

## Health Literacy and Patient Communication

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The purpose of Linking Research to Clinical Practice is to present evidence-based information to clinical dental hygienists so that they can make informed decisions regarding patient treatment and recommendations. Each issue will feature a different topic area of importance to clinical dental hygienists with A BOTTOM LINE to translate the research findings into clinical application.

**Miller E, Lee J, DeWalt DA, Vann WF. Impact of caregiver literacy on children's oral health outcomes. *Pediatrics*. 2010;126(1):107-114.**

**Objective:** The objective of this study was to examine the relationship of primary caregivers' literacy with children's oral health outcomes.

**Methods:** We performed a cross-sectional study of children who were aged  $\leq 6$  years and presented for an initial dental appointment in the teaching clinics at the University of North Carolina at Chapel Hill School of Dentistry. Caregiver literacy was measured using the Rapid Estimate of Adult Literacy in Dentistry (REALD-30). The outcome measures included oral health knowledge, oral health behaviors, primary caregiver's reports of their child's oral health status and the clinical oral health status of the child as determined by a clinical examination completed by trained, calibrated examiners.

**Results:** Among the 106 caregiver-child dyads enrolled, 59% of the children were male, 52% were white and 86% of caregivers were the biological mothers. The bivariate results showed no significant relationships between literacy and oral health knowledge ( $p=.16$ ) and behaviors ( $p=.24$ ). However, there was an association between literacy and oral health status ( $p<0.05$ ). The

multivariate analysis controlled for race and income. This analysis revealed a significant relationship between caregiver literacy scores and clinical oral health status as determined by using a standardized clinical examination. Caregivers of children with mild to moderate treatment needs were more likely to have higher REALD-30 scores than those with severe treatment needs (odds ratio: 1.14, 95% confidence interval - 1.05-1.25,  $p=0.003$ ).

**Conclusions:** Caregiver literacy is significantly associated with children's dental disease status

### Commentary

**Commentary:** Health literacy has been identified as an important factor in general health outcomes. Recently, numerous studies suggested that poor health literacy results in greater health disparities, especially in vulnerable populations. In a recent column (*J Dent Hyg*. 2010;84(1):6-9.), I discussed the importance of engaging patients in meaningful interaction where the patient has the opportunity to explore their values and beliefs about oral and dental health, examine pros and cons related to changing oral health behaviors and articulate and resolve ambivalence to change in a non-judgmental environment. The reviewed studies on motivational interviewing provided evidence that strategies aimed at eliciting the patient's own motivation towards behavior change allows them to become invested in the change process, which can result in better health outcomes. Concomitantly, it is important to understand that many patients come to us with low health literacy, which may impact their ability to "obtain, process, understand and act on (health) information and services needed to make appropriate (health) decisions" (Healthy People 2010).

Historically, dental hygienists were taught to provide patient education through brushing/flossing demonstration, often accompanied by written educational materials sent home with the patient. Even today, this is a common strategy. This, coupled with a large volume of written patient educational materials available (a search on Google yielded more than 8 million hits), makes it easy for clinicians to distribute materials, often without having a full understanding of the patient's level of health literacy. Results published by the 2003 National Assessment of Adult Literacy (sponsored by the National Center for Education Statistics) suggest that 43% of adults in the U.S. are unable to use print materials for daily activities, including health activities. Moreover, other researchers were able to demonstrate that 28% of parents had very low health literacy, with more than 66% unable to correctly provide demographic data on health insurance forms. This low level of health literacy in the U.S. translates to more than 77 million individuals struggling with health care. In the area of general health, research has shown that poor health literacy results in less use of preventive services, more hospitalizations, greater costs and poorer outcomes. Given that dental caries is still the most common disease in children, these researchers hypothesized that caregivers poor health literacy may be a contributing factor to children's poor oral health.

