REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

DIABETES MELLITUS NA PRÁTICA ODONTOLÓGICA: CONSIDERAÇÕES CLÍNICAS E POSSÍVEIS COMPLICAÇÕES

DIABETES MELLITUS IN DENTAL PRACTICE: CLINICAL CONSIDERATIONS AND POTENTIAL COMPLICATIONS

DIABETES MELLITUS EN LA PRÁCTICA ODONTOLÓGICA: CONSIDERACIONES CLÍNICAS Y POSIBLES COMPLICACIONES

Nathália Duarte Barros Rocha[1]; Glaucia Valias Filgueiras[1]; Alice Maia Machado Costa[2]; Paola Ferreira Galito[3]; Thiago Gouveia Bastos[4]; João Marcos Mattos[5]; Thiago Borges Mattos[4]; Márcio Eduardo Vieira Falabella[6]

1 Mestre, Universidade Federal de Juiz de Fora, Brasil
2 Graduanda, Universidade Federal de Juiz de Fora, Brasil
3 Mestre, Centro Universitário UninCor, Brasil
4 Doutorado, Centro Universitário UninCor, Brasil
5 Pós-doutorado, Centro Universitário UninCor, Brasil
6 Doutorado, Universidade Federal de Juiz de Fora, Brasil

E-mail: mevfalabella@hotmail.com

RESUMO

Introdução: O diabetes mellitus é uma doença metabólica crônica prevalente, com importantes implicações para a saúde bucal e para o atendimento odontológico. A hiperglicemia persistente pode afetar a função imunológica, as respostas inflamatórias, a integridade vascular e o reparo tecidual, potencialmente influenciando o manejo e os resultados do tratamento odontológico. **Objetivo:** Esta revisão narrativa crítica teve como objetivo analisar as principais considerações clínicas e potenciais complicações associadas ao tratamento odontológico em pacientes com diabetes mellitus, com ênfase na avaliação prévia ao tratamento, terapia periodontal, procedimentos invasivos, tratamento endodôntico, terapia com implantes e prevenção de complicações glicêmicas. **Métodos:** Foi realizada uma busca estruturada da literatura nas bases PubMed/MEDLINE e Scopus, complementada por buscas direcionadas no PubMed sobre hipoglicemia, terapia periodontal e controle glicêmico, uso de antibióticos, exodontia e reparo tecidual, terapia com implantes e desfechos endodônticos. Foram priorizadas diretrizes clínicas recentes, revisões sistemáticas, meta-análises e estudos primários com relevância clínica. A literatura foi analisada criticamente e sintetizada de acordo com sua relevância para a tomada de decisão clínica, sem realização de meta-análise quantitativa. **Resultados:** O diabetes pode

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

influenciar a inflamação periodontal, a suscetibilidade a infecções bucais, o reparo tecidual e os resultados dos tratamentos odontológicos. Entretanto, as evidências atuais não sustentam a exclusão automática de pacientes com diabetes de procedimentos odontológicos de rotina ou invasivos apenas com base no diagnóstico. A HbA1c pode contribuir para a estratificação do risco, mas não deve ser utilizada como critério isolado para determinar a elegibilidade ao tratamento odontológico. Atenção especial deve ser dada ao risco de hipoglicemia, particularmente em pacientes em uso de insulina, sulfonilureias ou meglitinidas. A terapia periodontal pode proporcionar uma melhora modesta no controle glicêmico, enquanto exodontias, tratamentos endodônticos e terapia com implantes requerem avaliação individualizada de acordo com o estado metabólico, as complicações sistêmicas, as condições bucais locais e a complexidade do procedimento. **Conclusão:** O diabetes mellitus deve ser considerado um importante fator modificador, e não uma contraindicação absoluta ao tratamento odontológico. Uma abordagem individualizada e baseada em evidências, integrando o estado metabólico, os riscos relacionados aos medicamentos, as condições bucais e as características do procedimento, é essencial para minimizar complicações, orientar adequadamente o planejamento terapêutico e evitar atrasos desnecessários em tratamentos odontológicos necessários.

Palavras-chave: Diabetes Mellitus; Assistência Odontológica; Saúde Bucal; Doenças Periodontais; Implantes Dentários.

ABSTRACT

Background: Diabetes mellitus is a prevalent chronic metabolic disorder with important implications for oral health and dental care. Persistent hyperglycemia may affect immune function, inflammatory responses, vascular integrity, and tissue repair, potentially influencing the management and outcomes of dental treatment. **Objective:** This critical narrative review aimed to analyze the main clinical considerations and potential complications associated with dental treatment in patients with diabetes mellitus, with emphasis on pre-treatment assessment, periodontal therapy, invasive procedures, endodontic treatment, implant therapy, and the prevention of glycemic complications. **Methods:** A structured literature search was conducted in PubMed/MEDLINE and Scopus, complemented by focused searches in PubMed addressing hypoglycemia, periodontal therapy and glycemic control, antibiotic use, tooth extraction and wound healing, implant therapy, and endodontic outcomes. Recent clinical guidelines, systematic reviews, meta-analyses, and clinically relevant primary studies were prioritized. The literature was critically analyzed and synthesized according to its relevance to clinical decision-making, without quantitative meta-analysis. **Results:** Diabetes may influence periodontal inflammation, susceptibility to oral infections, tissue repair, and dental treatment outcomes. However, current evidence does not support the automatic exclusion of patients with diabetes from routine or invasive dental procedures solely on the basis of the diagnosis. HbA1c may contribute to risk stratification but should not be used as an isolated criterion for dental treatment eligibility. Particular attention should be given to hypoglycemia risk, especially in patients using insulin,

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

sulfonylureas, or meglitinides. Periodontal therapy may provide a modest improvement in glycemic control, whereas tooth extraction, endodontic treatment, and implant therapy require individualized assessment according to metabolic status, systemic complications, local oral conditions, and procedural complexity. **Conclusion:** Diabetes mellitus should be considered an important modifying factor rather than an absolute contraindication to dental treatment. An individualized, evidence-informed approach integrating metabolic status, medication-related risks, oral conditions, and procedural characteristics is essential to minimize complications, support appropriate treatment planning, and avoid unnecessary delays in necessary dental care.

