Population Analysis: Mortality Rates from Heart Diseases Are Decreasing in Younger Men but Not in Younger Women in US, 2000-2020

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BACKGROUND

- Heart diseases (HD) remain the leading cause of mortality in the US with 697,000 deaths in 2020. With the improvement in healthcare, HD mortality rates have been steadily decreasing over the last decades. However, there are limited data on recent age and sex-specific HD mortality trends. The aim of this study was to conduct a time-trend analysis of recent HD mortality rates using the CDC's National Center of Health Statistics (NCHS) database.

METHODS

- Data were obtained from the NCHS database, which nearly covers 100% of deaths attributed to HD in the US, between 2000-2020.
- HD mortality rates were age-adjusted to the standard 2000-US population and categorized by age and sex using SEER*Stat Software (v.8.4.0.1, National Cancer Institute "NCI"). Time-trends were calculated using Joinpoint Regression software (v.4.9.0.1, NCI) which utilizes Monte Carlo permutation analysis to generate the simplest segmented trend.
- Trends were reported as annual percentage change (APC) and average APC (AAPC) over the entire period. Pairwise comparison was performed to evaluate for identicalness (test of coincidence) and parallelism (test of parallelism). AAPC absolute difference was evaluated as well using parametric estimations and Taylor series expansion.

RESULTS

Figure 1: Sex-specific Trends and Age-Adjusted Mortality Rates Per 100,000 Population for Heart Diseases Among Different Age Groups

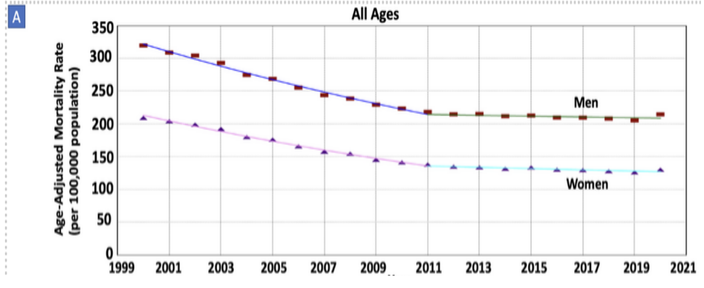

Figure 1A: The average annual percentage change (AAPC) is decreasing in women at a greater rate compared to counterpart men (-2.87 vs -2.34, p<0.001).

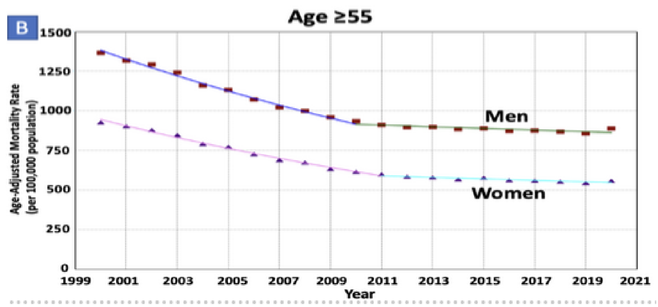

Figure 1B: The AAPC is decreasing in women at a greater rate compared to counterpart men (-3.17 vs -2.89, p=0.07).

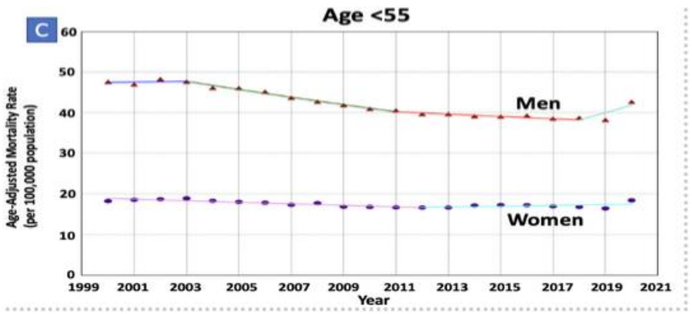

Figure 1C: The AAPC is decreasing in men but not in women with a statistically significant difference (-0.97 vs 0.01, p<0.001).

- Between 2000-2020, there were a total of 13,508,063 deaths attributed to HD in the database (48.6% women).
- Overall, HD mortality rates were decreasing in women (AAPC=-2.55, P<0.001) at a significantly greater rate compared to counterpart men (AAPC=-2.14, P<0.001) with an absolute AAPC-difference of 0.41 (P=0.004).
- Similar findings were seen among older adults (12,409,169 deaths, 50.3% women) in whom the AAPC was decreasing in women (AAPC=-2.69. P<0.001) at a significantly greater rate compared to counterpart men (AAPC=-2.32, P<0.001) with absolute AAPC-difference of 0.37 (P=0.01).
- However, when looking at younger adults (1,083,531 deaths, 29.6%% women), HD mortality rates were significantly decreasing in men (AAPC=-0.63, P<0.001) but not in women, who experienced a stable trend (AAPC=-0.39, P=0.05).

CONCLUSIONS

- Nationwide data from the CDC's NCHS, covering 100% of deaths attributed to HD in the US, shows that HD mortality rates have been declining in the US over the past two decades. However, when evaluating younger adults, aged <55 years, HD mortality rates have been improving in men but not in women.
- Future studies are needed to evaluate the disparity in HD mortality outcomes among younger adults.