This study used a cross-sectional approach to determine if there was a relationship between primary caregiver's literacy and the child's oral health. One hundred and six caregiver/children dyads attending the University of North Carolina School of Dentistry teaching clinic comprised a convenience sample in this

study. Children who presented for either an initial emergency or new patient exam were recruited for the study. In order to qualify for participation, children had to be  $\leq 6$  years of age and accompanied by their primary caregiver. Informed consent was obtained from the caregiver. If caregivers had difficulty reading the consent or HIPAA form, an interviewer assisted them by reading these documents aloud. Caregivers' literacy was then assessed using the Rapid Estimate of Adult Literacy in Dentistry (REALD-30). This instrument, comprised of 30 words related to dentistry, assesses reading ability within a dental health context. Caregivers were asked to read the words aloud and told to skip any word that they did not recognize. They were scored one point for each word read and pronounced correctly. Additionally demographic information, oral health knowledge, perceptions or oral health status and potential barriers were assessed using a verbally administered questionnaire. Following the assessment of the caregiver, the child's dental status was assessed using a 3-point caries severity index. Caregiver assessment was accomplished by 2 trained interviewers using a standardized sequence aimed at minimizing embarrassment. Children's examinations were performed by 2 calibrated clinical examiners.

Approximately 60% of the children were males, with race distributed as follows: white (53%), Black/African American (23%), Latina (10%) and other (14%). Approximately 86% of caregivers were mothers and only 33% had college degrees. Overall, the distribution of household income was fairly low, with 46% reporting yearly incomes  $\leq \$30,000$ . Caregivers overall level of oral health knowledge was fairly good (mean of 7.5 out of a possible 11 points). However, 43% reported they had fed their child by bottle at night. Of interest, approximately 57% perceived their child's dental health to be excellent, whereas 44% of children were caries free.

Results showed that REALD-30

score was not related to overall dental knowledge. However, the knowledge item about sugar exposure and caries risk was significantly related to the health literacy measure. Logistic modeling was used to examine whether the REALD-30 was significantly associated with disease severity (none/mild/moderate versus severe) while controlling for child's race and household income. The odds of children having the less caries severity were 1.14 times greater if caregivers had higher literacy scores. A relationship was not found between caregivers health literacy and perceived dental status of child.

This study is one of the first empirical investigations exploring the relationship between caregiver's health literacy and child's caries status. As such, the results have important implications for dental hygiene clinicians. Clear and appropriate communication techniques are needed if hygienists hope to have an impact on improving children's oral health. If the caregiver's literacy is taken into account during patient/parent engagement and communication, the clinician will undoubtedly be more effective. Additionally, understanding that poor caregiver literacy can predispose children to higher caries risk is important to keep in mind during professional interventions with pediatric patients.

**Parker EJ, Jamieson LM. Associations between Indigenous Australian oral health literacy and self-reported oral health outcomes. *Bmc Oral Health*. 2010;10(3):3.**

**Objective:** To determine oral health literacy (REALD-30), oral health literacy-related outcome associations and to calculate if oral health literacy-related outcomes are risk indicators for poor self-reported oral health among rural-dwelling Indigenous Australians.

**Methods:** 468 participants (aged 17-72 years, 63% female) completed a self-report questionnaire. REALD-30 and oral health literacy-related outcome associations were determined through bivariate analy-

sis. Multivariate modeling was used to calculate risk indicators for poor self-reported oral health.

**Results:** REALD-30 scores were lower among those who believed teeth should be infrequently brushed, believed cordial was good for teeth, did not own a toothbrush or owned a toothbrush but brushed irregularly. Tooth removal risk indicators included being older, problem-based dental attendance and believing cordial was good for teeth. Poor self-rated oral health risk indicators included being older, health care card ownership, difficulty paying dental bills, problem-based dental attendance, believing teeth should be brushed infrequently and irregular brushing. Perceived need for dental care risk indicators included being female and problem-based dental attendance. Perceived gum disease risk indicators included being older and irregular brushing. Feeling uncomfortable about orofacial appearance risk indicators included problem-based dental attendance and irregular brushing. Food avoidance risk indicators were being female, difficulty paying dental bills, problem-based dental attendance and irregular brushing. Poor oral health-related quality of life risk indicators included difficulty paying dental bills and problem-based dental attendance.

