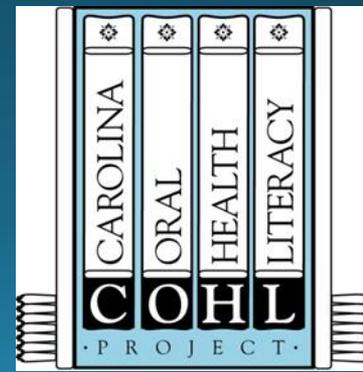


UNC  
DENTISTRY

# Longitudinal Changes in Oral Health Literacy among a Low-Income Population

W.F. Vann, Jr.  
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A. Kranz  
A.D. Baker  
J.Y. Lee



- “The degree to which individuals can obtain, process, and understand the basic health information and services they need to make appropriate health decisions”

(Institute of Medicine, 2004)

- It represents a constellation of skills including the ability to interpret documents and read and write prose (print literacy), use quantitative information (numeracy), and speak and listen effectively (oral literacy).

(Institute of Medicine, 2004)

# Low Health Literacy

- Affects between 30-40% of adults.
- Has been shown to affect health outcomes.

# Our Previous Endeavors to Study Literacy in the Oral Health Context (OHL)

Instrument development & refinement  
(TOFHL, REALM)

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# Previous Findings

- Caregiver OHL was significantly associated with children's dental disease status.

*Pediatrics 2010*

- Low caregiver OHL may be an important determinant of the meaningful use and cost of oral health care.

*Journal of Dental Research 2013*

A **gap** in knowledge relative to literacy  
in the oral health context?

*“The stability of literacy over time”*

# OUR AIMS

- Describe changes in OHL over time among a community-based cohort of low-income caregivers.
- Examine factors affecting changes in OHL over time.

# COHL Data Set

- Baseline data from 1,405 caregiver/child dyads obtained in 2008.
- Follow-up data from a total of 412 caregivers, 36 months later.

# Summary of Methodology for Current Study

- Baseline & follow-up data from 412 caregivers
- Caregiver's and children's socio-demographic information
- Dental Knowledge Questions (6-item agree/disagree scale)
- Dental Attendance (time since last dental visit)
- OHL using REALD-30

# Summary of Methodology for Current Study

We relied upon descriptive, bivariate, and multivariate statistical methods based on linear regression.

# Results

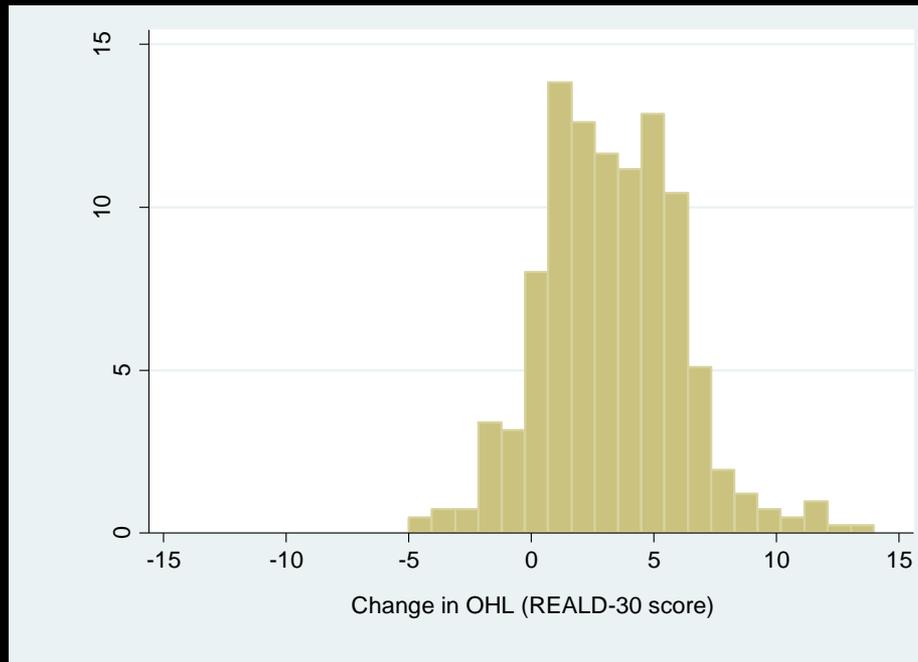
**Table 1.** Changes in oral health literacy (REALD-30 scores) overall and across strata of socio-demographic and oral health-related covariates among the follow-up sample of caregivers (n=412) participating in the Carolina Oral Health Literacy study between 2008 and 2013.

