

Review Article

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Evaluating Health Literacy and Community Health Workers: An Interdisciplinary Approach

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ABSTRACT

Health literacy is a multifaceted concept that describes how people access, understand, and use health information to make decisions about their health. Low health literacy is linked to negative health outcomes, higher healthcare costs, medication errors, and widened health disparities. This study recognized the importance of health literacy. It focused on the role of Community Health Workers (CHWs) in addressing and improving health literacy in their scope of practice and within communities. Personal health literacy is a critical determinant of individual and community well-being. CHWs build connections between healthcare providers and the people they serve, playing a key role in promoting health literacy and addressing health disparities. This study synthesized existing literature, examined interventions and research, and evaluated a targeted intervention designed for CHW trainees. The intervention focused on enhancing knowledge in health literacy, building skills for effective patient communication, and identified challenges and opportunities for CHWs to enhance health literacy and improve community health outcomes. Pre- and post-intervention assessments measured trainees' confidence in their health literacy levels. This quasi-experimental research design can inform how when adequately trained, CHWs can effectively advocate health literacy, reduce disparities, and improve health outcomes. Also noted are implications for future interventions and training programs, emphasizing the importance of interdisciplinary collaboration and policy support to strengthen the role of CHWs in public health.

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Received: February 27, 2025; **Accepted:** March 05, 2025; **Published:** March 12, 2025

Keywords: Advocacy, Community Health Workers, Cultural Competence, Disparities, Healthcare Access, Health Education, Health Literacy, Interdisciplinary

Evaluating Health Literacy and Community Health Workers

Health literacy (HL) is a multifaceted concept that describes the ability to access, understand, and use health information to make informed decisions about one's health [1]. Low HL is linked to negative health outcomes, higher healthcare costs, medication errors, and widened health disparities [2]. The importance of HL is underscored throughout this study in that it focuses on the role of community health workers (CHWs) in addressing and improving HL in their scope of practice and within communities.

CHWs are trusted individuals in the community trained to provide culturally sensitive health education, advocacy, and support [3]. Their unique position within communities makes them well-suited to address HL challenges. Individuals often become interested in community health work due to life experiences, employment opportunities, or because they had a CHW themselves. This study explores the mechanisms through which CHWs contribute to enhanced HL, describes a research project measuring HL improvement in community health workers, and identifies the potential impact on overall community health outcomes.

Overview of Study

This study aimed to assess the knowledge, skills, and confidence in HL of CHWs in training to help bridge gaps between providers, clients, and community members. To participate, individuals must:

- Be currently enrolled in a community health worker training program
- Be at least 18 years of age; and
- Must have earned at least a high school diploma or the equivalent

Participants were provided with an informed consent form and had the option to not participate in the study, although the training was part of the CHW curriculum. The researcher developed and delivered an HL learning intervention to six cohorts of CHW trainees from April 2024 through August 2024. Five sessions were delivered via Zoom technology, and one was in person. Each session was two hours in duration. Participants provided demographics, completed a pre-assessment, engaged in a learning activity, and completed a post-assessment to measure learning and perceived confidence in HL.

The learning outcomes for the study were inclusive of HL content in that (1) the participant will be able to provide information to clients in plain language, and (2) the participant will be able to develop health literacy skills that improve communication and facilitate decision-making. These outcomes accommodated both the material and the range of participants with experience ranging from novice to experienced learners. Though the outcomes were broad, they allowed for adaptation throughout the program to focus on the needs of the learner(s). Throughout the instruction of this intervention, each group expressed interest on session topics that varied from class to class. Individual codes were issued to participants so that information could be de-identified. This

research was submitted to the Institutional Review Board (IRB) and was approved (IRB# 23-N-138).

Literature Review

Although the World Health Organization first used the term health literacy in 1974, the global community is still behind in learning its meaning and impact. Aihara and Ishihara reported that in a survey of 453 healthcare workers in community-based integrated support centers in the Hyogo and Osaka prefectures of Japan, which included nurses, care managers, and social workers, only 39 (8.8%) knew the term and definition of HL [4,5].

