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Feature Article

The impact of inadequate health literacy on patient satisfaction, healthcare utilization, and expenditures among older adults

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ABSTRACT

Inadequate health literacy (HL) is associated with impaired healthcare choices leading to poor quality-of-care. Our primary purpose was to estimate the prevalence of inadequate HL among two populations of AARP® Medicare Supplement insureds: sicker and healthier populations; to identify characteristics of inadequate HL; and to describe the impact on patient satisfaction, preventive services, healthcare utilization, and expenditures. Surveys were mailed to insureds in 10 states. Multivariate regression models were used to identify characteristics and adjust outcomes. Among respondents ($N = 7334$), 23% and 16% of sicker and healthier insureds, respectively, indicated inadequate HL. Characteristics of inadequate HL included male gender, older age, more comorbidities, and lower education. Inadequate HL was associated with lower patient satisfaction, lower preventive service compliance, higher healthcare utilization and expenditures. Inadequate HL is more common among older adults in poorer health, further compromising their health outcomes; thus they may benefit from expanded educational or additional care coordination interventions.

Introduction

Health literacy (HL) is defined as the ability to obtain, process, and understand basic health information and services needed to manage one's health and make appropriate health decisions.[1–6] HL encompasses various skills needed to navigate the healthcare system, including print literacy (reading, interpreting, and understanding written information), oral literacy (speaking/listening effectively), and numeracy (applying quantitative information).[1,7–9] Individuals with inadequate HL may have trouble with even basic health-related tasks, such as following prescription instructions, calculating dosages, completing medical history or insurance forms, communicating with providers, interpreting test results, and understanding the risks and benefits of procedures.[10] More importantly, older adults with inadequate HL may struggle to self-manage multiple conditions and coordinate their care across various providers in an increasingly complex healthcare system.

In the US, over 46 million Americans are age 65 or older, a number that is increasing rapidly and projected to nearly double by 2050.[11–13] This population is the fastest-growing age group in the US, dominated by Baby Boomers who are reaching retirement and Medicare eligibility. Considering the rapid growth of this population and their generally higher healthcare needs, efforts to help seniors age successfully with optimal outcomes have become a priority.

The US Department of Education's National Assessment of Adult Literacy (NAAL) found that inadequate HL is especially prevalent among the elderly: 59% of adults age 65 years and older score in the two lowest ranges of HL, basic and below basic.[1,14] Of these, 29%

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have below basic HL.[14] Considering specific components of HL, 68% of older adults reportedly have difficulty understanding numbers and calculations; 71% using printed materials; and 80% using health-related documents.[14,15]

Several common characteristics of low HL among older adults have been established.[16,17] Individuals with inadequate HL are more likely to be older, male, minorities, and have lower income, education, and are generally sicker with poorer physical and mental health.[1,10,14,18–22] Commonly reported mental health-related characteristics include low general literacy, poor decision-making ability, reduced cognitive functioning, and a lack of social support.[16,17] Physical health characteristics most often tied to inadequate HL include lack of engagement in health-promoting behaviors such as exercise, reduced physical functioning, poor self-care, more chronic conditions, increased mortality risk, and poorer overall physical health.[14,16–18,22,23]

According to research, inadequate HL more strongly predicts health status than age, income, education, or race.[10,24] Studies support a relationship between inadequate HL and health outcomes, in addition to health behaviors including decision-making, compliance with prescription medications, self-management of chronic conditions, and participation in health screenings.[10,23,25,26] Low levels of HL have been associated with suboptimal outcomes including poorer overall health and physical fitness, increased disability and pain, increased prevalence and severity of certain conditions, reduced physical functioning, limited mobility, reduced quality of life, and poorer disease outcomes.[16–18,22,25,27–34] Those who rate their health as only fair or poor are twice as likely to have inadequate HL compared to those who rate their health as either good or excellent.[23,35]

Inadequate HL has also been shown to impact patient satisfaction with providers, services, and overall care, as well as compliance with recommended preventive services, healthcare utilization including inpatient (IP) admissions, and medical expenditures among older adults.[36–40] Older adults with inadequate HL tend to receive fewer cancer screenings and flu shots as compared to those with adequate HL.[21,22,32,41,42] Research also indicates higher emergency room (ER) visits and IP admissions among those with inadequate HL, perhaps due to these individuals bypassing less costly preventive services.[23,25,43–51]

