# Nonsteroidal Anti-Inflammatory Drug Risk Awareness: The Role of Age, Health Literacy and Reading Written Medicine Information

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# Background

- Problems with written medicine information (WMI)
- Health Literacy Concerns
- Risks associated with nonsteroidal anti-inflammatory drug (NSAID) use

# Objectives

- To estimate multivariable associations among
  - Key sociodemographic factors
  - Health literacy
  - Reading of WMI
  - NSAID risk awareness
- To estimate path models for
  - Reading WMI
  - NSAID risk awareness

# Study Design

- Cross-sectional survey
  - From the follow-up portion of the Alabama NSAID Patient Safety Study
- Alabama NSAID Patient Safety Study
  - Physician practices randomized into intervention and control groups
  - Physicians in both groups received
    - CME programs to improve safe prescribing of NSAIDS
    - NSAID monographs written in lay language to distribute to participants
  - Patients in the intervention group received a patient activation kit that promoted self-assessment of NSAID risk and discussion with their physician

# Patient Recruitment

- Participants recruited from 39 private, community-based, general, family and internal medicine physician practices in Alabama

- Inclusion Criteria
  - Established patient of participating physicians
  - Currently taking prescription NSAIDs
  - 50 years of age or older
  - Willingness to provide contact information, consent, and participate in a 30-minute telephone survey

# Study Implementation

- Telephone survey administered using computer assisted telephone interview protocols
- Participants received a $20 gift card
- Interviewers  were certified for competency before data collection began
- Data was collected between June 2006 and February 2007
- 73.1% of eligible patients completed the telephone interview
- Due to sample size limitations for analytical considerations one individual was dropped because they were not White or African-American.

# Measurements

| Variable | Measure | |
|---|---|---|
| NSAID Risk Awareness | Sum of known risks (5 levels, ordinal)<br>➢ No risks known<br>➢ Stomach or Intestinal Problems<br>➢ High Blood Pressure<br>➢ Kidney Disease<br>➢ Heart Attack | |
| Read WMI | Yes | No/Don't Know/Refused |
| Age | ≥ 65 years | < 65 years |
| Race | African-American | White |
| Sex | Female | Male |
| Education Level | Any college education | High school or below |
| Insurance status | Private +/- Medicare | All other types of insurance |
| Income | Adequate to meet basic needs | Inadequate to meet basic needs |
| "High" Comorbidities | > median # of comorbidities | ≤ median # of comorbidities |
| Estimated health literacy (Dichotomized) | Marginal - Adequate (M-A) | Inadequate |

# Health Literacy Screening Questions

| | Question | Inadequate | Adequate / Marginal (A-M) |
|---|---|---|---|
| SQ1 | "How often do you have problems learning about your medical condition because of difficulty understanding written information?" | Always, Often, Sometimes | Occasionally, Never |
| SQ2 | "How confident are you in filling out medical forms by yourself?" | Not at all, A little bit, Somewhat | Quite a bit, Extremely |
| SQ3 | "How often do you have someone (like a family member, friend, hospital/clinic worker, or caregiver) help you read hospital materials?" | Always, Often, Sometimes | Occasionally, Never |


Chew, L., Griffin, J., Partin, M., Noorbaloochi, S., Grill, J., Snyder, A., et al. (2008). Validation of screening questions for limited health literacy in a large VA outpatient population. *Journal of General Internal Medicine, 23*(5), 561-566.

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# Analytical Approach

- Descriptive statistics
- Chi-square analysis for bivariate relationships
- Mantel Haenszel Chi-square
  - Rule out confounding and effect modification from the parent study intervention
- Generalized Linear Latent and Mixed Model (gllamm) used to test multivariable relationships
  - Account for the clustering of patients with physician practices
- Path models were estimated to simultaneously test the relationships among significant variables from gllamm

