

Oral Hygiene Neglect after Dental Restoration: Assessing Patients' Misconceptions and Awareness – A Systematic Review

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Abstract

Dental restorations are common worldwide and depend on proper placement and oral hygiene. Misconceptions among patients can lead to poor hygiene and early failure. Addressing these helps improve education and prolong restorations. This review aimed to collect evidence of neglect of oral hygiene after dental restoration regarding misconceptions, knowledge lacunae, and awareness of post-restoration care. The literature search was conducted using Google Scholar and PubMed. It returned 518 records (Google Scholar: 44; PubMed: 474). After 18 duplicates were removed, 500 unique records were screened at the title and abstract level. Out of these, 11 studies were found to meet the inclusion criteria and were taken for full-text review. In the end, nine studies were considered for the final qualitative analysis. The nine studies were carried out worldwide, including in China, India, and Romania, and adopted surveys, questionnaires, and reviews. The sample size ranged from small clinical studies to large population surveys ($n = 2,529$). All of them showed the same result: knowledge, attitudes, and practices of patients with respect to dental restorations were inadequate. Major findings were as follows: (1) Patients from small cities and rural areas had poor knowledge of oral health. (2) Attitudes significantly influenced the failure of restorations. (3) Durability of restorations was lower among individuals with caries at high risk. (4) Educational interventions were indicated for hygiene practices post-restoration. This review reveals persistent gaps and misconceptions in dental patients' knowledge of oral hygiene after restorations. It emphasizes the need for targeted, culturally relevant education, especially for underserved and high-risk groups.

Key words: Composite restorations, dental restoration, oral health knowledge, oral hygiene, patient awareness, patient education, patient misconceptions, secondary caries

INTRODUCTION

Direct restorative materials used in dental restorations – amalgam, composite fillings, and ceramic inlays – are among the most routine clinical procedures in dentistry today.^[1] Despite advances in restorative materials and adhesives, restoration failure remains a major clinical issue, leading to many repeat dental visits and contributing to the global oral health burden.^[2]

Long-term success is influenced by material properties, the technique of the operator, cavity design, and, most importantly, patient behavior and habits.^[1] Of all these factors, adherence to

oral hygiene by the patient after restoration is most crucial. Secondary caries, which are the main factors in restoration failures, usually develop at the margins of the restoration and are highly influenced by patient efforts in controlling plaque to maintain oral health.^[2] Patients who cannot keep their oral cavities clean after restoration will have microbial

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biofilm that may cause acid demineralization to eventually result in marginal degradation and damage to the restoration failure.^[3]

Previous investigations indicate that patients frequently assume that restored teeth are permanently treated and decay-proof, leading to oral hygiene neglect.^[4] The lack of patient education, poor oral health literacy, and socioeconomic constraints to preventive dental care add to the misconception.^[5] The resulting consequences are clinically harmful, leading to markedly lower restoration survival rates among patients with high caries risk who do not modify their oral hygiene behaviors post-restoration, compared with low-risk counterparts.^[2]

Despite its clinical significance, there has been no systematic review that has brought together evidence of patient misconceptions and awareness regarding post-restoration oral hygiene. As a result, one cannot develop educational strategies and guidelines. This review aimed to address this gap by answering key research questions:

Among patients who have received dental restorations (including fillings and direct composite restorations), what is the prevalence and nature of oral hygiene neglect or reduced oral hygiene compliance, and what are the associated patient misconceptions, knowledge gaps, and awareness levels regarding post-restoration oral hygiene care.

The secondary objectives were to: (1) characterize the types and frequency of patient misconceptions identified in the literature; (2) identify patient subgroups at highest risk of post-restoration oral hygiene neglect; and (3) evaluate the effectiveness of educational or motivational interventions in improving post-restoration hygiene compliance.

METHODOLOGY

This systematic review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses 2020 guidelines.

Search strategy

An electronic search of the literature was conducted using PubMed (MEDLINE) and Google Scholar databases. It was conducted on January 10, 2026, using MeSH terms and free-text keywords for: (1) dental restorations and direct composite fillings; (2) oral hygiene behavior and compliance; and (3) the search focused on patient knowledge, attitudes, practices, and compliance, without restrictions on language or publication date to maximize sensitivity. Boolean operators (AND, OR) were used to combine search terms.

