

The Hidden Burden: How Malnutrition Worsens Outcomes in Pulmonary Hypertension Patients

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Background: Pulmonary hypertension is a serious condition with high morbidity and mortality. While much is known about its inherent risks, there is limited data on how modifiable factors like malnutrition impact outcomes in these patients. Malnutrition has been linked to worse outcomes in various cardiac conditions. This study aims to explore the influence of malnutrition on in-hospital outcomes for patients with pulmonary hypertension, with attention to the severity of malnutrition.

Methods: We conducted a retrospective cohort study using the National Inpatient Sample database, including adult patients with a primary diagnosis of pulmonary hypertension. Outcomes were compared between those with and without malnutrition, identified via ICD-10 codes. Multivariate logistic and linear regression analyses adjusted for confounders, and statistical analysis was conducted using STATA software.

Results: Out of 11,930 patients with pulmonary hypertension, 509 (4.27%) were identified as having concomitant malnutrition. These patients faced significantly worse outcomes compared to their well-nourished counterparts. Specifically, malnourished patients had a nearly fourfold increase in mortality rates (aOR 3.91; 95%CI 2.20-6.97), prolonged hospital stays (average increase of 11.37 days; $P < 0.001$), and substantially higher hospital charges (average increase of \$348,234; $P < 0.001$). Additionally, these patients experienced higher incidences of cardiogenic shock (aOR 2.57; 95% CI 1.53-4.33; $P < 0.001$), acute respiratory failure (aOR 1.77; 95%CI 1.15-2.74; $P = 0.01$), and acute kidney injury (aOR 2.07; 95%CI 1.32-3.28; $P = 0.01$). Outcomes worsened in proportion to the severity of malnutrition, with those suffering from severe malnutrition faring the worst.

Conclusions: Malnutrition in patients with pulmonary hypertension significantly exacerbates their risk of mortality, extends their hospital stay, inflates hospitalization costs, and increases the likelihood of severe complications such as cardiogenic shock, acute respiratory failure, and acute kidney injury. These

adverse effects are directly correlated with the degree of malnutrition, underscoring the critical need for timely and tailored nutritional interventions to improve patient outcomes.

Keywords: Pulmonary Hypertension, Malnutrition, Mortality, Morbidity