**Conclusions:** REALD-30 was significantly associated with oral health literacy-related outcomes. Oral health literacy-related outcomes were risk indicators for each of the poor self-reported oral health domains among this marginalized population.

## Commentary

As with many poor and disadvantaged populations in the U.S., Indigenous Australians have greater unmet health needs than non-Indigenous Australians. Moreover, they suffer a greater burden of oral diseases with more severe periodontal disease, fewer filled teeth, more missing teeth and less access to preventive care than their non-Indigenous counterparts. These authors

took a slightly more sophisticated approach to exploring the relationship between health literacy and oral health measures by including other explanatory factors in their predictive model, including: age and sex, socio-economic factors, use of dental services, oral health knowledge, oral health literacy and current oral health behaviors. Like the previous study, they used the REALD-30 to assess oral health literacy. However, oral/dental status was obtained via self report of 7 domains: having had one or more teeth extracted, self-rated oral health, perceived need for care, discomfort about appearance, food avoidance because of tooth/mouth problems and oral health-related quality of life.

Four-hundred and sixty-eight Indigenous Australians living in the Port Augusta region of South Australia participated in the study. The study was approved by the Aboriginal Health Council of South Australia as well as the University of Adelaide Research Ethics Committee. All subjects provided informed consent, and for those with limited reading ability, the consent form was read to them during the consent process. The average age of participants was 38, with 63% female.

Seventy percent reported that they had lost at least 1 tooth, 56% reported needing fillings or extractions, 56% were uncomfortable about the appearance of their mouth and 55% avoided eating certain foods because of their oral condition. Feeling uncomfortable about one's appearance was higher for older participants with low health literacy scores and those who did not brush teeth the preceding day. Additionally, those with lower oral health related quality of life were more likely to have lower literacy scores and seek care only when experiencing dental problems.

REALD-30 scores were compared between individuals who do and do not brush daily, between those who own versus don't own a toothbrush and between those who believed that cordial was good

versus bad for the teeth. In these comparisons, not surprisingly, individuals with higher health literacy scores were more likely to engage in health promoting behaviors and beliefs. In the multivariate modeling, after controlling for other possible confounders, low health literacy was found to be a statistically significant independent risk factor for all 7 self-reported oral health domains.

The authors were quick to caution that the participants in this study were a convenience sample from a defined region in Australia, and the REALD-30 measures word recognition, not comprehension or functionality. Despite these possible shortcomings, the consistency of association across all 7 domains of self-reported oral health gives some confidence that these findings are not spurious. As a preliminary study of health literacy in this population, there is clearly a need to better understand the intricate nature of health literacy on adverse oral health outcomes in order for appropriate interventions to be formulated.

### The Bottom Line

Effective patient-engagement and communication to effect oral health-related behavior change is one of the most rewarding, and challenging roles for dental hygienists. In the past decade, increasing attention has been given to factors that influence optimal oral health outcomes, as well as those that increase adverse outcomes. As I concluded in my previous column on Motivational Interviewing, application of the findings from cognitive psychology to oral health education and preventive counseling increases the likelihood of successful behavior change on the part of our patients. Similarly, understanding the role that health literacy plays in adversely impacting oral health, especially in underserved populations, is critical to maximizing impact of educational efforts.

