

Health Literacy Improvement in Low Literacy Population

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PLAIN LANGUAGE SUMMARY: This study examined alternative approaches to educational resources catering to low education/low literacy populations to engage and empower them to participate actively in their healthcare planning. An extended timeline of this study could show improvement in health literacy levels by evaluating health literacy via standardized pre- and post-program completion assessment.

Keywords: health literacy, alternative education resources

Abstract

BACKGROUND: Health literacy impacts health disparities as it relates to a social determinant of health. There is little research on policies or programs to improve. However, not mutually exclusive, low health literacy correlates with low education and low literacy population. Decreased health literacy increases health care costs, morbidity, primary and secondary prevention, and reduced compliance with medications or treatment plans.

OBJECTIVE: To empower individuals in the low education/low literacy high-risk population to actively participate in their health goals and care planning by developing accurate and accessible educational video resources that provide an expandable framework to improve health literacy and health outcomes. Through quantitative and qualitative feedback, empowerment was measured through increased participation and engagement with a survey.

METHOD: Registered adult learners at a non-profit organization (n=21) worked with private volunteer tutors (n=14) to improve literacy by viewing optional educational videos on general health topics. The learners and tutors completed a brief written questionnaire marking participation, as well as comprehension, and engagement of video.

KEY RESULTS: Total participation of completed surveys was 75 percent amongst the different sample groups. There was 55% participation of the target high-risk adult student population. Questionnaire results identified the video length, interest level, and comprehension level was adequate for the target population. Participation barriers included participants missing learning sessions, decreased readiness to change lesson planning, and Wi-Fi connectivity.

CONCLUSIONS: Further evaluation of the program to determine if video resources improve health literacy. This will require increased longevity of the pilot program, formal pre- and post-health literacy evaluations, and producing more video content.

Background

Health literacy has become a research focus for the first time since the Healthy People framework was established in 1979 (Santana et al., 2021). Healthy People 2030 initiative expanded the definition of health literacy, separating personal and organizational health literacy (Centers for Disease Control and Prevention [CDC], 2023). Personal health literacy is “the degree to which individuals have the ability to find, understand, and use information and services to inform health-related decisions and actions for themselves and others,” (CDC, 2023). While, organizational health literacy’s focus is the ability of an organization to enable individuals to improve their consumers’ health literacy and make informed decisions for themselves (CDC, 2023). Health literacy impacts health disparities as a social determinant of health. It is recognized that individuals with fewer years of formal education have increased personal health risks (Centers for Disease Control and Prevention [CDC], 2020). The program pilot site is an educational non-profit organization that serves one rural eastern county in North Carolina. In 2008, this non-profit organization was born from the Community Needs Assessment conducted by this county’s Chamber of Commerce’s Education Committee, which identified adult literacy as a significant need within the county, where 27% of adults are functionally illiterate (Literacy Connection of Wayne County [LCWC], 2023). This organization’s scope of service is to provide free literacy services, such as reading comprehension, mathematics, financial knowledge, and computer technology. These services are available to all adults in the community to foster the population’s autonomy, health, and well-being through volunteer-based group and individual tutoring.

Organizational Needs Statement

The strategic plan for 2019-2024 at the non-profit organization proposes a new goal to increase the health literacy of clients and their families. Due to evidence-based strategies to improve health literacy in the research stages, no key performance indicators have been defined by the non-profit organization. (Literacy Connection of Wayne County [LCWC], 2019). This non-profit organization recognizes that low health literacy and inadequate adult literacy are different, yet the two issues positively correlate. As such, the non-profit organization must expand its programs to integrate health-related literacy strategies for its participants. In 2022, the non-profit organization hosted a podcast series with guest speakers from multiple healthcare professionals that practice locally. The series amplified the pressing issue of low health literacy as a systemic problem leading to health disparities and health inequity. To further extend services related to this topic, this non-profit organization wanted to develop an improvement plan to increase the county residents' proficiency in health literacy, which could improve the community's health outcomes.