McCaffery et al, found that targeting HL in adult education programs may impact improved health [6]. This study measured participants' HL, confidence, and knowledge levels. All participants received the standard program curriculum, while a randomized group received additional HL content. After six months, those who had received the HL content reported higher levels of confidence and HL than their peers who only received the basic education, indicating retention of learned information. Additionally, those participating in the enhanced HL program stated they were likely to share the information to help others.

Another study in Japan reported that CHWs with higher levels of HL could find and understand health-related information and were generally more effective in communicating with their clients [7]. Furthermore, an extensive review of community-based HL interventions reported that CHWs deliver HL programming effectively and influence mental HL education and interventions [8].

Clear and effective communication between healthcare providers and patients is essential for achieving positive health outcomes. Coleman and Fromer reported that in a study of 45 participants, including 11 physicians and 34 non-physicians, HL knowledge and skills improved from pre- to post-training scores [9]. However, in sub-groups, physicians were least likely to change behaviors such as speaking slowly or using techniques such as plain language and teach-back with their patients. This study further supports the need for CHWs, as they are trusted healthcare workers, bridging gaps between providers and patients.

Research indicated that educating CHWs impacts their HL confidence [10]. For this study, two cohorts of CHWs were given a pre-and post-knowledge assessment, participated in a three-hour webinar focusing on the basics of HL and cultural humility, and then were given a handout with resources with terms, definitions, and additional materials for reference. When evaluated, both cohorts reported that the difference between the pre- and post-knowledge mean scores were significant when measuring confidence in defining HL and identifying HL practices.

A further study provided HL skill training in Texas during live, remote sessions to seven certified CHWs to improve teach-back, active listening, and action planning in their clinical environment [11]. Pre- and post-assessments showed an increased understanding of the need for these skills but also revealed a decrease in being capable (confidence) of effectively utilizing action planning and patient communication. Lessons learned from this study include the support and recommendation to standardize core CHW competencies and training standards across the United States.

Elements of constructivist theory were used in this study as pedagogical constructivism incorporates activity, interdisciplinary

transfer, action learning, and communication between the teacher and the student [12]. It is important to connect with learners as individuals using cultural humility while supporting a framework of life-long learning. Using Siebert's model of constructivist learning, elements including but not limited to interest, mind, feelings, perception, and reflection were incorporated into the intervention for this study to create a safe learning environment and encourage high levels of engagement. Additionally, the facets of this model promoted confidence and self-efficacy, motivation, needs analysis, and respect for the teacher and the student [12,13].

Constructivist theory was selected for this study as its foundation considers problem-solving, creative thinking, and culture [14]. In the pedagogical context, constructivism is centered on the learner as each individual connects current and past experiences. Initially discussed regarding child development, Piaget argued that constructivism promotes critical thinking and problem-solving development [15]. Training future CHWs on core competencies and working with patients from diverse backgrounds is essential to knowledge and skill development. Personal experience is not only expected to be intertwined with learning but also appreciated and appropriate [14]. Consequently, the researcher also constructed knowledge through participant interaction [16].

Other studies posit that constructivist concepts are fundamental in knowledge translation in a clinical healthcare setting. In a scoping literature review, Thomas et al, suggested that humans draw on past experiences and apply them to current situations to build knowledge and capacity [17]. Hence, the dynamic enables critical thinking and problem-solving, with the learner actively participating. Additionally, the researchers found that social constructivist approaches were common in interventions designed to increase skill levels, change behaviors, and increase knowledge [17].

Further, in a study of why women became CHWs in Mexico, Ramirez-Valles noted that their motives were socially constructed and are, therefore, relevant to each person's life experiences [18]. Recognizing the motives of individuals who pursue community health work provides insight into the communities and embodies the cultural humility essential in this line of work. Ramirez-Valles also suggested that motives change over time and that programs and organizations should be nimble to accommodate [18]. These principles further support intertwining constructivist frameworks into community health worker education and training.

