



Health Literacy

Full Summary

Description:

Health literacy has been defined as “the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions,” by *Healthy People 2010*, the ten-year plan for improving the US national health.¹ Subsequently, a working group sponsored by the National Institute of Dental and Craniofacial Research adapted this definition in the context of oral health.² The Institute of Medicine went on to further define health literacy in terms of both reading and numeracy, stating: health literacy refers to “the ability to perform basic reading and *numerical tasks* necessary to navigate the health care environment and act on health care information.”³

Approximately 90 million people are estimated to be of low health literacy, indicated by inability to fill out medical forms, understand or obtain health information and read drug labels.⁴ Forty-seven percent of adults have below an “intermediate” literacy which suggests an ability to read and understand only short commonplace text and simple documents and the ability to locate only easily identifiable quantitative information to conduct simple one-step problems when clearly specified.

Results from the National Assessment of Adult Literacy (NAAL) reported that on average health literacy levels were lower among particular ethnic minorities (Black, Hispanic, American Indian/Alaska Native, and multiracial adults), men, older adults, those in poverty, those who received publically funded insurance and those with lower



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levels of education. Furthermore, the report stated that the means by which individuals obtained information varied according to health literacy levels; a higher percentage of adults with higher levels of health literacy received their health information from the internet compared to those with lower levels, who relied primarily on “magazines and newspapers.” Moreover, those with the lowest levels, were the least likely to use the internet and received the majority of their health information by radio or television rather than print media.

Fewer studies have examined factors associated with oral health literacy. Atchison et al.⁵, reported race, education and English as the primary language were significantly associated with oral health literacy in crude analyses, while age was not a statistically significant factor. Moreover, the association between education and oral health literacy was stronger among English as a second language participants. Furthermore, health literacy was the only statistically significant factor associated with confidence in filling out health forms ($\beta=0.50$, $p=0.02$). In addition, the authors also reported that participants with higher oral health literacy were significantly more likely to obtain health information from the internet than those with lower oral health literacy. Investigators did not find any significant differences between groups by use of TV or newspaper. Similarly, Lee and colleagues⁶ found significant differences in oral health literacy by race/ethnicity and level of education. Among a population of young female participants of the Women, Infants, and Children (WIC) program in North Carolina, oral health literacy score was on average 2 points higher among white women than among African American or American Indian women (95% CI: 1.4, 2.6) when adjusted for education,



age, and county of residence. In addition, failure to finish high school was significantly associated with a score 7.1 points lower than those with a college degree or greater (95% CI: -8.4, -5.8).

Effectiveness and Efficacy:

Studies exploring associations between health literacy and health outcomes have been mixed.⁷⁻¹² In the NAAL report, those who reported poor overall health had substantially lower health literacy scores (mean health literacy score=196) compared to those who reported excellent health (mean health literacy score=262). Forty-two percent of those who reported poor health scored “below basic” whereas only 8% of those who reported excellent health scored “below basic.” Limited data exists evaluating the association between health literacy and biomarker outcomes.^{7, 13}

The effect of health literacy interventions on health behaviors have provided conflicting results, although most studies have been small and underpowered.⁷⁻¹² However, in some studies it can be difficult to distinguish treatment effects because literacy sensitive interventions have been administered to both low and higher literacy groups. In general, materials written at lower reading levels, 7th to 5th grade with illustrated and/or bulleted text formats may increase retention and comprehension, however the relative gain remains debated.¹⁴⁻¹⁶ Tailored interventions at the appropriate literacy levels may be key to observing relevant outcomes in low literacy populations.

Health literacy involves the use of various skills including social, cultural and conceptual knowledge, listening, speaking, arithmetical, writing and reading skills.³ There are several instruments used in dentistry to measure oral health literacy, the Rapid Estimate of Adult Literacy



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in Dentistry (REALD-30),¹⁷ Rapid Estimate of Adult Literacy in Dentistry-99 (REALD-99),¹⁸ Test of Functional Health Literacy in Dentistry (TOFHLiD),¹⁹ Oral Health Literacy Instrument (OHLI)²⁰ and the Rapid Estimate of Adults Literacy in Medicine and Dentistry (REALM-D).⁵ Most tools measure oral health literacy through word recognition without assessment of comprehension.^{3, 5, 17, 18} The TOFHLiD and OHLI, however measure functional oral health literacy through the use of text prompts or passages with omitted words which assess reading comprehension and numeracy.^{19, 20}

Few studies have evaluated the association between oral health literacy and oral health outcomes.²¹⁻²⁴ Macek et al.²² investigated the conceptual oral health knowledge of low income adults. While approximately 90% reported that sugar caused dental caries and approximately 80% reported that brushing and flossing were the best ways to prevent “tooth decay,” only 15% reported knowing how to floss and 21% reported knowledge that plaque consisted of “germs.” Vann and colleagues²³ have shown poor oral health literacy among female caregivers was associated with a 44% significantly greater odds of poor oral health status among children (OR=1.44; 95% CI: 1.02-2.05). Similarly, Miller et al.²⁴ reported the children of caregivers with higher literacy were significantly more likely to have none/mild/moderate treatment needs when compared to children with severe treatment needs (OR=1.14; 95% CI: 1.05-1.25). However, Divaris and colleagues²⁵ did not find a significant association between caregivers oral health literacy and their children’s oral health related quality of life among participants of WIC among 7 counties in North Carolina; however, the authors noted that caregivers’ limited oral health literacy may itself influence the report of quality of life associated factors. Studies evaluating the effect of health literacy interventions on oral health behaviors and oral health outcomes are needed.



Community Programs:

Jones et al.²¹ reported that the REALD-30 was a feasible instrument to administer in a university hospital dental clinic setting. Literacy assessments were conducted by nonclinical staff in the operatories prior to clinical assessments. An efficient, accurate, and patient acceptable means of screening in the clinic would be an invaluable tool for clinicians. While many people may function successfully in their daily lives, they may still have difficulties obtaining and understanding health information.³ Hence, identification of individuals with limited oral health literacy may increase the opportunity for improved patient-clinician communication to improve primary prevention, treatment plan adherence and risk factor management.

Cost:

Limited health literacy has been associated with less knowledge about an individual's own disease status, poor illness management, engagement in the decision making process, greater disease burden, decreased utilization of preventive services, and increased hospitalizations which leads to overall higher health care expenditures.⁴ A study conducted among a small Medicaid population in Arizona concluded charges among low literacy Medicaid patients (defined as reading $\leq 3^{\text{rd}}$ grade level) were \$7,500 than those who had higher literacy.²⁶ Although outdated, Friedland et al.²⁷ estimated the additional expenditures due to low health literacy in 1996 were \$29 billion. Similar cost analyses relating limited oral health literacy to health care expenditures have yet to be examined.

Safety:

Assessment of health literacy includes few if any safety risk when education is the primary intervention. However, the high prevalence of limited health literacy raises important questions regarding the discordance between the reading ability of a large sector of the American



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population and a wide variety of health related materials including but not limited to, informed consent forms, insurance enrollment materials, and medication documentation.³



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