Headache Medicine

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Variations in ambient temperature and their relationship to the number of hospitalizations due to headaches in the state of Maranhão: a 10-year time series

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Introduction
Headaches affect people during the most productive phase of life, between the ages of 25 and 55, causing various direct and indirect impacts. Approximately 53% of individuals report needing to take time off from important activities, while 30% state that they have missed work or school at least once in the past three months. The association between headache and temperature variation is influenced by various physiological and environmental factors.

Objetive
To evaluate temperature index variations and their relationship with the number of hospitalizations over the past 10 years in Maranhão.

Methods
The study employed a quantitative research method, using a descriptive and cross-sectional analysis. Temperature data were collected from the National Institute of Meteorology (INMET) platform, and variables were extracted using DATASUS TABWIN based on the following descriptors: "outpatient care", "hospitalizations", "headache syndromes", "Maranhão" and "sex". The data were analyzed using SPSS Statistics (v.32). Categorical variables were described using absolute and relative frequencies, and numerical variables using the median and interquartile range (Q1–Q3). The chi-square test was used to compare categorical variables, and the Kruskal-Wallis test with Dunn's post hoc test was used for numerical variables, with a statistical significance level of $p<0.05$.

Results
Between 2015 and 2024, there were 6,522 hospitalizations, with a predominance of females (68.2%), and no statistically significant difference between the sexes ($p>0.05$). There was a progressive increase in hospitalizations between 2015 and 2019 (195 to 1,028 cases), a decrease in 2020 (615 cases), a new rise in 2021–2022, and a slight decline in 2023–2024. Temperature showed a significant difference across the years ($p<0.05$), ranging from 26.1 °C to 34.1 °C, as did the number of hospitalizations. The largest increases occurred between 2016 and 2018, while the largest decrease was recorded in 2020 (−40.7%).

Conclusion
A progressive increase in hospitalizations was observed throughout the time series, with a predominance of female patients and significant fluctuations after 2019. Furthermore, there were significant differences in temperature and the number of hospitalizations between the years evaluated, suggesting a possible influence of temporal and environmental factors on hospitalization patterns during the study period.

Keywords:
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