

Prevalence and factors associated with enteral nutrition in patients admitted to a hospital in Asunción, between July and december 2025

Prevalencia y factores asociados a nutrición enteral en pacientes internados en un hospital de Asunción, entre julio a diciembre 2025

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ABSTRACT

Introduction: Hospital malnutrition is a common problem that affects patients' clinical recovery, increasing morbidity, length of hospital stays, and mortality. Enteral nutrition is used as a fundamental strategy to ensure nutritional support in patients who cannot be fed orally. However, the prevalence of its use and the factors that influence its non-administration, discontinuation, or poor tolerance are not always clearly documented, which limits the planning of effective nutritional interventions. **Objective:** To determine the prevalence and factors associated with the use of enteral nutrition in malnourished patients hospitalized in a referral hospital between July and December 2025. **Methodology:** Observational, descriptive, retrospective cross-sectional cohort study; the study population consisted of adult hospitalized patients of both sexes with complete medical records. Data were collected from medical charts; Microsoft Office Excel® 2013 was used for data processing, and EpiInfo 7.25 statistical software was used for analysis. The study adhered to basic ethical principles of research and the Declaration of Helsinki. **Results:** Fifty-seven patients were included, predominantly over 50 years of age, with a high frequency of malnutrition and weight loss. The nasogastric route was the most frequently used, with a duration of 7–14 days. The most common complications were diarrhea and gastrointestinal symptoms. **Conclusion:** Malnutrition was prevalent, and enteral nutrition was a key strategy, highlighting the need to optimize its indication and management to improve clinical outcomes.

Keywords: malnutrition, enteral nutrition, prevalence.

RESUMEN

Introducción: La desnutrición hospitalaria es un problema frecuente que afecta la recuperación clínica de los pacientes, aumentando la morbilidad, la estancia hospitalaria y la mortalidad. La nutrición enteral se utiliza como estrategia fundamental para garantizar el aporte nutricional en pacientes que no pueden alimentarse por vía oral. Sin embargo, la prevalencia de su uso y los factores que influyen en su no administración, suspensión o tolerancia insuficiente no siempre están claramente documentados, lo que limita la planificación de intervenciones nutricionales efectivas. **Objetivo:** Determinar la prevalencia y los factores asociados al uso de nutrición enteral en pacientes desnutridos internados en un hospital de referencia, entre julio y diciembre de 2025. **Metodología:** Estudio observacional, descriptivo, retrospectivo de cohorte transversal; la población de estudio estuvo conformada por pacientes adultos internados de ambos sexos, con registros completos. Los datos fueron recolectados de fichas clínicas; se utilizó Microsoft Office Excel® 2013 para el procesamiento de los datos y el software estadístico EpiInfo 7.25 para su análisis. El estudio respetó los principios éticos básicos de la investigación y la Declaración de Helsinki. **Resultados:** Se incluyeron 57 pacientes, con predominio de mayores de 50 años y alta frecuencia de desnutrición y pérdida de peso. La vía nasogástrica fue la más utilizada, con duración entre 7–14 días. Las complicaciones más frecuentes fueron diarrea y síntomas gastrointestinales. **Conclusión:** La desnutrición fue frecuente y la nutrición enteral constituyó una estrategia clave, destacando la necesidad de optimizar su indicación y manejo para mejorar los resultados clínicos.

Palabras clave: desnutrición, nutrición enteral, prevalencia.

INTRODUCTION

Hospital malnutrition is a frequent and underdiagnosed problem among hospitalized patients, with adverse effects on morbidity, mortality, complications, length of hospital stay, and healthcare costs. Recent reviews have documented that between 10% and 65% of patients may experience nutritional deterioration during hospitalization (1).

A multicenter study conducted in Latin America, the Latin American Study on Parenteral and Enteral Nutritional Therapy – ELANPE Study, reported that the median prevalence of malnutrition at admission was approximately 33% among evaluated patients. However, the implementation of nutritional support, including enteral nutrition, was limited, reaching only 14.6% of patients (2).

In Brazil, a study carried out in a public intensive care unit showed that although nearly half of the patients had oral intake below 60% of estimated nutritional requirements, enteral nutrition was prescribed in only 26.3% of cases and was effectively administered in just 3.5% (3). Similarly, prospective studies involving hospitalized patients in Brazilian university hospitals reported that 39.5% presented severe malnutrition at admission, with significant reduction in muscle mass during hospitalization despite nutritional support (4).

