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Relationship between oral cancer and the human development index in Ecuador: an ecological time series study over the period 2000–2024

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Relationship between oral cancer and the human development index in Ecuador: an ecological time series study over the period 2000–2024

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Abstract

Oral cancer is a growing public health problem whose burden may vary with socioeconomic development; however, national trends in Ecuador and their relationship with the Human Development Index (HDI) have not been characterized. ***Objective:*** To analyze temporal trends in oral cavity cancer hospital-admission and mortality rates in Ecuador from 2000 to 2024 and to examine their association with the HDI. ***Methods:*** In this ecological time-series study, hospital-discharge and death-certificate records for oral cavity cancer (ICD-10 codes C00–C06) were obtained from the National Institute of Statistics and Censuses. Crude and age-standardized rates were estimated overall and by sex, age group, and region. Temporal trends were assessed with joinpoint regression, and the association with the annual HDI was evaluated using Pearson and Spearman correlations. ***Results:*** Between 2000 and 2024, 17,249 hospital admissions and 1,424 deaths from oral cavity cancer were recorded. Mortality rose steadily across the period, whereas admissions increased until 2019 and then fell sharply in 2020, recovering only partially. The burden was concentrated on adults aged 65 years and older; deaths in those younger than 20 years and in the Amazonia, region were too few to model. The HDI was positively and significantly correlated with both outcomes, more strongly for hospital admissions ($r = 0.95$, $p < 0.001$) than for mortality ($r = 0.42$, $p = 0.039$). ***Conclusions:*** Oral cavity cancer mortality in Ecuador has risen during a period of advancing human development. This positive ecological association most likely reflects population aging and more complete case detection and registration rather than causal effects, and it underscores the need for stronger cancer surveillance, primary prevention, and early detection, particularly in older adults.

Keywords: oral cavity cancer; mortality; hospital admissions; Human Development Index; time-series studies; joinpoint regression; Ecuador.

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