The Relationship of Literacy With Trust of Physicians and Perceived Efficacy of Patient-Physician Interactions Among Mothers of Early Preterm Infants

Ian M. Bennett MD PhD
University of Pennsylvania School of Medicine

Jennifer F. Culhane PhD MPH
Drexel University School of Medicine, and
Children’s Hospital of Philadelphia
Overview

- **Preterm Birth:**
  - Disparity parallels disparity in literacy
  - Risk of high utilization of care among infants
  - Requires complex care utilization (health, social services, work, etc.)

- **Literacy and Care Utilization:**
  - Generally associated with reduced care adherence
  - Maternal low literacy may be associated with specific obstacles to care utilization
1. Means of operationalizing a relationship between literacy and outcomes of interest to the health system,
2. Way to formulate novel interventions addressing needs of a vulnerable population.
Health Literacy Framework

Institute of Medicine, 2004

Health Literacy

Experience of Care (Demands of System) Communication (PCAS)

Literacy Measures TABE-RL

Health Contexts

Individuals

Patient-Centered Measures
Socio-Demographic Factors
Trust of Provider (PCAS)
Health Status
Personal Physician

Candidate Health Literacy Component Measures
Self Efficacy in Patient-Provider Interaction (PEPPI)

Health Outcomes And Costs
Preterm Prevention Project

- Jennifer F. Culhane, PI
- PA State Department of Health Grant
- Inter-pregnancy intervention to reduce the risk of repeat preterm birth
- Multi-faceted intervention focused on multiple risk factors among women with an early preterm infant
CONCEPTUAL MODEL FOR INTERVENTIONS

Infection/Inflammation
1) Uro-Gynecologic
2) Periodontal
3) Smoking
4) Under and Overweight
5) Major Depressive Disorder
6) Poor Housing
7) Low Literacy

Stress

Immuno-Modulation

Systemic Inflammatory State

Risk of Repeat Preterm Birth
Study Enrollment

- Approached: N=2243
- Eligible: N=1450
- Consented: N=1126

Carried out 6 Month Postpartum Interview: N=657

Included in Current Analysis: N=627 (56% of consented)
## Participant Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>460 (74)</td>
</tr>
<tr>
<td>US Nativity</td>
<td>580 (93)</td>
</tr>
<tr>
<td>Medicaid Insurance</td>
<td>416 (66)</td>
</tr>
<tr>
<td>Unmarried</td>
<td>513 (82)</td>
</tr>
<tr>
<td>Ed. Attainment</td>
<td></td>
</tr>
<tr>
<td>&lt;High School Ed</td>
<td>200 (32)</td>
</tr>
<tr>
<td>HS/GED</td>
<td>242 (39)</td>
</tr>
<tr>
<td>Personal Physician</td>
<td>369 (59)</td>
</tr>
</tbody>
</table>
Measures

- Primary Care Assessment Survey (PCAS)
  - Physician Communication Sub-Scale (6 items)
  - Physician Trust Sub Scale (8 items)
- Perceived Efficacy of Patient-Physician Interaction (PEPPI)
  - 10 items “How confident are you…”
  - Questions, main concerns, make most of visit
- Test of Adult Basic Education Reading Test Locator (TABE-RL)
- Socio-Demographic Variables
Distribution of Reading Level in PPP

N=627

Percent

20.89% 39.07% 40.03%

1.6-6.9 E&M 6.6-8.9 D 8.6-12.9 A

TABE-RL Grade Reading Levels
### Measure Characteristics

<table>
<thead>
<tr>
<th>Scale</th>
<th>Items</th>
<th>Mean (SD)</th>
<th>Score Range</th>
<th>Chron. Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCAS Communication</td>
<td>6</td>
<td>28.9 (5.7)</td>
<td>6-36</td>
<td>0.930</td>
</tr>
<tr>
<td>PCAS Trust</td>
<td>8</td>
<td>17.4 (5.2)</td>
<td>8-40</td>
<td>0.826</td>
</tr>
<tr>
<td>PEPPI Self Efficacy</td>
<td>10</td>
<td>45.1 (5.3)</td>
<td>10-50</td>
<td>0.926</td>
</tr>
</tbody>
</table>

*Due to skewed distribution this measure was divided into quintiles for analyses. All measures varied significantly by the TABE-RL score.*
# Pearson Correlations of Measures

<table>
<thead>
<tr>
<th></th>
<th>PCAS Communication</th>
<th>PCAS Trust</th>
<th>PEPPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCAS Communication</td>
<td>1</td>
<td>-0.431</td>
<td>1</td>
</tr>
<tr>
<td>PCAS Trust</td>
<td>-0.431</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>PEPPI</td>
<td>0.519</td>
<td>-0.528</td>
<td>1</td>
</tr>
</tbody>
</table>
## Distribution of Measures

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (SD)</th>
<th>Varied by TABE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCAS Communication</td>
<td>28.9 (5.7)</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>PCAS Trust</td>
<td>17.4 (5.2)</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>PEPPPI</td>
<td>45.1 (5.3)</td>
<td>P=0.001</td>
</tr>
</tbody>
</table>
### Regression Analysis For Literacy on PCAS Communication

<table>
<thead>
<tr>
<th>Variable</th>
<th>Bivariate* beta (95% CI)</th>
<th>Fully Adjusted†* beta (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TABE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.6-6.9</td>
<td>-2.18 (-3.52, -0.84)</td>
<td>-0.88 (-1.98, 0.22)</td>
</tr>
<tr>
<td>6.6-8.9</td>
<td>-1.18 (-2.25, -0.10)</td>
<td>-0.73 (-1.61, 0.16)</td>
</tr>
<tr>
<td>8.6-12.9</td>
<td>Ref</td>
<td>Ref</td>
</tr>
</tbody>
</table>

*Adjusted for potential socio-demographic, health status, and health behavior Confounders
†Adjusted for PCAS Trust, PEPPPI, and presence of a personal physician.
Summary

- Low literacy is a challenge for a significant proportion of women with preterm birth.
- Low literacy is associated with a number of characteristics hypothesized to contribute to obstacles to care.
- The association of literacy with poor physician communication was eliminated by addition of measures of physician trust, self efficacy, and the presence of a personal physician.
Future

- Assessment of care utilization outcomes
- Determine if health literacy interventions can modify responses to these measures
Thanks

- The PPP participants
- PPP Staff

Grant Support
- PA Department of Health (PI Culhane)
- 5R03MH074750-02 (PI Bennett) NIH/NIMH