Headache Medicine

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Economic impact of hospitalizations for primary headaches in Brazil: an analysis based on hospital costs and human capital loss (2015-2025)

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Introduction
Primary headaches, including migraines and other headache syndromes, are a major cause of morbidity and functional impairment, significantly impacting health systems and population productivity. Despite their high prevalence, the economic dimension of related hospitalizations remains underestimated, especially in middle-income countries where data on direct and indirect costs are limited and fragmented.

Objective
To analyze the economic impact of hospitalizations for primary headaches in Brazil from 2015 to 2025, considering hospital costs and human capital loss.

Methods
An ecological, retrospective, and descriptive study based on secondary data from the Hospital Information System (SIH) and the Mortality Information System (SIM), available through DATASUS. Hospitalizations and deaths due to primary headaches (ICD-10: G43-G44) in Brazil between January 2015 and December 2025 were included. Analyzed variables were: hospitalizations, costs (hospital and professional), average cost per hospitalization, length of stay, fatal events, and mortality rate. Indirect impact was estimated via the human capital method, using productive life years lost (between 14 and 65 years), based on the midpoint of age groups, average annual per capita income, and employment level, per data from the Brazilian Institute of Geography and Statistics (IBGE). A 3% annual discount rate was applied, following health economics guidelines.

Results
A total of 113,863 hospitalizations for primary headaches were recorded in Brazil between 2015 and 2025, with a total hospital cost of BRL 57,429,745.71, averaging BRL 504.38 per admission, and a mean stay of 4 days. Expenses on hospital services (BRL 50,095,659.13) outweighed professional services (BRL 7,250,684.89). Concurrently, 1,024 deaths occurred (0.9% mortality rate). The human capital loss estimated via SIM, considering primary headaches as the underlying cause, was BRL 5,110,574.95. Thus, the combined economic impact (direct hospital costs and associated mortality) exceeded BRL 62 million in this period, potentially underestimated when only the underlying cause of death is considered. When including deaths during hospitalizations initiated by the condition (SIH), the additional estimated economic burden was BRL 84,618,927.81, representing a value 135.3% higher than the SIM-based mortality estimate.

Conclusion
Despite low mortality, primary headaches generated significant hospital costs and human capital loss during the analyzed period. The discrepancy between estimates based on the underlying cause of death and those derived from deaths during hospitalizations suggests a potential underestimation of the economic burden of these conditions. This reinforces the need for strategies focused on proper management and prevention of exacerbations. Additionally, the lack of absenteeism and presenteeism projections suggests the total economic impact may be even greater.

Keywords:
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