To our knowledge, there is little research examining the impact of inadequate HL specifically within populations of Medicare Supplement insureds with different health status levels. In the US, government-funded Medicare covers adults age 65 and older as well as those under 65 and disabled. Medicare pays about 80% of medical expenditures for these individuals but offers no prescription drug benefits. Those enrolled in Medicare plans are personally responsible for obtaining additional insurance plans to cover the remaining 20% of medical expenses (i.e., Medicare Supplement or Medigap plans) and prescription drug coverage (Medicare Part D Rx plans). Among the 54 million older adults in the US with Medicare coverage, 10.2 million purchase Medigap insurance plans from private insurers to defray out-of-pocket (OOP) expenses from copayments, coinsurance, and deductibles that Medicare does not cover in entirety.[52,53] Since this population may differ from general older adult and/or Medicare populations, it was of interest to examine HL within subgroups that vary by health status and to detail associated characteristics and health outcomes of inadequate HL. Additionally, most research studies focus on specific chronic conditions (e.g., hypertension, heart disease, congestive heart disease, asthma) rather than overall health status.[54,55] This study uses an objective measure derived from administrative medical claims to characterize poor health status as compared to a generally healthier randomly selected control group.

Statement of purpose

The purpose of this study was to estimate the prevalence of inadequate HL among a sicker sample of older adults eligible for a care coordination program and a healthier randomly selected older adult sample; to identify common characteristics associated with inadequate HL within these cohorts; and to describe the impacts of inadequate HL on patient satisfaction, preventive services compliance, healthcare utilization, and expenditures. In doing so, we will demonstrate a potential need for population-level intervention programs targeting older adults with inadequate HL, especially those with poorer health.

Methods

Study design and sample selection

In 2015, approximately 4 million Medicare beneficiaries were covered by an AARP® Medicare Supplement Insurance plan insured by UnitedHealthcare Insurance Company (or, for New York residents, UnitedHealthcare Insurance Company of New York), offered in all 50 states, Washington DC, and various US territories. Those eligible for the study must have been enrolled in AARP Medicare Supplement plans for at least six months and have been 65 years or older at the time of the survey. A randomly selected sample of 31,000 insureds in 10 states (Arizona, California, Colorado, Florida, Missouri, New Jersey, New York, North Carolina, Ohio, and Texas) was mailed surveys in 2012 and 2013. The sampling strategy included an objective eligibility criterion for care coordination programs within five states (i.e., New Jersey, New York, North Carolina, Ohio, and Texas) and a randomly selected population with no health criteria within the remaining states (i.e., Arizona, California, Colorado, Florida and Missouri). Care coordination programs are generally telephonic outreach programs conducted by nurse counselors and are offered by US health plans to individuals with selected diagnosis codes and high medical expenditures. Starting in 2008, five states operated care coordination programs; the remaining five states were chosen as suitable controls for the evaluation of the effectiveness of the designated programs. Among those who were mailed surveys, 9708 insureds responded. Those who did not meet plan eligibility ($N = 472$), did not answer the HL question ($N = 348$), had duplicate surveys ($N = 288$), were missing on any other of the variables ($N = 1218$), or were in the top 0.5% of medical expenditures (i.e., outliers; $N = 48$) were excluded. The final study population included 7334 survey respondents. Those eligible for the care coordination programs will be referred to as “sicker” while the randomly selected insureds will be considered the “healthier” group. No bias on the primary variable of interest (HL) was evident; the prevalence of inadequate HL prior to and after exclusions remained unchanged. This study was approved by the New England Independent Review Board (NEIRB#: 12-114).

Survey

A modified version of the Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey was used. CAHPS is funded and overseen by the US Agency for Healthcare Research and Quality (AHRQ). The survey is designed to query patients and healthcare consumers to report on and evaluate their experiences and satisfaction with Medicare delivery systems, including physicians, health plans, and supplemental plans. Version 4.0 was adapted for use in the AARP Medigap population in 2012 and 2013 by adding questions about HL, AARP Medicare Supplement plan satisfaction, and use of advance directives. The survey distribution methodology included mailing of the printed survey with a second copy sent to