Oncology 2025
The Cancer Control Challenge:
Better Understanding It to Better Face It

EFFECT OF AGE-PERIOD-BIRTH COHORT ON GASTRIC CANCER MORTALITY IN THE STATE OF PARÁ, BRAZIL, FROM 1984 TO 2023.

Keren Ariane Pinheiro da Silva Carvalho[1], Andrey Silva Machado[1], Saul Rassy Carneiro[1], Ana Carolina Sales Medeiros[1], Aline Georgina Oliveira de Oliveira[1].

[1]Federal University of Pará (UFPA);

Introduction: Stomach cancer is a major cause of cancer mortality worldwide, ranking fifth in incidence and mortality among all types of cancer. Overall stomach cancer rates have been decreasing in recent years; however, new studies show an increasing trend in this type of cancer among the younger population. In Brazil, gastric cancer is one of the leading causes of death from malignant neoplasms, and is more prevalent in the North and Northeast regions. The North of Brazil has shown an increasing rate of death from gastric cancer when compared to other regions of the country, with environmental factors such as alcohol and tobacco consumption, and dietary factors, due to the high consumption of salty foods, such as dried meat and salted fish, contributing to this increase. **Objectives:** To estimate the effects of age, period and birth cohort on the trend of gastric cancer mortality in the State of Pará, Brazil, from 1984 to 2023. **Methods:** An ecological study of deaths from stomach cancer was carried out in the state of Pará, from 1984 to 2023. Data were extracted from the Mortality Information System, and were searched using the International Classification of Diseases, 10th revision (ICD-10) under code C16. The study population consisted of both sexes, aged ≥ 30 years. Crude and age-standardized mortality rates were calculated for each period and cohort. Separate analyses were conducted for each sex. The ages and years of deaths were grouped into five-year intervals, with the last being ≥ 70 years, totaling ten age groups and eight periods. Seventeen birth cohorts were analyzed, the first being from 1909 and the last from 1989. The risk of death from stomach cancer in a given birth cohort or in a given period was estimated using relative risks (*RR*). The effect of age, period and birth cohort was calculated using the Poisson regression model, using estimable functions: deviations, curvatures and drift, using the Epi library of the statistical program *R* version 4.5.0. **Results:** Between 1984 and 2023, 14,161 deaths from stomach cancer were recorded in Pará. Mortality rates per 100,000 inhabitants (MRCAG) increased throughout the historical series, with progressive growth with age. Male and female MRCAG showed a significant increase, being in men from 45 years of age and in women from 55 years of age. In both men and women, a higher relative risk (*RR*) was observed in the older birth cohorts, with a significant reduction (*RR* < 1) for men from the 1984 period onwards. The *RR* for the reference period also showed a significant reduction from the 1984 decade onwards (*RR* < 1), remaining relatively

constant over time for men and women. **Conclusion:** Based on the analysis of the age-period-cohort effect, gastric cancer was shown to be a disease that predominantly affects people in older age groups, and a reduction in mortality was also observed from 1984 onwards in all age groups.

Keywords: Stomach neoplasms, Age-period-cohort analysis, Mortality, Pará State, Epidemiology.