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

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

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Introduction: Cervical cancer (CC) is one of the leading causes of neoplastic mortality in women worldwide, responsible for approximately 311,000 deaths per year, with a mortality rate of 4.60 deaths/100,000 women. In Brazil, CC is already the third most common type of cancer in primary cancer location and the fourth most common type of cancer mortality in women, when non-melanoma skin tumors are not considered. According to INCA, CC is the second most common type of cancer in the North and Northeast regions, and the North region stands out for having the highest mortality rates in Brazil, with a temporal trend of growth between 2000 and 2017, especially in the state of Pará. **Objectives:** To estimate the effects of age, period and birth cohort on the trend in cervical cancer mortality in the State of Pará, Brazil, from 1984 to 2023. **Methods:** An ecological time-series study was carried out from 1984 to 2023 of deaths from cervical cancer in the state of Pará, whose data sources were the Mortality Information System, searched through the International Classification of Diseases, 9th (ICD-9) and 10th revision (ICD-10) under code C53 and population estimates from the Brazilian Institute of Geography and Statistics. The study population was composed of women, aged ≥ 30 years. Mortality rates were calculated by age group for each period and cohort. The ages and years of death were grouped into five-year intervals, the last ≥ 70 years, totaling ten age groups and eight periods. Seventeen birth cohorts were analyzed, the first from 1909 and the last from 1989. The risk of death from CHD in a given birth cohort or in each period was estimated using relative risks (RR) Interval estimates were obtained with a 95% confidence interval (95% CI). 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:** 7,986 deaths were observed, corresponding to an average mortality rate of 10.9/100 thousand women. The effect of age indicated a progressive increase in rates with advancing age, especially from 45 years onwards. the effect of the period

showed an increase in the risk of death, with the highest values from 2009 onwards (RR = 1.03; 95% CI: 0.83 - 1.13). The cohort effect revealed an increase in the risk of death from 1934 onwards, with a reduction from 1954 onwards, but increasing again from 1979 onwards, assuming the greatest risk from 1989 onwards (RR = 1.11; 95% CI: 1.02 - 1.21). **Conclusion:** Based on the analysis of the age-period-cohort effect, cervical cancer was shown to be a disease that progressively affects women in older age groups, and a reduction in mortality was also observed from 1959 onwards in women aged 30 to 35 years.

Keywords: Uterine cervical neoplasms; Age-period-cohort analysis; Mortality; Pará State; Epidemiology.