Impact of Individual and Neighborhood-level Factors on Cardiovascular Risk in Hispanics compared to Whites

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Background

- Cardiovascular disease (CVD) is the leading cause of mortality in the US, accounting for nearly 1 in every 4, or 600,000, deaths each year (CDC, 2013; Daviglus et al., 2012; Heron, 2012).
- Roughly 715,000 Americans have a heart attack each year; about 550,000 are first events (CDC, 2013).
- Rates of CVD vary across race and ethnicity and account for about 25% of deaths for Caucasians, and African Americans, and 21% for Hispanics (CDC, 2013).
- At least 50% of non-Hispanic Whites (NHWs) have high blood pressure, LDL cholesterol, and/or smoking.
- However, 71% of Hispanic women and 80% of Hispanic men have one or more of those CVD risk factors (Daviglus et al., 2012), resulting in a higher prevalence of risk factors compared to NHWs (Derby et al., 2010).
- The lower aggregate mortality rate for Hispanics compared to Whites and African-Americans is therefore unexpected and as yet unexplained.

Purpose

To examine the impact of individual and neighborhood-level factors on CVD risk and mortality rates in White Hispanic women and men in Miami-Dade County, FL.

- Describe individual-level and neighborhood-level factors for White Hispanic men and women compared to White non-Hispanic men and women in Miami-Dade County, FL.
- Determine whether neighborhood-level factors predict individual-level Framingham Risk Score (FRS-10) and selected non-FRS-10 CVD risk factors in White Hispanic men and women compared to White non-Hispanic men and women.
- Determine whether individual-level and neighborhood-level CVD risk factors predict neighborhood-level CVD mortality for White Hispanic men and women compared to White non-Hispanic men and women.

Methods

- Secondary analysis using an archival database and guided by the Fundamental Causes Theory (Link & Phelan, 1995)
- Setting: Five hospitals Miami-Dade County, FL
- County has a largely Hispanic population; 34.3% of Cuban descent (U.S. Census, 2011)
- Sample: 3,317 adults, 30–74 years old, living in Miami-Dade County, with no history of CVD
- Sample included White Hispanic Women (n=1,188), White Hispanic Men (n=1,384), White non-Hispanic Women (n=335), and White non-Hispanic Men (n=410)
- Data sources: Individual level data: limited data set from January 2012 to February 2013 retrieved from hospital records
- Neighbhorhood-level data: Census tract data from US Census.gov and Floridacharts.org

Results

- FRS-10 risk was significantly different across the four subgroups (p < .001).
  - Post hoc tests showed that White Hispanic women had less cardiac risk compared to White Hispanic men (p < .001) and White non-Hispanic men (p < .001).
  - Of the seven components of the FRS-10, only total cholesterol differed significantly across the four subgroups (p < .001).
  - Post hoc tests showed that White Hispanic women had higher total cholesterol compared to White non-Hispanic women (p < .01) and White non-Hispanic men (p = .031).
  - Of the five individual-level CVD risk factors, LDL (p < .001) and triglycerides (p = .051) differed significantly across the four subgroups.
  - Post hoc tests showed White Hispanic women had higher LDL compared to White non-Hispanic women (p = .007) and White non-Hispanic men (p = .005).
  - Multilevel models were assessed to see if neighborhood-level factors predict FRS-10 and non-FRS-10 individual-level CVD risk factors. None of the models were significant at the .05 level.
  - Only neighborhood median household income (NSES) and Hispanic ethnic concentration were significant predictors of CVD mortality (p = .01).

Conclusions

- This study supports previous studies that demonstrate higher individual-level risk but lower CVD mortality rates for Hispanics.
- Living in neighborhoods with higher Hispanic concentration may put White Hispanic women and men at higher risk of CVD, based on FRS-10 estimates.
- Living in neighborhoods with higher Hispanic concentration and lower median household income may put individuals at greater mortality risk regardless of race/ethnicity.
- Findings disagree with the Fundamental Causes Theory’s barrio effect and several other previous studies.
- Further research is needed to:
  - Identify other potential protective factors that account for lower CVD mortality for Hispanics in the US.
  - Understand differences for U.S. Hispanic subgroups, since data are predominantly from Mexican-Americans.

Table 1 - Relationships between Neighborhood-level Factors, FRS-10, and CVD Mortality by Race/Ethnicity

<table>
<thead>
<tr>
<th>White Hispanic Women</th>
<th>FRS-10</th>
<th>CVD Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Hispanics in Neighborhood</td>
<td>r = -.08**</td>
<td>r = -.26***</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>r = .02</td>
<td>r = .11***</td>
</tr>
<tr>
<td>White Hispanic Men</td>
<td>% Hispanics in Neighborhood</td>
<td>r = .07*</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>r = .05</td>
<td>r = .12***</td>
</tr>
<tr>
<td>White non-Hispanic Women</td>
<td>% Hispanics in Neighborhood</td>
<td>r = .08</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>r = .08</td>
<td>r = .26**</td>
</tr>
<tr>
<td>White non-Hispanic Men</td>
<td>% Hispanics in Neighborhood</td>
<td>r = .07</td>
</tr>
<tr>
<td>Median Household Income</td>
<td>r = .07</td>
<td>r = .19***</td>
</tr>
</tbody>
</table>

*p<.05; **p<.01; ***p<.001