The association between oral health literacy and missed dental appointments

Jagan Kumar Baskaradoss, BDS, MPH

ABSTRACT

Background. In this study, the author identified associations among demographic characteristics, dental risk factors, health-seeking behaviors, oral health literacy level, and failure to keep dental appointments.

Methods. The author conducted an unmatched 1:2 case-control study at a university-based dental clinic from February through April 2015. The author used the Comprehensive Measure of Oral Health Knowledge questionnaire to record the oral health literacy of the respondents. The author obtained additional information about the various covariates using a questionnaire and checking the patients' electronic medical records. The author used a multivariate logistic regression analysis to test the associations between missed appointments and other risk factors in addition to oral health literacy.

Results. Data from 150 (50 case patients and 100 control patients) respondents were included in the analysis. The case and control patients were comparable in terms of sociodemographic characteristics and dental risk factors. The Comprehensive Measure of Oral Health Knowledge score was used to categorize the sample into low ($\leq$ 18) and high ($>$ 18) oral health literacy groups. Low oral health literacy was associated with a 2-fold increase in the risk of having missed appointments (adjusted odds ratio, 2.38; 95% confidence interval, 1.05-5.40). Age was also independently associated with missed appointments (adjusted odds ratio, 1.03; 95% confidence interval, 1.01-1.06).

Conclusions. After adjusting for the various demographic and dental risk factors, poor oral health literacy was found to be independently associated with missed dental appointments. Insights into the role of oral health literacy and clinic attendance could play an important role in addressing the problem of missed dental appointments.

Practical Implications. Considering the effects of missed appointments on treatment outcomes, predictors of patient compliance behaviors may be useful in circumventing cancellations and no shows.

Key Words. Health knowledge; attitudes; practice; health literacy; oral health; patient appointments.

JADA 2016:■(■):■-■

http://dx.doi.org/10.1016/j.adaj.2016.05.011

The association between a person's literacy skills and health status is well established.[1-3] Interest in this relationship has led to the emergence of the concept of health literacy. Health literacy is "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions."[4] The World Health Organization Commission on the Social Determinants of Health has identified literacy as having a central role in determining inequities in health in both rich and poor countries.[5] Approximately 80 million US adults have limited health literacy, which places them at risk of experiencing poorer health outcomes.[6] Poor literacy skills among adults are surprisingly common in developed countries. Data from many developed nations indicate a relationship between low literacy levels and the reduced use of available health information and services.[7]

Knowledge about health literacy has important implications in both clinical and public health settings. A systematic review of health literacy and health outcomes concluded that low health literacy is associated with poorer health outcomes and the reduced use of health care services.[2] Patients' health literacy also influences their ability to communicate effectively with health care professionals, which in turn can negatively affect the quality of physician-patient relationships.[8] Lower literacy has been linked to problems with the use of preventive services, delayed diagnoses of medical conditions,[9] poor adherence to medical instructions, poor self-management skills, increased mortality risks, poor health outcomes, and higher health care costs.[1,3]

Several factors contribute to missed dental appointments, such as bad weather, administrative errors, fear and poor communication, long lag times and conflicting time commitments between appointments, barriers to access, and simple forgetfulness.[10] Among the patient characteristics, not valuing the importance of dental service, a lack of trust in the dental health care system, and behavioral issues have been shown to be associated with reduced attendance.[11]

Numerous studies have explored the relationship between oral health literacy and oral health–related practices.[12-14] Holtzman and colleagues[13] found that people with poor oral health literacy are more likely to have missed dental appointments. Patients' health-seeking behaviors are influenced by a number of factors, including their perspectives about the symptoms, perceived disrespect, and inability to understand the scheduling system.[15] Because oral health literacy plays a central role in all of these factors, it may be a good predictor of clinic attendance. Considering the effects of missed appointments on treatment outcomes, it is essential to focus on the possible predictors of patient compliance behaviors.

The aim of this study was to identify associations between adult patients' oral health literacy levels and their clinic attendance behaviors.

METHODS

The institutional review board of Case Western Reserve University, Cleveland, Ohio, approved the study protocol.

Study design and sample selection. This was an unmatched case-control study that used a convenience nonprobability sampling method. I drew the study sample from the dental patients who attended the dental clinic at the School of Dental Medicine (SODM), Case Western Reserve University, from February through April of 2015. I referred to the electronic dental records of patients scheduled for the following day and identified the case and control patients. I repeated the process every day until I achieved the required sample size. A case patient was defined as a patient who had at least 1 missed appointment within 12 months of the study. A missed appointment was defined as an appointment for which the patient failed to appear or cancelled less than 24 hours before the scheduled appointment.[16] A control patient was defined as a patient who had kept all of his or her scheduled appointments during the same period.

Selection criteria. The inclusion criteria for the patients were

- older than age 18 years;
- black or white race;
- the ability to provide informed consent to participate in the study;
- had at least 3 scheduled appointments in the previous 12 months of the study.

Patients who required emergency care were excluded from the study.

Sample size calculation. I calculated the sample size using statistical software, Epi Info, Version 7 (StatCalc module). I used a power of 80% and a 2-sided confidence interval (CI) of 95%. The expected prevalence of poor oral health literacy in the control group was assumed to be 29%[17] with an expected odds ratio (OR) of 3. For a case to control ratio of 1:2, the estimated sample size was 41 case patients and 82 control patients, which I then rounded up to 50 case patients and 100 control patients.

Data collection. I informed the participants that their participation was voluntary and that they could withdraw from the study at any time. I obtained informed consent before data collection, and to ensure privacy, I assigned the participants a separate scheduled cubicle for completing the questionnaires. I obtained information regarding the participants' demographic details, income, family size, insurance type, and sources of health information using an additional data collection form. I collected the reasons for missed appointments from the case patients. I extracted data on the periodontal risk assessment and caries risk assessment from the participants' electronic dental records. These clinical assessments are routinely performed for all patients and are based on the risk assessment–based individualized treatment model. The components of this risk assessment were published previously.[18]

I used the Comprehensive Measure of Oral Health Knowledge (CMOHK) developed by Macek and colleagues[17] to record the oral health literacy of the participants. CMOHK is a 23-item questionnaire that contains 10 basic knowledge questions, 6 dental caries prevention and management questions, 5 periodontal disease prevention and management questions, and 2 oral cancer prevention and management questions. The Health Literacy Dental Scale developed by Jones and colleagues[19] includes several questions that assess the respondents' communication skills. I included 4 of these questions in the study to asses if the participant asked the dentist questions, understood information, used information, and acquired a second opinion.

Pilot testing. I selected a convenience sample of 10 adults from among the participants who attended the dental clinic at the SODM. I asked the participants to complete the CMOHK and the additional data sheet. After the pilot-testing sessions, I asked the participants to provide feedback on the questionnaire; based on this feedback, I made a few minor changes to create the final version of the questionnaire.

ABBREVIATION KEY. **CMOHK:** Comprehensive Measure of Oral Health Knowledge. **OHL:** Oral health literacy. **SODM:** School of Dental Medicine.