



CARDI•OH

Ohio Cardiovascular and Diabetes Health Collaborative



In partnership with:



Cardi-OH ECHO Tackling Type 2 Diabetes

Thursday, September 24, 2020

Disclosure Statements



- The following planners, speakers, moderators, and/or panelists of the CME activity have financial relationships with commercial interests to disclose:
 - Kathleen Dungan, MD, MPH receives consulting fees from Eli Lilly and Tolerion, institutional research fees from Eli Lilly, Novo Nordisk, and Sanofi Aventis, and presentation honoraria from Nova Biomedical, Integritas, and Uptodate.
 - Siran M. Koroukian, PhD receives grant funds for her role as a co-investigator on a study funded by Celgene.
 - Adam T. Perzynski, PhD reports being co-owner of Global Health Metrics LLC, a Cleveland-based software company and royalty agreements for book authorship with Springer Nature publishing and Taylor Francis publishing.
 - Martha Sajatovic, MD receives grant support as PI of studies with Nuromate and Otsuka, study design consulting fees from Alkermes, Otsuka, Neurocrine, and Health, and publication development royalties from Springer Press and Johns Hopkins University.
 - Christopher A. Taylor, PhD, RDN, LD, FAND reports grant funding for his role as a researcher and presenter for Abbott Nutrition and grant funding for research studies with both the National Cattleman's Beef Association and the American Dairy Association.
 - Jackson T. Wright, Jr., MD, PhD reports research support from the NIH and Ohio Department of Medicaid and consulting with NIH, AHA, and ACC.
 - These financial relationships are outside the presented work.
- All other planners, speakers, moderators, and/or panelists of the CME activity have no financial relationships with commercial interests to disclose.

Health literacy and numeracy and its impact on type 2 diabetes



Elizabeth Beverly, PhD

Associate Professor

Heritage Faculty Endowed Fellowship in Behavioral Diabetes

OHF Ralph S. Licklider, D.O., Research Endowment

Department of Primary Care

Ohio University Heritage College of Osteopathic Medicine

Goutham Rao, MD, FAHA

Chief Clinician Experience and Well-Being Officer, University Hospitals Health System

Jack H. Medalie Endowed Professor and Chairman

Department of Family Medicine and Community Health

Division Chief, Family Medicine, Rainbow Babies and Children's Hospital

Case Western Reserve University School of Medicine & University Hospitals Cleveland Medical Center

Objectives



1. Describe the scope and impact of poor health literacy upon self-management of type 2 diabetes.
2. Define patient numeracy.
3. Describe the impact of poor patient numeracy in the self-management of type 2 diabetes.

Health Literacy



- The degree to which people have the capacity to obtain, process, and understand basic health information and services to make appropriate health decisions.

Prevalence Low Health Literacy



- Low health literacy in adults with type 2 diabetes:
 - Global prevalence: 34.3%
 - US prevalence: 28.9%
 - Education mediates the relationship between health literacy and health outcomes.

Impact on Type 2 Diabetes

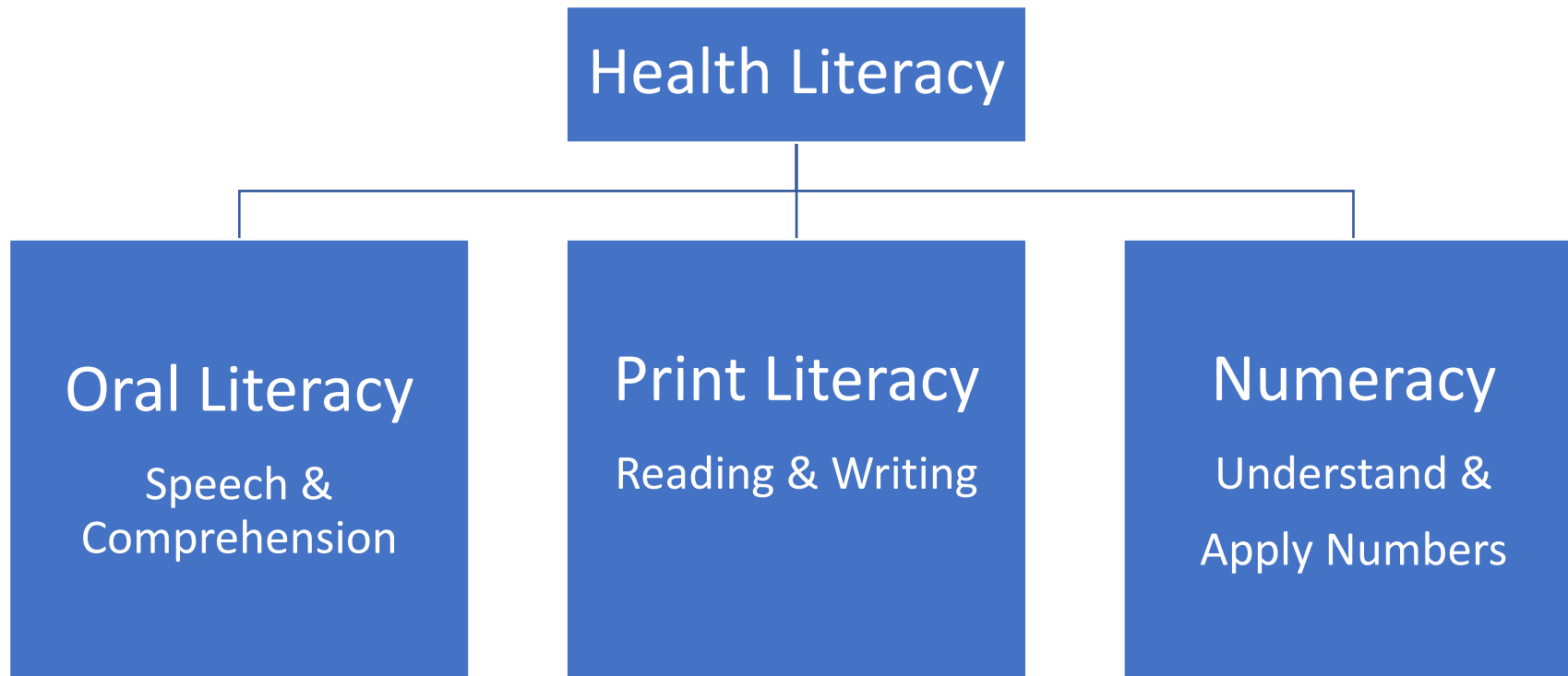
- Lower health literacy associated with:
 - Less diabetes knowledge
 - Higher A1C levels
 - Decreased exercise and foot care*
 - Difficulty communicating and understanding medical terms
 - Less desire to participate in shared decision-making