Eligibility criteria

Inclusion criteria

- Studies reporting on patient knowledge, attitudes, practices, or misconceptions regarding oral hygiene after dental restoration
- Studies including patients who had received at least one dental restoration (filling, composite, or endodontic treatment)
- Cross-sectional studies, cohort studies, randomized controlled trials, systematic reviews, and literature reviews
- Studies reporting quantitative or qualitative data on post-restoration oral hygiene compliance or patient awareness.

Exclusion criteria

- Studies not focused on post-restoration oral hygiene behavior or patient knowledge
- *In vitro*, laboratory, or animal studies
- Case reports, editorials, and opinion pieces without original data
- Studies with no extractable data on patient behavioral or knowledge outcomes.

Screening process

All retrieved records were imported and deduplicated. Title and abstract screening was performed independently against the eligibility criteria using a predefined scoring threshold of ≥ 3.0 . Studies meeting the threshold proceeded to full-text retrieval and assessment. Full-text screening was performed against the same eligibility criteria. Reasons for exclusion at the full-text stage were documented.

Data extraction

A structured data extraction form was used to collect the following information from each included study: (1) study design; (2) country and setting; (3) sample size; (4) participant characteristics; (5) type of restoration examined; (6) key findings related to patient knowledge, attitudes, and practices; (7) patient misconceptions identified; (8) oral hygiene compliance outcomes; and (9) main conclusions.

RESULTS

Study selection

The database search yielded 518 records in total (Google Scholar: $n = 44$; PubMed: $n = 474$). Following deduplication, 500 unique records were screened at the title and abstract level. Of these, 489 records were excluded for the following reasons: not focused on post-restoration oral

hygiene ($n = 210$); no patient behavioral or knowledge data ($n = 155$); non-human or laboratory study ($n = 80$); unrelated dental topic ($n = 44$). Eleven studies were retrieved for full-text assessment. Two studies were excluded at the full-text stage: one due to insufficient patient hygiene/behavioral data and one because it was not focused on dental fillings or composite restorations. Nine studies were included in the final qualitative synthesis [Figure 1].

Study characteristics

The characteristics of the 9 included studies are summarized in Table 1. Studies were published between 2016 and 2026 and were conducted across multiple countries, including China, India, Romania, Brazil, the Netherlands, and Croatia. Study designs included cross-sectional surveys ($n = 3$), questionnaire-based assessments ($n = 2$), systematic reviews ($n = 2$), and integrated literature reviews ($n = 2$). Sample sizes ranged from small clinical cohorts to large population-based surveys (maximum $n = 2,529$).

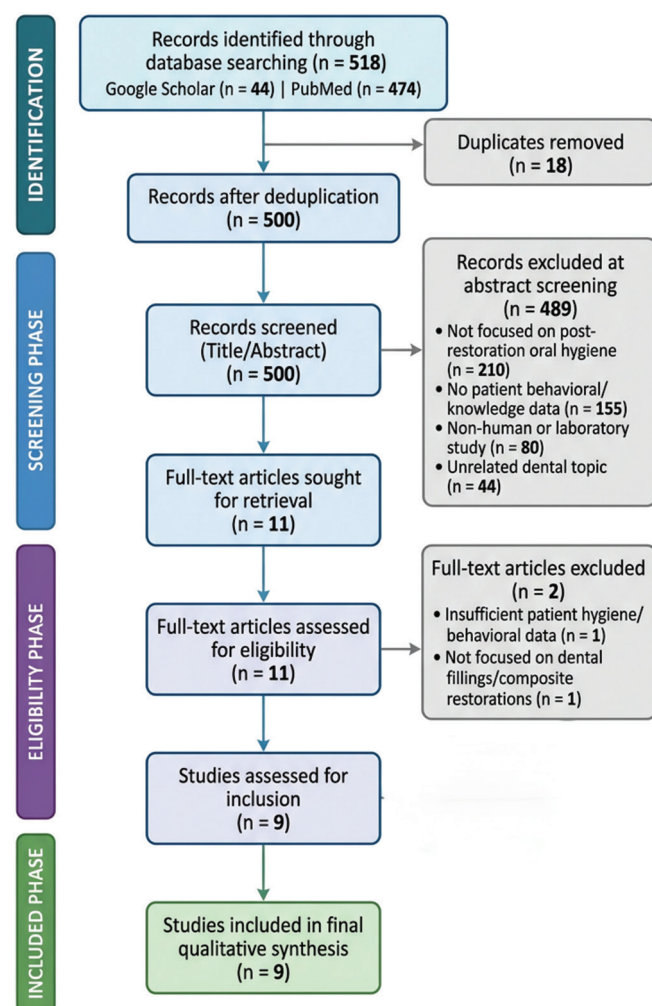


Figure 1: Preferred reporting items for systematic reviews and meta-analyses 2020 flow diagram