	n <sup>1</sup> (%) <sup>2</sup>	Oral Health Literacy (REALD-30)			P <sup>4</sup>
		Worsened n (%) <sup>3</sup>	No change n (%) <sup>3</sup>	Improved n (%) <sup>3</sup>	
<b>Total</b>	412 (100)	35 (8)	33 (8)	344 (84)	
<b>Race</b>					0.2
White	164 (40)	11 (7)	8 (5)	145 (88)	
African American	161 (39)	17 (11)	17 (11)	127 (79)	
American Indian	87 (21)	7 (8)	8 (9)	72 (83)	
<b>Caregiver's sex</b>					1.0
Male	1 (0.2)	0 (0)	0 (0)	1 (100)	
Female	411 (100)	35 (9)	33 (8)	343 (83)	
<b>Caregiver's age (mean, median)</b>	27.5 (25.3)	29.2 (24.3)	27.4 (25.4)	27.4 (25.4)	0.01
<b>Education</b>					0.8
<HS	83 (20)	6 (7)	9 (11)	68 (82)	
HS/GED	138 (34)	11 (8)	12 (9)	115 (83)	
Some college	154 (37)	16 (10)	10 (6)	128 (83)	
≥College	37 (9)	2 (5)	2 (5)	33 (89)	
<b>Marital status</b>					0.5
Single	259 (63)	20 (8)	23 (9)	216 (83)	
Married	108 (26)	9 (8)	6 (6)	93 (86)	
Divorced/separated/other	44 (11)	6 (14)	4 (9)	34 (77)	
<b>Number of children</b>					1.0
1	152 (42)	12 (8)	11 (7)	129 (85)	
2	110 (30)	8 (7)	10 (9)	92 (84)	
3	66 (18)	7 (11)	5 (8)	54 (82)	
≥4	37 (10)	4 (11)	3 (8)	30 (81)	
<b>Oral health status</b>					0.7
Excellent/V. Good/Good	294 (72)	23 (8)	23 (8)	248 (84)	
Fair/Poor	117 (28)	12 (10)	10 (9)	95 (81)	
<b>Last dental visit<sup>5</sup></b>					
Within the last 1 year	252 (61)	21 (8)	18 (7)	213 (85)	0.7
Within the last 2 years	331 (81)	26 (8)	26 (8)	279 (84)	0.7
Over 2 years ago/never	80 (19)	8 (10)	7 (9)	65 (81)	

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<b>Marital status</b>						0.3
	Single	259 (63)	20 (8)	23 (9)	216 (83)	
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**Table 2.** Pairwise correlations of changes in oral health literacy, knowledge, and educational attainment with age at baseline and follow-up time among the follow-up sample of caregivers (n=412) participating in the Carolina Oral Health Literacy study between 2008 and 2013.

	Oral health literacy (REALD-30)	Knowledge score (6-item scale)	Educational attainment	Age at baseline	Follow-up time
Oral health literacy (REALD-30)	1.00				
Knowledge score (6-item scale)	0.10*	1.00			
Educational attainment	0.06	-0.04	1.00		
Age at baseline	-0.09	-0.07	0.04	1.00	
Follow-up time	-0.13*	-0.02	-0.14*	0.02	1.00

\*denotes nominally statistically significant correlation; none was statistically significant after a Sidak correction for multiple testing

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Knowledge score (6-item scale)	0.10*	1.00			
Educational attainment	0.06	-0.04	1.00		
Age at baseline	-0.09	-0.07	0.04	1.00	
Follow-up time	-0.13*	-0.02	-0.14*	0.02	1.00

\*denotes nominally statistically significant correlation; none was statistically significant after a Sidak correction for multiple testing

**Table 3.** Results of multivariate linear regression modeling of oral health literacy changes across sociodemographic characteristics, oral health status, dental attendance, and change in oral health knowledge and among the follow-up sample of caregivers (n=412) participating in the Carolina Oral Health Literacy study between 2008 and 2013.

	Beta	95% CI	P
<b>Age (years, at baseline)</b>	-0.04	-0.08, -0.00	0.04
<b>Follow-up time (months)</b>	-0.03	-0.05, 0.01	0.2
<b>Race</b>			
White	<i>referent</i>	.	.
African American	-0.49	-1.23, 0.24	0.2
American Indian	-0.05	-1.17, 1.06	0.9
<b>Change in educational attainment<sup>1</sup></b>	0.61	-0.18, 1.41	0.1
<b>Oral health status</b>			
Excellent/V. Good/Good	0.38	-0.27, 1.04	0.3
Fair/Poor	<i>referent</i>	.	.
<b>Last dental visit within the last 1 year</b>	0.26	-0.34, 0.85	0.4
<b>Change in oral health knowledge<sup>1</sup></b>	0.22	-0.05, 0.48	0.1

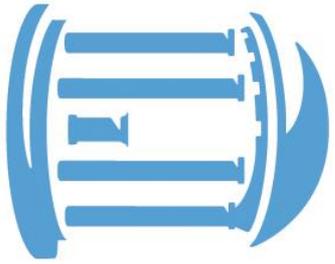
<sup>1</sup>changes variables were coded such that higher educational attainment and better oral health knowledge were given a positive sign

# Conclusions

- Over 36 months, OHL improved in this moderate-sized community-based sample of low-income caregivers.
- OHK and OHL followed parallel trajectories.
- Younger participants showed more gains in OHL, while older ones showed more deterioration.

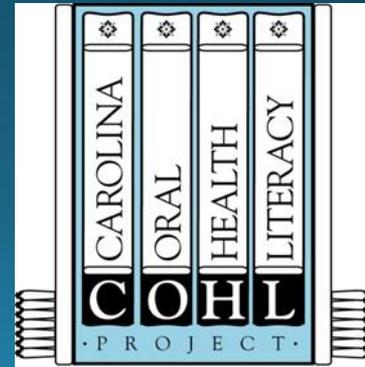
# Implications: lessons learned from HL in medicine may not be applicable for OHL for our population of younger caregivers...

- “Health literacy declines with increasing age among adults with diabetes.”  
Morris et al. Change in health literacy over 2 years in older adults (>65) with diabetes. *Diabetes Educ* 2013 39(5)638-46.
- Health literacy in **young adults** has not been reported to date; however, ongoing studies are examining this question in patients with asthma and COPD, so more findings from medicine are in the pipeline.
- Also, a large study (LITCOG) is currently examining health literacy and cognitive change over time but no results have been published.



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# COHL Data Collected from Several Domains

- Socio-demographic
- Self-Reported Oral Health Behaviors and Knowledge
- Quality of Life, Self-Efficacy, Dental Neglect
- Dental Attendance
- Health Literacy and Oral Health Literacy