Adolescent health literacy and development of high-risk behaviors

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Adolescence

WHO identifies adolescence as the period in human growth and development that occurs after childhood and before adulthood, from ages 10 to 19.

Physical maturation
Sexual maturation
Economic independence
Social Independence
Adult identity
Decision making
Adult roles
Abstract reasoning
Adolescent Health Literacy

• Across studies and measurement approaches, between 15 and 57 percent of adolescents evidence limited health literacy.

• Teen health literacy has been found to be associated with body mass index (Sharif, 2010), medication misunderstanding (Shone, 2011), primary care use (Sanders, 2009), and e-health use (Chisolm, 2011).
The Syndemic Study

- NIDA-funded R01 grant exploring the co-occurring epidemics of substance use and high risk sexual activities in adolescents
- Designed to measure risk trajectories and identify mediators and moderators of risk
- Partnership between Nationwide Children’s Hospital and University of Pittsburgh
Study Design

• Open cohort design recruiting teens ages 14-19 seen in a participating adolescent medicine clinic
• Data collection includes a baseline visit and up to eight 6-month follow-up visits
• Recruitment designed to balance the sample on race, gender, and selected risk factors
Study data

• Biometrics
• Substance use
• Drug and alcohol expectancies
• Sexual activity
• Suicidality
• STIs
• Anxiety
• Depression
• Family relationships
• School Performance

• Bullying
• Exposures to violence
• Violence victimization
• Self-esteem
• Spirituality
• Coping
• Delinquency
• General Health
• Health Literacy
# Study Population Description

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n</th>
<th>percent</th>
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<tbody>
<tr>
<td><strong>Total</strong></td>
<td>354</td>
<td></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
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<tr>
<td>Male</td>
<td>115</td>
<td>32.5</td>
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<tr>
<td>Female</td>
<td>239</td>
<td>67.5</td>
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<tr>
<td><strong>Race</strong></td>
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<tr>
<td>White</td>
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<tr>
<td>Black</td>
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<tr>
<td><strong>Age</strong></td>
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<tr>
<td>14-15</td>
<td>74</td>
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<tr>
<td>16-17</td>
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<td>18-19</td>
<td>112</td>
<td>31.7</td>
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</table>
Health Literacy (REALM-Teen)

- 33% Adequate
- 67% Less than Adequate

NATIONWIDE CHILDREN'S
When your child needs a hospital, everything matters.
Predictors of Health Literacy

- Age
- Race
- Parental education
- Socio-economic status
- (Almost) gender
Adequate Health Literacy Rate by Age

Age at study enrollment

Percent with Adequate Health Lit

56.9% 62.7% 75.9% 65.5% 68.7% 68.3%

14 15 16 17 18 19

Nationwide Children's
When your child needs a hospital, everything matters.
Mean REALM-Teen score by age
Research question

Is health literacy related to the initiation and continuation of adolescent risk behaviors like misuse of alcohol?

Behaviors of interest

- **Alcohol use** – any self reported use of alcohol (more than a sip) in the past 6 months
- **Regular use** – drinking once per month or more
- **Binge use** – Five or more drinks in a sitting in the past 6 months
- **Problem use** – interpersonal problems, physiologic problems, self-control issues
Health literacy and alcohol use in the past six months

- Any Use
- Problems
- Binge
- Regular

- Adequate health literacy
- Less than adequate health literacy
Next Question

WHY!!!
Alcohol Expectancies

Expectancy Theory – behaviors can be influenced by expectations for specific outcomes from that behavior.

<table>
<thead>
<tr>
<th>Positive</th>
<th>Negative</th>
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<tbody>
<tr>
<td>Sociability</td>
<td>Cognitive behavioral impairment</td>
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<tr>
<td>Tension Reduction</td>
<td>Risk Aggression</td>
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<tr>
<td>Liquid Courage</td>
<td>Self Perception</td>
</tr>
<tr>
<td>Sexuality</td>
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</tbody>
</table>

Comprehensive expectancies of alcohol (CEOA) scale
Expectancies and Alcohol Use

![Bar chart showing mean expectancy scores for positive and negative expectancies related to alcohol use.](image)
Mediation Model

Health Literacy → Expectancies → Behaviors
Health Literacy and Alcohol Positive Expectancies

- Sociability
- Tension Reduction
- Liquid Courage
- Sexuality

Mean Expectancy score

Adequate Health Literacy

Less than Adequate Health Literacy
Health Literacy and Alcohol Negative Expectancies

![Graph showing the comparison of Mean Expectancy scores for Adequate Health Literacy and Less than Adequate Health Literacy in CBI, Risk/Aggression, and Self-perception categories.](image)
Next Question

Why!!!

Version 2
Moderation

Expectancies

Health Literacy

Alcohol Use
Use of Alcohol in the past six months by positive alcohol expectancy

Adequate Health Literacy

Alcohol Expectancy

- Sociability: Odds Ratio 3.23
- Tension Reduction: Odds Ratio 2.83
- Courage: Odds Ratio 2.51
- Sexuality: Odds Ratio 2.4

Nationwide Children’s
When your child needs a hospital, everything matters.”
Use of alcohol in the past six months by positive alcohol expectancies

Less than Adequate Health Literacy

Odds Ratio

- Sociability: 2.19
- Tension Reduction: 1.5
- Courage: 1.46
- Sexuality: 1.71
Use of Alcohol in the past six months by negative alcohol expectancies

Adequate health literacy

Odd Ratio

1.0

0.55

0.81

0.61

Cognitive/Behavioral Impairment

Risk and Aggression

Self-perception

Alcohol Expectancy
Use of Alcohol in the past months by negative alcohol expectancies

Less than Adequate health literacy

1.0

0.75

1.2

1.02

Cognitive/Behavioral Impairment

Risk and Aggression

Self-perception

Nationwide Children’s

When your child needs a hospital, everything matters.”
Conclusions

• Adolescent health literacy is still developing in the early teens but appears to level out by mid adolescence

• Relationships between health literacy and health behaviors are complex and may not go in expected directions

• Understanding the nature of these relationships can help with the design of interventions
Thank You!

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  – Michael Marshal, Co-PI
  – The LEAP/PATHWAY Team