Synthesis of evidence

Patient knowledge regarding post-restoration oral hygiene

Consistently inadequate patient knowledge regarding the maintenance of dental restorations was a finding across all included studies. This was also supported by a large cross-sectional survey conducted by Ye *et al.*^[7] In China ($n = 2,529$), which demonstrated that a sizeable proportion of dental patients held misconceptions about the permanence and self-maintenance of dental fillings. In mediation analysis, it was found that knowledge had a significant direct effect on both attitudes and practices – confirming a clear causal pathway from misinformation to neglect of oral hygiene.^[7]

Similarly, Mohan *et al.* identified significant knowledge gaps among patients attending a tertiary care hospital in Jharkhand, India. Patients demonstrated limited understanding of the susceptibility of restored teeth to secondary caries and the importance of continued oral hygiene vigilance after restoration.^[8]

Geographic and socioeconomic disparities

Geographic location and socioeconomic status were consistently identified as significant moderators of patient knowledge and oral hygiene behavior. Patients in smaller cities and rural areas had significantly less knowledge of oral health than their urban counterparts.^[7] Pande *et al.* highlighted that oral health disparities persist, affecting underserved groups with limited dental access, low health literacy, and inadequate patient care education.^[5]

Patient attitudes as contributors to restoration failure

Gheorghiu *et al.* reviewed the causes of adhesive restoration failures, citing patient factors such as poor oral hygiene, diet, and parafunctional behaviors, as well as material and operator issues. The review highlighted that patient attitudes toward oral hygiene are modifiable risk factors that clinicians can target for education.^[3]

Caries risk and restoration survival

Van de Sande *et al.* conducted a systematic review, finding an inverse relationship between caries risk and restoration survival. High-risk patients had lower survival rates, mainly due to poor oral hygiene post-treatment. The review highlights the need for risk-based management to address this gap.^[2]

Awareness of restoration complications

Nijakowski *et al.*^[4] reviewed patients' awareness of complications in composite restorations, finding low awareness of issues such as secondary caries, marginal degradation, fracture, and discoloration. This gap reduced motivation for hygiene and delayed follow-up.^[4]

Table 1: Characteristics of included studies

Author(s), Year	Study design	Country	Sample size	Key focus
Tadin and Badrov 2024 ^[6]	Cross-sectional	Croatia	2126	Oral health knowledge, behaviors, and oral hygiene practices among patients.
Pande <i>et al.</i> , 2026 ^[5]	Literature review	India	NR	Evidence-based oral health education in restorative care
Coelho <i>et al.</i> , 2024 ^[1]	Integrated review	Brazil	NR	Multifactorial contributors to restoration longevity
Ye <i>et al.</i> , 2024 ^[7]	Cross-sectional survey	China	2,529	KAP toward dental defects and fillings; mediation analysis
Mohan <i>et al.</i> , 2024 ^[8]	Questionnaire-based	India	771	KAP regarding restorative and endodontic treatment
Gheorghiu <i>et al.</i> , 2023 ^[3]	Literature review	Romania	NR	Causes of adhesive direct restoration failures
van de Sande <i>et al.</i> , 2016 ^[2]	Systematic review	The Netherlands	NR	Patient risk factors for restoration survival
Nijakowski <i>et al.</i> , 2026 ^[4]	Systematic review	NR	NR	Awareness of complications of direct composite restorations
Melebari <i>et al.</i> , 2019 ^[9]	Clinical study	NR	30	Motivational effect of multicolored restorations in children

KAP: Knowledge, attitude, and practice, NR: Not reported

Compliance after implant and periodontal restoration

Tadin and Bardov^[6] investigated oral health knowledge, behaviors, and oral hygiene practices among general patients receiving care in the restorative department. It was noted that many respondents associate poor oral health literacy and low priority with poor oral health. Although they possess good knowledge of oral health, a disconnect remains between their perceptions and their actual health status. There is a need to focus on targeted education initiatives that promote comprehensive hygiene practices and address prevalent misconceptions.^[6] This non-compliance was associated with an increased risk of peri-various oral disease, highlighting that oral hygiene neglect after restoration is not confined to conventional fillings but also extends to more complex restorative treatments.