Keywords: Diabetes Mellitus; Dental Care; Oral Health; Periodontal Diseases; Dental Implants.

RESUMEN

Introducción: La diabetes mellitus es una enfermedad metabólica crónica prevalente, con importantes implicaciones para la salud bucal y la atención odontológica. La hiperglucemia persistente puede afectar la función inmunitaria, las respuestas inflamatorias, la integridad vascular y la reparación tisular, lo que potencialmente influye en el manejo y los resultados del tratamiento odontológico. **Objetivo:** Esta revisión narrativa crítica tuvo como objetivo analizar las principales consideraciones clínicas y las posibles complicaciones asociadas al tratamiento odontológico en pacientes con diabetes mellitus, con énfasis en la evaluación previa al tratamiento, la terapia periodontal, los procedimientos invasivos, el tratamiento endodóntico, la terapia con implantes y la prevención de complicaciones glucémicas. **Métodos:** Se realizó una búsqueda estructurada de la literatura en las bases de datos PubMed/MEDLINE y Scopus, complementada con búsquedas específicas en PubMed sobre hipoglucemia, terapia periodontal y control glucémico, uso de antibióticos, extracción dental y reparación tisular, terapia con implantes y resultados endodónticos. Se priorizaron guías clínicas recientes, revisiones sistemáticas, metaanálisis y estudios primarios de relevancia clínica. La literatura fue analizada críticamente y sintetizada de acuerdo con su relevancia para la toma de decisiones clínicas, sin realizar un metaanálisis cuantitativo. **Resultados:** La diabetes puede influir en la inflamación periodontal, la susceptibilidad a infecciones orales, la reparación tisular y los resultados de los tratamientos odontológicos. Sin embargo, la evidencia actual no respalda la exclusión automática de pacientes con diabetes de procedimientos odontológicos rutinarios o invasivos únicamente por el diagnóstico de la enfermedad. La HbA1c puede contribuir a la estratificación del riesgo, pero no debe utilizarse como criterio aislado para determinar la elegibilidad para el tratamiento odontológico. Se debe prestar especial atención al riesgo de hipoglucemia, particularmente en pacientes que utilizan insulina, sulfonilureas o meglitinidas. La terapia periodontal puede proporcionar una mejora modesta del control glucémico, mientras que las extracciones dentales, los tratamientos endodónticos y la terapia con implantes requieren una evaluación individualizada de acuerdo con el estado metabólico, las complicaciones sistémicas, las

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

condiciones orales locales y la complejidad del procedimiento. **Conclusión:** La diabetes mellitus debe considerarse un importante factor modificador y no una contraindicación absoluta para el tratamiento odontológico. Un enfoque individualizado y basado en la evidencia, que integre el estado metabólico, los riesgos relacionados con los medicamentos, las condiciones orales y las características del procedimiento, es esencial para minimizar las complicaciones, orientar adecuadamente la planificación terapéutica y evitar retrasos innecesarios en tratamientos odontológicos necesarios.

Palabras clave: Diabetes Mellitus; Atención Odontológica; Salud Bucal; Enfermedades Periodontales; Implantes Dentales.

1. Introduction

Diabetes mellitus (DM) is a chronic metabolic disorder characterized by persistent hyperglycemia resulting from defects in insulin secretion, insulin action, or both. Its global prevalence continues to increase, making DM one of the most significant public health challenges worldwide. Beyond its well-established systemic consequences, diabetes may substantially influence oral health and the delivery of dental care through complex interactions involving inflammatory dysregulation, impaired immune responses, vascular alterations, and changes in tissue repair.

The oral cavity may both reflect and contribute to the systemic burden of diabetes. Individuals with DM have an increased susceptibility to periodontal disease, and the relationship between these conditions is widely recognized as bidirectional. Persistent hyperglycemia may exacerbate periodontal inflammation and tissue destruction, whereas chronic periodontal inflammation may adversely affect glycemic control. Recent evidence has further explored the potential metabolic benefits of periodontal therapy, reinforcing the importance of integrating periodontal and systemic care in individuals with diabetes (ALWITHANANI, 2023; OLIVEIRA et al., 2023; CORBELLA et al., 2025).

From a clinical perspective, diabetes represents an important consideration throughout the different stages of dental treatment. The patient's diabetes type and duration, metabolic status, medication regimen, dietary habits, history of hypoglycemic episodes, and diabetes-related complications may influence treatment planning and the management of potential complications. In particular, the risk of hypoglycemia during dental procedures requires careful assessment, especially among patients treated with insulin, sulfonylureas, or meglitinides. Appropriate communication between dental and medical professionals may be necessary to coordinate glucose-lowering medications and treatment plans when clinically indicated (AMERICAN DIABETES ASSOCIATION PROFESSIONAL PRACTICE COMMITTEE, 2026a, 2026b). Importantly, HbA1c should be interpreted as a risk

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

modifier rather than as an isolated criterion for determining whether dental treatment can be performed, since no universal HbA1c threshold adequately defines procedural safety across all patients and clinical situations.

