



RIISING BREAST CANCER BURDEN IN PAKISTAN: AGE-SPECIFIC AND PROVINCIAL DALY TRENDS IN A GLOBAL CONTEXT 1990–2021

Muhammad Bilal Sardar, Seher Saleem, Mohsin Raza, Armghan Ur Rehman, Muhammad Asfand Yar Nadir
Allama Iqbal Medical College, Lahore
Corresponding Author: * bilalsardar508@gmail.com



BACKGROUND

- Breast cancer is the most common cancer in women and a leading cause of mortality worldwide. Its burden is measured in Disability-Adjusted Life Years (DALYs), reflecting both premature deaths and years lived with disability. While global rates have declined due to advances in early detection and treatment, Pakistan continues to face rising breast cancer burden with major disparities across provinces. This study assesses age-specific and provincial DALY trends in Pakistan from 1990 to 2021 and compares them with global patterns.

OBJECTIVES

- To examine temporal trends in breast cancer DALY rates among females in Pakistan by age group and province from 1990 to 2021, and to compare these patterns with global trajectories.

METHODS

- We analyzed IHME Global Burden of Disease 2021 data, focusing on breast cancer DALY rates per 100,000 females. Age groups (15–49, 50–74, 75+) were extracted for Pakistan, alongside provincial age-standardized values. Global age-standardized estimates were included for comparison. Central estimates and 95% uncertainty intervals (UIs) were reported, and percent change between 1990 and 2021 was calculated.

RESULTS

- Globally, the age-standardized breast cancer DALY rate decreased from 503.81 (UI: 475.91–532.23) in 1990 to 455.56 (UI: 426.64–485.28) per 100,000 in 2021, a 9.58% decline. In contrast, Pakistan experienced increases across all age groups.
- Among women aged 15–49 years, DALY rates rose from 377.18 (UI: 288.16–473.81) to 617.95 (UI: 469.62–797.47), a 63.83% increase. For women aged 50–74 years, rates increased from 1931.96 (UI: 1402.77–2625.93) to 2747.18 (UI: 1926.77–3790.52), a 42.20% rise. In the 75+ group, rates escalated from 1420.08 (UI: 924.88–2046.40) to 2319.60 (UI: 1520.41–3367.63), reflecting a 63.34% increase.
- Substantial heterogeneity was observed across provinces in 2021. Azad Jammu & Kashmir had the highest burden at 1249.33 (UI: 816.12–1633.91) per 100,000, followed by Punjab at 1068.51 (UI: 749.64–1461.21) and Gilgit-Baltistan at 981.43 (UI: 694.40–1511.28). Sindh reported the lowest rate at 513.40 (UI: 352.74–706.85). The steepest proportional rises since 1990 were recorded in Balochistan (+60.73%), Khyber Pakhtunkhwa (+51.29%), and Punjab (+50.34%), with all provinces showing upward trajectories.

CONCLUSION

- Between 1990 and 2021, breast cancer DALY rates among Pakistani women rose sharply across all age groups, diverging from declining global trends. Marked inter-provincial differences were evident, with the greatest current burden in Azad Jammu & Kashmir and Punjab, and the fastest growth in Balochistan.
- These findings underscore the urgent need for targeted provincial interventions, enhanced early detection programs, and tailored strategies across different age groups to reduce Pakistan's growing breast cancer burden.

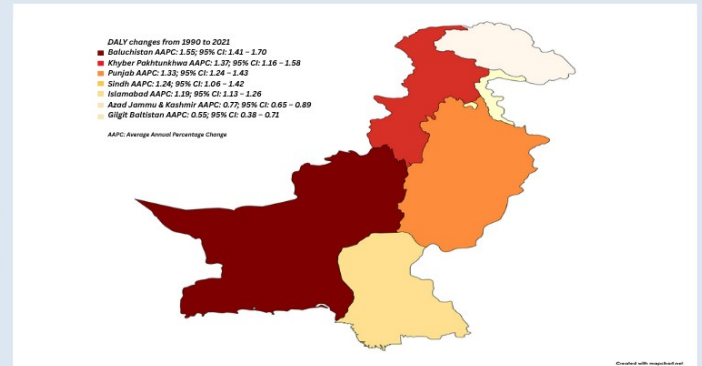


Figure 1: Average Annual Change in Disability-Adjusted Life Years (DALYs) for Breast Cancer Across the Provinces of Pakistan

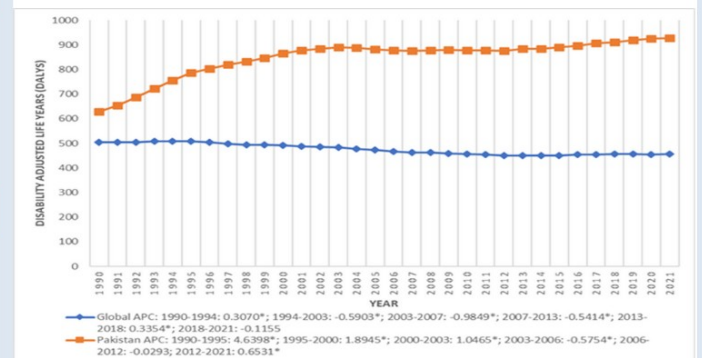


Figure 2: Annual Percentage Change (APCs) in DALYs for Breast Cancer in Pakistan and Worldwide

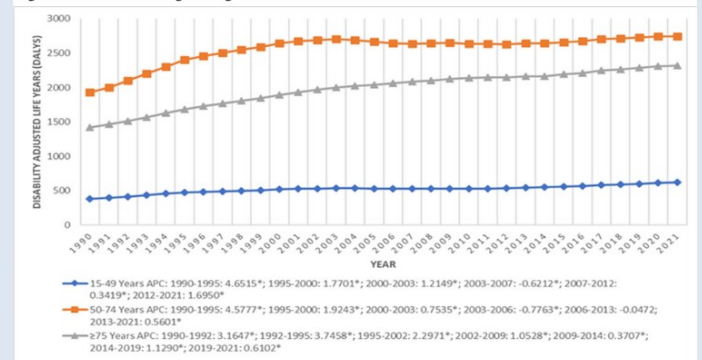


Figure 3: APCs Comparison of DALYs for Breast Cancer in Pakistan Among Age Groups