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

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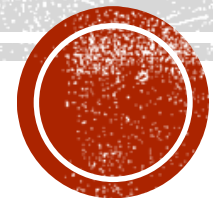
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OBJECTIVES

(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.

BACKGROUND

- 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

| Numeracy | → | Preventive health behaviors |

- Health literacy → 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 → 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

Flu Shot		Dental Checkup	
No	Yes	No	Yes
n = 1590	n = 1608	n = 1082	n = 2116
Percentages	Percentages	Percentages	Percentages
50.29%	49.71%	32.63%	67.37%

Vision Screening		Osteoporosis Screening	
No	Yes	No	Yes
n = 1204	n = 1994	n = 1913	n = 641
Percentages	Percentages	Percentages	Percentages
37.72%	62.28%	74.90%	25.10%

RESULTS

- Dichotomous numeracy level (low vs. moderate to high proficiency) → 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, $p < 0.05$).

DISCUSSION

(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

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