Invasive dental procedures have traditionally raised concerns regarding delayed wound healing and an increased susceptibility to postoperative infection in patients with diabetes. However, current evidence suggests that the relationship between diabetes and adverse dental outcomes is more complex than previously assumed and may be influenced by metabolic stability, the presence of active infection, systemic comorbidities, and the complexity of the planned procedure. Evidence regarding relatively uncomplicated tooth extraction does not support the assumption that diabetes alone invariably results in impaired healing, highlighting the importance of distinguishing simple extractions from more complex oral surgical procedures and adopting an individualized approach to risk assessment (SINGH et al., 2026).

Similarly, diabetes may influence the prognosis of other dental therapies. Evidence suggests an association between diabetes and apical periodontitis in endodontically treated teeth, while evidence regarding implant therapy remains heterogeneous, with some studies indicating increased implant failure and marginal bone loss in patients with diabetes and others reporting more favorable outcomes among well-managed patients with type 2 diabetes. Therefore, diabetes type, metabolic status, diabetes-related complications, oral hygiene, periodontal health, and long-term maintenance should be incorporated into clinical decision-making rather than applying generalized restrictions based solely on the diagnosis of diabetes (LIU et al., 2023; AL ANSARI; SHAHWAN; CHRCANOVIC, 2022; JAMES et al., 2024).

Despite the growing body of evidence addressing the relationship between diabetes and oral health, practical uncertainties remain in daily dental practice. Questions regarding the appropriate assessment of glycemic status, the management of patients at risk of hypoglycemia, the safety of invasive procedures, the appropriate use of antibiotics, and the extent to which diabetes should influence decisions regarding endodontic and implant treatment continue to challenge dental professionals. Accordingly, an evidence-based and clinically oriented approach is essential to avoid both unnecessary treatment restrictions and the underestimation of potential systemic and postoperative risks.

Therefore, this critical narrative review aims to analyze the main clinical considerations and potential complications associated with dental treatment in patients with diabetes mellitus, with particular emphasis on pre-treatment

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

assessment, glycemic and medication-related risks, periodontal therapy, invasive procedures and wound healing, endodontic treatment, implant therapy, and the prevention and management of glycemic complications in the dental setting.

2. Methods

Study design and literature search

This study was designed as a critical narrative review with a structured literature search, aiming to provide a clinically oriented synthesis of current evidence regarding diabetes mellitus and dental treatment, with particular emphasis on treatment planning, procedure-related risks, and potential clinical complications.

Electronic searches were conducted in PubMed/MEDLINE and Scopus on September 5, 2026. The principal search covered publications from 2021 to 2026. Older publications were considered when necessary to provide essential clinical or conceptual context. The search strategy combined terms related to diabetes mellitus and dental care, using controlled vocabulary and title/abstract terms in PubMed and title/abstract/keyword terms in Scopus. Boolean operators (AND and OR) were used to combine the search concepts.

In PubMed/MEDLINE, the principal search strategy was:

("Diabetes Mellitus"[Mesh] OR "diabetes mellitus"[Title/Abstract] OR diabetic*[Title/Abstract]) AND ("Dental Care for Chronically Ill"[Mesh] OR "Dental Care"[Mesh] OR "Dentistry"[Mesh] OR "dental care"[Title/Abstract] OR "dental treatment"[Title/Abstract] OR "dental practice"[Title/Abstract] OR dentistry[Title/Abstract] OR "oral health"[Title/Abstract] OR "oral surgery"[Title/Abstract] OR "tooth extraction"[Title/Abstract] OR "endodontic

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

treatment"[Title/Abstract] OR "root canal treatment"[Title/Abstract] OR "dental implant*"[Title/Abstract] OR "implant therapy"[Title/Abstract] OR periodont*[Title/Abstract]) In Scopus, the corresponding search strategy was: TITLE-ABS-KEY(("diabetes mellitus" OR diabetic*) AND ("dental care" OR “dentistry OR "dental treatment" OR "dental practice" OR "oral health" OR "oral surgery" OR "tooth extraction" OR "endodontic treatment" OR "root canal treatment" OR "dental implant*" OR "implant therapy" OR periodont*))

The principal searches were limited to publications from 2021 to 2026. In PubMed, the database's five-year publication-date filter was applied, whereas in Scopus the publication year was restricted to 2021–2026.

In addition to the principal search, complementary searches were conducted in PubMed to identify evidence addressing specific clinical issues considered particularly relevant to dental management of patients with diabetes. These searches focused on hypoglycemia during dental treatment; periodontal disease and glycemic control/HbA1c; antibiotic use and antimicrobial prophylaxis in dental procedures; tooth extraction, oral surgery, and wound healing; dental implant therapy and implant-related outcomes; and endodontic treatment and periapical disease.

For hypoglycemia, the following PubMed strategy was used: ("Diabetes Mellitus"[Mesh] OR "diabetes mellitus"[Title/Abstract] OR diabetic*[Title/Abstract]) AND (hypoglycemia[Title/Abstract] OR "Hypoglycemia"[Mesh] OR "hypoglycemic episode*"[Title/Abstract] OR "blood glucose"[Title/Abstract] OR "blood glucose level*"[Title/Abstract]) AND (dentistry[Title/Abstract] OR "dental care"[Title/Abstract] OR "dental treatment"[Title/Abstract] OR "dental practice"[Title/Abstract] OR "dental procedure*"[Title/Abstract] OR "oral surgery"[Title/Abstract])