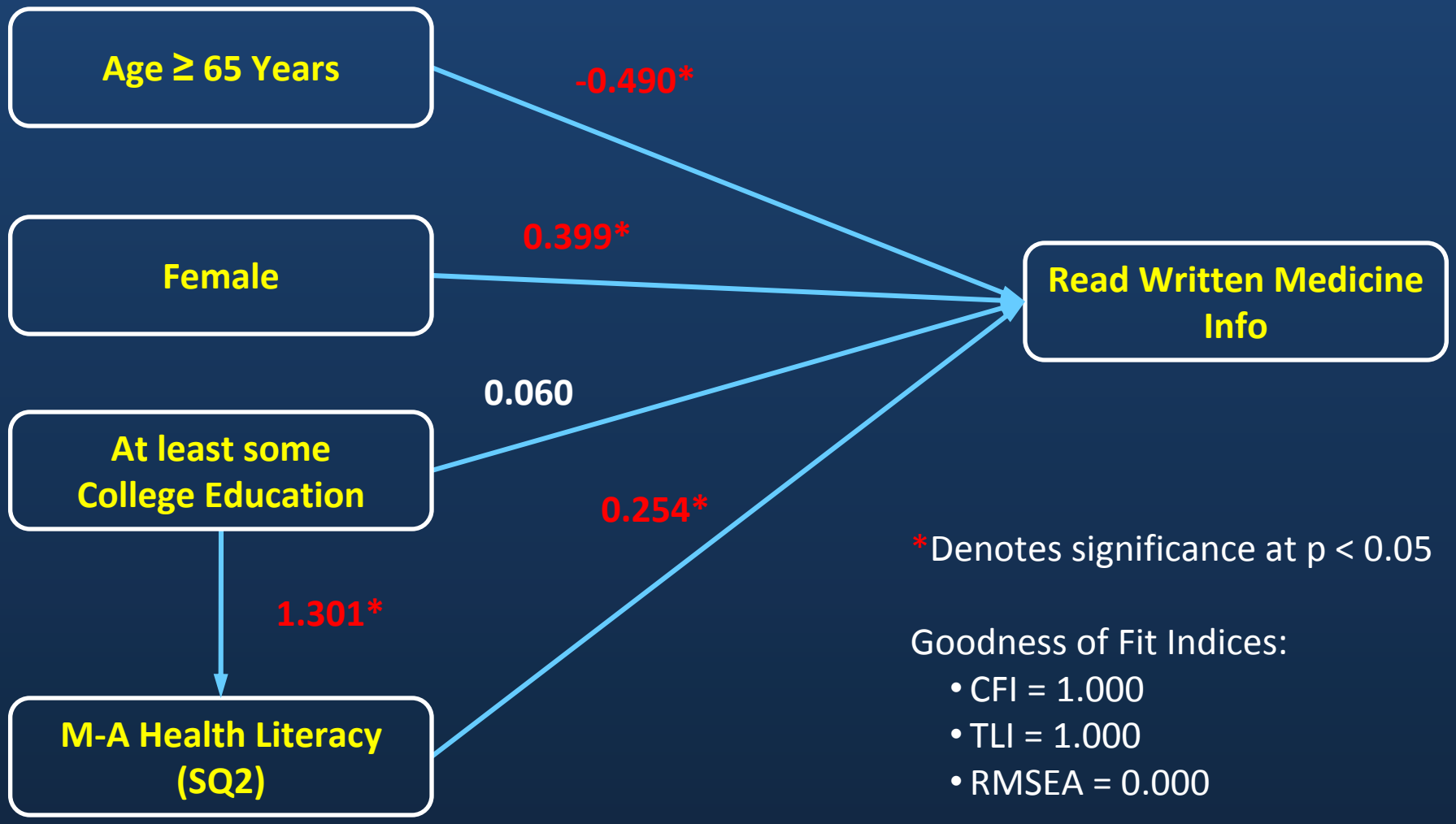
# Descriptive Statistics

| Participant Characteristics (n = 382) | | |
|---|---|---|
| NSAID Risk Awareness, median | 2 | n/a |
| Read WMI, n (%) | 250 | (67.6) |
| Age ≥ 65 years, n (%) | 145 | (38.1) |
| African American, n (%) | 148 | (38.7) |
| Female, n (%) | 275 | (72.0) |
| Any college education, n (%) | 165 | (43.3) |
| Privately insured, n (%) | 200 | (57.3) |
| Income adequate to meet needs, n (%) | 274 | (72.3) |
| Number of comorbidities, median | 2 | n/a |
| M-A health literacy: SQ1, n (%) | 296 | (77.9) |
| M-A health literacy: SQ2, n (%) | 282 | (73.8) |
| M-A health literacy: SQ3, n (%) | 296 | (77.5) |