Research Questions

This project addressed HL at the most basic level. As community health workers (CHWs) are liaisons between providers and community members, patients, or clients, CHWs must understand the deficiencies in HL and help fill the void. As a social determinant of health, health literacy affects how people find, understand, and use information to make informed choices about their health and well-being [1]. While HL is a global concern, some aspects of the focus may be community-dependent concerning social drivers.

The project initially measured participants' self-efficacy related to their confidence in their own level of health literacy, provided training on HL as it pertained to community health workers, and measured whether the learning outcomes were achieved during training through improved confidence.

- Does a structured health literacy education intervention improve the knowledge of health literacy concepts and

information for community health worker training program participants?

- Does a health literacy education intervention in a community health worker training program improve trainees' confidence in their health literacy levels?
- What variables contribute to health literacy confidence levels in community health worker trainees?

Research Design and Data Collection Methods

The author utilized a quasi-experimental design for this research. Data collection methods for this study included:

- The researcher will teach one section of an online or in-person course and the section is on health literacy.
- The researcher will be introduced to the participants in the course by the instructor of record and then the instructor of record will leave the online delivery platform or classroom instruction.
- The researcher will explain what she will be teaching and how she will be collecting data for research purposes. The researcher will explain that the instructor of the course will not have access to the data that is collected by the researcher and that the data collected will have no effect on their grade in the course.
- The researcher will share that she will be collecting information by using a separate code for each participant demographics, pre- and post- assessment questionnaire, and explain the purposes behind the questionnaire.
- The researcher will administer the pre-assessment and demographic form to the participants prior to presenting her section on health literacy.
- After completing her presentation on health literacy, the researcher will send all participants the post-assessment.

All consent, demographics, and pre-and post-assessments were administered through Qualtrics, software designed for users to build and distribute surveys, evaluations, and other instruments to collect data. Data files were then downloaded and entered into SPSS, a statistical software package, for analysis. The instructor submitted a list of participant names and emails to the researcher, and three-digit codes were generated and sent to each participant by the researcher along with the information on this study. Recipients used their unique code during the session for consent, demographic information, and pre-and post-assessments. If, during the consent procedure, the participant elected not to participate in the study, they were directed to the end of the survey, with the code recorded. After entering the same unique code on the pre-assessment, participants answered questions to measure confidence and knowledge in health literacy.

Finally, Frechtling Westat et al, recommended collecting knowledge and confidence levels pre-and post-intervention [19]. This provided stakeholders with a baseline of the participants' knowledge and confidence levels in HL prior to the intervention and what they reported after the intervention. Following said recommendation, participants utilized their unique codes a final time to complete the post-assessment which asked the same questions measuring knowledge and confidence levels related to HL.

Data Analysis

Out of 45 participants, 33 usable responses provided the necessary consent, demographic information, and pre-and post-assessments (n = 33) for this study. Participant demographics included gender identification, age, highest level of education, and county of

residence in Ohio. Descriptive statistics from SPSS include various demographic data. For gender (Table 1), 79% identified as a woman (26), 12% as a man (4), and 9% as non-binary (3). The mean age of all participants was 39.7 years, with a minimum age of 19 and a maximum age of 68. The standard deviation was 12.8.

Table 1: Participant Gender

Gender Identification	Frequency (n)	Percent (Valid)
Agender (genderless)	0	0
Genderqueer or Genderfluid	0	0
Man	4	12
Non-Binary	3	9
Questioning or Unsure	0	0
Two-Spirit	0	0
Woman	26	79
Prefer not to disclose	0	0
Additional gender category/identity not listed	0	0
Total	33	100.0

Note: No participant selected the identities of agender, genderqueer, genderfluid, questioning or unsure, two-spirit, prefer not to disclose, or any additional gender category/identity not listed.

