Numeracy and preventive health care service utilization among middle-aged and older adults in the U.S.

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OBJECTIVES

(1) To determine whether a specific numeracy skill cut-point(s) reflects an empirical threshold in the context of preventive health service utilization, and

(2) To identify associations between numeracy and preventive health services utilization among middle-aged and older adults in the United States.
Health literacy—"a set of skills for one to obtain, process, and understand health information to maintain/promote one’s health and to navigate complex health care systems" (Berkman et al., 2011)
BACKGROUND

- Numeracy is defined as “the ability to access, use, interpret, and communicate mathematical information and ideas, to engage in and manage mathematical demands of a range of situations in adult life” (National Center for Education Statistics, 2012, p. 1).

- Health literacy ⇐ literacy, numeracy, etc.
- Literacy research > numeracy research
BACKGROUND

- Health literacy $\rightarrow$ preventive health behaviors
- Risk and benefit perceptions (Rothman et al., 2006)
- Complex numeric preventive health information
- Sufficient numeracy – only about 10% in the U.S. adults
- Aging $\rightarrow$ poorer health & lower numeracy
- Understudied in the middle-aged and older adults
METHODS

- 2012/2014 PIAAC data, age 45+
- N = 2,989
- **Outcomes**: dental checkup, vision screening, flu vaccination, osteoporosis screening
- **Predictors**: numeracy proficiency levels (5, 3, and 2 levels)
- **Covariates**: literacy plus sociodemographic characteristics, health status, numeracy use, etc.
METHODS

- IDB analyzer 4.0 and SAS 9.4
- Plausible levels, sampling weights and replicate weights
- Binary logistic regression

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<th>Flu Shot</th>
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RESULTS

- Dichotomous numeracy level (low vs. moderate to high proficiency) $\rightarrow$ preventive health behaviors

- Other numeracy levels (e.g., low vs. moderate vs. high) did not predict preventive health behaviors

- After adjusting for the covariates, the numeracy was only associated with dental checkup (OR = 1.41, $p < 0.05$).
(1) meaningful numeracy cut-point? → dichotomous (low vs. moderate & high proficiency)
(2) preventive health behavior predictor? → dental checkup

Numeracy may be useful → specific preventive health behaviors such as dental checkup
DISCUSSION

This study added:

- Empirical evidence of the understudied topics and sub-populations
- Nationally representative findings

- Numeracy measurement and risk communication in health care
  (e.g., risk of neglecting routine dental checkup)
- Future research → pathways, sub-groups, intervention
ACKNOWLEDGEMENT

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THANK YOU

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