Exploring Oral Literacy Burden in Medical Dialogue: Predictors of learning among analogue patients with restricted and adequate literacy skills

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Health Literacy Burden in print is widely recognized

Adaptation of informed consent print materials to meet the needs of low literate patients (aiming for a ceiling of 8th grade level) is now routine – even mandated in the US (Paasche-Orlow, NEJM, 2004).

Thousands of studies have analyzed the suitability and reading level of health education materials for diverse patient and community populations; for the most part the literacy demand far exceeds average reading skills.

Low literacy has consequences beyond decoding to poor comprehension of complex oral language

Low literacy has been associated with poor comprehension and recall of complex oral language. Patients complain they are not given information about their problems *in ways they could understand*. Low literate patients have lower levels of health knowledge even after attending special classes.

(Williams et al, 1998; Schillinger et al, 2004; Baker et al, 1996)

Low literacy has consequences for expressive language

Patients with poor literacy skills are more likely to use descriptive language that is concrete and highly contextualized. Restricted language interferes with medical communication; doctors regard these patients as unreliable sources of medical history (Farmer et al, 2006)

and the patients report not feeling listened to. (Baker et al, 1996; Bennett, 2006)

Most literacy measures are print-based and although it is possible to assess oral literacy, it is infrequently examined outside of early childhood or condition-related disability.

No studies have attempted a systematic assessments of *oral* literacy demand within the medical dialogue.

Genetic counseling presents particular, but not unique, oral literacy demands. The field is rapidly evolving, its language is complex and largely unfamiliar to the lay public, and genetic counseling sessions tend to be long, informationally dense and abstract.

Study AIMS

Explore the manifestation of oral literacy burden within the context of genetic counseling practice and its effect on analogue patient learning

Specify and explore four domains of oral literacy burden:

(1) Medical jargon
(2) Informational context
(3) General language complexity
(2) Dialogue Interactivity

Hypothesis: high oral literacy burden

-- will be associated with lower levels of learning for all analogue patients

-- the effect will be greatest for analogue patients with restricted literacy skills.

Study Methods

Genetic Counselors: 96 prenatal genetic counselors (US and Canada) recruited at the NSGC national conference to conduct a prenatal genetic counseling session

Simulated Clients: Six female and three male partners (African American, Latino, and White) trained to consistently portray a scripted case

Videotapes were RIAS coded to create measures of informational context and dialogue interactivity. Session transcripts were used to assess medical jargon, and general language complexity

Taping of sessions in hotel rooms at the NSGC meetings in Charlotte, NC

Analogue Study: Videotapes were used to assess likely client outcomes

Analogue Clients: 309

subjects recruited in two cities: Baltimore and Salt Lake City to watch the session videotapes while imagining they are the session client or spouse.

AC literacy was measured using REALM (and REAL-G) Erby et al (2006).

Analogue Clients: men and women between 35 and 50 with at least one child and no prior GC contact)

African American (n= 131)
White subjects (n=139).

Oral Literacy Burden Indicator 1
---Use of medical jargon

Derived from analyses of session transcripts

Count of the number of different key terms used (term coverage)

Average number of repetitions of each terms

Jargon use as % of all transcript words

*Variation
*Susceptibility
*Sporadic
*Hereditary
*Mutation
*Chromosome
*Abnormality
Uterus
Disorder
Instruction
Generation
Retardation
Surgery
Population
Miscarriage
Development
Condition
Carrier
Insurance
Ultrasound
Syndrome

Oral Literacy Burden Indicator 2: --General language complexity

- Measures include (Microsoft Grammar Summary):
  - Flesch-Kinkaid grade level
  - Flesch reading ease
  - Average number of syllables per word (ASW)
  - Average number of words per sentence
  - Percentage of transcript sentences in the passive voice

Oral Literacy Burden Indicator 3: Informational context

Informational Context was calculated as the percentage of informational statements (derived from RIAS codes) that were given using a personalized rather than depersonalized contextual frame.

Personally Contextualized informational "Based on *what you told me about your history*, there is a 1 in 400 chance *that your test will show that your baby has one of these genetic mutation"*

Depersonalized context "Nobody has a risk of zero – a pregnant women over 35 has a 1 in 400 chance of having a baby with this mutation"

Dialogue Pacing, Density, and Interactivity

Derived from RIAS codes

- Turn-taking (number of floor changes)
- Turn density (number of complete thoughts expressed within a counselor turn)
- Turn duration
- Interactivity

Outcomes

Genetic Counselors: Self-rated their educational effectiveness immediately following the simulated session

After viewing the session videotape, AC completed a 7-item prenatal knowledge questionnaire (adapted from Marteau et al) and rated the degree to which they identified with the client in the video (7-pt scale)

Genetic counselors' use of medical jargon and complex language was *inversely* related to self-ratings of informational effectiveness

Counselors' self-ratings of informational effectiveness was positively correlated with analogue clients' knowledge scores (.26*)-- but only for those with adequate literacy.

Differences in Knowledge by Analogue Patient Characteristics

Adequate literacy (above 8th grade level), non-minority ethnicity, and degree of identification with the simulated patient were all independently correlated with knowledge.

Total information communicated was associated with both knowledge score and oral literacy burden.

	Prenatal Visits (n)		
	All (309)	LL (152)	HL (157)
Genetics Specific Terminology			
All REAL-G words	.03	.02	**-.16****
Unique REAL-G words	.02	.07	-.04
Ratio of REAL-G words to total transcript words	.03	.02	**-.11***
General Language Complexity			
Average syllables per word	-.02	-.04	-.02
Flesch-Kincaid Reading Grade	-.04	**-.07**	**.15***
Dialogue Structures			
Syllables/ second	.01	.03	0
Number of turns	.03	.09	-.03
Turn density	-.15	**-.35*****	.05
Turn duration	-.11	**-.34****	.13*
Interactivity	.04	**.16***	**-.11+**
% Information Personally contextualized	.08	**.18***	.02

Beta coefficients from regression equations using GEE to account for nesting, AC identification with patient, AC ethnicity and the amount of information communicated

CONCLUSIONS

AC ethnicity contributed independent variance to learning in this study. We don't know why or how!

We do not have sufficient statistical power to disentangle literacy and ethnicity in our study population, (78% of the African American ACs scored below 8th grade level compared with 16% of the White ACs). Literacy accounts for most of the variance, however ethnicity may be a factor as African Americans are reported to hold more negative or ambivalent attitudes about genetic testing than their white counterparts, and these attitudes may have reduced relevance and attentiveness to the information presented during the sessions and/or raised suspicion and lowered trust.

CONCLUSIONS

This study demonstrates that oral literacy burden can be measured and that the domains have face and predictive validity.

Learning is associated with patient literacy *and* the oral literacy burden of the medical dialogue. Interactivity and contextualized information is especially important for low literate learners.

Reduced oral literacy burden carries an informational and perhaps organizational cost; literate learners learned less in high interactivity sessions perhaps because this type of presentation style is less comprehensive or well organized than dense talking blocks.

Finally, a broad spectrum of sociocultural and socioemotional factors may also play an important role in patient learning.