In 2003, the National Assessment of Adult Literacy was the first nationwide evaluation of health literacy proficiency completed (National Center for Education Statistics, 2006). This assessment showed that only 12% of adult Americans have proficient personal health literacy (National Center for Education Statistics, 2006). In addition, 88% of adults in the United States need to improve their health literacy skills to navigate the healthcare system (Lopez et al., 2022). In 2014, the University of North Carolina (UNC) partnered with other institutions to map a predictive model estimating the mean health literacy of individuals based on census regions using the 2010 census. This predictive model approximates that 37% of adults have basic or below basic health literacy skills in the rural county in eastern North Carolina, where this project

took place. In comparison, the national average is 34%. (University of North Carolina [UNC], 2014).

Healthy People 2030 considers expanding health literacy a “top-priority public health issue” (Office of Disease Prevention and Health Promotion, n.d.). Research is still in its infancy, and evidence-based improvement interventions are being developed (Office of Disease Prevention and Health Promotion, n.d.). Health literacy improvement aligns with the Institute for Healthcare Improvement’s (IHI) Triple Aim Framework because it could simultaneously target all three dimensions, improving patient satisfaction, population health, and decreasing healthcare costs (IHI, 2023). The Agency for Healthcare Research and Quality (AHRQ) Benchmark assessments can guide health literacy development. These assessment tools can provide quantitative data on the ongoing advancement of health literacy proficiency by providing baseline understanding and screening of low health literacy risks. (Agency for Healthcare Research and Quality [AHRQ], 2019). In addition, surveys can provide data about differences in patient experience and satisfaction after increased health literacy.

Problem Statement

Low health literacy is a hidden risk factor for increased morbidity and mortality (Santana et al., 2021). Limited health literacy is negatively associated with physical and mental health outcomes. Some health literacy barriers include decreased use of primary prevention, mismanagement of chronic conditions, misunderstanding of nutrition labels, medication errors, and increased healthcare costs. Additionally, individuals with low health literacy have an increased incidence of chronic illness and a higher risk of hospitalizations (Hickey et al., 2018).

Purpose Statement

To empower individuals within the county to be active participants in their health goals and care planning by developing accurate and accessible educational resources that provide an expandable framework to improve health literacy and health outcomes.

Literature Review

Healthy People 2030 dubs health literacy an active research problem, with minimal current resources for implementing strategies to mitigate this problem (Office of Disease Prevention & Health Promotion, n.d.). A broad Boolean search on the intervention and quality improvement of health literacy in community-based settings was conducted using three academic databases. A literature search log was used so search terms and conditions could be replicated and reviewed further. The CINAHL Complete, Pubmed, and PsychINFO databases were used. The Boolean search terms used to refine the search with each database to keep results uniform for comparison were [("health literacy" OR "patient education") AND (community OR "public health") AND (intervention OR "Quality Improvement")].

By implementing the inclusion and exclusion parameters to the searches of each database, CINAHL Complete yielded 63 results, Pubmed yielded 4,863 results, and PsychINFO yielded 141 results. These criteria for inclusion and exclusion were added at the inception of each database search, so no refinement was applied after retrieving the above results. The level of evidence for all three database searches was separate from the inclusion and exclusion criteria due to the shallow volume of articles after reviewing titles and abstracts that pertained to interventions or improvements to mitigate low health literacy. Due to the lack of previous research on mitigating low health literacy, all articles, regardless of evidence level, were kept after being deemed appropriate and applicable after reading them. Only four articles were kept as appropriate resources because they were related to interventions to improve health literacy,

community-based, and nonspecific to an ethnic or religious subgroup. Most articles within each database search were excluded because they were specific to only a small ethnic group, pertained specifically to mental health literacy, were based in a formal healthcare organizational setting, or were not related to mitigating low health literacy but the problem itself.