For periodontal disease and glycemic control, the following PubMed strategy was used: ("Diabetes Mellitus"[Mesh] OR "diabetes mellitus"[Title/Abstract] OR diabetic*[Title/Abstract]) AND (periodont*[Title/Abstract] OR "Periodontal Diseases"[Mesh] OR "periodontal therapy"[Title/Abstract] OR "periodontal treatment"[Title/Abstract] OR "scaling and root planing"[Title/Abstract]) AND (HbA1c[Title/Abstract] OR "glycated hemoglobin"[Title/Abstract] OR "glycated haemoglobin"[Title/Abstract] OR "glycemic control"[Title/Abstract] OR "glycaemic control"[Title/Abstract] OR "blood glucose"[Title/Abstract])

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

For antibiotic use and antimicrobial prophylaxis, the following PubMed strategy was used: ("Diabetes Mellitus"[Mesh] OR "diabetes mellitus"[Title/Abstract] OR diabetic*[Title/Abstract]) AND ("Anti-Bacterial Agents"[Mesh] OR antibiotic*[Title/Abstract] OR "antibiotic prophylaxis"[Title/Abstract] OR "antimicrobial prophylaxis"[Title/Abstract]) AND (dentistry[Title/Abstract] OR "dental care"[Title/Abstract] OR "dental treatment"[Title/Abstract] OR "dental procedure*"[Title/Abstract] OR "oral surgery"[Title/Abstract] OR "tooth extraction"[Title/Abstract] OR "dental implant*"[Title/Abstract] OR "oral infection*"[Title/Abstract] OR "odontogenic infection*"[Title/Abstract])

For tooth extraction, oral surgery, and wound healing, the following PubMed strategy was used:

("Diabetes Mellitus"[Mesh] OR "diabetes mellitus"[Title/Abstract] OR diabetic*[Title/Abstract]) AND("Tooth Extraction"[Mesh] OR "tooth extraction"[Title/Abstract] OR "dental extraction"[Title/Abstract] OR "oral surgery"[Title/Abstract] OR "oral surgical procedure*"[Title/Abstract]) AND ("Wound Healing"[Mesh] OR "wound healing"[Title/Abstract] OR "postoperative healing"[Title/Abstract] OR "surgical site infection"[Title/Abstract])

For dental implant therapy and implant-related outcomes, the following PubMed strategy was used: ("Diabetes Mellitus"[Mesh] OR "diabetes mellitus"[Title/Abstract] OR diabetic*[Title/Abstract]) AND ("Dental Implants"[Mesh] OR "dental implant*"[Title/Abstract] OR "implant therapy"[Title/Abstract] OR "implant treatment"[Title/Abstract] OR "implant survival"[Title/Abstract] OR "implant failure"[Title/Abstract] OR "peri-implant"[Title/Abstract] OR "marginal bone loss"[Title/Abstract])

For endodontic treatment and periapical disease, the following PubMed strategy was used: ("Diabetes Mellitus"[Mesh] OR "diabetes mellitus"[Title/Abstract] OR diabetic*[Title/Abstract]) AND ("Endodontics"[Mesh] OR endodont*[Title/Abstract] OR "root canal treatment"[Title/Abstract] OR "root canal therapy"[Title/Abstract] OR "apical periodontitis"[Title/Abstract] OR "periapical disease"[Title/Abstract]) AND ("treatment outcome"[Title/Abstract] OR "treatment outcome"[Mesh] OR "treatment failure"[Title/Abstract] OR "endodontic outcome"[Title/Abstract] OR "apical periodontitis"[Title/Abstract] OR "periapical healing"[Title/Abstract])

Priority was given to publications with direct clinical relevance to dental practice, particularly clinical guidelines, systematic reviews, meta-analyses, and

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

relevant clinical studies. Recent evidence was prioritized, while earlier publications were retained when necessary to provide essential clinical or conceptual context.

Study selection and evidence synthesis

Publications were considered eligible when they provided clinically relevant information regarding the management of patients with diabetes undergoing dental treatment, including evidence addressing glycemic assessment, hypoglycemia, periodontal disease and periodontal therapy, odontogenic infections, tooth extraction and oral surgery, wound healing, endodontic treatment, dental implant therapy, and procedure-related complications.

Records identified through the database searches were screened for relevance based on their titles and abstracts, followed by assessment of potentially relevant full-text publications. Studies that did not provide information relevant to the relationship between diabetes mellitus and dental treatment were excluded.

The selected evidence was critically analyzed and organized according to its clinical applicability. No quantitative meta-analysis was performed, as the objective of this review was to synthesize clinically relevant evidence across different dental procedures and identify practical considerations, areas of uncertainty, and implications for individualized clinical decision-making.

Because this was a critical narrative review rather than a systematic review, the selection process was guided by clinical relevance and applicability to dental practice rather than by an exhaustive systematic-review methodology.

It's a generalized contraindication to invasive dental treatment. Current evidence does not support the automatic exclusion of patients with diabetes from procedures such as tooth extraction or implant therapy solely on the basis of the diagnosis. However, the level of metabolic control, the presence of systemic complications, and the invasiveness of the planned procedure should be carefully considered, particularly when elective treatment is proposed. Instead, treatment

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

decisions should be guided by individualized risk assessment, particularly considering metabolic stability, procedural complexity, active infection, and the patient's overall systemic condition (SINGH et al., 2026; AL ANSARI; SHAHWAN; CHRCANOVIC, 2022; JAMES et al., 2024).

The available evidence also reinforces the importance of integrating periodontal care into the broader management of individuals with diabetes. The bidirectional relationship between diabetes and periodontal disease provides a clear example of the interaction between oral and systemic health. Periodontal inflammation may contribute to systemic inflammatory burden, while metabolic dysregulation may modify periodontal susceptibility and disease progression. Importantly, recent evidence suggests that patients with diabetes can benefit from periodontal therapy, supporting the inclusion of periodontal assessment and maintenance as essential components of comprehensive dental care (ALWITHANANI, 2023; OLIVEIRA et al., 2023; WEIJDIJK et al., 2026).

