



Dental Utilization Is Not Associated with Oral Health Literacy

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Original study being reviewed:

Is Dental Utilization Associated with Oral Health Literacy?
 Burgette JM, Lee JY, Baker AD, Vann WF Jr.
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Background

This article critically appraises a cross-sectional study that was conducted to investigate whether an association exists between dental utilization and Oral Health Literacy (OHL).

Clinical question

In participants of the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) in North Carolina, is dental utilization associated with OHL?

Summary of methods

The authors conducted a cross-sectional study using data collected through the Carolina Oral Health Literacy Project from nine sites of the WIC Program in seven North Carolina counties. OHL was determined by the validated 30-item Rapid Estimate of Adult Literacy in Dentistry test. A question from the National Health and Nutrition Examination Survey was employed to assess dental utilization. Multiple linear regression was used to analyze the association between OHL and covariates. Ordinary least square regression was performed to determine whether an association exists between dental utilization and OHL.

Critical appraisal

This was a well-constructed cross-sectional study employing validated survey techniques. The strength of the findings was considered low to moderate given the size of the study and its design. The generalizability is limited due to selection bias, as only females of low socioeconomic status and who spoke English were included in the study. Another limitation was that there was no distinction made for the nature of the dental utilization (emergency versus regular maintenance).

Practical implications

The results showed no association between dental utilization and OHL. These findings are of importance as there are no other studies showing this directional relationship, or lack thereof, explicitly. Further research is needed to analyze this relationship while taking the nature of the dental utilization into consideration.

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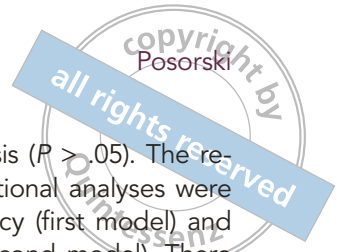
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Evidence summary

Background

Oral health literacy (OHL) is one of the multifactorial determinants of oral health.¹ While the research on OHL as a determinant of dental utilization and oral health outcomes has been growing, there is limited information on the association between dental utilization and OHL. This study is the first population-level study of its kind to examine whether there is an association between dental utilization and OHL.



Clinical question

In participants of the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) in North Carolina, is dental utilization associated with OHL?

Methods

The authors conducted a population-level cross-sectional study using data collected through the Carolina Oral Health Literacy (COHL) Project from nine sites of the WIC Program in seven North Carolina counties. A validated word-recognition test—the 30-item Rapid Estimate of Adult Literacy in Dentistry (REALD-30) test—was used to assess OHL. The principles of this test are based on the ability of an individual to correctly read a dental-related word to the interviewer. It contains 30 words total, arranged in increasing level of difficulty. A question from the National Health and Nutrition Examination Survey was employed to assess dental utilization. The question was “How long has it been since the participants’ last dental visit?” and the answers were subdivided into categories of less than 12 months, 12 to 23 months, 2 to 5 years, and more than 5 years. The participants’ demographic characteristics were evaluated through descriptive statistics. Multiple linear regression was used to analyze the associations between OHL and age, education, race, marital status, self-efficacy, and dental knowledge. Finally, ordinary least-square regression was performed to determine whether an association exists between dental utilization and OHL. The final analysis was further tested by running two additional models: (1) without self-efficacy related to OHL (testing whether lack of self-efficacy had an effect on OHL), and (2) dental knowledge related to OHL (testing whether dental knowledge had an effect on OHL). Self-efficacy was measured by the General Self-Efficacy Scale (GSE), a 10-item validated psychometric test. A 6-item dental knowledge survey was employed to assess the participant’s understanding of common dental principles, such as “fluoride helps prevent tooth decay” and “tooth decay in baby teeth can cause infections that can spread to the face and other parts of the body.” The researchers excluded male participants and individuals who did not speak English from the study. Data provided by a total of 1,277 female caregivers was utilized in the final analysis.

Results

The researchers concluded that no association exists between dental utilization and OHL, and they

did not reject the null hypothesis ($P > .05$). The results did not change after additional analyses were run, including lack of self-efficacy (first model) and including dental knowledge (second model). There was a 24% variance for sociodemographic and dental-related predictors of OHL. While race, education, and self-efficacy significantly predicted OHL ($P < .05$), dental utilization, age, and marital status did not ($P > .05$). Power calculations indicated that the study had $> 90\%$ power ($\alpha = 0.05$), suggesting that it had greater than a 90% chance of detecting a true difference as small as one REALD-30 point. This analysis did not make a distinction between reasons for the dental utilization (ie, problem- or emergency-based versus regular preventive care and maintenance), which might have produced different results. Further research is needed to investigate the reasons for dental utilization and their specific effect on OHL.

Critical appraisal

A cross-sectional study is observational in nature and designed to look at the characteristics of a population at one point in time.² The NIH Quality Assessment Tool³ was used to evaluate the study and showed all but one criterion for a credible cross-sectional study was met, as no time frame was provided. This study was a well-constructed population-level cross-sectional study that employed validated survey techniques. An observational cross-sectional study design was appropriate to test the hypothesis of this research, which investigated whether an association exists between dental utilization and OHL. The authors used validated surveys and methods and adjusted for possible confounders in their analyses, increasing the strength of the evidence. The strength of the findings was considered low to moderate given the size of the study and its design.

Data from the COHL Project was utilized in this analysis. The goal of the state-level COHL project was to explore the OHL in the state and its associated health outcomes.⁴ Individuals of low socioeconomic status (SES) participating in the Special Supplemental Nutrition Program for WIC at nine sites in seven North Carolina counties were the primary target group of the project. In general, individuals of low SES suffer from lower literacy levels, including lower OHL.¹ Therefore, this was an appropriate target population to explore the research question. The sample size of the study was some-

what small, though given no comparison was being made it was sufficient for this analysis. The researchers excluded males and individuals who were not proficient in English from the study, citing potential differences in health-seeking behavior and a small sample size. This introduced selection bias and limited the ability of the results to be generalized to a larger population.

The results showed no association between dental utilization and OHL. The findings did not change when further analysis was performed incorporating models without self-efficacy and with dental knowledge. This means that self-efficacy and knowledge of common dental principles did not affect the outcome variable, OHL. However, the actual results and the 95% confidence intervals were not provided. In addition, the researchers did not take into consideration the reason for the dental utilization, which was a limitation of the study. It is possible that individuals who came in for the dental visits because of a problem or emergency could have different levels of OHL from those who see a dental professional for regular preventive care and maintenance. In a systematic review investigating the relationship between parent health-literacy levels and pediatric emergency department utilization, Morrison et al concluded that individuals with low literacy levels are more likely to utilize the emergency department as a primary point

of care.⁵ There is no research addressing this hypothesis as it pertains to dental care and OHL specifically, and it should be studied further.

Despite its limitations, this study is important because it was the first to assess the relationship between dental utilization and OHL. It illustrated the need for further research to help understand this issue, which could improve oral health outcomes. Given the limited research on the topic, it is difficult to yield clinical implications. However, dental hygienists should understand the complexity of OHL when working with patients.

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