The Role of Health Literacy in Health Outcomes and Health Disparities

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PEPH Webinar:
Environmental Health Literacy
Literacy

- Literacy is inherently a functional concept i.e., it is competence in a set of skills relating to a specific domain of human endeavors.
Issues About the Concept of Literacy

- Basic literacy skills (reading, writing, arithmetic) very useful
- However, really is no one Literacy
- The demands are contextual
Definition of Health Literacy

“The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions.”

Healthy People 2010
Definition of Health Literacy

“The degree to which individuals have the capacity to obtain, process, and understand basic health information, services, and skills needed to make informed health decisions and actions.

- Understand how to use glucometer
- Interpret blood glucose results
- Obtain information about an illness
- Participate in discussions of informed consent
- Enroll in health insurance plan
Conceptual Domains for HL

- Basic Literacy Skills
  - Prose, Document, Quantitative
- Self-care tasks
  - Disease specific
- Interactional
- Navigation

→ place your bets
Health Literacy in America

National Assessment of Adult Literacy (NAAL)
- National household survey, 2003, N~20,000
- Prose, document, and quantitative literacy

English

From http://nces.ed.gov/naal/
NAAL Levels

- **Below Basic**: Circle date on appointment slip, Understand simple pamphlet about pre-test instructions
- **Basic**: Understand simple pt ed handout
- **Intermediate**: Determine healthy weight from BMI chart, Interpret prescription and over-the-counter drug labels
- **Proficient**: Define medical term from complex document, Calculate share of employee’s health insurance costs
Figure 2-1. Percentage of adults in each health literacy level: 2003

All adults

- Percent Below Basic: 14%
- Percent Basic: 22%
- Percent Intermediate: 53%
- Percent Proficient: 12%

Men

- Percent Below Basic: 16%
- Percent Basic: 22%
- Percent Intermediate: 51%
- Percent Proficient: 11%

Women

- Percent Below Basic: 12%
- Percent Basic: 21%
- Percent Intermediate: 55%
- Percent Proficient: 12%

National Assessment of Adult Literacy (NAAL), 2003
Percentage of adults in each health literacy level, by race/ethnicity: 2003

Race/ethnicity

White

- Below Basic: 9
- Basic: 19
- Intermediate: 58
- Proficient: 14

Black

- Below Basic: 24
- Basic: 34
- Intermediate: 41
- Proficient: 2

Hispanic

- Below Basic: 41
- Basic: 25
- Intermediate: 31
- Proficient: 4

National Assessment of Adult Literacy (NAAL), 2003
Literacy and Income

National Assessment of Adult Literacy (NAAL), 2003
Percentage of adults in each health literacy level, by highest educational attainment: 2003

Educational attainment

Less than/some high school
- Percent Below Basic: 49
- Percent Basic and above: 27
- Percent at Basic: 23
- Percent at Proficient: 1

High school graduate
- Percent Below Basic: 15
- Percent Basic and above: 29
- Percent at Basic: 53
- Percent at Proficient: 4

Some college
- Percent Below Basic: 5
- Percent Basic and above: 20
- Percent at Basic: 67
- Percent at Proficient: 8

National Assessment of Adult Literacy (NAAL), 2003
Why does this matter?
## Literacy and Health Outcomes

<table>
<thead>
<tr>
<th>Health Outcomes/Services</th>
<th>Behaviors</th>
<th>Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>General health status</td>
<td>Substance abuse*</td>
<td>Birth control</td>
</tr>
<tr>
<td>Hospitalization</td>
<td>Breastfeeding</td>
<td>Pap screening</td>
</tr>
<tr>
<td>Emergency department use</td>
<td>Behavioral problems</td>
<td>Emergency department instructions</td>
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<tr>
<td>Prostate cancer stage</td>
<td>Adherence to medication*</td>
<td>Asthma</td>
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<tr>
<td>Depression</td>
<td>Smoking*</td>
<td>Hypertension</td>
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<tr>
<td>Diabetes control*</td>
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<td>Diabetes</td>
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<tr>
<td>HIV control*</td>
<td></td>
<td>And many more...</td>
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<tr>
<td>Mammography*</td>
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<td></td>
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<tr>
<td>Pap smear</td>
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<td>Pneumococcal immunization</td>
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<tr>
<td>Influenza immunization</td>
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<tr>
<td>STD screening</td>
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<tr>
<td>Cost</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortality</td>
<td></td>
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</tbody>
</table>
Low Literacy and Mortality

- Limited literacy independently predicts all-cause and cardiovascular deaths in the elderly (39.4% vs 18.9% with HR 1.52, CI 1.26-1.83)