Evidence also indicates that hospital-acquired malnutrition, defined as the development or worsening of malnutrition during hospitalization, is frequent and may be attributed to interruptions in meals, dissatisfaction with hospital diets, fasting for procedures, or reduced appetite (5). In intensive care units, up to 40% of patients have been reported to experience caloric-protein deficits due to problems related to the administration of enteral nutrition (5,6).

Furthermore, recent studies have shown that the implementation of enteral nutrition protocols remains suboptimal, even when nutritional risk has already been identified (7-9). This highlights a significant gap between clinical need and hospital practice. In this context, understanding the prevalence of malnutrition, the indication and effective use of enteral nutrition, as well as the factors associated with its implementation or lack thereof, is essential to optimize nutritional care, reduce complications, and improve the quality of hospital care (10-13).

More recent studies conducted in referral hospitals have demonstrated that systematic nutritional assessment at admission and monitoring during hospitalization continue to be insufficient, especially in low- and middle-income countries, where limited resources and the absence of multidisciplinary teams negatively impact the timely implementation of enteral nutrition (14-16).

Therefore, the present study aimed to determine the prevalence and factors associated with the use of enteral nutrition in malnourished hospitalized patients in a referral hospital between July and December 2025, identifying factors associated with the use or non-use of this nutritional therapy. The results contributed to strengthening care protocols, improving clinical nutrition practices, and generating relevant local evidence for hospital management.

Enteral nutrition was one of the most important tools for improving the nutritional status of patients who were unable to feed adequately through the oral route. In individuals who were already malnourished upon hospital admission, or who became malnourished during hospitalization, this intervention could make the difference between faster recovery and the development of complications that prolonged hospital stay. Malnutrition was associated with loss of strength, increased risk of infections, poor wound healing, and worse response to medical treatments, making its proper management a priority.

Understanding how frequently enteral nutrition was used and which factors influenced its indication helped identify which patients required earlier or more intensive nutritional support. This allowed the evaluation of whether nutritional management was timely, whether there were common patterns among patients who most required this therapy, and whether aspects of healthcare practice could be improved.

The results of the study may help strengthen protocols, optimize resources, improve service organization, and guide specific training programs for healthcare professionals.

METHODOLOGY

An observational, descriptive, retrospective, and cross-sectional study was conducted in a referral hospital during the period from July to December 2025.

The study population consisted of adult hospitalized patients of both sexes, aged over 18 years, who presented malnutrition or nutritional risk identified at hospital admission or during hospitalization, and who were candidates for enteral nutritional support.

Data were obtained from secondary sources through the review of medical records and hospital clinical files. A non-probability consecutive sampling method was used, including all patients who met the inclusion criteria during the study period.

The variables analyzed included age, sex, nutritional status, weight loss, route of enteral nutrition administration, duration of enteral therapy, gastrointestinal complications, and factors associated with the indication and use of enteral nutrition.

Inclusion criteria: Adult patients of both sexes, older than 18 years, with adequate and complete records of clinical evolution, as well as nutritional treatment administered through enteral support, either by oral route or feeding tube, ensuring the availability of complete information.

Exclusion criteria: Patients who received only parenteral nutrition, those with contraindications for enteral nutrition, patients referred from other centers without the necessary data, or outpatients.

Data analysis: Data collection and analysis: Data were collected using a structured questionnaire designed by the authors based on the information available in the medical records of hospitalized patients. The instrument included sections related to sociodemographic characteristics, clinical data, nutritional status, and factors associated with the use of enteral nutrition in the studied population. The questionnaire was previously validated in a similar sample.

Data were processed using Microsoft Excel® 2013 and analyzed using EpiInfo version 7.25. Descriptive statistics included frequencies, percentages, means, and standard deviations, according to the nature of the variables. Temporal and comparative analyses were performed to evaluate the characteristics associated with the use and non-use of enteral nutrition among hospitalized malnourished patients.

Ethical considerations: The study respected the ethical principles established in the Declaration of Helsinki and national regulations concerning health research. Confidentiality and anonymity of patients were guaranteed through data coding procedures. Since this was a retrospective study based on medical records, no direct interventions were performed on the patients. The research protocol was submitted for review and approval by the University Ethics Committee and received authorization from the General Directorate of the hospital before data collection began.

RESULTS

Table 1 presents the sociodemographic data. Regarding age, there was a predominance of patients older than 50 years (91.2%), with a similar distribution between sexes (50.9% female). Most patients were from the Central Department (43.9%) and Asunción (35.1%), had family support (78.9%), and had primary or secondary educational level (73.7%). The most frequent marital status was married (49.1%).

