

Oral Health Literacy and Its Association with Oral Health in Adults: A Systematic Review and Meta-Analysis of Observational Studies

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ADMINISTRATIVE INFORMATION

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Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 2 October 2025 and was last updated on 2 October 2025.

INTRODUCTION

Review question / Objective This study aimed to conduct a systematic review and meta-analysis to examine the association between OHL and oral health-related outcomes, including periodontitis, dental caries, general oral health status, and oral health-related quality of life (OHRQoL) in adults. Clarifying these associations may inform the development of strategies to enhance oral health.

Rationale

However, the association between OHL and oral health has shown inconsistent results, studies reporting positive associations while others found no significant relationship. This heterogeneity may be explained by differences in participant characteristics (e.g., educational level, presence of chronic diseases) and study settings (e.g., community, hospital). In addition, the inclusion of various oral health outcomes, such as general oral

health, oral health-related quality of life, and oral conditions including caries and periodontitis, may further contribute to inconsistent findings. Although numerous studies have examined these associations, few meta-analyses have systematically synthesized the available evidence.

Condition being studied

Association of oral health literacy with oral health outcomes.

METHODS

Search strategy

The author used the specified search technique to identify relevant publications. The search terms were derived from combinations of keywords following MeSH terms [("Adult") AND "oral health literacy" OR "dental health education" OR "dental health knowledge") AND "oral health" OR "oral conditions" OR "dental caries" OR "periodontal disease" OR "tooth loss" OR "mouth diseases" OR

“oral health status” OR “gingival disease”]). The following databases were consulted: PubMed, Embase, Scopus, CINAHL, and Web of Science, which were searched from inception to March 31, 2025, for eligible studies. To find more relevant studies, the reference lists of all pertinent research papers and reviews were also examined. The author reviewed the abstract and title after eliminating duplicates to assess the included studies' relevance. After that, the complete texts of those articles were examined and assessed to see if they qualified for inclusion. Every possible study's abstract and full texts were scrutinized and evaluated.

Participant or population

Adults.

Intervention

Oral health literacy.

Comparator

Oral health outcomes.

Study designs to be included

Observational studies (cross-sectional, case-control, or cohort study).

Eligibility criteria

Studies were included if they met the following criteria: (1) involving adults aged 18 years and above; (2) were interesting in oral health literacy measured using validated methods; (3) had oral health related outcomes such as general OH, periodontitis, dental caries, and oral health-related quality of life assessed by validated methods; and (4) were observational studies (e.g., cross-sectional, case-control, or cohort study).

Information sources

PubMed, Embase, CINAHL, Web of Science, and Scopus.

Main outcome(s)

General oral health, dental caries, periodontitis, and oral health-related quality of life are the main outcomes.

Data management

Two independent authors individually extracted data from each study according to a predesigned data extraction form. Extracted information includes study characteristics (e.g., first author's name, year of publication, country, and setting), participant characteristics (e.g., age, proportion of male participants, and proportion with the lowest education level), OHL assessment (e.g., instruments, assessment methods, and cut-off

points for low OHL), and outcomes (e.g., types and assessment methods).

Quality assessment / Risk of bias analysis

The methodological quality of the included studies is assessed by using the Joanna Briggs Institute's (2020) critical appraisal criteria.

Strategy of data synthesis

Data is managed and analyzed using Comprehensive Meta-Analysis (CMA) version 3.0 software.

Subgroup analysis

To explore potential sources of heterogeneity, meta-regression analyses are conducted for continuous moderators (e.g., age, male percentage, and the proportion of the lowest education level), while subgroup analyses will be performed for categorical moderators (e.g., setting, country, chronic disease, OHL assessment methods, and OH assessment methods).

Sensitivity analysis

Sensitivity analyses are conducted to evaluate the robustness of the meta-analysis results regarding the association between oral health literacy and oral health outcomes. We performed analyses excluding studies with a high risk of bias based on JBI quality appraisal, and Egger's regression test was used to assess publication bias. Additionally, we compared the pooled estimates obtained using random-effects and fixed-effect models to assess the impact of different statistical assumptions. Subgroup-based sensitivity analyses were also conducted, such as analyzing studies by age group, type of OHL assessment tool, and study design, to determine whether these factors influence the overall findings. Any substantial changes in results will be reported and discussed in detail.

Language restriction: No language restriction.

Country(ies) involved: No restriction on the countries.

Other relevant information

Previous meta-analyses and systematic reviews also included studies conducted in children; we only assess the association of OHL and oral health in adults.

Keywords

Oral health literacy, oral health, Periodontitis, dental caries, oral health-related quality of life.

Dissemination plans

The findings of this systematic review and meta-analysis on oral health literacy and oral health outcomes will be submitted to peer-reviewed journals in the fields of dentistry and public health. Results will also be presented at national and international conferences related to oral health.

Contributions of each author

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