Another relevant finding concerns the management of acute dental conditions. In clinical practice, concerns regarding delayed healing or postoperative complications may sometimes lead to the postponement of necessary treatment in patients with diabetes. However, untreated odontogenic infections may themselves contribute to inflammatory and metabolic stress. Therefore, the decision to delay treatment should carefully consider whether postponement offers a genuine reduction in risk or instead allows the underlying oral condition to worsen (AMERICAN DIABETES ASSOCIATION PROFESSIONAL PRACTICE COMMITTEE, 2025a; SINGH et al., 2026).

Hypoglycemia represents a particularly important concern because it may occur acutely during dental treatment and requires immediate recognition and management. Unlike long-term metabolic markers, the risk of hypoglycemia is closely related to practical aspects of the dental appointment, including meal timing, medication use, and procedure duration. This emphasizes the importance of obtaining an appropriate medical history and planning appointments in a manner that minimizes disruption to the patient's usual routine (AMERICAN DIABETES ASSOCIATION PROFESSIONAL PRACTICE COMMITTEE, 2025b).

The evidence regarding endodontic and implant treatment further demonstrates the importance of avoiding oversimplified clinical conclusions. Diabetes has been associated with an increased prevalence of apical periodontitis in endodontically treated teeth, while implant-related outcomes may be influenced by metabolic control and other local and systemic factors. Nevertheless, neither endodontic nor implant treatment should be categorically denied to patients solely

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

because of diabetes. Instead, adherence to established treatment principles, careful control of local inflammatory conditions, and long-term follow-up remain central to successful outcomes (LIU et al., 2023; BUDREIKAITĖ et al., 2022; AL ANSARI; SHAHWAN; CHRCANOVIC, 2022; JAMES et al., 2024).

An important limitation of the available literature is the heterogeneity among studies regarding the definition and assessment of glycemic control. Differences in HbA1c thresholds, study populations, types of diabetes, and evaluated dental outcomes make direct comparisons difficult and limit the establishment of universal clinical cutoffs. Consequently, the use of isolated glycemic values as absolute criteria for permitting or prohibiting dental procedures should be approached with caution (AMERICAN DIABETES ASSOCIATION PROFESSIONAL PRACTICE COMMITTEE, 2025a; AMERICAN DIABETES ASSOCIATION PROFESSIONAL PRACTICE COMMITTEE, 2025b).

Overall, the evidence supports a patient-centered approach in which diabetes is considered an important modifying factor rather than an isolated determinant of dental treatment outcomes. Effective communication between dental and medical professionals may be particularly valuable in patients with significant metabolic instability, complex systemic complications, or when extensive elective procedures are planned. Future research should prioritize standardized definitions of glycemic control and prospective studies evaluating clinically relevant dental outcomes in different populations of patients with diabetes.

Periodontal disease, diabetes, and oral infection

Periodontal disease represents one of the most clinically relevant oral conditions associated with diabetes mellitus. Persistent hyperglycemia may contribute to an exaggerated inflammatory response, alterations in immune function, and changes in periodontal tissue metabolism, potentially increasing susceptibility to periodontal destruction. Consequently, individuals with diabetes may present a higher prevalence and severity of periodontitis, particularly when glycemic control is inadequate (ALWITHANANI, 2023).

The relationship between diabetes and periodontal disease is considered bidirectional. Diabetes may modify the host response to periodontal pathogens and contribute to periodontal disease progression, while persistent periodontal inflammation may influence systemic inflammatory pathways and adversely affect

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

metabolic control. This interaction reinforces the importance of periodontal assessment and management as components of comprehensive dental care for patients with diabetes (ALWITHANANI, 2023; OLIVEIRA et al., 2023).

Periodontal therapy may provide benefits beyond improvements in local periodontal parameters. Evidence from systematic reviews and meta-analyses suggests that non-surgical periodontal treatment may produce a **modest improvement in glycemic control in patients with type 2 diabetes and periodontitis** (XIE et al., 2025). In a meta-analysis of randomized controlled trials, periodontal treatment was associated with an approximately **0.29 percentage-point reduction in HbA1c at 6 months** compared with no periodontal treatment, although the certainty of the evidence was moderate and heterogeneity among studies should be considered when interpreting the magnitude of this effect (OLIVEIRA et al., 2023). More recent evidence has continued to support the potential systemic benefit of periodontal treatment, although the magnitude and clinical relevance of the glycemic effect may vary according to baseline metabolic status, periodontal disease severity, treatment protocols, and follow-up duration (CORBELLA et al., 2025).

Importantly, current evidence does not support the assumption that patients with diabetes are unable to respond adequately to periodontal therapy. A recent systematic review with meta-analysis and trial sequential analysis reported no significant differences in the clinical response to non-surgical periodontal treatment between patients with and without diabetes, although individual metabolic conditions and disease characteristics remain relevant to treatment planning and long-term maintenance (WEIJDIJK et al., 2026).

From a clinical perspective, diabetes reinforces the importance of early diagnosis, periodontal risk assessment, effective plaque control, individualized oral hygiene instructions, periodontal treatment, and regular maintenance. In patients with poor metabolic control, closer monitoring may be particularly relevant because persistent hyperglycemia and periodontal inflammation may coexist and potentially contribute to a cycle of local and systemic inflammatory burden. However, periodontal treatment should not be viewed as a substitute for medical management of diabetes; rather, it should be regarded as an important component of comprehensive care that

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

may provide both local periodontal benefits and a modest improvement in glycemic control (ALWITHANANI, 2023; OLIVEIRA et al., 2023; CORBELLA et al., 2025).