In 2003, the American Dental

Education Association approved the competencies for Entry into the Profession of Dental Hygiene. [J Dent Ed. 2008;72(7):827-831]. This document requires the graduating hygienist to possess general knowledge regarding health, health determinants and characteristics of various populations that influence oral health in individuals and populations. As evidence about health disparities increases, dental hygiene clinicians need to reconsider their practice standards and modes of patient-engagement and, as needed, re-tool in order to increase their effectiveness with individuals and populations. In the context of oral health, clinicians need to understand that functional health literacy includes the knowledge, skills and capacity for individuals to understand the causes of disease, to engage in self-promoting oral health behaviors, to be able to navigate dental delivery systems effectively and to make decisions that advance their oral health. This implies that dental hygiene interventions cannot be conceptualized and delivered to individuals in a standardized manner. Increasing collection of patient-level and population-level information to better assess literacy skills is just as important as using findings from cognitive psychology to engage patients effectively. The results from the above referenced studies provide preliminary evidence to support that health literacy varies widely within and between populations, appears to be predictive of oral health outcomes and is an important factor in managing patients and populations.

These studies suggest that oral health literacy may be a critical predictor of patient and population based outcomes. Clearly, the science on health behaviors, health literacy and engaging patients effectively is still fairly young. The growing body of evidence in dentistry and medicine suggests that achieving optimal oral health is only achievable by understanding the complex nature of human behavior. I antici-

pate over the next decade that dental and dental hygiene researchers will unravel and understand much of this complexity and identify elements for effective interventions. Until that time, the following conclusions appear to be supportable from the emerging literature:

- Oral health literacy, like general health literacy, is highly variable in human populations and appears to be related to oral health outcomes
- Dental hygienists need to be cognizant of their patient's health literacy as low literacy may present a barrier to oral health education
- Achieving optimal oral health requires clinicians who can use emerging scientific information on health outcomes

## Summary

Over the past 3 years, I have advocated for dental hygiene clinicians to use best practice standards of care by incorporating scientific evidence into their daily practice. Research over the past decade about the multi-factorial nature of oral diseases, biological/social/cultural determinants of health and disease and principles of human behavior and cognition as they relate to health behaviors has changed the landscape for dental hygiene practice. Concomitantly, scientific findings provide excellent guidance on how dental hygienists can raise the bar in their own practices. It has also clarified the level of unmet need and possible reasons for poor

oral and general health in America. The impact of poor health literacy on an individual's health seeking behaviors, adoption and maintenance of preventive care, ability to make good decisions about daily oral care and understanding of professional counsel needs to be at the forefront of every clinician/patient interaction.

Many free resources exist for clinicians to improve their understanding of health literacy. The National Patient Safety Foundation has developed the AskMe3 campaign (<http://www.npsf.org/askme3/>), which seeks to improve patient/clinician communication by providing simple strategies for health care providers and patients alike. Health Resources and Services Administration has a free on-line course aimed at improving patient/clinician communication by addressing issues of literacy and cultural competency (<http://www.hrsa.gov/publichealth/healthliteracy/>). This on-line course can be done at one's leisure and takes approximately 5 hours to complete. Lastly, organized dentistry recently adopted the ADA Health Literacy in Dentistry Action Plan for 2010-2015 ([http://ada.org/sections/professionalResources/pdfs/topics\\_access\\_health\\_literacy\\_dentistry.pdf](http://ada.org/sections/professionalResources/pdfs/topics_access_health_literacy_dentistry.pdf)). This document provides valuable information about the impact of poor health literacy in dentistry and outlines a multi-faceted action plan. It is available on-line as a PDF file and a must-read for all oral health professionals.

Dental hygiene education is be-

ginning to incorporate health literacy content into curricula. Evolution of curricula from an evidence-based perspective offers the most effective means for changing patient/clinician communication, however, experienced clinicians in the field have the responsibility to remain abreast of research findings and intentionally select continuing education venues that allow them to retool to improve patient outcomes. Clearly, dental hygienists are the key oral health professional to improve patient and population outcomes through preventive counseling and care. While having knowledge about the biology of oral health and disease at one's fingertips is necessary for counseling patients, it is not sufficient, especially for traditionally underserved populations and individuals with low health literacy. Clinicians must have superb communication skills that take into account interacting with individuals and populations with a wide range of health literacy. Effective patient education and counseling can only occur when patients understand and can act on advice. As evidence increases in this area, it undoubtedly will change the manner in which we engage our patients and effectively communicate.

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