Educational and motivational interventions

Coelho *et al.*^[1] highlighted that patient education improves restoration longevity, noting that combining behavioral counseling with clinical care leads to better results.^[9] Evaluated the use of multicolored restorations in primary school children as a motivational instrument and found that this approach improved dental behavior and oral hygiene. Their findings suggest that innovative, patient-centered strategies can effectively promote ongoing dental care after restorations.^[9]

oral hygiene and controlling plaque after the procedure.^[10] Poor oral hygiene promotes biofilm growth at restoration edges, leading to secondary caries and gingivitis.^[11] Although chairside education is provided, many patients remain unaware of proper oral hygiene after restoration. They often believe their restored teeth are immune to decay or require less care, which can lead to more problems and failures.^[12] Socioeconomic disparities, limited health literacy, and reinforcement of recall visits all contribute to this lack of awareness.^[13]

This review examines nine studies focused on patients' understanding, attitudes, behaviors, and misconceptions about oral hygiene following dental restorations. It highlights common knowledge gaps and misconceptions across the globe, which contribute to poor oral hygiene and early failure of restorations. The most common misconception was that a restored tooth is permanently protected and needs no routine oral hygiene.^[4,7] Such a misconception leads to negligence of brushing and flossing near restorations, risking secondary caries.^[2] High-risk patients have lower restoration survival rates,^[8] highlighting serious clinical consequences of this misconception.

Differences in oral health knowledge across regions and socioeconomic categories indicate an oral health inequality. Patients from rural areas and those with lower incomes consistently exhibited lower levels of knowledge.^[5,7] This indicates that patient education fails to reach vulnerable groups, aligning with research on oral health disparities. Therefore, community outreach and culturally tailored education are essential. Educational and motivational interventions are limited but promising. Targeted education and new engagement strategies can improve patient behavior. However, the lack of randomized controlled trials is a major gap that future research should address.^[1,9]

DISCUSSION

Dental restorations are designed to regain the shape, function, and look of teeth damaged by caries or trauma. However, their long-term success largely relies on patients keeping good

Clinical implications

Clinicians should provide oral hygiene advice at every visit to address the misconception that restorations eliminate the need for routine oral care.^[4] Patients with high-risk caries need more frequent education, follow-up, and advice on oral hygiene and diet.^[2] Educational materials should incorporate verbal, written, and visual components to enhance comprehension for individuals with diverse literacy levels and skills.^[5] Patient education should be tailored to align with the patient's cultural background, language, and location, especially in underserved communities.^[7] One restoration session is not sufficient for full education. Hence, continuous reinforcement during follow-up visits is crucial for maintaining behavior change.^[6]

Limitations

Limitations of this review include the inclusion of studies with various study designs, participant populations, and outcome measures. Most studies were conducted in China and India, limiting the generalizability of the findings. Most studies were based on self-reported data that can introduce bias. Direct comparison of studies was difficult due to a lack of standardized assessment tools. Furthermore, publication bias may underrepresent studies with negative outcomes. Future research should focus on validated educational interventions tested via randomized controlled trials. It is essential to develop instruments to assess misconceptions and conduct long-term studies on patient understanding, oral hygiene, and restoration longevity.

CONCLUSION

This review shows that many dental patients believe restorations permanently stop decay, which reduces their oral hygiene efforts and increases the risk of restoration failure. These misconceptions are common among rural, lower-income, and less-educated groups, raising equity issues. The findings highlight the need for targeted, evidence-based patient education to address misconceptions about oral hygiene neglect among patients with restorations.

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AUTHOR CONTRIBUTIONS

Conceptualization, methodology, formal analysis, writing – original draft, and writing – review and editing: Research

team. All authors have read and agreed to the final version of the manuscript.

ETHICS STATEMENT

This systematic review is registered in the Research and Innovation Center of Riyadh Elm University (“FUGRP/2026/482/1397/1278”), Riyadh, Saudi Arabia.

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