A novel mixed method using Geographic Information Systems (GIS) and ethnographic methods to study disparities in cervical cancer mortality in Hispanic women

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A novel mixed method using Geographic Information Systems (GIS) and ethnographic methods to study disparities in cervical cancer survivorship in Hispanic women

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BACKGROUND
There are currently 16 million cancer survivors in the U.S. with many individuals having a history of cancer and living longer, healthier lives. However, disparities in cancer survivorship management, coordination and quality of care are apparent in the literature, including in primary care where many survivors access care.

OBJECTIVE
To investigate cervical survivorship mortality disparities seen with cervical cancer in Hispanic women through the comparative study of three Texas counties.

NEW METHODS
IRAP
Sequential mixed methods design using quantitative GIS and qualitative participant observation and key informant interviews to investigate cervical cancer disparities among cervical cancer survivors. Data used to create GIS maps for Phase I are drawn from large open-access census level repositories, as well as from the Texas level repositories.

OUTCOMES: Measures: We seek to identify barriers and facilitators of high quality cancer survivorship care at three levels: 1) community, 2) care delivery (medical), 3) policy

PHASE I: quantitative phase of the methods - county and zcta level differences through GIS mapping:

Examples of Quantitative Phase to Identify County and ZCTA level differences through GIS Mapping:

<table>
<thead>
<tr>
<th>Region selected for study</th>
<th>Quantitative GIS mapping and descriptive statistical analysis</th>
<th>GIS mapping to county level for both social determinants of health and access points for medical care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dallas County</td>
<td>Region for study determination by the public health issue under investigation</td>
<td></td>
</tr>
<tr>
<td>Tarrant County</td>
<td>GIS Mapping to county level for both social determinants of health and access points for medical care</td>
<td></td>
</tr>
<tr>
<td>Bexar County</td>
<td>GIS mapping to county level for both social determinants of health and access points for medical care</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Population</th>
<th>Dallas County</th>
<th>Tarrant County</th>
<th>Bexar County</th>
<th>Texas County (2010)</th>
</tr>
</thead>
<tbody>
<tr>
<td>White Non-Hispanic (2009–2013)*</td>
<td>3,278,462</td>
<td>2,054,475</td>
<td>2,618,148</td>
<td>2,852,632</td>
</tr>
<tr>
<td>Hispanic (2009–2013)*</td>
<td>1,958,578</td>
<td>1,252,709</td>
<td>1,369,391</td>
<td>1,654,048</td>
</tr>
<tr>
<td>Cervical Cancer Mortality Rate – Hispanic (2000–2013)*</td>
<td>3.5%</td>
<td>3.2%</td>
<td>3.6%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Cervical Cancer Mortality Rate – White Non-Hispanic (2009–2013)*</td>
<td>3.5%</td>
<td>2.6%</td>
<td>3.4%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Cervical Cancer Incidence Rate – Hispanic (2000–2013)*</td>
<td>8.1%</td>
<td>7.8%</td>
<td>7.9%</td>
<td>7.8%</td>
</tr>
<tr>
<td>Cervical Cancer Incidence Rate – White Non-Hispanic (2009–2013)*</td>
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<td>7.8%</td>
</tr>
</tbody>
</table>

RESULTS
Within three counties in Texas, variability exists in the cervical cancer survivorship care delivery and coordination. Community Assessment Profiles (CAP) of these differences were created for each county using different mapping tools. CAPs then serve to guide the qualitative Phase II of the methods utilizing on the ground participant observation and key informant interviews in Dallas, Fort Worth, and Bexar counties. Development of this method has included learning throughout the quantitative phase regarding how best to utilize the GIS maps to pinpoint targets of interest (i.e. hot spots, cold spots, ZCTA, county level queries) with a low incidence disease like invasive cervical cancer.

CONCLUSIONS
GIS can help to showcase differences at county and ZCTA-level data related to cervical cancer care delivery. Quantitative CAPs can help focus qualitative research to best understand cervical cancer mortality disparities seen in Hispanic women.

Lehigh Valley Health Network & Rutgers Robert Wood Johnson Medical School

1100 West 49th Street, Austin, TX 78756, https://www.dshs.state.tx.us/tcr/.
Funding: NIH Grant #3R01CA176545-02S1 and ACS Grant CCCDA -17-100-01

Acknowledgements: Robert Graham Center, GIS maps to pinpoint targets of interest (i.e. hot spots, cold spots, ZCTA, county level queries) with a low incidence disease like invasive cervical cancer.

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