



Disparities of cervical cancer Incidence and mortality rates in US between 2000-2012

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BACKGROUND

- Cervical cancer (CCa) is the 4th most common female cancer worldwide, and the 7th overall, with an estimated incidence of 528,000 cases and 266,000 deaths in 2012 .
- CCa incidence and death rates have dramatically declined since the introduction of the Papanicolaou (Pap) test in US.
- During the past decade (2002-2012) alone, CCa incidence and death rates continued to decline by 2.4% and 0.9% annually.
- Although black and Hispanic women experienced greater reduction in recent years, they continue to have higher incidence rates than whites; black women have the highest rate of dying from cervical cancer than any other racial/ethnic groups .
- Great variations also exist among geographic regions of the US, with the South having both the highest incidence and mortality rates compared to other U.S. regions.
- Given that more than half of blacks live in the South (Census 2010), these geographic variations raise a question about the combined effects of race and region on the outcomes of cervical cancer, specifically whether living in the South is associated with greater racial disparity in cervical cancer incidence and mortality.
- The present study explores the question by examining race- and region-specific cervical cancer incidence and mortality rates and changes between 2000 and 2012.

METHODS

DATA

1. Incidence and mortality data of CCa were obtained from Surveillance, Epidemiology, and End Results (SEER) 18 program: CCa (specifically, site recode ICD-O-3/WHO 2008 = 'Cervix Uteri', corresponding to C530-C539) .
2. 18 registries of SEER 18 data: Four (Louisiana; Metropolitan Atlanta, Georgia; Rural Georgia; and Greater Georgia) to the South region, and the remaining 14 registries were categorized as the US14 region.
3. Four groups based on combination of two race/ethnic groups and two regions: NHB-US14, and NHB-South, NHW-South, and NHW-US14.

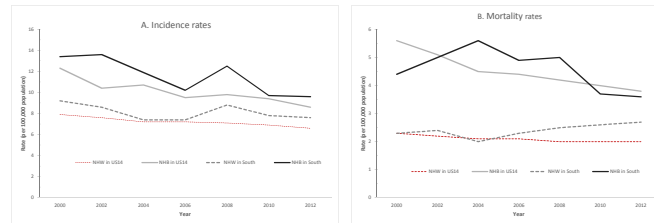
STATISTICAL ANALYSIS

1. Age-adjusted incidence and mortality rates of cervical cancer were calculated as cases per 100,000 women on the basis of the 2000 US Standard Population using SEER*Stat software.
2. Annual percent changes (APCs) and their 95% confidence intervals (CIs) were characterized for trends analysis using SEER*Stat and Joinpoint Regression.
3. Incidence and mortality disparity ratios were computed by dividing race- and region-specific cervical cancer incidence and mortality rates for each of US14-NHB, South-NHW, and South-NHB by the rates of US14-NHW (a reference group).
4. Finally, age-specific incidence and mortality rates of cervical cancer were examined for NHW and NHB women in the South.

RESULTS

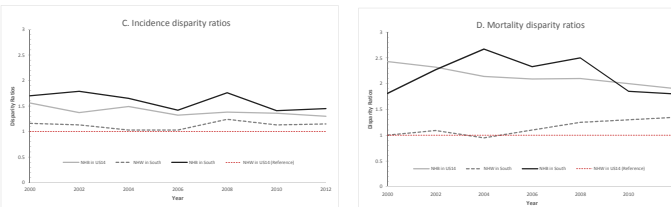
Result 1: Overall trends of rates over 13 year-span (2000 – 2012)

1. The incidence rate decreased from 9.6 per 100,000 in 2000 to 7.4 per 100,000 in 2012 with an average annual decrease of 1.9% (95% CI=[-2.3, -1.5]).
2. The overall trend of reduction was largely accounted for by the decrease in mortality rate experienced in US14 (APC=-1.5, 95% CI=[-2.0, -1.1]). There was no significant trend of reduction in the South (APC=-0.2, 95% CI=[-1.0, 0.6]).



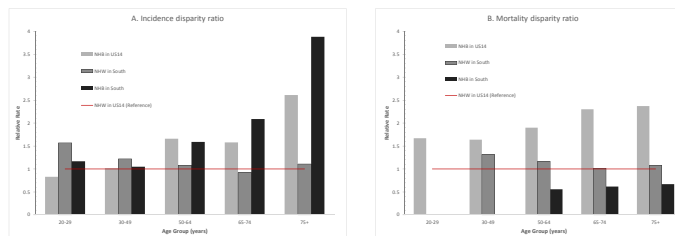
Result 2: Overall trends of disparity ratios over 13 year (2000 – 2012)

1. Disparity ratios in cervical cancer incidence progressively decreased between 2000 and 2012 for NHB women in both regions, but not for white women in the South (Figure 1C and 1D).
2. Incidence and mortality rates of black women in both regions much higher and disparities between white and black women was getting bigger in mortality rates rather than in incidence rates (Reference: US14-NHW)

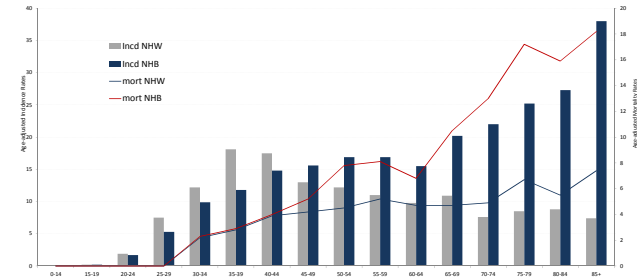


Result 3: Trends of age-specific disparity ratios for 4 groups

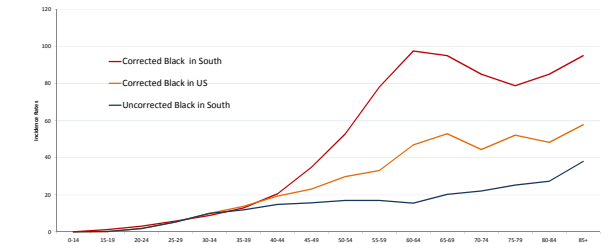
1. Age-adjusted incidence rates increase with increase of age for all three groups except Non-Hispanic White women in the US 14 region (US14-NHW), while age-adjusted mortality rates increase with age for all four groups.



Result 4: Age-specific rates in the South (2008-2012)



Result 5: Age-specific rates after hysterectomy (2008-2012)



CONCLUSIONS

1. Although black race and living in the South were individually associated with higher cervical cancer incidence and mortality, combined associations were of smaller magnitude than the sum of individual associations.
2. We also observed that although racial disparity has been narrowed in recent years, there has been little change or even a growing gap between white women in the South and their counterparts in the US14 region.
3. Age-specific analysis further indicates that the emerging regional gap observed among white women might be attributable to the excess number of new cases and deaths among young women.

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