Oral infections also deserve particular attention in individuals with diabetes. Altered immune responses and metabolic dysregulation may influence the progression and clinical management of odontogenic infections. Therefore, the presence of active infection should not automatically lead to postponement of necessary dental treatment. Instead, the urgency of controlling the infectious source, the extent of the infection, and the patient's systemic condition should guide clinical decision-making. When signs of significant systemic involvement or metabolic instability are present, interdisciplinary management and medical coordination may be necessary (AMERICAN DIABETES ASSOCIATION PROFESSIONAL PRACTICE COMMITTEE, 2026a).

Invasive dental procedures and wound healing

Invasive dental procedures in patients with diabetes have traditionally been associated with concerns regarding delayed wound healing and an increased risk of postoperative infection. Chronic hyperglycemia may affect vascular function, inflammatory responses, immune defense, and tissue repair, potentially influencing postoperative outcomes. However, the available evidence does not support a uniform increase in complications across all patients with diabetes. Instead, postoperative risk should be interpreted in relation to metabolic status, diabetes-related complications, procedural complexity, and individual patient characteristics (AMERICAN DIABETES ASSOCIATION PROFESSIONAL PRACTICE COMMITTEE, 2026a; SINGH et al., 2026).

Tooth extraction is among the most common invasive procedures in dental practice. Current evidence suggests that diabetes alone does not invariably result in impaired post-extraction healing or clinically significant postoperative complications. A recent systematic review and meta-analysis found that the available evidence remains limited and heterogeneous, emphasizing the importance of considering glycemic control and individual patient characteristics when assessing postoperative risk (SINGH et al., 2026). Therefore, diabetes should be regarded as a potential risk modifier rather than an independent contraindication to tooth extraction.

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

The clinical assessment should also distinguish **simple tooth extraction from more extensive oral surgical procedures**. The evidence available for uncomplicated extraction should not be automatically extrapolated to procedures involving extensive tissue manipulation, multiple extractions, bone grafting, sinus augmentation, or other complex surgical interventions. For these procedures, the assessment should incorporate the extent of surgery, anticipated tissue trauma, local infection, healing requirements, metabolic status, and the presence of systemic complications.

When an active odontogenic infection is present, treatment decisions should be guided primarily by the urgency of controlling the infectious source, the extent of infection, and the patient's systemic condition. Diabetes alone should not be used as a reason to indefinitely postpone treatment of an active dental infection. Conversely, patients presenting with signs of systemic involvement, significant metabolic instability, or acute diabetes-related complications may require medical coordination and modification of the timing or extent of elective treatment (AMERICAN DIABETES ASSOCIATION PROFESSIONAL PRACTICE COMMITTEE, 2026a).

For elective invasive procedures, a more cautious approach may be appropriate when there is evidence of **poor glycemic control or metabolic instability**. In this context, poor glycemic control should not be defined solely by a single HbA1c value. Relevant considerations include markedly elevated or worsening glycemic indices, symptomatic hyperglycemia, recurrent clinically significant hypoglycemia, recent hyperglycemic crises, substantial changes in diabetes treatment, and the presence of systemic symptoms or acute diabetes-related complications. Metabolic instability should therefore be understood as a clinical state that may increase procedural risk and warrant individualized treatment planning and, when appropriate, coordination with the patient's medical team (AMERICAN DIABETES ASSOCIATION PROFESSIONAL PRACTICE COMMITTEE, 2026a; AMERICAN DIABETES ASSOCIATION PROFESSIONAL PRACTICE COMMITTEE, 2026b).

There is no universally applicable HbA1c threshold that independently determines the safety of every dental procedure. HbA1c should instead be interpreted as one component of a broader risk assessment that includes the patient's current

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

clinical condition, diabetes treatment, comorbidities, systemic complications, presence of active infection, and procedural complexity. Consequently, decisions regarding postponement of elective treatment should be individualized rather than based on a single laboratory value (AMERICAN DIABETES ASSOCIATION PROFESSIONAL PRACTICE COMMITTEE, 2026a; AMERICAN DIABETES ASSOCIATION PROFESSIONAL PRACTICE COMMITTEE, 2026b).

Postoperative management should emphasize appropriate surgical technique, adequate local hemostasis, infection control, pain management, and clear postoperative instructions. **Routine antibiotic administration should not be recommended solely because a patient has diabetes.** Antimicrobial therapy should instead be considered according to the clinical characteristics of the procedure and the presence of established infection or other recognized indications for antibiotic therapy. The decision should also take into account the severity and extent of infection, systemic involvement, and the patient's overall clinical condition.

Close postoperative follow-up may be appropriate for patients with poor metabolic control, significant diabetes-related complications, extensive surgical procedures, or other factors that may compromise healing. Monitoring should focus on pain, swelling, infection, wound closure, and other procedure-specific outcomes, with prompt reassessment when unexpected postoperative findings occur (SINGH et al., 2026).

Overall, current evidence supports moving away from the assumption that invasive dental treatment is inherently unsafe in patients with diabetes. **Diabetes mellitus should be considered a potential modifier of postoperative risk, not an automatic contraindication to invasive dental treatment.** Clinical decisions should balance the urgency and complexity of the procedure against the patient's metabolic and systemic condition, with particular caution when significant metabolic instability or acute systemic complications are present.

Endodontic treatment and diabetes mellitus

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

Diabetes mellitus may influence the development and persistence of periapical disease through alterations in immune and inflammatory responses associated with chronic metabolic dysregulation. Accordingly, diabetes has been investigated as a potential modifying factor in the occurrence of apical periodontitis and periapical healing following endodontic treatment (LIU et al., 2023; BUDREIKAITĖ et al., 2022).