Table 1: Sociodemographic data (n=57)

Age	Absolute Frequency	Percentage (%)
18-30 years 31-40 years 41-50 years >50 years	11 3 52	1,8% 1,8% 5,3% 91,2%
Sex	Absolute Frequency	Percentage (%)
Male Female	28 29	49,1% 50,9%
Area of residence	Absolute Frequency	Percentage (%)
Asunción Central Department Other	20 25 12	35,1% 43,9% 21,2%
Family support	Absolute Frequency	Percentage (%)
yes no	45 12	78,9% 21,2%
Educational level	Absolute Frequency	Percentage (%)
No formal education Primary Secondary Tertiary	6 22 20 9	10,5% 38,6% 35,1% 15,8%
Marital status	Absolute Frequency	Percentage (%)
Single Married Divorced Widowed	15 28 6 8	26,3% 49,1% 10,5% 14%

The information collected regarding nutritional status is presented in Table 2. A predominance of patients with BMI <18.5 was observed (35.1%), followed by those with adequate nutritional status (26.3%). Malnutrition was the most frequent condition (35.1%), demonstrating a high burden of nutritional impairment in the studied population. Regarding recent weight loss, the highest prevalence was observed among patients with severe weight loss (>10%) in 43.9% of cases, reflecting significant nutritional deterioration prior to or during hospitalization.

Table 2: Nutritional status (n=57)

BMI	Absolute Frequency	Percentage (%)
<18,5 18,5-24,9 25-29,9 >30	20 15 12 10	35,1% 26,3% 21,1% 17,5%
Nutritional status	Absolute Frequency	Percentage (%)
Adequate Overweight Malnourished Obesity	15 12 20 10	26,3% 21,1% 35,1% 17,5%
Recent weight loss	Absolute Frequency	Percentage (%)
Non-significant (<5%) Moderate (5-10%) Severe (>10%)	14 18 25	24,6% 31,6% 43,9%

Table 3 presents data related to enteral nutritional support and associated factors. In this regard, the nasogastric route was the most commonly used (96.5%), with the duration of nutritional therapy mainly ranging between 7–14 days (43.9%). The most frequent complications were diarrhea (31.6%) and other complications (31.6%), followed by nausea or vomiting. Most patients were discharged from the hospital (61.4%).

Table 3. Enteral nutrition and associated factors (n=57)

Enteral nutrition route	Absolute Frequency	Percentage (%)
Nasogastric Nasojejunal Gastrostomy Jejunostomy	55 1 1 0	96,5% 1,8% 1,8% 0%
Duration of nutrition	Absolute Frequency	Percentage (%)
<7 days 7-14 days >14 days	20 25 12	35,1% 43,9% 21,1%
Complications	Absolute Frequency	Percentage (%)
Nausea or vomiting Diarrhea Aspiration pneumonia Others	15 18 6 18	26,3% 31,6% 10,5% 31,6%
Outcome	Absolute Frequency	Percentage (%)
Discharge Transfer Death	35 12 10	61,4% 21,1% 17,5%
Associated factors	Absolute Frequency	Percentage (%)
Lack of formula Clinical contraindication Limited resources	No data No data No data	No data No data No data

DISCUSSION

In the present study, a predominance of patients older than 50 years was observed, with a similar distribution between both sexes and a higher proportion from the Central Department and Asunción. Likewise, most patients had family support and basic educational levels, reflecting the typical profile of hospitalized patients requiring specialized nutritional support.

These findings are consistent with those reported in the Latin American FELANPE study, in which Paraguay actively participated, where it was shown that patients receiving nutritional therapy (enteral and parenteral) are mainly hospitalized older adults in high-complexity centers, with sociodemographic and clinical characteristics similar to those found in the present study (17). Furthermore, that study highlights the importance of hospital organization and nutritional support as part of comprehensive inpatient care.

The concentration of patients in urban areas such as Asunción and the Central Department also aligns with the centralization of health services and complex therapies, such as nutritional support, in referral hospitals in the country, as reported in recent national reports (18). This may explain the greater access of these patients to specialized nutritional therapies.

Similar results were reported in the Latin American Nutrition Study (ELAN), which included data from Paraguay, where a significant proportion of hospitalized patients presented malnutrition or nutritional risk, as well as recent weight loss as one of the main clinical indicators (19). This study emphasizes that hospital malnutrition remains an underdiagnosed and undertreated problem in the region.

Likewise, the high frequency of severe weight loss found in this study is consistent with regional research, where this parameter is directly associated with a higher risk of complications, prolonged hospital stay, and increased mortality. These findings reinforce the importance of early nutritional assessment and timely initiation of nutritional support, including enteral or parenteral nutrition according to clinical indication.

