Literacy, Numeracy, Income & Composite Health Risks

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Adam T Perzynski, PhD
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Project funded by the Agency for Healthcare Research and Quality (AHRQ), Grant 1R01HS020919, An Open-source Public Domain Health Risk Assessment for Use in Primary Care.
Objectives

• Understand how numeracy and literacy may affect the risks that impact health outcomes
  • Present a conceptual model
  • Present results from the pilot study of a health risk assessment
Low health literacy and numeracy are associated with poorer health outcomes and lower use of health care services.

- Poorer Health Status and All Cause Mortality in Elderly
- Emergency Care Use
- Hospitalization
- Medication Management
- Home Blood Pressure Monitoring
- Shared Decision Making
- Interpreting Health Information (labels and health messages)
- Preventive Service Use (mammography, colorectal cancer screenings and influenza)
- Interpretation and Communication of Risks
Conceptual Model

Social and Demographic Context
- Age
- Sex
- Race/Ethnicity
- Language
- Occupation
- Birthplace
- Education
- Household
- Income
- Social Support
- Health Insurance
- Marital Status

Numeracy & Literacy

RISK
- Healthcare Utilization
  - Influenza Vaccination
  - Mammography
- Non-Modifiable Individual Risks
  - Family History
- Health Behavior Risks
  - Smoking, Alcohol Use, Lack of Exercise

Health Outcomes
Your Risk Age

Now: 72.3
Risk Age Now compares you to other people your age and sex for all causes of death.

Target: 71.9
Target Risk Age tells you what your Risk Age would be if you lived healthier.

What Can You Do to Lower Your Risk Age?

Not smoking is the single best thing you can do for your health.

A good systolic blood pressure is less than 130.

Getting a regular pap smear can detect problems early.
How We Measure Risk
A Composite Index of Risk of Mortality

Modifiable Risks
- Tobacco & Alcohol
- Weight (Physical Activity)
- Nutritional Habits
- Blood Pressure & Cholesterol
- Preventive Screening Recommendations
- Safety

Non-Modifiable Risks
- Family History
- Current or Past Disease (diabetes, cardiovascular disease, hypertension)
- Reproductive History (Women)

Risk
Age

Population Mortality
(Based on Age, Sex and Race)
Measures

Health Literacy

1. How confident are you filling out medical or hospital forms by yourself?

5-point Likert Scale: Not at all to Extremely Confident

Income

Education

Age

Risk Age

Numeracy

1. Imagine that you flip a coin 100 times. About how many times will the coin come up heads in 100 flips?

2. 100 people have entered the Spring City Run. 70% of the runners will finish the race. Of the 100 people who enter the race, how many will finish?

3. In the Washington School raffle 5 people out of 100 who enter will win a prize. What percentage (%) of the people who enter the raffle will win a prize?


Study Population

• 102 Diverse Participants
  • Community Computer Centers in Cleveland (n = 27)
  • Hospital Patients, Visitors and Staff (n = 30)
  • Annual Professional Conferences (n = 45)
    • Gerontological Society of America
    • American Public Health Association
Study Population

**Sex**
- Male: 26%
- Female: 74%

**Race**
- Black: 49%
- White: 32%
- Other: 19%
Analysis

• Univariate Descriptives
• Bivariate Correlations
Education

n = 89

High School Graduate or Less: 25%
College Graduate and Post Graduate or Professional Degree: 75%
How confident are you filling out medical or hospital forms by yourself?

Not at all, A little bit and Somewhat Confident

Not Adequate

14%

Adequate

86%

Quite and Extremely Confident
In the Washington School raffle 5 people out of 100 who enter will win a prize. What percentage (%) of the people who enter the raffle will win a prize?
In the Washington School raffle 5 people out of 100 who enter will win a prize. What percentage (%) of the people who enter the raffle will win a prize? 5%
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<thead>
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<th>Risk Age</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
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<td>Adequate</td>
<td>38</td>
<td>40.73</td>
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Independent Samples t-test

\[ p = 0.049 \]

\[ CI = 0.48 - 14.69 \]
## Bivariate Correlations

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Health Numeracy

“Health numeracy is the degree to which individuals have the capacity to access, process, interpret, communicate, and act on numerical, quantitative, graphical, biostatistical, and probabilistic health information needed to make effective health decisions.”

Significance & Future Research

• Risk Age could be considered a simple composite index of accumulated disadvantage over the life course
• Larger Sample
• Additional measures of literacy and numeracy
• Multivariate Structural Equation Model
Limitations

• Small sample size
• Brief measures of Literacy and Numeracy
Thank you!