Current State of Knowledge

More literature regarding current expectations or evidence-based practice guidelines is needed to implement an improvement process for mitigating low health literacy across a community. Most current scholarly literature surrounding the concept of health literacy continues to emphasize low health literacy as a social determinant of health, correlations between low health literacy and poor health outcomes, and potential causes and contributing factors to low health literacy. The current literature offered beginning trials of possible solutions to low health literacy but have provided mixed efficacy results and require longevity of the studies to show proven possible long-term correlations between interventions and improving the subjects' health literacy. The literature review shows that an individual's health literacy level is linked to health outcomes, but more information is needed (Office of Disease Prevention and Health Promotion, n.d.). After the initial national assessment of health literacy in 2003, there has been no more research to analyze improvements or decline in health literacy proficiency. More research must be done to quantify the literacy proficiency levels.

The current literature emphasizes that traditional modalities of education and learning through reading pamphlets or completing coursework are less effective for an adult learner to improve health literacy. Porter et al. (2022) highlighted podcasts in their study to improve health literacy, focusing primarily on sexual health. Podcasts and other social media platforms as educational interventions make education more mobile and accessible to the community (Porter

et al., 2022). There is limited empirical research on the ability of social media platforms to create behavior change. Still, they allow increased access and the ability to link more content and resources and maintain engagement with learners (Porter et al., 2022).

Besides using social media to provide education outlets for adult learners, the literature emphasizes community-based collaboration to improve health literacy. Friedman et al. (2020) associated the success of a clinical organization in improving health literacy with the development of a collaborative community partner. Community-based preventative education programs provide resources to grow health literacy (Sul et al., 2023). The limitations to current literature regarding community-based intervention strategies regarding health literacy are that the research is in its infancy, and results of program success are measured by participants' satisfaction with the programs available (Sul et al., 2023). Community readiness assessments could provide information about the community's needs and willingness to participate in a particular innovation before implementation (Friedman et al., 2020). Before individual participation in a program, these early assessments can indicate personal motivation to improve health literacy (Friedman et al., 2020).

Current Approaches to Solving Population Problem(s)

Although low health literacy does not necessarily correlate with low literacy, low numeracy, or low education level, this is the primary population targeted by the non-profit organization partnering as the project site. Due to this vulnerable population having below-level literacy, using social media platforms or podcasts to provide visual and auditory education videos will maximize the efficacy of implementing a program process (Porter et al., 2022). The non-profit organization offers one-on-one tutoring services, so providing learners and potential participants with individualized content would be ideal but unrealistic based on the available

resources. Although individualized learning is not obtainable now, a pre-implementation assessment can identify common medical themes that most participants could benefit from gaining information on (Sul et al., 2023). Partnering with this non-profit organization provides the benefit of active involvement within the existing community to increase participation in a health literacy improvement process (Friedman et al., 2020).

Evidence to Support the Intervention

Implementing a short video that provides practical information to the learners at the non-profit organization and providing the learners, board members, employees, and other healthcare providers with surveys to assess the effectiveness of video information and the implementation process are the best intervention for the target population.

Evidence-Based Practice Framework

There were two goals for this project. One goal was to evaluate electronic resources developed to mitigate low health literacy for the specific low literacy population in the county. The second goal was to assess the implementation process for accessibility, ease of use for the learner, and the sustainability of implementation for the administrator. The RE-AIM framework was implemented for a change strategy in a community-based setting. The conceptual framework, RE-AIM, originated in 1999 to take existing literature on health promotion and disease management and implement it into practice. The RE-AIM concepts helped to plan a program and improved the chances of the program being applicable in community settings (RE-AIM, 2023). The RE-AIM framework has five steps to implement research into action (RE-AIM, 2023). The RE-AIM acronym stands for Reach, Effectiveness, Adoption, Implementation, and Maintenance, with each letter representing a step in the framework's process (RE-AIM, 2023).

