

ABSTRACT NO:14
RESEARCH ARTICLE**Temporal Trends in the Burden of Brain and Central Nervous System Cancer in Pakistan: A Global Burden of Disease Study, 1990–2023**Muhammad Bilal Aamir ¹, Tehreem Tariq ², Muhammad Aamir Saghir ³**Abstract**

Objective: Brain and central nervous system (CNS) cancers represent a significant source of mortality and morbidity worldwide, creating clinical and economic challenges. In Pakistan, the fifth most populous country, CNS tumours are the 13th most frequently diagnosed cancers, yet accurate nationwide data remain scarce, hindering policy-making for early detection and treatment. This study examines trends in incidence, prevalence, mortality, disability-adjusted life years (DALYs), years of life lost (YLLs), and years lived with disability (YLDs) of brain and CNS cancers in Pakistan from 1990 to 2023, along with sex-stratified analyses.

Methods: Data on brain and CNS cancers incidence, prevalence, mortality, DALYs, YLLs, and YLDs for Pakistan from 1990 to 2023 were extracted from the Global Burden of Disease 2023 database. The disease burden was quantified using age-standardized rates per 100,000 population. For temporal trends evaluation, we employed Joinpoint regression analysis to calculate the annual percent change (APC) and the average annual percent change (AAPC) with 95% confidence intervals (CIs). Data were stratified by sex to assess demographic disparities.

Results: Between 1990 and 2023, age-standardized incidence, mortality, DALYs, YLDs, and YLLs rates remained relatively stable, with non-significant AAPCs of 0.29, 0.09, 0.21, 0.28, and 0.21, respectively (all $p > 0.05$). In contrast, age-standardized prevalence increased significantly from 3.59 to 4.49 per 100,000 (AAPC: 0.60; 95 % CI: 0.20–1.00; $p = 0.003$). Joinpoint analysis showed significant increases during 1990–2006 (APC: 0.18) and 2009–2021 (APC: 1.39), while the increase during 2006–2009 (APC: 2.95) was non-significant. A significant decline occurred during 2021–2023 (APC: –4.14). Males had higher mortality, DALYs, and YLLs rates, whereas females had slightly higher incidence, prevalence, and YLDs rates.

Conclusion: Despite stable age-standardized incidence, mortality, and disability trends, brain and CNS cancer prevalence increased significantly in Pakistan from 1990 to 2023, highlighting the need for continued surveillance and healthcare planning.

Keywords: Pakistan; Brain and Central Nervous System Cancer; Global Burden of Disease

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