Participants reported their highest level of education (see Table 2), with 9.1% having a high school diploma or general education diploma (GED) (3), some college or associate's degree 45.5% (15), bachelor's degree 33.3% (11), and master's degree 12.1% (4). Additionally, participants reported that 45.5% (15) previously received some form of HL education, and 54.5% (18) had not received any form of HL education prior to this intervention (see Table 3). Previous HL education may have included a formal setting such as in CHW training, workshops, webinars, or continuing education, or informal such as an infomercial, website, or by anyone who is not an educator.

Individuals participating in this training selected their Ohio county of residence from a drop-down box. Fourteen Ohio counties were represented with a concentration in Athens and Franklin counties (Table 4). Figure 1 provides a visual of the diversity in communities across the state.

Table 2: Participant Highest Level of Education

Level of Education	Frequency (n)	Percent (Valid)
High School Diploma/GED	3	9.1
Some college or associate's degree	15	45.5
Bachelor's degree	11	33.3
Master's degree	4	12.1
Doctorate/Terminal degree	0	0
Total	33	100.0

Note: No participants selected a Doctorate/Terminal degree level of education.

Table 3: Prior Health Literacy Education

Answer	Frequency (n)	Percent (Valid)
No	18	54.5
Yes	15	45.5
Total	33	100.0

Table 4: County of Residence

County	Frequency	Valid Percent	Cumulative Percent
Adams	1	3.0	3.0
Athens	8	24.2	27.3
Butler	1	3.0	30.3
Crawford	1	3.0	33.3
Franklin	11	33.3	66.7
Guernsey	1	3.0	69.7
Hocking	1	3.0	72.7
Knox	1	3.0	75.8
Lawrence	1	3.0	78.8
Richland	1	3.0	81.8
Ross	2	6.1	87.9
Scioto	2	6.1	93.9
Tuscarawas	1	3.0	97.0
Washington	1	3.0	100.0
Total	33	100.0	100.0

Note: Participants indicated fourteen counties as their residence, including Adams, Athens, Butler, Crawford, Franklin, Guernsey, Hocking, Knox, Lawrence, Richland, Ross, Scioto, Tuscarawas, and Washington counties. All 88 counties were options to select. Map of Ohio Representing CHW Trainees' County of Residence



Note: Image taken from [22]

Figure 1

Results

Using regression analysis as a powerful statistical tool to identify and quantify relationships between the dependent and independent variables, the regression analysis determined that the variables of the highest level of education, age, and county of residence did not contribute to the increase in confidence in HL at a significance level of <0.01 , but that prior HL education did impact confidence in HL levels of trainees at the exact p-value of <0.01 (Table 5). The only variable that explains the increase in HL from pre- to post-assessment scores is the HL education intervention demonstrated by the paired t-test (Table 6).

Table 5: Regression Analysis of Confidence in Health Literacy Increase from Pre-Assessment to Post-Assessment

		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
Model		B	Std. Error	Beta		
1	(Constant)	.772	.600		1.288	.208
	Participant Age	.021	.009	.368	2.237	.033*
	Highest Level of Education	.070	.139	.082	.507	.616
	Prior Health Literacy Education	-.716	.228	-.504	-3.149	.004**
	a. Dependent Variable: Confidence Increase from pre- to post-assessment					

Note: * = .05 significant, ** = .01 moderately significant, *** = .001 highly significant

Table 6: Paired Samples Correlations of Pre-Assessment and Post-Assessment Confidence in Health Literacy and Correct Answers

Paired Samples Correlations					
		<i>n</i>	Correlation	Significance p	
				One-Sided	Two-Sided
Pair 1	Pre- and Post-Assessment Confidence	33	.401	.010	.021
Pair 2	Pre- and Post-Assessment Correct Answers	33	.567	<.001	<.001