Causal Pathways between Limited Health Literacy and Health Outcomes

Paasche-Orlow and Wolf, AJHB 2007
Causal Pathways between Limited Health Literacy and Health Outcomes

Access and Utilization of Health Care

**Patient Factors**
- Navigation Skills
- Self-efficacy
- Perceived barriers

**System Factors**
- Complexity
- Acute care orientation
- Tiered delivery model

Provider-Patient Interaction

**Patient Factors**
- Knowledge
- Beliefs
- Participation in decision making

**Provider Factors**
- Communication skills
- Teaching ability
- Time
- Patient-centered care

Self-Care

**Patient Factors**
- Motivation
- Problem solving
- Self-efficacy
- Knowledge/skills

**Extrinsic Factors**
- Support Technologies
- Mass media
- Health education
- Resources

Health Literacy

Health Outcomes

Paasche-Orlow and Wolf, AJHB 2007
Example: Medication Adherence

☐ 204 patients w/ HIV
☐ ↓ medication adherence was ↑ among AA
☐ Adj: excluding HL, AA were 2.40 (1.14–5.08) times more likely to be nonadherent
☐ With HL included in final model
  ■ effect of race diminished to nonsignificance
  ■ HL was a significant independent predictor of nonadherence 2.12 (1.93–2.32)

Osborn, Paasche-Orlow, Davis, Wolf. AJPM 2007
Example:
End-of-Life Decision Making

- AA more likely than W to want aggressive care
- Ss asked preferences after hearing a verbal description of advanced dementia and again after 2 min video (P/P)
- Unadj: AA OR 4.8 (2.1–10.9) opt aggressive care (verbal)
- Adj: the effect of race: OR 1.1 (0.3–3.2)
- Unad: low HL OR 17.3 (6.0–49.9), marg HL, OR 11.3 (4.2–30.8) opt aggressive care (verbal)
- Adj: low HL OR 7.1 (2.1–24.2), marg HL OR 5.1 (1.6–16.3)
- W/ Video - no differences by level of HL or by Race

Goals

☐ Define Environmental HL
  ■ What are the skills in this domain?

☐ Measure EHL
  ■ For research?

☐ Study EHL

☐ Improve EHL
What are the Skills, Tasks, and Contexts of EHL?
What are the measurement options?

- REALM-like?
- TOFHLA-like?
- Other approaches?
How many of these words can you read aloud and pronounce correctly, each within five seconds? Start with the first column, reading down. Skip those you cannot read.

<table>
<thead>
<tr>
<th>Fat</th>
<th>Fatigue</th>
<th>Allergic</th>
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<tbody>
<tr>
<td>Flu</td>
<td>Pelvic</td>
<td>Menstrual</td>
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<tr>
<td>Pill</td>
<td>Jaundice</td>
<td>Testicle</td>
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<td>Dose</td>
<td>Infection</td>
<td>Colitis</td>
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<tr>
<td>Eye</td>
<td>Exercise</td>
<td>Emergency</td>
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<tr>
<td>Stress</td>
<td>Behavior</td>
<td>Medication</td>
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<tr>
<td>Smear</td>
<td>Prescription</td>
<td>Occupation</td>
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<tr>
<td>Nerves</td>
<td>Notify</td>
<td>Sexually</td>
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<tr>
<td>Germs</td>
<td>Gallbladder</td>
<td>Alcoholism</td>
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<tr>
<td>Meals</td>
<td>Calories</td>
<td>Irritation</td>
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<tr>
<td>Disease</td>
<td>Depression</td>
<td>Constipation</td>
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<tr>
<td>Cancer</td>
<td>Miscarriage</td>
<td>Gonorrhea</td>
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<tr>
<td>Caffeine</td>
<td>Pregnancy</td>
<td>Inflammatory</td>
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<tr>
<td>Attack</td>
<td>Arthritis</td>
<td>Diabetes</td>
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<tr>
<td>Kidney</td>
<td>Nutrition</td>
<td>Hepatitis</td>
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<tr>
<td>Hormones</td>
<td>Menopause</td>
<td>Antibiotics</td>
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<td>Herpes</td>
<td>Appendix</td>
<td>Diagnosis</td>
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<td>Seizure</td>
<td>Abnormal</td>
<td>Potassium</td>
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<tr>
<td>Bowel</td>
<td>Syphilis</td>
<td>Anemia</td>
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<tr>
<td>Asthma</td>
<td>Hemorrhoids</td>
<td>Obesity</td>
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<tr>
<td>Rectal</td>
<td>Nausea</td>
<td>Osteoporosis</td>
</tr>
<tr>
<td>Incest</td>
<td>Directed</td>
<td>Impetigo</td>
</tr>
</tbody>
</table>
Thank you!

☐ I’d be happy to hear you questions and ideas.

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