Ethical Consideration & Protection of Human Subjects

There are no ethical considerations for this project because there is little or no risk involved to participating individuals. Multi-media education was provided at an easy-to-understand elementary level that contained interventions equal to the target population. Participation and feedback reviews was anonymous to reduce the risk of potential bias and harm to participants and reduce participants' concern for retaliation due to feedback.

CITI modules for social and behavioral researchers and key personnel were completed in preparation for the formal approval process. A formal IRB review process was not indicated.

Implementation

There is limited research on program development to improve personal health literacy. Still, even less data is needed to support program implementation for persons with high-risk social determinants of health and low literacy. With education and printed learning materials about health-related topics available from many organizations, there are limited resources that can engage, empower, and educate persons with low literacy.

Aim

The long-term goal of developing this health literacy program is to empower individuals of low literacy to actively participate in their health goals and care planning by producing accurate and accessible educational resources that provide an expandable framework to improve personal health literacy and ultimately improve health outcomes. This project aimed to create a program process to deliver resource materials that were understandable, interesting, and accessible to persons in the community with low literacy, with the measurable goal of increased participation over a ten-week timeframe. The quantitative, quantifiable goal of project implementation is to have 75% total participation from both sample populations: (1)

tutors/students and (2) faculty/board members/interns. The qualitative goal of project implementation was to evaluate participants' preferred length of video, content, comprehension, and interest.

Methodology

The target population was the students and tutors participating in one-on-one learning through already established programs for low literacy and low numeracy at the project site. Additional data was collected from faculty, interns, and the board of directors members to determine potential interest in future program development and provide feedback for improvement to help students and the project succeed. Five short three-to-six-minute videos were developed for students and tutors to watch various health-related information during their two hours per week of one-on-one learning sessions. The videos were created based on basic information needed to navigate provider appointments and medications and based on the highest disease processes that cause morbidity and mortality in the county. The five videos included information on strategies for engaging with providers, reading prescription labels, tracking medications, hypertension, and diabetes mellitus.

Sample

There were two distinct populations involved in this program. One population was the organization's faculty, interns, and board members. This sample was added to the study because this group represents key stakeholders for program success. All persons within this population were included in the sample size, with 20 participants (N=20). No persons in this population were excluded. The other sample group was based on adult learners and volunteer tutors. Both tutors and adult learners were included within the population, because this partnership between the learner and student is intimate and buy in from the tutor population is needed to have the

learners succeed. Two tutors were excluded from the sample size because they were accounted for in the faculty population, which could artificially inflate results. Also, the author and the author's adult learners were excluded from the study to prevent potentially biased results. After these exclusions, the sample size of the learners and tutors was 35 (n=35).

Timeline

A new video was introduced to the sample population every two weeks to complete five videos. With each video view, students and tutors were encouraged to complete a survey providing both qualitative and quantitative data.

The other sample population of board members, faculty, and interns was provided with all five videos to view in one session and one survey to complete after viewing all videos. These surveys specific to non-students or tutors also provided quantitative and qualitative data.

Collaboration with Site

The faculty included in the implementation and development of the project was the Executive Director, who partnered as site liaison, Program Manager, and Center and Graphics Coordinator. The project site liaison and faculty were very involved in the success of the project implementation. Formal project meetings took place in-person pre-implementation, post-implementation, and weekly during the ten-week implementation phase with the site liaison and bi-weekly with all faculty members, apart from one virtual meeting that took place due to variation in the liaison's hours. There were twelve formal meetings with the site liaison, seven of which included other site faculty. Informal discussions took place multiple times a week throughout the implementation timeline for real-time feedback to aid in preparation for rapid cycle changes using the PDSA (Plan, Do, Study, Act) model. The mutual collaboration took place with all site faculty to develop changes to be tested and improve the implementation

process. Site faculty also helped perpetuate the project with students and tutors by encouraging participation, assisting students and tutors with video and survey access, and independently tracking individual involvement throughout the implementation period.

