions have the responsibility to promote good health through the nutritional care they provide and, additionally, as purchasers and providers of food services, they have a great social responsibility because they can reduce waste and protect the environment, thus contributing to sustainability<sup>7,34-36</sup> and providing health services with a high social impact.<sup>6,32,37</sup>

Moreover, situations such as the worldwide epidemic of diet-related chronic diseases, which has led to initiatives such as "food is medicine" to prevent, manage and treat these diseases,<sup>38</sup> should be considered, and hospitals should strengthen their approaches to health and nutrition and become a model to be followed.

## The university hospital

Hospitals are social entities or enterprises dedicated to medical care and, frequently, to scientific research and teaching. They have an impact on the structure of society because,

being the backbone of the health system, they not only provide healthcare services, but also combine science, technology, hospitality and humanitarianism, developing organized interdisciplinary processes within an ethical and deontological framework for patient-centered healthcare.<sup>39</sup>

In a university hospital, the knowledge, teaching and learning of the values related to health sciences are the axis that allows building intellectual capital and training highly qualified and motivated personnel, which is the very essence of its existence.<sup>39</sup> A university hospital is established when a health institution commits itself to the essential functions of a university (teaching, research and extension) and thus undertakes objectives and functions that other health care institutions do not have.<sup>40-42</sup>

In Colombia, according to Law 735 of 2002,<sup>43</sup> a university hospital is defined as “an institution providing health services that, through a teaching and care agreement, uses its facilities to offer internships to students from official and private universities in the area of health; carries out research in this field; develops programs to promote health and preventive medicine; and provides, preferably, medical-care services to people lacking economic resources at the different levels of care and stratification”.

Thus, in Colombia, university hospitals are academic scenarios of a scientific-technical nature that must explicitly demonstrate their vocation for teaching and research; be authorized and accredited; have agreements with institutions of higher education; be able to build knowledge, generate critical thinking, develop educational processes, provide professional training and healthcare services;<sup>41,42</sup> and have suitable spaces, personnel and processes for both patient care and the training of healthcare professionals.<sup>44</sup>

In accordance with the mission, policies and objectives of the Universidad Nacional de Colombia, the HUN follows the aforementioned concepts in its operation. In addition, its mission is to be an institution of excellence in the provision of services, research, training and management that responds to the healthcare needs and expectations of individuals and populations.<sup>44</sup> Regarding teaching, the HUN adopts an academic model that integrates teaching, research and extension, which allows for the training of professionals and joint and interdisciplinary action among students, teachers and researchers from different areas.<sup>44</sup> Similarly, the HUN promotes the development and dissemination of health knowledge and places research as a fundamental tool for the formulation of questions and decision making in health interventions.<sup>44</sup>

The institutional principles of respect for human life, conditions and dignity based on the recognition of rights and healthcare are the framework for action at the HUN, which is also based on a person-centered service, “understood as the process through which patients and their families, during any type of contact with hospital personnel, accumulate warm and satisfactory experiences and are granted the right to participate in the decision-making processes related to them”.<sup>44, p96</sup>

### **Contributions to the nutrition model at the HUN by the DNH-FM-UN**

The DNH-FM-UN has made several contributions to the HUN through teachers in the areas of adult clinical nutrition and food services, which are committed to this institution and to the nutrition of patients. For example, in 2014, the DNH-FM-UN presented to the Faculty of Medicine the Project for the organization and operation of hospital nutritional care, in which different activities were outlined to support the operation of the future university hospital. Starting in 2015, after the opening of the HUN, it continued to contribute to the hospital's nutrition model through internships and graduate works by students of the Nutrition and Dietetics program.

The contributions made by the clinical nutrition area include the development of state-of-the-art clinical nutrition management models; the establishment of clinical criteria for the dietary manual; assisting in the creation of the nutritional support group; participating in the organization of the swallowing, obesity and diabetes clinics; and developing support documents for the nutrition service. Moreover, it has contributed to the development of guidelines including nutritional screening, nutritional assessment, metabolic support by enteral and parenteral nutrition, and nutritional treatment of various diseases. It has also participated in the nutritional care process (screening, complete nutritional assessment, determination of energy and nutrient requirements, management plan related to diet and/or nutritional support, and assessment of food intake using a visual scale) and nutritional counseling for patients upon discharge. The clinical nutrition area of the DNH-FM-UN has also supported the work of the Group for the Care of the Elderly (GRAMA) of the HUN.

In turn, the food services area of the DNH-FM-UN has contributed to the operation of the HUN by monitoring the food service through internships and practicums; controlling the processes related to the production, assembly and distribution of diets; food and nutrition education; evaluation of diet satisfaction and consumption; among other activities. All of them derive from the research proposal entitled *Modelo de servicio de alimentación hospitalaria* (Hospital Food Service Model), which aims to offer a food service with a high level of safety and nutritional and sensory quality that ensures dietary intake, is inclusive and humanized, and contributes to timely recovery and patient satisfaction. This model includes eight components: diet, operation and management, care and service, healthy environments, assertive communication, food and nutrition education, supervision, and research.

Based on this proposal, graduate studies have contributed to the development of strategies for the implementation of some components of the nutrition model, to the evaluation and updating of the nutrition manual, and to the elaboration of educational material. This experience led to the development of a research project in Bogotá with the objective of characterizing the food service model implemented in the hospitals of the city, in order to identify the best practices aimed at providing quality food service and the satisfaction and timely recovery of inpatients. The results of this research will be presented in a forthcoming publication.<sup>45</sup>

In addition, professors and students from the areas of clinical nutrition and food services of the DNH-FM-UN have worked together with the HUN's speech therapy service. As a result, a standard diet for patients with swallowing difficulties, known by consensus as the "Smooth Diet", was developed. Case study dynamics were also carried out for the benefit of the patients treated and their families, with the participation of students from the Nutrition and Dietetics, Speech Therapy, Occupational Therapy, and Physical Therapy programs.

In summary, the results and contributions made to the HUN show the interdisciplinary nature of the work carried out under a patient-centered care model.

## Conclusions

The DNH-FM-UN has contributed to the HUN with guidelines, protocols, manuals, models and research proposals on the nutritional care of inpatients that seek to prevent malnutrition and ensure their timely recovery and satisfaction, highlighting the relevance of diet, nutrition and health education and the patient's participation in dietary

prescription. All of this reflects DNH-FM-UN's commitment to the HUN's mission, especially to the comprehensive clinical nutrition and food service processes.

### Conflicts of interest

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