# Factors Associated with Reading Written Medicine Information

| Reading WMI | Model I | | Model II | | Model III | |
|---|---|---|---|---|---|---|
| | AOR | 95% CI | AOR | 95% CI | AOR | 95% CI |
| African American | 0.87 | (0.50 - 1.52) | 0.87 | (0.50 - 1.51) | 0.86 | (0.50 - 1.49) |
| **Female** | **2.08** | **(1.20 - 3.60)** | **2.12** | **(1.23 - 3.67)** | **1.93** | **(1.11 - 3.35)** |
| **Age ≥ 65 years** | **0.37** | **(0.22 - 0.63)** | **0.38** | **(0.23 - 0.65)** | **0.42** | **(0.25 - 0.70)** |
| Any college education | 1.20 | (0.67 - 2.17) | 1.24 | (0.69 - 2.22) | 1.30 | (0.73 - 2.30) |
| Adequate income | 1.36 | (0.73 - 2.53) | 1.42 | (0.77 - 2.63) | 1.44 | (0.78 - 2.65) |
| Privately insured | 1.31 | (0.74 - 2.33) | 1.20 | (0.67 - 2.12) | 1.17 | (0.66 - 2.08) |
| High comorbidity | 1.66 | (0.98 - 2.83) | 1.67 | (0.98 - 2.85) | 1.66 | (0.98 - 2.83) |
| **M-A health literacy (SQ1)** | **2.08** | **(1.08 - 4.03)** | | | | |
| **M-A health literacy (SQ2)** | | | **2.09** | **(1.12 - 3.91)** | | |
| **M-A health literacy (SQ3)** | | | | | **1.98** | **(1.04 - 3.77)** |

# Path Model for Reading WMI




*Denotes significance at $p < 0.05$

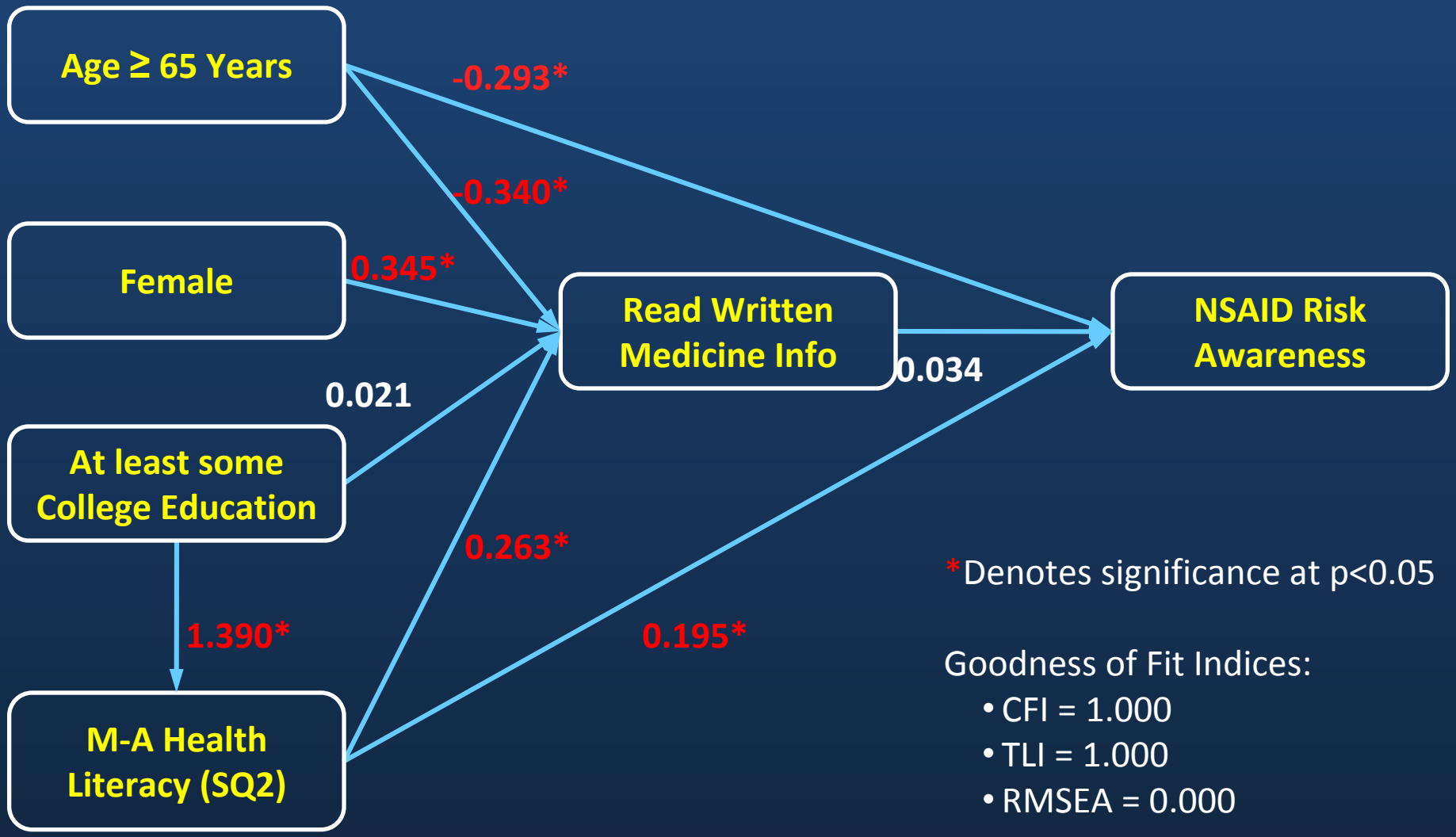
Goodness of Fit Indices:

- CFI = 1.000
- TLI = 1.000
- RMSEA = 0.000

# Factors Associated with NSAID Risk Awareness

| Risk Awareness | Model I | | Model II | | Model III | | Model IV | |
|---|---|---|---|---|---|---|---|---|
| | AOR | 95% CI | AOR | 95% CI | AOR | 95% CI | AOR | 95% CI |
| African American | 1.35 | (0.83 - 2.21) | 1.36 | (0.83 - 2.24) | 1.33 | (0.81 - 2.16) | 1.28 | (0.78 - 2.09) |
| Female | 0.83 | (0.52 - 1.35) | 0.86 | (0.53 - 1.40) | 0.80 | (0.49 - 1.30) | 0.90 | (0.56 - 1.46) |
| **Age ≥ 65 years** | **0.55** | **(0.35 - 0.86)** | **0.56** | **(0.35 - 0.87)** | **0.58** | **(0.37 - 0.91)** | **0.58** | **(0.37 - 0.92)** |
| Adequate income | 0.76 | (0.45 - 1.28) | 0.79 | (0.46 - 1.33) | 0.77 | (0.46 - 1.31) | 0.80 | (0.48 - 1.35) |
| Privately insured | 1.29 | (0.80 - 2.07) | 1.28 | (0.79 - 2.06) | 1.22 | (0.76 - 1.97) | 1.12 | (0.68 - 1.83) |
| High comorbidity | 1.11 | (0.71 - 1.72) | 1.15 | (0.74 - 1.78) | 1.15 | (0.74 - 1.79) | 1.10 | (0.70 - 1.70) |
| Read WMI | 1.30 | (0.83 - 2.06) | 1.32 | (0.83 - 2.08) | 1.32 | (0.84 - 2.08) | 1.35 | (0.86 - 2.13) |
| **M-A health literacy (SQ1)** | **2.07** | **(1.21 - 3.56)** | | | | | | |
| **M-A health literacy (SQ2)** | | | **1.72** | **(1.04 - 2.83)** | | | | |
| **M-A health literacy (SQ3)** | | | | | **1.96** | **(1.15 - 3.34)** | | |
| **Any college education** | | | | | | | **1.88** | **(1.18 - 2.99)** |

# Path Model for NSAID Risk Awareness




*Denotes significance at p<0.05

Goodness of Fit Indices:

- CFI = 1.000
- TLI = 1.000
- RMSEA = 0.000

# Study Limitations

- Data were derived from self-report
  - Recall bias
  - Socially desirable responses
- Study used secondary data nested within a randomized clinical trial
  - Cross-sectional data preclude any determination of cause and effect
- One-item health literacy screening questions only provide estimates of health literacy and may be influenced by personal experience of the patient
- Only awareness of NSAID risks was assessed and may not be representative of other drug classes

# Summary and Conclusions

- Research Findings
  - Reading WMI is not associated with NSAID risk awareness
  - Elderly and those with less than adequate health literacy should be targeted as a special populations for intervention to improve NSAID risk awareness
- Policy Consideration
  - One-item health literacy screening questions may serve as a practical way to assist in identifying patients at-risk for not reading WMI and decreased NSAID risk awareness
- Future research should focus on methods to facilitate the use of WMI and to promote the translation of this information into patient understanding and action

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