Results

Although data was collected from two population groups, the purpose of data collection was to tailor the program's content and delivery process to benefit the students at the project site who were already receiving services for low literacy or low education. The videos were developed to broaden the health knowledge at the current average students' reading and comprehension level. Based on survey feedback and verbal testimonials given to faculty from students and their tutors, the targeted student population benefited from participation. Increased health literacy levels cannot be quantified with this short-term implementation. Still, students provided personal feedback on the video questionnaires describing new information learned after each video. Students also asked questions about videos to expand their knowledge about video topics.

Achievements and Insights

The project progressed forward as expected, with increasing participation as each video was presented. Total participation amongst all sample populations (Adult students, volunteer tutors, faculty, board of directors, and interns) met the goal of 75 percent by the end of the ten-week implementation timeline. Participation exceeded the goal of 75% by the end of the ten-week implementation timeline by video number five. Adult learners and volunteer tutors participated 55.43% of the time throughout the study. The biweekly breakdown of adult student and tutor participation, based on each video shows the highest participation being the videos about common chronic conditions (Hypertension and Diabetes Mellitus) rather than procedural-

based video content. Results did not yield a weekly increase in involvement as predicted before implementation. Participation increases were independent of the timeline but based more on the content of the video, relatability to the audience, and attendance at tutoring sessions. Figure A below highlights learner and tutor participation by video, showing the spikes in participation related to the content versus the length of time within the implementation period. Board of director, faculty, and intern participation was 95 percent, which is predicted to be substantially higher than adult learner and volunteer tutor participation.

The survey for both populations had individual questions regarding video engagement, comprehension, video length, ease of access, and desire for future content. Faculty, Board of Directors, and interns rated 95 percent or above positively, saying that each video was easy to access, had beneficial video length, and had appropriate student interest and comprehension level with a four or higher Likert score (one through five rating). The question regarding recommending this program produce future content had 89% of faculty, board members, and interns recommending continuation of the program and 98% of learners and tutors wanting to watch future content. Learners and tutors had an overall 76% positive results related to ease of access, student understanding of content, interest and engagement of videos, and length of each video. Figure B below compares the participation between each population group and their individualized answers to survey questions.

Unintended Positives Results

This project was intended to develop a process to provide the targeted population with material related to health topics and analyze the process to determine where improvements could be made to increase participation. Although this project was not designed to evaluate individual participants' health literacy improvement over time, some unintended positive results related to

personal health literacy were seen. Participants engaged more with their providers at appointments, asked questions related to their treatment plan, started care with a primary care provider, sought out mental health services, and started taking their prescription medications as prescribed.

As participation increased throughout the project implementation timeline, new participants became engaged with the videos and wanted access to watch the prior videos that had been released. Most participants' feedback on the video length was positive, or they stated the videos were too short and wanted more information. Participants also want more content. Each survey asked students and learners to describe what they had learned after watching each video. The survey was voluntary, so when this question was answered, learners provided appropriate responses, proving they understood the content. Via the surveys, suggestions were provided from students and tutors about health topics that they wish to see in the future for additional videos. Additional content requested by learners and tutors included chronic kidney disease, cancer prevention, immunizations, older adult-specific healthcare, depression, nutrition related to different chronic conditions, different providers and resources in the county, dementia or cognitive impairment, depression, anxiety and stress management, sleep hygiene, liver disease, eye health, baby wellness, and pregnancy prevention.

Barriers and Limitations

Barriers to project implementation included tutor and student readiness to change lesson plan routine, limited digital literacy with an aging population of students, Wi-Fi connectivity at the project site location, a limited amount of video content to target specific health topics to relate to the population, and hesitancy to discuss personal health-related concerns openly.

Targeting this low education or low literacy population, many social determinants of health played a role as a barrier, like lack of childcare and transportation and poor health.

