

MAYO CLINIC PROCEEDINGS

Health Literacy: An Important Clinical Tool in Heart Failure



“A good head and good heart are always a formidable combination. But when you add to that a literate tongue or pen, then you have something very special.”¹

—Nelson Mandela

The quote from Nelson Mandela portrays the importance of literacy in our daily life. In this issue of *Mayo Clinic Proceedings*, Fabbri et al² report the effect of health literacy on clinical outcomes in patients with heart failure. The authors demonstrate that patients with incident heart failure and low health literacy had higher mortality and hospitalizations in a population-based study of an 11-county region in southeast Minnesota. On the basis of these and related data, the authors recommend that clinical evaluation of health literacy not only will decrease mortality and morbidity in patients with heart failure but also may assist in designing individualized interventions in this patient population.

We will examine the clinical importance of health literacy in health care outcomes more specifically in patients with heart failure, comparing and contrasting the findings of Fabbri et al² with those from other investigations.

Health Literacy

In the past decade, it has become more evident that the ability of patients to read, listen, and comprehend health information is an important component of maintaining and improving health. This concept has been defined by the Institute of Medicine (IOM) as health literacy, that is, “the degree to which individuals can obtain, process, and understand the basic health information and services they need to make

appropriate health decisions.”³ The importance of health literacy in the management and outcomes of cardiovascular disease is paramount since data from the IOM have shown the following: (1) 90 million adults in America have difficulty understanding and using health information; (2) limited health literacy is associated with a higher rate of hospitalization and use of emergency services among patients; and (3) limited health literacy may lead to billions of dollars in avoidable health care costs.³

Health literacy comprises a conglomerate of skills related to not only reading and comprehension but also utilization of printed information, numeric information, and verbal literacy. Patients without these skills do not have the ability to adequately provide self-care and, perhaps, will be at risk from higher mortality.

There are several tools to evaluate health literacy.⁴⁻⁶ The 3 most widely used instruments are the Newest Vital Sign, the Rapid Estimate of Adult Literacy in Medicine, and the Test of Functional Health Literacy in Adults (TOFHLA) or the Short Test of Functional Health Literacy in Adults (S-TOFLA).⁴ The short version of the TOFHLA has 2 parts: One is related to the ability to understand documents and numbers (4 multiple-choice numeracy questions), and the other related to 2 reading passages.

There is an alternative, validated tool that is easier to implement and less time-consuming, and is called the brief 3 question screener⁷⁻⁹; this is the tool used by Fabbri et al.²

Health Literacy and Heart Failure

Many studies have shown that inadequate levels of health literacy in the United States are present in patients with acute and chronic

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heart failure. Thus, low health literacy is associated with lack of knowledge of the disease process as well as difficulties in understanding educational interventions. Low health literacy creates a barrier to the achievement of knowledge related to self-care and quality of life in patients with heart failure.

A study of 600 patients with heart failure demonstrated that low health literacy was present in 37%.¹⁰ In addition, patients with adequate health literacy had higher general heart failure knowledge, higher self-efficacy, higher prevalence of key self-care behaviors, and higher quality-of-life scores compared with patients with low literacy. Low health literacy is also associated with decreased adherence to guideline-directed heart failure therapy, as shown in a study involving 314 patients with heart failure, 29% of whom had inadequate health literacy¹¹; patients with adequate health literacy demonstrated significantly greater adherence to medical therapy (69.4%) compared with those with inadequate (54.2%) health literacy.¹¹

Clinical outcomes, such as mortality and hospitalization, are also higher in either hospitalized patients or outpatients with heart failure and low health literacy.

One study reported that although low health literacy was found in only 17.5%, its presence was independently associated with higher mortality.⁹ In another study, 37% of ambulatory patients with symptomatic heart failure had low literacy. Patients with low literacy had higher rates of all-cause hospitalization or death as well as heart failure–related hospitalizations.¹²

Low health literacy is also associated with a 32% higher mortality after adjusting for several comorbidities and predictors of survival following hospitalization in patients with acute heart failure.¹⁰ In addition, low health literacy can predict morbidity and mortality in patients with heart failure. In patients who were followed for at least 2 years following hospitalization for heart failure, those with inadequate or marginal health literacy were 1.94 times more likely to have readmission for heart failure and 1.91 times more likely to die from any cause.⁵

The article by Fabbri et al² confirms previous reports demonstrating the importance of health literacy in the clinical outcomes of patients with heart failure and, to our knowledge, this is the first study that investigates health literacy in a population-based community.

There are several important implications raised by the findings of Fabbri et al.² First, in contrast with other studies, the prevalence of low health literacy is lower (10.5%), while using the same questionnaire. Although the reasons are not clear, previous studies have involved hospitalized patients who are not comparable to this community cohort. Interestingly, the authors demonstrate that the prevalence of low health literacy was heterogeneous in the different counties that were surveyed, and ranged from 6.9 to 17.1. In addition, Olmsted County has a high level of literacy, and it is the county that contributed most of the patients in this cohort.

Second, Fabbri et al² demonstrate that low health literacy in patients with heart failure is associated not only with increase in mortality but also with hospitalizations. The latter is important because analyzing separate outcomes for death and hospitalizations may lead to different clinical implications. These results are in contrast with studies that have shown increase in mortality but not hospitalizations,⁹ and others in which the clinical outcome was mortality and hospitalizations as a composite end point.¹²

Third, the association between low health literacy and rates of hospitalization underscores low health literacy as a contributor to hospitalization-based utilization of health care.

