Geographic Variations of Racial Disparities of Cervical Cancer Late-stage Diagnosis in Texas

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Introduction
Cervical cancer is the third most common cancer among women in the United States. Although overall cervical cancer late-stage diagnosis and mortality rates have decreased due to the wide use of Pap smear test as a screening method, disparities still exist among different population groups. Racial disparities exist between minority groups and whites in cervical cancer late-stage diagnosis. Few studies have examined how racial disparities in cervical cancer late-stage diagnosis vary spatially. It has become one of the overarching themes of the American Cancer Society (ACS)’s 2015 goal to eliminate disparities in the cancer burden among different segments of the US population (ACS 2010).

Objectives and Research Questions
This study aims to investigate geographic patterns of racial disparities in cervical cancer late-stage diagnosis in Texas. Meanwhile, it will determine how SES, insurance, socio-demographic factor, socio-environmental factor, and spatial access to health care contribute to the disparities. The research aims to address the following questions:
1. Does racial disparity of cervical cancer late-stage diagnosis vary spatially in Texas?
2. How does SES, socio-demographic factor, socio-environmental factor, insurance, and spatial access to cervical cancer preventive service impact the geographic pattern of racial disparity?

Methods

1. Spatial access to health care: The enhanced two-step floating catchment area method (E2SFCA) (Luo & Qi 2009)

2. Racial disparities
   Rate Difference (RD) and Rate Ratio (RR) (Lachin 2000)

3. Disparities by multiple factors
   Multivariate Logistic Regression

Study Area

Data Sources

Results

1. Spatial access to primary care physicians (PCPs)
   Figure 2 shows the geographic pattern of spatial access to PCPs. There is unequal distributed spatial access to PCPs in Texas. Urban areas have higher spatial access to PCPs due to the concentrated distribution of PCPs in urban areas. Part of western and southern Texas has lower spatial access to PCPs as shown in Figure 2.

2. Geographic variations of racial disparities of cervical cancer late-stage diagnosis
   Figure 3 displays geographic variations of African-American cervical cancer late-stage diagnosis. Figure 4 displays geographic variations of Hispanic cervical cancer late-stage diagnosis.

According to the result of rate difference (RD) statistic shown in figure 3, 431 out of 438 census tracts have exhibited statistically significant higher late-stage diagnosis rate in African-Americans. They are observed in metropolitan areas of Dallas-Fort Worth, Austin-San Antonio, and Houston. Several census tracts in eastern Texas are identified with higher late-stage diagnosis rate in African-Americans as well. Figure 4 identifies 481 census tracts with statistically significant higher late-stage diagnosis rate in Hispanics. The significant census tracts were found in metropolitan areas of Dallas-Fort Worth, Austin-San Antonio, and Houston. Southwest US-Mexico border areas exhibited higher rate in Hispanics as well.

Conclusions
1. Racial disparities in cervical cancer late-stage diagnosis vary across space in Texas.
2. SES, socio-environment factor, and insurance explained the geographic variation in racial disparities between African-Americans and non-Hispanic whites.
3. SES, socio-demographic factor, and insurance explained the geographic variation in racial disparities between Hispanics and non-Hispanic whites.

References

Acknowledgement


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