A recent meta-analysis including 15 studies reported an association between diabetes mellitus and an increased risk of apical periodontitis in endodontically treated teeth. These findings suggest that systemic metabolic conditions may influence the host response to persistent or recurrent endodontic infection and should be considered when evaluating periapical disease in patients with diabetes (LIU et al., 2023).

Similarly, a systematic review focusing on patients with type 2 diabetes identified an association between diabetes, apical periodontitis, and root canal treatment. However, the available evidence remains heterogeneous, with differences in study design, diagnostic criteria, endodontic treatment characteristics, and definitions of glycemic control. Therefore, these findings support an **association between diabetes and periapical disease**, but do not establish diabetes as an independent determinant of endodontic treatment failure in every clinical situation (BUDREIKAITĖ et al., 2022; LIU et al., 2023).

From a clinical perspective, diabetes mellitus should **not be considered a contraindication to conventional endodontic treatment**. The primary determinants of endodontic success remain adequate diagnosis, effective chemomechanical preparation and disinfection, appropriate management of the root canal system, and an adequate coronal seal. Nevertheless, systemic conditions that modify inflammatory and immune responses may influence periapical healing and should be considered when establishing prognosis and follow-up (LIU et al., 2023).

In patients with poor metabolic control, persistent symptoms, or delayed periapical healing, clinical findings should be interpreted within a broader context that includes local infection, treatment quality, periodontal status, systemic health, and metabolic condition. Diabetes should therefore be regarded as a **potential modifying

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

factor rather than a standalone explanation for endodontic treatment failure**. Further longitudinal studies are needed to clarify the extent to which glycemic control influences endodontic outcomes and periapical healing (LIU et al., 2023; BUDREIKAITĖ et al., 2022).

Dental implant therapy and diabetes mellitus

Dental implant therapy has historically raised concerns in patients with diabetes because chronic hyperglycemia may affect bone metabolism, vascular function, immune responses, and tissue repair. These biological alterations may influence osseointegration and peri-implant tissue stability. However, the available evidence is heterogeneous, and diabetes mellitus should not be regarded as an absolute contraindication to implant therapy. Instead, diabetes should be considered a potential risk modifier whose clinical relevance depends on metabolic status, diabetes type, systemic complications, oral conditions, and the characteristics of the planned treatment (AL ANSARI; SHAHWAN; CHRCANOVIC, 2022; JAMES et al., 2024).

Evidence regarding implant failure and survival is not entirely consistent. A systematic review and meta-analysis including 89 publications found a significantly higher risk of implant failure in patients with diabetes compared with individuals without diabetes (OR 1.777), as well as greater marginal bone loss. The same analysis reported a higher risk of implant failure among patients with type 1 diabetes compared with those with type 2 diabetes (OR 4.477), suggesting that diabetes type may be clinically relevant when interpreting implant prognosis (AL ANSARI; SHAHWAN; CHRCANOVIC, 2022).

Conversely, other systematic reviews have reported favorable implant survival in patients with type 2 diabetes, particularly when metabolic control is adequate. A recent systematic review reported implant survival rates comparable to those observed in non-diabetic populations among patients with well-managed type 2 diabetes, although peri-implant parameters were less favorable in patients with poorer glycemic control (JAMES et al., 2024). These apparently contrasting findings may reflect differences in diabetes type, glycemic status, follow-up duration, implant protocols, patient selection, and definitions of implant success and failure.

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

Importantly, implant survival should not be considered the only relevant outcome. Studies have reported greater marginal bone loss, bleeding on probing, probing depth, and other peri-implant inflammatory parameters in patients with diabetes or hyperglycemia, even when implant survival remains high. In a systematic review and meta-analysis, diabetes/hyperglycemia was associated with less favorable peri-implant clinical and radiographic parameters, and increasing HbA1c levels were associated with dose-dependent worsening of some peri-implant outcomes (AL ANSARI; SHAHWAN; CHRCANOVIC, 2022; LV et al., 2022).

The clinical interpretation of these findings should therefore distinguish **implant survival or failure from peri-implant health**. A patient with diabetes may achieve successful osseointegration and long-term implant survival while still presenting a greater susceptibility to peri-implant inflammation or marginal bone loss. Consequently, the absence of early implant failure should not be interpreted as evidence that diabetes has no effect on peri-implant tissues.

The assessment of patients with diabetes who are candidates for implant therapy should include diabetes type, duration of disease, current metabolic status, glucose-lowering treatment, presence of diabetes-related complications, periodontal status, oral hygiene, smoking, bone availability, history of previous implant complications, and the patient's ability to adhere to long-term maintenance. Particular attention should be given to the presence of active periodontitis, as periodontal inflammation and inadequate plaque control represent modifiable risk factors for peri-implant disease (ALWITHANANI, 2023; JAMES et al., 2024).

Glycemic status should be incorporated into this assessment but should not be reduced to a single HbA1c cutoff for implant eligibility. Evidence suggests that poorer metabolic control may be associated with less favorable peri-implant outcomes; however, the available studies use heterogeneous glycemic thresholds and clinical definitions. Therefore, HbA1c should be interpreted together with the patient's overall systemic condition, diabetes-related complications, oral inflammatory status, and the complexity of the proposed implant treatment rather than as an isolated criterion for treatment exclusion (JAMES et al., 2024; AL ANSARI; SHAHWAN; CHRCANOVIC, 2022).