Note: .05 significant, .01 moderately significant, .001 highly significant

Research Questions and Findings

- Does a structured health literacy education intervention improve the knowledge of health literacy concepts and information in community health worker training programs?
- The paired samples t-test (Table 6) indicates higher mean values on the post-assessment correct score (7.09) than the mean on the pre-assessment correct score (4.82) at a p-value of <0.001.
- Does a health literacy education intervention in a community health worker training program improve trainees' confidence in health literacy?
- The paired t-test (Table 6) shows a p-value of 0.021, indicating that the difference in means between pre- and post-assessment confidence in HL did not happen by chance and that the HL education intervention successfully improved trainees' confidence. While it does not meet the standard of .001, which is highly significant, it is significant at .05.
- What variables contribute to confidence levels in health literacy in community health worker trainees?
- In a regression using the dependent variable confidence increase from pre- to post-assessment, participant age and prior HL education were significant at the .05 (.033) and .01 (.004) confidence levels, respectively (Table 5). Using an R2 model summary (Table 7), R2 suggests that 29.9% of the change in confidence levels in HL reported between the pre-and post-assessment are explained by the predictors of age, highest level of education, and prior HL education. County of residence was not used in this regression, nor was gender, as only four participants identified as male ($n=4$). Figure 2 shows the increase in HL confidence from pre- to post-assessment.

Table 7: R2 Using the Dependent Variable Confidence Increase from Pre-Assessment to Post-Assessment

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.547 ^a	.299	.227	.632
a. Predictors: (Constant), Health Literacy Education, Highest Level of Education, Participant Age				

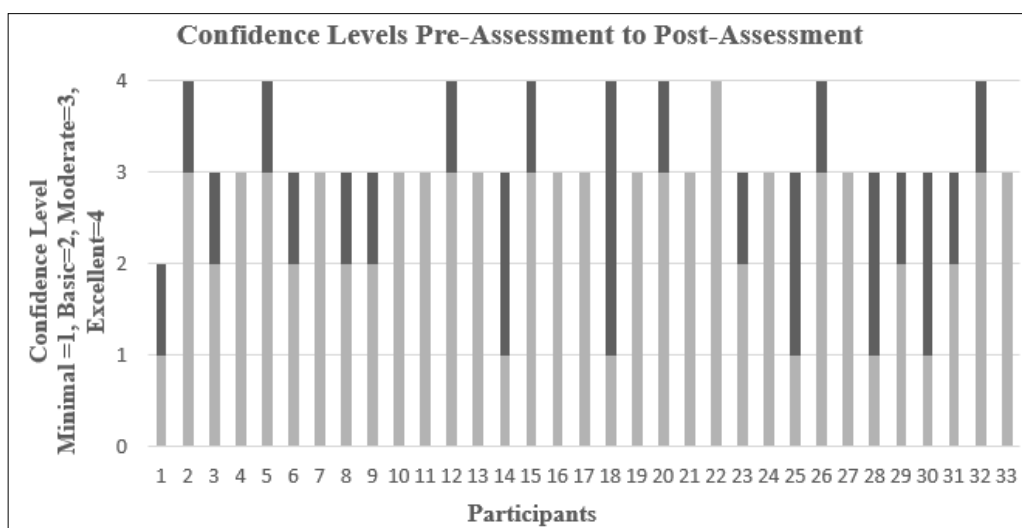


Figure 2: The Difference in Individual Participant Confidence from Pre-Assessment to Post-Assessment

Discussion

Relating current learning to previous experiences was common throughout each training cohort. In this context, as discussed by Siebert and Mogashoa, constructivism was present as learner-centered, and each individual connected their current and past experiences [13,14]. For example, a few participants commented on using plain language exercises and how using teach-back would have improved their experience with a healthcare provider. By evaluating their own experience, they could articulate how a patient would feel when given information in terms they could not easily understand, coinciding with the study that Thomas et al, conducted and reported that participants drew on past experiences and applied them to current situations to build knowledge and capacity in clinical healthcare settings [17].