*Significant in studies using self-report measures

Impact on Type 2 Diabetes

- Gaps in knowledge:
 - Relationship between health literacy and self-care
 - Relationship between health literacy and self-efficacy
 - Gender differences
 - Effectiveness of interventions with experimental design
 - Cost-effectiveness of interventions
 - Influence of environment

Types of Health Literacy



Numeracy in its various forms

- Broadly:
- the ability to understand and work with numbers
- Health numeracy:
- Health numeracy is the degree to which individuals have the capacity to access, process, interpret, communicate, and act on numerical, quantitative, graphical, biostatistical, and probabilistic health information needed to make effective health decisions.

Physician/Health professional numeracy



> [Acad Med.](#) 2010 Nov;85(11):1794-9. doi: 10.1097/ACM.0b013e3181e7218c.

Physician numeracy as the basis for an evidence-based medicine curriculum

[Goutham Rao](#) ¹, [Steven L Kanter](#)

Affiliations + expand

PMID: 20671540 DOI: [10.1097/ACM.0b013e3181e7218c](#)



Common Numeracy Skills

Common Numeracy Skills

Skills

Numeration/counting/hierarchy

Calculations (addition, subtraction, multiplication, division)

Understanding time/dates

Reading graphs/tables/figures/ measurement

Using fractions/ decimals/ percentages/ proportions

Understanding probability

Higher order mathematics (algebra, geometry, calculus, etc.)

Applied (Contextual) Skills

Performing multi-step math problems

Estimation

Applying logic

Ability to interpret/ infer mathematics from problem/situation, problem solving

Scope of the Problem

- Given a bus schedule, 32% of adults cannot figure out the duration of a ride. (110 million Americans)
- Low numeracy strongly associated with poor diabetes control

New Report Documents Low Level of Numeracy in Adult Black Population

Filed in Research & Studies on September 7, 2020



The Program for the International Assessment of Adult Competencies is a large-scale study of working-age adults – ages 16 to 65 – conducted by the U.S. Department of Education that assesses adult skills in three domains: literacy, numeracy, and digital problem solving. The assessment defines numeracy as “the ability to access, use, interpret and communicate mathematical information and ideas in order to engage in and manage the mathematical demands of a range of situations in adult life.”

So what should we do?

- Awareness
- Assessment

Question 1

You are told to follow the sliding scale shown here. The sliding scale indicates the amount of insulin you take based upon your blood sugar levels.

If Blood sugar is:	Units of Insulin
130-180	0
181-230	1
231-280	2
281-330	3
331-380	4

How much insulin would you take for a blood sugar of 295?

ANSWER ____ units

Correct answer: 3 units

Percent answered correctly 85%



Thank you!

Questions/Discussion



CARDI•OH

Ohio Cardiovascular and Diabetes Health Collaborative

Extra slides



In partnership with:



Low Health Literacy



- More prevalent among:
 - Older adults
 - Minority populations
 - Medically underserved people
 - People with low socioeconomic status

Impact of Low Health Literacy



- Low health literacy results in:
 - Medication errors
 - Not performing self-care behaviors
 - Reduced use of preventive services
 - Increased emergency department visits
 - Longer hospital stays and increased hospital re-admissions
 - Increased mortality

Berkman ND et al., Literacy and Health Outcomes, AHRQ, 2004; Health Literacy: A Prescription to End Confusion, 2004, National Academies Press.