In this study, the nasogastric route was the main method of enteral nutrition administration, which is consistent with clinical practice in the region, where this access is the most widely used due to its simplicity, lower cost, and rapid placement. Similar results have been reported in Paraguay, where nasogastric tube feeding constitutes the most frequent strategy in hospitalized patients requiring nutritional support, especially in public referral centers (20).

Regarding duration of therapy, the predominance of 7 to 14 days is comparable to studies conducted in Brazil, where enteral nutrition is commonly used during the acute phase of hospitalization and adjusted according to the patient's clinical evolution. These studies also highlight that duration is closely related to disease severity and functional recovery (21).

Regarding complications, diarrhea and gastrointestinal symptoms were the most frequent events, which is consistent with Brazilian literature where these complications are widely described as the most common during enteral therapy (21). These may be associated with formula osmolarity, infusion rate, or the patient's clinical condition.

Finally, the high proportion of hospital discharges reflects a favorable outcome in most cases, although the presence of deaths highlights the clinical complexity of this population. Overall, these findings reinforce the importance of proper indication, monitoring, and management of enteral nutrition to optimize clinical outcomes in hospitalized patients.

Limitations

The study presented limitations inherent to its retrospective design, such as reliance on the quality and completeness of clinical records. Additionally, it was conducted in a single center, which may limit the generalizability of the results.

CONCLUSION

Hospital malnutrition represented a frequent problem in the studied population, with a predominance in patients older than 50 years and a high proportion of significant weight loss, indicating an important impairment of nutritional status. Enteral nutrition constituted a fundamental tool for the management of these patients, with the nasogastric route being the most commonly used due to its accessibility and ease of implementation in the hospital setting.

Despite its widespread use, associated complications were observed, mainly of gastrointestinal origin, highlighting the need for continuous monitoring and appropriate individualization of nutritional support. Likewise, the results suggest that although enteral nutrition is widely used, there are still opportunities for improvement regarding its timely indication, follow-up, and optimization of administration.

In this context, the importance of implementing early detection strategies for nutritional risk from hospital admission is emphasized, as well as strengthening institutional protocols and healthcare staff training. These actions will contribute to improving the quality of care, optimizing clinical outcomes, and reducing complications associated with malnutrition in hospitalized patients.