Furthermore, after each session, participants discussed what they learned from the HL intervention and how they could implement the skills acquired in the immediate future. The interaction among these adult learners brought forth further insight and examples of how this information would have been useful in previous scenarios with clients, employers, peers, or their situations.

It should also be noted that of those who did not have prior HL education (18), 13 participants reported an increased level of confidence in HL, with eight increasing by one level and five increasing by two levels (Figure 2). Five individuals reported no change in their HL confidence levels. Moreover, of the 15 participants with prior HL education, six reported an increased confidence level in HL by one. Nine reported no change, indicating that those participants who did not have prior HL education showed more of an increase in their HL confidence level than those who had HL education prior to this training. This suggests that the intervention benefited those with no prior knowledge, which fulfills the goal of bridging the gap in confidence and knowledge.

While it is encouraging to witness increased confidence levels reported by participants with no prior HL education, overconfidence bias may affect those individuals [20]. An overconfidence bias happens when participants overestimate their knowledge, cognition, or skills. In other words, the possibility exists that because those participants had not experienced any prior learning related to HL and their confidence was lower; after receiving HL education they reported higher levels of confidence in HL that were not accurate or that were not a true reflection of their confidence. It is acknowledged that CHW trainees in programs such as the program in this study continue to pursue learning and development in this area to close gaps between current and desired states of knowledge and understanding.

Limitations

With new CHWs being trained annually across the United States and globally, the impact of their knowledge base, skill level, and education is felt worldwide. This intervention only touched a small population of CHWs in a specific training program for a two-hour period. Health literacy covers a myriad of information and cannot be covered extensively in a short period of time.

Select topics were presented to be informative, provide a basic understanding of health literacy, how it affects clients' lives, how it impacts CHWs, and offer tools that can be used immediately. While this study provided insight into practice and may aid future studies, results should be interpreted cautiously. Further research is needed to examine the social and economic impact of providing HL training to community health workers by tracking and analyzing longitudinal data.

Conclusion

By taking an interdisciplinary research approach, the possibility of positively impacting health outcomes is beyond limits. This approach fosters innovation by integrating insights and methodologies from diverse fields, promoting more holistic and practical solutions to complex health challenges. Effectively implementing research-based changes in practice means recognizing and addressing perceived barriers that educators and healthcare practitioners encounter in what Hofmann described as paradoxes, in that they require balancing conflicting demands such as being open to act as a change agent, moving past perceived norms to establish new ones, working collaboratively with others, and taking risks [21].

The purpose of this study was to assess the knowledge, skills, and confidence in HL of CHWs in training to help bridge gaps between providers, clients, and community members. Participants were assessed on knowledge and confidence in their HL levels pre- and post-intervention. The analysis suggests that the intervention increased both knowledge and confidence in the HL levels of the community health worker trainees, essentially underscoring the value of an educational intervention tailored to this audience.

The implications are that these trainees are better prepared to serve their communities when entering the workforce. In turn, increasing confidence empowers them to investigate and explore research, education, and employment opportunities. These CHWs will have a deeper understanding of clients' barriers to finding, accessing, and understanding health information, and they will be better equipped to communicate health information effectively. By improving CHWs' confidence levels of HL, they are empowered to contribute to improved health outcomes in their communities by reducing health disparities and increasing health awareness and preventive education.

Additionally, feedback from the CHW training director indicated that while the participants recognized they acquired information and skills related to HL, they needed to be made aware of the low literacy rates in the United States and how it impacts public health and well-being. In other words, they did not know what they did not know. The feedback from the instructor further supports learning relative to the comments made during the sessions for CHWs using plain language and teach-back [22].

It is important to recognize the roles of CHWs and their impact on healthcare. Continued investments in training, continuing education, and increasing levels of HL are critical strategies for improving overall health outcomes. Stakeholders, policymakers, and institutions of higher learning should prioritize these initiatives and realize the social return on investment CHWs provide.

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