Clinical Implications

Where do we go from here? Studies such as those by Fabbri et al² lend credence to and reinforce the importance of measuring health literacy in patients with heart failure to achieve better clinical outcomes. The authors correctly observe that the association of low health literacy with worse outcomes in patients with heart failure is complex, involving as it does such relevant issues as access to care, the interaction between provider and patient, and ability for self-care. In addition, health literacy is influenced by socioeconomic and demographic factors as well as education.^{2,13}

Another important aspect of the data by Fabbri et al² is the relationship between health literacy and hospitalizations. Despite numerous attempts at reducing rehospitalizations from heart failure, not much progress has occurred. Integrating strategies that include health literacy as well as a comprehensive patient-centered

model with early reassessment, neuropsychological status, functional status, medical management, and financial means may reduce hospitalizations for heart failure.¹⁴

Because heart failure is highly prevalent in the United States,^{15,16} every physician's practice is likely affected by health literacy issues. Thus, it is important to recognize and assess patients' health literacy skills and provide patients with tools to increase their knowledge of the disease and adherence to medical therapy, with the ultimate aim of improving outcomes in heart failure. Finally, there should be heightened recognition of language barriers, cultural issues, and challenges that stem from health care disparities. Understandably, the pressures on clinical care and productivity may leave little time for the provider to evaluate health literacy. In a truly team-based approach to care, this issue must be shared by all so as to improve outcomes in heart failure.

Conclusion

This group from Mayo Clinic has made seminal contributions to understanding of different aspects of quality of care in heart failure. This study is another important contribution, because the data published herein reinforce the importance of assessing health literacy and its impact in clinical outcomes in patients with heart failure. In our opinion, several steps should be taken from the clinician's point of view regarding health literacy. First, we all need to be familiar with the concept of health literacy and the impact of health literacy on clinical outcomes for heart failure. Second, health care providers should recognize the utilization of simple tools to assess health literacy and that such assessment promotes better outcomes in patients with heart failure. Finally, health care providers should improve their communication with patients and in a manner commensurate with the patient's level of health literacy. As Kofi Annan said, "Knowledge is power. Information is liberating. Education is the premise of progress, in every society, in every family"¹⁷

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Potential Competing Interests: The authors report no competing interests.

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REFERENCES

1. Kannings A. *Nelson Mandela: His Words*. Lulu Press Inc; 2014.
2. Fabbri M, Yost K, Finney Rutten LJ, et al. Health literacy and outcomes in patients with heart failure: a prospective community study. *Mayo Clin Proc*. 2018;93(1):9-15.
3. Institute of Medicine (US) Committee on Health Literacy; Nielsen-Bohman L. In: Panzer AM, Kindig DA, eds. *Health Literacy: A Prescription to End Confusion*. Washington, DC: National Academies Press; 2004.
4. Altin SV, Finke I, Kautz-Freimuth S, Stock S. The evolution of health literacy assessment tools: a systematic review. *BMC Public Health*. 2014;14:1207.
5. Moser DK, Robinson S, Biddle MJ, et al. Health literacy predicts morbidity and mortality in rural patients with heart failure. *J Card Fail*. 2015;21(8):612-618.
6. Wu JR, Holmes GM, DeWalt DA, et al. Low literacy is associated with increased risk of hospitalization and death among individuals with heart failure. *J Gen Intern Med*. 2013;28(9):1174-1180.
7. Chew LD, Bradley KA, Boyko EJ. Brief questions to identify patients with inadequate health literacy. *Fam Med*. 2004;36(8):588-594.
8. Chew LD, Griffin JM, Partin MR, et al. Validation of screening questions for limited health literacy in a large VA outpatient population. *J Gen Intern Med*. 2008;23(5):561-566.
9. Peterson PN, Shetterly SM, Clarke CL, et al. Health literacy and outcomes among patients with heart failure. *JAMA*. 2011;305(16):1695-1701.
10. Macabasco-O'Connell A, DeWalt DA, Broucksou KA, et al. Relationship between literacy, knowledge, self-care behaviors, and heart failure-related quality of life among patients with heart failure. *J Gen Intern Med*. 2011;26(9):979-986.
11. Noureldin M, Plake KS, Morrow DG, Tu W, Wu J, Murray MD. Effect of health literacy on drug adherence in patients with heart failure. *Pharmacotherapy*. 2012;32(9):819-826.
12. McNaughton CD, Cawthon C, Kripalani S, Liu D, Storrow AB, Roumie CL. Health literacy and mortality: a cohort study of patients hospitalized for acute heart failure. *J Am Heart Assoc*. 2015;4(5). Erratum in: *J Am Heart Assoc*. 2015;4(6):e000682.
13. Safeer RS, Cooke CE, Keenan J. The impact of health literacy on cardiovascular disease. *Vasc Health Risk Manag*. 2006;2(4):457-464.
14. Sperry BV, Ruiz G, Najjar SS. Hospital readmission in heart failure, a novel analysis of a longstanding problem. *Heart Fail Rev*. 2015;20(3):251-258.
15. Roger VL. Epidemiology of heart failure. *Circ Res*. 2013;113(6):646-659.
16. Ventura HO, Silver MA. Observations and reflections on the burden of hospitalizations for heart failure. *Mayo Clin Proc*. 2017;92(2):175-178.
17. Annan K. <https://www.brainyquote.com/quotes/quotes/k/kofiannan389917.html>. Accessed November 8, 2017.