

A New, Short, Easy-to-Use Self-report Measure of Health Literacy

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BACKGROUND

The measurement of health literacy has been a weakness in the field since the multi-dimensional and complex concept was initially developed.

We report on the development and initial testing of a short, easy-to-use self-report measure of health literacy based on the conceptual framework of health literacy presented in the Calgary Charter on Health Literacy, which was published in 2011.

Most, if not all, existing health literacy measures are used to correlate a one-time assessment of health literacy to health status, but do not have a valid or reliable ability to assess change. As a result, there is scant evidence that an active intervention to change an individual's health literacy can lead to changes in health status.

METHODOLOGY

The purpose of this effort was to initially test the validity and reliability of a new, shorter, self-report measure of health literacy in both English and Spanish. This was conducted in the context of two distinct health literacy programs focused on improving health and well-being.

The Canyon Ranch Institute (CRI) Theater for Health program is an arts-based intervention using theater that includes live, unscripted interactions with audience members to determine the narrative that will produce the best health outcomes for the families and communities in the performance. The play's content and themes are based on formative research findings and reflect real-world conditions in the community where it is performed. We included the health literacy assessment in only the post evaluation within the communities in Lima, Peru, where we piloted CRI Theater for Health. This was done in Spanish with individuals living in two neighboring shantytowns – a very low-income population with low levels of literacy and education.

The Canyon Ranch Institute Life Enhancement Program (CRI LEP) is an integrative health intervention based on the best practices of health literacy to prevent, diagnose, manage, and reverse chronic disease in low-income communities. The CRI LEP includes approximately 40 hours of contact time for groups of approximately 20 participants. This includes interactive sessions focused on integrative health, nutrition, physical activity, stress management, sense of purpose, and spirituality. We include the health literacy assessment in both pre and post evaluation of the program in multiple communities across the United States. These include a largely white, rural community; a largely black population in the southern United States; a largely Hispanic/Latino community of mainly Puerto Rican descent in the south Bronx, NY; and a largely Hispanic/Latino community but of Mexican and Central American descent in southern Arizona. This piloting was completed in either Spanish or English, as appropriate. The health literacy measure is given as part of an interview with CRI LEP participants who are read the questions by a trained researcher who records their responses.

The scale's five items and Likert responses:

Please indicate on the following scale from Never (1) to Always (4) how often you engage in the following tasks.

	Never	Sometimes	Often	Always
Find health information.	1	2	3	4
Understand information about your health	1	2	3	4
Evaluate how health information relates to your life (e.g. determine if and how information is relevant to your life)	1	2	3	4
Communicate about your health to others	1	2	3	4
Act on information about your health	1	2	3	4

Reliability assessment	# of items in scale	N	Cronbach's alpha
CRI Theater for Health	5	118	0.87
CRI Life Enhancement Program	5	556	0.83

Pearson's Correlations – Theater for Health	Total Score					Pearson's Correlations – CRI LEP	Total Score				
	2.	3.	4.	5	Total Score		2.	3.	4.	5	Total Score
1. Find	0.68**	0.55**	0.48**	0.42**	0.73**	1. Find	0.41**	0.48**	0.38**	0.39**	0.73**
2. Understand		0.77**	0.61**	0.55**	0.90**	2. Understand		0.58**	0.32**	0.37**	0.70**
3. Evaluate			0.50**	0.523*	0.85**	3. Evaluate			0.43**	0.51**	0.80**
4. Communicate				0.57**	0.78**	4. Communicate				0.49**	0.73**
5. Use					0.78**	5. Use					0.75**

Note: % is of those who responded. Not everyone answered every question.	Average age	Female	White	Black	Mixed Race	Hispanic/Latino	English primary language	Average years of education	Income less than \$15k annually	Average # of chronic disease diagnoses
CRI Theater for Health	32.2	100%	0%	0%	0%	100%	0%	Less than high school	100%	Not asked
CRI LEP	52.8	85%	64%	24%	13%	32%	78%	12.8	38%	3

Selected Pearson's Correlations with health literacy post score - CRI Theater for Health	
Change in health knowledge	0.23*
Number of people spoke with about household hygiene	0.40**
Confidence to make changes	0.80**
Change in how often wash hands	0.21*
Change in how often brush teeth	0.30**
Change in how important hygiene is to health	0.24*
Change in how often talk about household hygiene	0.24*

Selected Pearson's correlations with change in health literacy - CRI Life Enhancement Program	
PHQ-9 Depression	-0.19**
Civic Engagement	0.17**
Health Care Communication scale	0.14**
Empowerment scale	0.44*
Goal making scale	0.44**
Navigation skill scale	0.45**
Self-reported knowledge	0.36**
How often ask health care professionals questions	0.38**
Stress	-0.34**
Glasses of water per day	0.12*
Use Nutrition Facts label	0.27**
Use Ingredients list	0.21**
Use new ways to prepare fruit and vegetables	0.16**
Satisfaction with life	0.22**
General health status	0.22**
How often receive emotional support needed	-0.11*

* - Significant at 0.05 level
** - Significant at 0.01 level



Participants in the CRI LEP in Cleveland, OH stretch out during a fitness session.



Actors perform in front of the community during the CRI Theater for Health performances in shantytowns of Lima, Peru.

KEY FINDINGS

In all contexts, Cronbach's alpha is at an acceptable level above 0.80. Scale items significantly correlate with each other and the total score.

Validity is further demonstrated by hypothesized statistically significant correlations between the change and/or post scores in health literacy and participants' changes in knowledge, attitudes, beliefs, behaviors, as well as numerous objective health status indicators (See Tables).

Additionally, in the CRI LEP we use the new health literacy measurement scale both pre and post. The intervention consistently creates statistically significant differences in health literacy for participants. (Pre 13.7; Post 15.1; Change 1.4; N=408; p ≤ 0.000)

In the CRI LEP, we also performed a linear regression analysis. While taking into account age, gender, years of education, income, number of children, and total number of chronic disease diagnoses at pre, a statistically significant relationship between change in self-reported general health status and change in health literacy exists. (Adjusted R squared 0.198, p ≤ 0.000)

IMPLICATIONS

Uniquely, this new health literacy measure has shown statistically significant change and a significant correlation of that change with changes in other health metrics. Ideally, next steps in this development process include using this methodology in a pre/post study design with a control or comparison group.

Based on available data, we conclude that this new measure of health literacy is easy to use, appears valid and reliable in the multiple cultural and linguistic settings where testing has occurred to date, is applicable across a range of health contexts, and lays the groundwork for future development of more objective skill-based measures of health literacy.

The policy, delivery, and practice implications for this health literacy measure are broad, when considering the unsustainable financial costs of low health literacy. Estimates of the costs of low health literacy vary, but are often estimated as ranging from \$106 to \$238 billion annually in the United States. Given that economic significance, as well as the individual and public health significance of health literacy, the ability to quickly and easily measure change in health literacy – and provide evidence that change in health literacy is associated with changes in health status – can further advance health literacy as an effective way to improve health at lower costs.

Acknowledgement:

We would like to thank each participant in the CRI LEP, all the CRI LEP Core Team members who provide the program to their communities, the sponsors of the CRI LEP in each community, and the founders of CRI who allow us to share the program in communities. We also thank the communities in Lima, Peru who supported and participated in the CRI Theater for Health program and our partner the Clorox Company.

