

# HEALTH LITERACY AND HEALTHCARE-RELATED INTERNET USE AMONG OLDER ADULTS WITH CHRONIC ILLNESS

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# Background

- Healthcare (HC) providers are increasing the use of electronic healthcare services
- Individuals with poor health literacy (HL) have limited use of web-based patient services
- Older adults are less likely to access the Internet
- There is limited information on the relationship between HL and Internet use
- Among those with Internet access, how does HL affect HC Internet use?

# Objective

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- Assess relationships between HL and healthcare-related Internet use
- **Hypothesis:** Adults with limited HL less likely to use the Internet for healthcare purposes compared to those with adequate HL, despite having Internet access

# Study Design

- **2-year prospective cohort study**
- **Settings**
  - Primary care practices in New York City and Chicago
- **Inclusion Criteria**
  - $\geq 55$  years of age
  - Moderate to severe COPD
- **Exclusion criteria**
  - Asthma or other chronic respiratory illness
  - Dementia ( $\geq 4$  errors on a 6-item dementia screener)
  - Neurological/psychological conditions affecting cognition

# Measures

## ☐ **Main Outcome**

### ☐ **Internet Use**

- ☐ Any use of the Internet to access health information
- ☐ Any use of the Internet to communicate with healthcare providers
- ☐ Or both

## ☐ **Main Independent Variable**

### ☐ **Health Literacy**

- ☐ Short Test of Functional Health Literacy in Adults (S-TOFHLA)
- ☐ Inadequate/marginal (0-22) vs adequate (23-36)

## ☐ **Other Measures**

- ☐ Socio-demographics, English proficiency, and health status

# Statistical Analyses

- Analysis restricted to participants with Internet access (N=215)
- Multinomial logistic regression was used to evaluate the bivariate relationship between healthcare-related Internet use and health literacy, demographic predictors, comorbidities, physical health, and cognitive impairment

*Healthcare-related Internet use = health literacy*

- Multinomial logistic regression was also used to evaluate the multivariate relationship between healthcare-related Internet use and health literacy, controlling for other predictors

*Healthcare-related Internet use = health literacy + age + gender + race + income + English proficiency + limited cognition + any physical impairment*

# Participant Demographics

Characteristic	N = 215 (%)
<b>Limited health literacy</b>	14
<b>Age</b>	
55-64	38
65-69	25
≥70	38
<b>Male</b>	45
<b>Race</b>	
White, non-Hispanic	53
African-American, non-Hispanic	36
Hispanic	11
<b>Education</b>	
High school or less	12
High school graduate	19
Some college	29
College graduate	40
<b>Married/living with partner</b>	44
<b>Low income (≤\$1350/month)</b>	31
<b>General health status</b>	
Excellent/very good	27
Good	36
Fair/poor	38

# Internet Use

- Healthcare-related Internet use:
  - 70% access health info
  - 64% contact HC providers
  - 74% any
  - 33% both
- Other technology use
  - 78% use the Internet to browse the web
  - 73% use the Internet for email
  - 40% use their cellphones to text
  - 28% download apps on their phone

# Participant Characteristics by Healthcare-Related Internet Use

Characteristic	No healthcare-related Internet use N=57, (%)	Any healthcare-related Internet use N=158, (%)	P-value
<b>Age</b> , yrs (mean±SD)	66±7	68±8	0.06
<b>Male</b>	44	45	0.89
<b>Race</b>			<0.01
White, non-Hispanic	32	60	
African-American, non-Hispanic	49	32	
Hispanic	19	8	
<b>Married/living with partner</b>	47	42	0.52
<b>Low income</b> (≤\$1350/month)	51	23	<0.01
<b>Low English proficiency</b>	12	4	0.04

# Participant Characteristics by Healthcare-Related Internet Use

Characteristic	No healthcare-related Internet use N=57, (%)	Any healthcare-related Internet use N=158, (%)	P-value
<b>Comorbidities</b>			
Hypertension	75	47	0.02
Hyperlipidemia	47	31	0.02
Diabetes	32	17	0.02
Depression (PHQ-9 $\geq$ 10)	32	19	0.04
<b>Any physical impairment (ADLs<math>\geq</math>1)</b>	28	15	0.02
<b>Limited cognition (MMSE<math>\leq</math>24)</b>	35	15	<0.01

# Relationship Between Health Literacy and Healthcare Related Internet Use

Variable	Uses Internet to...			
	Access healthcare information <u>OR</u> contact providers vs. none		Access healthcare information <u>AND</u> contact providers vs. none	
	(%)	OR (95% CI)	(%)	OR (95% CI)
<b>Adequate HL<sup>2</sup></b>	91	Ref	97	Ref
<b>Limited HL<sup>2</sup></b>	9	0.11 (0.04-0.30)	3	0.20 (0.04-0.96)

<sup>1</sup>Adjusted by age, gender, race, income, English proficiency, cognition, and physical function

<sup>2</sup>Measured by the Short Test of Functional Health Literacy Assessment

# Conclusions

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- Among Internet users, participants with inadequate HL were less likely to use the web for healthcare purposes
- This effect remained significant when adjusted for patient socio-demographic factors, English proficiency, and health status

# Limitations

- Analysis limited to study participants that completed 6-month follow-up
  - Non-respondents more likely have inadequate HL
- Patient Internet use based on self-report
  - Internet use was not quantified

