

## ORIGINAL ARTICLE

# Financial impact of disease-related malnutrition at the San Pedro de Alcántara hospital. Estimated cost savings associated to a specialized nutritional survey<sup>☆</sup>



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### KEYWORDS

Disease-related malnutrition;  
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### Abstract

*Introduction and objectives:* DRM is a highly prevalent condition in Spanish hospitals and is associated to increased healthcare costs. Costs associated to DRM were calculated using the methods of the PREDyCES study. The potential savings derived from specialized nutritional treatment were calculated by extrapolating the results of the SNAQ strategy.

*Results:* Median cost per procedure in patients with DRM was €9679.85, with a final cost of €28,700,775.2. The cost of each patient with DRM was 2.63 times higher than the cost of patients with no DRM. The potential cost saving associated to specialized nutritional treatment was estimated at €1,682,317.28 (5.86% of total cost associated to DRM).

*Conclusions:* Patients with DRM showed a higher consumption of financial resources as compared to well-nourished patients. Specialized nutritional treatment is a potential cost-saving procedure.

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**PALABRAS CLAVE**

Desnutrición  
relacionada con  
enfermedad;  
Costes;  
Impacto económico

## Impacto económico de la desnutrición relacionada con la enfermedad en el hospital San Pedro de Alcántara. Estimación del ahorro asociado a una atención nutricional especializada de calidad

**Resumen**

**Introducción y objetivos:** La DRE es una entidad con alta prevalencia en nuestro medio hospitalario y conlleva un aumento de los costes sanitarios. Siguiendo la metodología del estudio PREDyCES se estimó el coste asociado a DRE. El ahorro potencial asociado al tratamiento especializado de la DRE se calculó extrapolando los datos de la estrategia SNAQ.

**Resultados:** La mediana del coste por proceso en pacientes con DRE ascendió a 9.679,85€/proceso, lo que supuso un coste final de 28.700.775,2 €. Cada paciente con DRE consumió 2,63 veces más recursos económicos que los pacientes sin DRE. El ahorro potencial asociado al tratamiento especializado de la DRE se estimó en 1.682.317,28€ (5,86% del gasto asociado a la DRE).

**Conclusiones:** Los pacientes con DRE presentaron un consumo de recursos muy superior al de pacientes normonutridos. Un tratamiento nutricional especializado supondría un ahorro potencial significativo.

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**Introduction**

Disease-related malnutrition (DRM) is very common in the Spanish hospital setting, with an estimated prevalence of 20–70%.<sup>1</sup> Only one national multicentric study has been published in this regard—the Prevalence of Malnutrition and Associated Costs study (*Prevalencia de Desnutrición y Costes Asociados [PREDyCES®]*)<sup>2</sup>—which established a prevalence of malnutrition under conditions of routine clinical practice of 23% using the Nutritional Risk Screening 2002 (NRS-2002) tool.<sup>3</sup> This study moreover showed patients with malnutrition to be associated to greater resource consumption, referred particularly to a longer mean stay, compared with patients without malnutrition. This observation was particularly notorious among the patients that developed malnutrition during admission, with doubling of the estimated costs vs those patients that maintained normal nutrition during admission (12,237€ vs 6408€). Furthermore, DRM is associated to increased comorbidity and mortality, as acknowledged by the competent European authorities.<sup>4,5</sup> The aim of the present study is to establish the economical impact of DRM in a Spanish third-level hospital and to estimate the potential savings derived from its treatment, extrapolating the data published in the literature based on the Short Assessment Nutritional Questionnaire (SNAQ)<sup>6,7</sup> strategy.

**Material and methods**

Three sub-studies were carried out in order to address the following issues: cost of a malnourished patient in the study center; estimated annual total cost derived from DRM in the center; and potential savings if the screening rates and therapeutic objectives of the SNAQ strategy were reached, according to the latest published information.<sup>6</sup>

### Sub-study 1. Quantification of the cost associated to the management of a patient with *Nutritional Risk Screening 2002* positivity at some point during hospital admission

**Type of study**

A cross-sectional study was carried out under conditions of routine clinical practice.

**Sample size estimation**

According to the PREDyCES® study,<sup>2</sup> which defines malnutrition as an NRS-2002 score of >3 points, the mean cost of the 468 malnourished patients included in the sample is 9239€, with a standard deviation (SD) of 1731€. Using the formula  $n = \frac{Z_{\alpha}^2 \cdot S^2}{d^2}$ , where  $Z_{\alpha} = 1.96$ ,  $S^2 = (1731)^2$  and  $d = 360$  (0.4% of the mean price per malnourished patient according to the PREDyCES®), we estimate a necessary sample size of 89 malnourished patients according to the NRS-2002 in order to establish the mean cost of a malnourished patient with a confidence level of 95% and a precision of 4%.

**Screening of study candidates**

The patient screening criteria were: prescription of artificial nutrition via the oral, enteral, parenteral or mixed route by the physician in charge of the patient or by the specialist in Endocrinology and Nutrition of the Nutritional Support Unit, after receiving the request from the Department in charge; patient age over 18 years; and the obtainment of informed consent. The patients came from the same Departments in Hospital San Pedro de Alcántara (HSPA), except Pediatrics, Intensive Care and Maternity. Patients rejecting the intervention or who failed to give consent were excluded, in the same way as those patients with stays of under 48 h.

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