Lessons Learned

The site organization plans to make this project a permanent program to incorporate with other programs that provide one-on-one learning opportunities for students in literacy, numeracy, technology, and financial comprehension. Permanent program development and expansion depend on grant funding opportunities, content expert involvement, and potential partnerships.

Organizational Changes Needed for Continuation

The non-profit organization plans to amend the intake form for new and prospective students to include the potential need for health literacy education. Due to low literacy, incorporating health into overall learning goals at the start of student-tutor partnerships could increase health literacy program participation and make health literacy development more person-centered and specific to individual students. Health literacy level and establishing goals during the intake of students could help lesson planning for one-on-one learning sessions to be more intentional and unique for each student's needs.

Recommendations for Replication

This health literacy improvement project's potential for replication, growth, or expansion is limitless. If other organizations are interested in replicating this program, it would be beneficial to complete a small organizational readiness emulation before beginning implementation and complete a pre-survey to evaluate health topics the specific population is most interested in or relates to.

Another recommendation for replication would be to make these videos accessible on the site to participants so they can be viewed in their environment as often and as many times as they

would like. Using a social media platform could increase participation since frequent learning sessions were canceled due to illness, lack of childcare, or transportation.

Conclusion

Decreased health literacy is negatively linked to mortality, morbidity, and healthcare costs. Low literacy and education correlate with low health literacy. This program was uniquely designed for this population. It successfully made the first step in improving health literacy by engaging and educating this population. The program yielded positive results for the targeted population of individuals with low education/literacy. With increased content and longevity of this problem, there is potential to see improvement in health literacy and participant health outcomes.

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Figure A

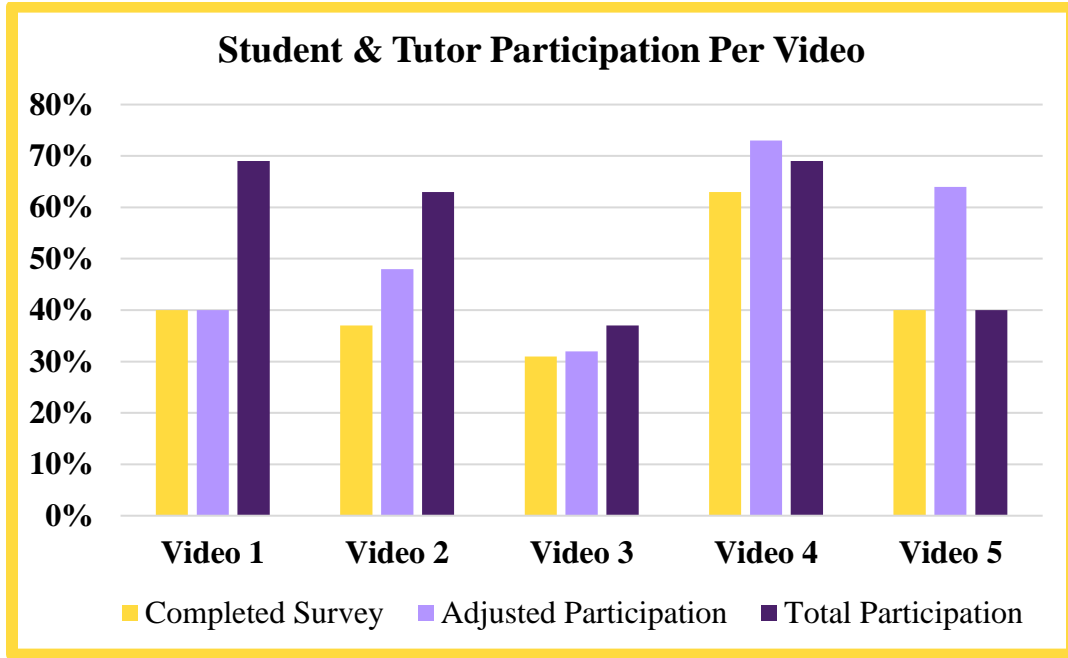


Figure B