# Implications

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- Even though increasing numbers of adults have Internet access, inadequate HL may limit some individuals from using this access for healthcare
- It is important to consider whether the target audience of Internet-based health resources has the capacity to use them as intended

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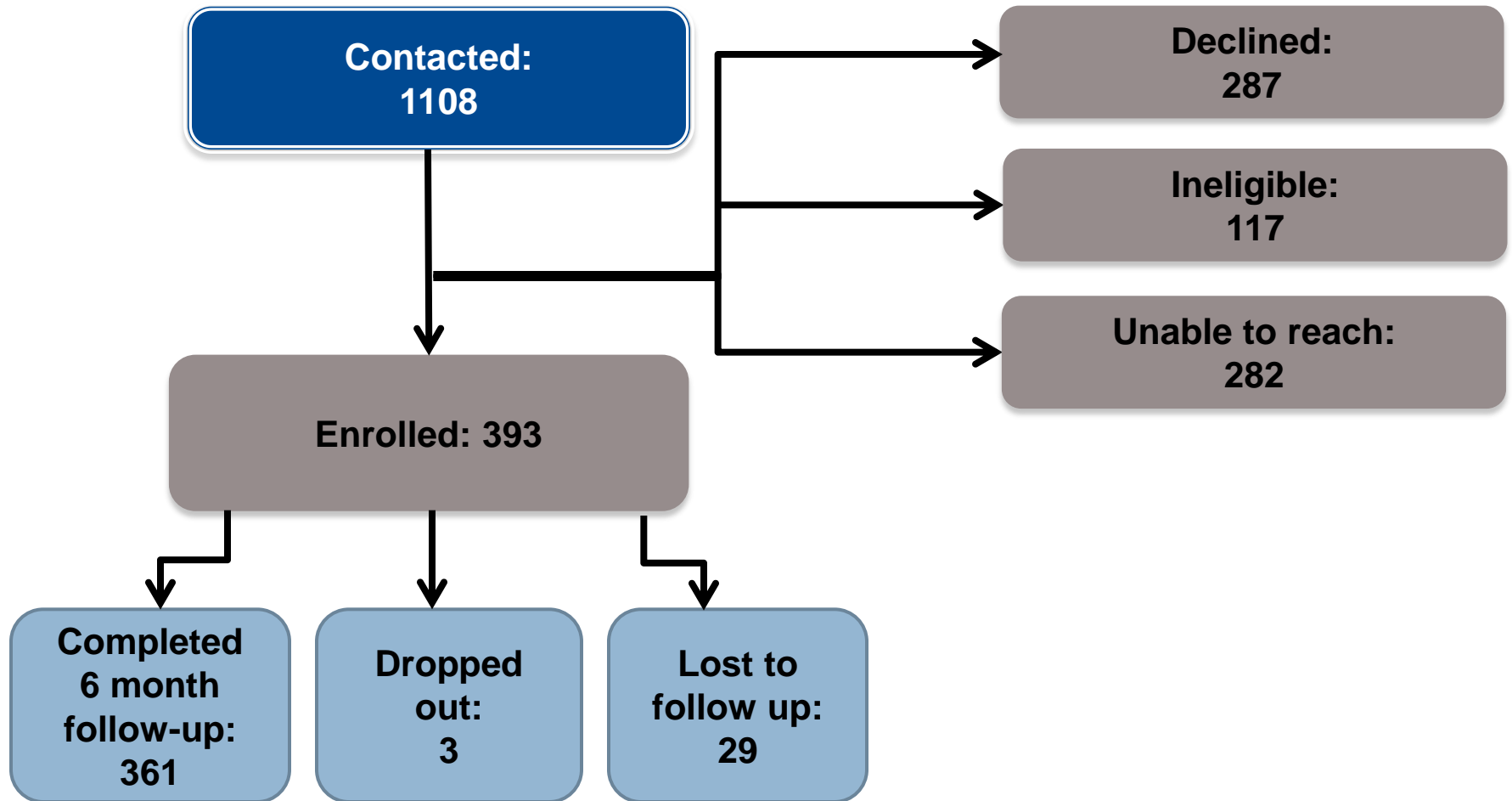
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# QUESTIONS?

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# Study Recruitment Diagram



# Relationship Between Health Literacy and Sum of Healthcare Related Internet Use Items

Predictor	Healthcare Information	Contact Providers	Healthcare Information OR Contact Providers vs. None	Healthcare Information AND Contact Providers vs. None
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Low health literacy	0.13(0.06-0.31)	0.10(0.02-0.44)	0.11(0.04-0.30)	0.20(0.04-0.96)
Age			1.02(0.97-1.07)	0.97(0.92-1.01)
Male			0.81(0.39-1.70)	1.40(0.74-2.66)
Race			-	-
White, non-Hispanic			Ref	Ref
African-American, non-Hispanic			0.52(0.22-1.26)	0.67(0.30-1.50)
Hispanic			0.47(0.12-1.88)	0.63(0.15-2.70)
Low income (≤\$1350/month)			0.52(0.23-1.18)	0.31(0.13-0.77)
Low English proficiency			1.74(0.33-9.25)	0.41(0.04-4.36)
Limited cognition (MMSE≤24)			0.79(0.31-2.01)	0.63(0.23-1.77)
Any physical impairment (ADLs≥1)			0.62(0.26-1.49)	0.41(0.14-1.16)