HOW DO WE MEASURE HEALTH LITERACY?

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WHAT SKILLS SHOULD BE INCLUDED WHEN ASSESSING 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”

• Critical Components:
  • Communication (e.g. pronunciation, verbalization)
  • Comprehension (e.g. prose/reading, problem solving)
  • Quantitative/Numeracy
  • Navigation
  • Health information seeking
  • Function
  • Decision making/critical thinking
  • Need for assistance
  • Confidence (self-efficacy)
  • Motivation?
  • Cognitive skills?

What are the important factors when measuring health literacy?
MULTIPLE GENERAL HEALTH LITERACY MEASURES AVAILABLE

• Rapid Estimate of Adult Literacy in Medicine - (REALM-SF; REALM-VS; REALD-99; REALM-Teen; REAL-G; HKREALD-30
• Test of Functional Health Literacy in Adults - (STOFHLA; TOFHLiD; version; Spanish version)
• Single Items, BRIEF ,SILS
• Short Assessment of Health Literacy for Spanish-speaking Adults (SAHLSA-50)
• Newest Vital Sign (NVS)
• Medical Term Recognition Test (METER)
• Functional Health Literacy Tests (FHLTs)
• Health Literacy Skills Instrument (HLSI)
• Health Literacy Assessment Using Talking Touchscreen Technology (Health LiTT)
CONDITION & POPULATION SPECIFIC HEALTH LITERACY MEASURES

- Literacy Assessment for Diabetes (LAD); Diabetes Numeracy Test (DNT-15)
- Asthma Numeracy Questionnaire (ANQ)
- Health Literacy Skills Instrument the Numeracy Understanding in Medicine Instrument (NUMi)
- HBP-health literacy scale (HBP-HLS)
- Spanish Parental Health Literacy Activities Test (PHLAT Spanish; PHLAT-8)
- Hebrew Health Literacy Test (HHLT)
- Korean Health Literacy Scale (KHLS); Health Literacy Test for Singapore (HLTS)
- Literacy Measure for patients with HIV
- The Food Label Literacy for Applied Nutrition Knowledge questionnaire (FLLANK)
## COMPARING GENERAL HEALTH LITERACY MEASURES

<table>
<thead>
<tr>
<th>Constructs Measured</th>
<th>REALM</th>
<th>TOFHILA</th>
<th>BRIEF (SILS)</th>
<th>SAHLSA</th>
<th>NVS</th>
<th>METER</th>
<th>FHLTs</th>
<th>HLSI</th>
<th>Health LiTT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word recognition and pronunciation of medical terms</td>
<td>Word recognition and comprehension, need for assistance, and confidence</td>
<td>Reading &amp; verbal comprehension, need for assistance, and confidence</td>
<td>Word recognition of medical terms</td>
<td>Reading and comprehension of a nutrition label</td>
<td>Word recognition of medical terms</td>
<td>Reading comprehension</td>
<td>Prose, document, quantitative, oral, and Internet-based information seeking skills</td>
<td>Prose, document, quantitative</td>
<td></td>
</tr>
<tr>
<td>Administration time (minutes)</td>
<td>3-7 long 1 short</td>
<td>22 long 7 short</td>
<td>1-2</td>
<td>3-6 long 2-3 short</td>
<td>3-4</td>
<td>2-3</td>
<td>Median 3</td>
<td>&gt;10 long 5-10 short</td>
<td>18</td>
</tr>
<tr>
<td>Number of Items</td>
<td>7/66 items</td>
<td>17/50 items or 4/36 items</td>
<td>4 items</td>
<td>50 items or 18 items</td>
<td>6 items</td>
<td>70 items</td>
<td>21 items</td>
<td>25 items or 10 items</td>
<td>30 items</td>
</tr>
<tr>
<td>Performance-Based</td>
<td>✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td></td>
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<tr>
<td>Self Administered</td>
<td>✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td></td>
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<tr>
<td>Available in Spanish</td>
<td>✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td></td>
</tr>
<tr>
<td>Long distance administration (e.g. phone, mail, computer)</td>
<td>✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
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</tbody>
</table>

**How do existing measures compare with one another in terms of important factors?**
## COMPARING GENERAL HEALTH LITERACY MEASURES

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<tr>
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<th>REALM</th>
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<th>FHLTs</th>
<th>HLSI</th>
<th>Health LiTT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✔</td>
<td></td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>(pronunciation, verbalization)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Comprehension</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>(prose/reading, problem solving)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>✔</td>
<td></td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Numeracy/Quantitative</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Health information seeking</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Function</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Decision making/critical thinking</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Confidence (self-efficacy)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Need for assistance</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Navigation</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>
KEY DIFFERENCES BETWEEN HEALTH LITERACY MEASURES

- Instruments vary from screening items, to performance based measures
- Tools vary in their approach to operationalizing the concept into a measurable construct
- Administration styles vary
- Time and resources needed vary
- Scoring, ranges, and levels vary

How do we reach a consensus on the best way to operationalize health literacy?
MEASURE VARIATION IN PREVIOUS RESEARCH

- Currently limited published research demonstrating measurement variation
- Griffin et al, 2010
  - Estimates of poor health literacy varied by the assessment used, especially after adjusting for non-response bias
    - STOFHLA categorized 8% with inadequate and 7% with marginal skills; whereas with REALM, 4% were categorized with 6th grade skills (i.e. inadequate) and 17% with 7–8th grade skills (i.e. marginal)
    - Adjusting for non-response bias increased S-TOFHLA prevalence estimates to 9.3% as inadequate and 11.8% as marginal; and the REALM estimates to 5.4% as ≤6th grade skills (i.e. inadequate) and 33.8% as 7–8th grade skills (i.e. marginal)
Haun et al, 2012,

- Correlation among instruments was positive, with strongest association was between the STOFHLA and the REALM

- Categories of health literacy and associated factors (e.g., gender, race) varied depending on the instrument used to assess health literacy

- REALM and BRIEF categorized the mean scores as marginal health literacy; whereas mean scores were categorized as adequate on the STOFHLA

- Instruments concurred most often when categorizing respondents with adequate health literacy skills
AN EXAMPLE OF VARIATION AMONG DIVERSE POPULATIONS

Haun et al, 2012,

• Associated factors varied depending on the instrument used to assess health literacy.
  • Minority status was associated with low health literacy on the REALM and STOFHLA, but not the BRIEF.
  • Education was associated with low health literacy on the REALM and BRIEF, but not the STOFHLA.
  • Age was associated with low health literacy on the STOFHLA and BRIEF, but not on the REALM.
  • Though gender was not a significantly associated factor in this study, other research has indicated differences by gender.

HARC 2012 Presentations have also provided examples of Measurement Variation.
MEASURE VARIATION LEAVES THE QUESTION, IS THERE A “BEST” OPTION?

• Until measures, constructs, and associated outcomes are definitively understood, researchers, clinicians, public health practitioners and administrators need to exercise options:
  • Align measures with context:
    • resources, administration style, population, disease, etc.
  • Use multiple measures