Knowledge, Prevention Practices, and Risk of Tick-Borne Illnesses in Hispanic and Non-Hispanic Persons

Shu Yang Hu (JHSPH MMI)

Primary Preceptor: Dr. Katherine Feldman (DHMH)
Secondary Preceptor: Dr. Christina Nelson (CDC)
Project Purpose

To examine differences in knowledge, attitudes, and practices surrounding tick borne illness (TBI) in Hispanic and non-Hispanic populations.
Preceptor Organization

Organizations involved:

- DHMH
- University of Virginia
- CDC (Fort Collins, CO)
Tick Borne Illnesses

Some ticks carry pathogens that can cause human disease, including:

- Babesiosis
- Ehrlichiosis
- Rocky Mountain spotted fever
- Anaplasmosis
- Tularemia
- Lyme Disease (LD)

Bottom Photo (left to right): The blacklegged tick larva, nymph, adult male and adult female. Photo from Dr Daniel Cameron.

LD Symptoms

Local Infection: erythema migrans (EM), may be accompanied by headache, arthralgias, myalgias, and fever

Late Infection: facial palsy, meningitis, radiculoneuropathy, carditis, or arthritis
Public Health Significance

• LD: most common nationally notifiable vector-borne illness in the United States
  – 36,307 confirmed and probable cases in 2013

• Common Risk factor: Outdoors
  – Outdoor workers in Lyme-endemic areas have 5.1 greater odds of occupational tick exposure

• Hispanics at risk?
  – Represent 44.8% of grounds maintenance workers and 42.8% of workers in the farming, fishing, and forestry industries in US
  – 7 million in Northeast/Midatlantic Region
  – 30.7% of the population had no health insurance in 2010

Objectives

What is the level of knowledge and awareness about TBI, particularly LD, in Hispanic populations relative to non-Hispanic populations?

What preventive practices are followed regarding LD by these populations? How might the attitudes of these populations relate to their current practices?

If adequate public health knowledge, awareness, and/or practices regarding TBI are lacking, identify priority areas for improvement.
Methodology

January 2015

Revise survey materials. Goal: Complete 110 surveys from each ethnic groups

Consult with subject matter experts

Site Selection and Obtaining Permission

DHMH IRB Approval

On-site Survey Administration

Input data into Excel. Data analysis using Excel and Stata 13.

May 2015

Definition of Hispanic: a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race. (U.S. Census Bureau, 2010)
Data Variables

- Zip Code
- County of Residence
- Age
- Number of household members
- Primary language spoken at home
- Race/Ethnicity
- Education level
- Employment status
- Previous LD diagnosis
- Property characteristics (lawn, type of residence)
- Protective behaviors (time spent outdoors)
- Tick attachment in the past year (crawling, bites)
- Knowledge of TBI
- Born in the USA
Results

- N=168 participants, 83 Hispanic and 85 Non-Hispanic
- Median age: 40 years old
  - significantly younger population of Hispanics were surveyed than Non-Hispanics (Pearson chi-square test, p-value<0.001)
- Gender: Male (42.2%) in Hispanics, Male (23.5%) in Non-Hispanics
- Primary Language: Spanish (80.5%) in Hispanics, English (100%) in Non-Hispanics

<table>
<thead>
<tr>
<th>Time Spent Outdoors</th>
<th>Hispanics</th>
<th></th>
<th>Non-Hispanics</th>
<th></th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 hours or less</td>
<td>39</td>
<td>52.0%</td>
<td>23</td>
<td>29.9%</td>
<td></td>
</tr>
<tr>
<td>4-10 hours</td>
<td>25</td>
<td>33.3%</td>
<td>37</td>
<td>48.1%</td>
<td>0.090</td>
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<tr>
<td>11-20 hours</td>
<td>6</td>
<td>8.0%</td>
<td>8</td>
<td>10.4%</td>
<td></td>
</tr>
<tr>
<td>21-30 hours</td>
<td>1</td>
<td>1.3%</td>
<td>1</td>
<td>1.3%</td>
<td></td>
</tr>
<tr>
<td>&gt;31 hours</td>
<td>4</td>
<td>5.3%</td>
<td>8</td>
<td>10.4%</td>
<td></td>
</tr>
</tbody>
</table>
Knowledge of TBI and LD between Hispanics and Non-Hispanics

Correctly answered ticks as vectors
- Hispanic: 37%
- Non-Hispanic: 79%

Correctly answered LD as TBI
- Hispanic: 23%
- Non-Hispanic: 68%

Both: Pearson chi-square test, p-value<0.001.
More Non-Hispanics (29.7%) would perform body checks than Hispanics (8.9%) (Pearson chi-square test, p-value= 0.018).

No steps to protect against ticks → largest number of people
Discussion

• Hispanics were significantly less knowledgeable about TBI compared to Non-Hispanics

• Substantial number of people in both groups would take no prevention measures
  – Showering and body checks were more preferred

• Areas for improvement
  ✔ Reach out to young Hispanic adult populations
  ✔ Have bilingual informational materials ready
  ✔ Need for more visible public health information
Limitations

Small sample size

Self-reported data

IRB process

Photo from Hydro-Clean (2015)

Photo from Pet Life (2015)
Lessons Learned

• Site-specific: Expect and respect barriers to obtaining permission
• Crucial to be familiar with target population’s language
• IRB application process
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References