REFERENCES

1. Cass AR, Charlton KE. Prevalence of hospital-acquired malnutrition and modifiable determinants of nutritional deterioration during inpatient admissions: a systematic review of the evidence. *J Hum Nutr Diet.* 2022;35(6):1043–58. Available from: <http://dx.doi.org/10.1111/jhn.13009>
2. Ferreira Heyn A, Bordón Riveros C, Morínigo Martínez M, Elizeche Serra L, Ibarra Samudio L, Aguilar-Rabito A, et al. Latin American Study on Parenteral and Enteral Nutritional Therapy (ELANPE Study). *Nutrition.* 2025;129:112590. Available from: <http://dx.doi.org/10.1016/j.nut.2024.112590>
3. Aline SM, Welton GP, Esther FBN, Ricardo LFM, et al. Assessment of dietary intake and prescription of oral supplementation and enteral nutrition in ICU patients in a public hospital. *BRASPEN J.* 2024;39(2). Available from: <http://dx.doi.org/10.37111/braspenj.2024.39.1.14>
4. Silva LA. Enteral and parenteral nutritional therapy in hospitalized patients: nutritional status, caloric and protein adequacy, and clinical outcomes [dissertation]. Universidade Federal de Minas Gerais; 2023. Available from: <https://hdl.handle.net/1843/62033>
5. Souza DF de, Reis AS, Nascimento PF, Francisco DV, Santos V dos, Silva KL do N, et al. Caloric-protein adequacy of enteral nutritional therapy and factors associated with waste in ICU patients. *Res Soc Dev.* 2022;11(14):e48111435815. Available from: <http://dx.doi.org/10.33448/rsd-v11i14.35815>
6. Durán Poveda M, Suárez-de-la-Rica A, Cancer Minchot E, et al. The prevalence and impact of nutritional risk and malnutrition in gastrointestinal surgical oncology patients. *Nutrients.* 2023;15(14):3283. Available from: <http://dx.doi.org/10.3390/nu15143283>
7. Vallejo KP, Martínez CM, Matos Adames AA, et al. Current clinical nutrition practices in critically ill patients in Latin America: a multinational observational study. *Crit Care.* 2017;21(1):227. Available from: <http://dx.doi.org/10.1186/s13054-017-1805-z>
8. Pérez-Romero MT, Villanueva-Juárez JL, Serralde-Zúñiga AE, Castillo-Martínez L. Characteristics of patients receiving nutrition care and its associations with prognosis in a tertiary hospital. *Rev Assoc Med Bras.* 2022;68(6):808–13. Available from: <http://dx.doi.org/10.1590/1806-9282.20220072>
9. Correia MITD, Saulo S, Brunton C, Sulz I, Rodriguez D, Gomez G, et al. Prevalence of malnutrition risk and its association with mortality: NutritionDay Latin America survey results. *Clin Nutr.* 2021;40(9):5114–21. Available from: <http://dx.doi.org/10.1016/j.clnu.2021.07.023>
10. Dias TS, Oliveira LFN de, Firmino MAD, et al. Caloric-protein adequacy of enteral therapy in patients with pressure injuries. *Nutr Rev Nutr Vigil Saúde.* 2024;11(1):e13669. Available from: <http://dx.doi.org/10.52521/nutrivisa.v11i1.13669>
11. Castro AL, Kummel Duarte C, Almeida Guimarães Barbosa J. Monitoring complications related to enteral nutrition in hospitalized adults. *Enferm Bras.* 2024;23(4):1794–1806. Available from: <http://dx.doi.org/10.62827/eb.v23i4.4025>
12. Correia MITD, Perman MI, Waitzberg DL. Hospital malnutrition in Latin America: a systematic review. *Clin Nutr.* 2017;36(4):958–67. Available from: <http://dx.doi.org/10.1016/j.clnu.2016.06.025>
13. Bherulal B, Riaz Mangi M, Khan B, et al. Prevalence of malnutrition in hospitalized patients: risk factors and clinical outcomes. *J Popul Ther Clin Pharmacol.* 2025. Available from: <http://dx.doi.org/10.53555/s11x9833>
14. Marquezini RF, de Oliveira MC. Risk factors associated with malnutrition in hospitalized patients. *Rev Nutr.* 2023;29(3). Available from: <https://puccampinas.emnuvens.com.br/nutricao/article/view/8026>
15. de Almeida Santos A, de Abreu Silva L, Mendes Chagas G, et al. Prevalence of hospital malnutrition in patients using nutritional support. *Nutr Health.* 2025;31(4):1465–71. Available from: <http://dx.doi.org/10.1177/02601060241300233>
16. Mariños Cotrina BW, Segovia Denegri RE, Arévalo Cadillo EJ, et al. Prevalence of malnutrition risk and nutritional therapy in hospitalized adults in Peru. *Rev Nutr Clin Metab.* 2020;3(2):13–19. Available from: <http://dx.doi.org/10.35454/rncm.v3n2.28>
17. Ferreira Heyn AM, Kliger G, Jiménez MC, et al. Commitment of Asunción: a call to action. *Nutr Hosp.* 2024;41(1):249–54. Available from: <http://dx.doi.org/10.20960/nh.05100>
18. Ministerio de Salud Pública y Bienestar Social (PY). Regional Hospital of Encarnación guarantees parenteral nutrition for patients. 2025. Available from: <https://itapuanoticias.tv/hospital-regional-garantiza-nutricion-parenteral-para-pacientes/>
19. Correia MITD, Waitzberg DL. The impact of malnutrition on morbidity, mortality, length of hospital stay and costs. *Clin Nutr.* 2003;22(3):235–9. Available from: [http://dx.doi.org/10.1016/s0261-5614\(02\)00215-7](http://dx.doi.org/10.1016/s0261-5614(02)00215-7)
20. Gavilán Rojas MI, Fonclara López LM, Fretes Apelt FV, et al. Enteral nutrition in critically ill COVID-19 patients in prone position. *DEL NAC.* 2024;16(2):32–42. Available from: <http://dx.doi.org/10.18004/rdn2024.may.02.032.042>
21. Amaral Felicio B, Oliveira Medrado Pinto R, Andrade Villela Dessimoni Pinto N, Ferreira da Silva D. Nutritional safety in hospitalized patients receiving enteral nutrition in Brazil. *Nutr Hosp.* 2012;27(6):2122–9. Available from: <http://dx.doi.org/10.3305/nh.2012.27.6.6118>

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHORSHIP CONTRIBUTIONS

EEO: Study design, conceptualization, manuscript writing, and general research coordination.

GMNS: Manuscript transcription, translation, and general document review.

JASP: Data collection and analysis of epidemiological records from the national surveillance system.