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

Before implant placement, active periodontal and odontogenic infections should be appropriately managed, oral hygiene should be optimized, and the patient should receive clear information regarding the importance of long-term maintenance. In patients with substantial metabolic instability or uncontrolled systemic complications, elective implant treatment may require postponement or medical coordination until the patient's condition has been adequately assessed and stabilized.

From a clinical perspective, the current evidence supports the following interpretation: **diabetes is not an absolute contraindication to dental implant therapy; however, diabetes may be associated with an increased risk of implant failure and marginal bone loss, and the magnitude of this risk may vary according to diabetes type and metabolic status. Outcomes appear more favorable in appropriately selected patients with stable metabolic control, but careful periodontal management and long-term peri-implant maintenance remain essential** (AL ANSARI; SHAHWAN; CHRCANOVIC, 2022; JAMES et al., 2024).

Long-term follow-up is particularly important because implant therapy should not be evaluated solely on the basis of initial osseointegration or early survival. Regular maintenance, reinforcement of oral hygiene practices, monitoring of peri-implant tissues, periodontal surveillance, and continued attention to systemic metabolic control are important components of long-term care. Thus, implant rehabilitation in patients with diabetes requires individualized risk assessment and integration of local oral management with broader systemic health care.

The evidence reviewed supports an individualized approach to the dental management of patients with diabetes mellitus, considering glycemic status, medication-related risks, systemic complications, and the nature of the planned dental procedure, as summarized in Table 1.

Table 1. Evidence-informed clinical considerations for dental management of patients with diabetes mellitus

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

Clinical situation	Main concern	Clinical considerations	Supporting evidence
Pre-treatment assessment	Metabolic instability and systemic complications	Assess diabetes type and duration, current glucose-lowering medications, glycemic goals, history of hypoglycemia or hyperglycemic crises, diabetes-related complications, comorbidities, nutritional status, and overall clinical condition. HbA1c should be interpreted as a risk modifier within the overall clinical assessment rather than as an isolated determinant of treatment eligibility.	American Diabetes Association Professional Practice Committee, 2026a,b
Risk of hypoglycemia	Acute hypoglycemic event during dental treatment	Minimize disruption to regular meals and medication schedules. Particular attention is warranted in patients using insulin, sulfonylureas, or meglitinides. Dental professionals should have access to blood glucose monitoring and rapidly available carbohydrate. Glucagon should be available when clinically appropriate and according to local protocols.	American Diabetes Association Professional Practice Committee, 2026a,b

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

Hypoglycemia during treatment	Symptomatic or severe hypoglycemia	Level 1: glucose <70 and ≥54 mg/dL. Level 2: glucose <54 mg/dL. Level 3: severe event requiring assistance from another person. In a conscious patient who can safely swallow, administer fast-acting carbohydrate and reassess after approximately 15 minutes; repeat treatment if necessary. If the patient cannot safely swallow or has altered consciousness, activate emergency management and administer glucagon according to training and protocol when indicated.	American Diabetes Association Professional Practice Committee, 2026b
Periodontal disease and therapy	Periodontal inflammation and impaired metabolic control	Perform comprehensive periodontal assessment, establish effective plaque control, provide individualized oral hygiene instructions, and institute periodontal therapy and maintenance. In patients with type 2 diabetes and periodontitis, periodontal treatment may produce a modest improvement in glycemic control; however, periodontal therapy should complement rather than replace medical diabetes management.	Alwithanani, 2023; Oliveira et al., 2023; Corbella et al., 2025; Weijdijk et al., 2026

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

Odontogenic infection	Progression of local infection and systemic deterioration	Active infection should be promptly assessed and the infectious source controlled according to clinical urgency. Diabetes alone should not justify indefinite postponement of necessary treatment. Medical coordination may be appropriate when systemic involvement or significant metabolic instability is present.	American Diabetes Association Professional Practice Committee, 2026a
Antibiotic use	Inappropriate routine antimicrobial administration	Diabetes alone should not be considered an indication for routine antibiotic therapy or prophylaxis. Antibiotics should be prescribed according to established clinical indications, considering the presence and severity of infection, systemic involvement, and the characteristics of the procedure.	Relevant dental literature identified in the complementary search
Simple tooth extraction	Postoperative infection and delayed healing	Assess metabolic and systemic status, local infection, procedural complexity, and expected healing requirements. Diabetes should be considered a potential risk modifier rather than an automatic contraindication to uncomplicated extraction.	Singh et al., 2026

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

Complex oral surgery	Greater tissue trauma and healing requirements	Evidence from uncomplicated tooth extraction should not be automatically extrapolated to multiple extractions, extensive flap procedures, bone grafting, sinus augmentation, or other complex surgeries. Treatment planning should incorporate surgical extent, metabolic status, infection, systemic complications, and postoperative follow-up requirements.	Singh et al., 2026; American Diabetes Association Professional Practice Committee, 2026a
Endodontic treatment	Persistent or delayed periapical healing	Diabetes may be associated with a higher prevalence of apical periodontitis in endodontically treated teeth. Diabetes should not be considered a contraindication to conventional endodontic treatment. Adequate diagnosis, chemomechanical preparation, disinfection, obturation, and coronal sealing remain fundamental to treatment success.	Liu et al., 2023; Budreikaitė et al., 2022
Implant therapy	Implant failure, marginal bone loss, and peri-implant inflammation	Assess diabetes type, metabolic status, periodontal condition, oral hygiene, systemic complications, smoking, bone availability, and capacity for long-term maintenance. Diabetes is not an absolute contraindication, but may be associated with increased implant failure and marginal bone loss. Outcomes	Al Ansari, Shahwan and Chrcanovic, 2022; James et al., 2024

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

		may be more favorable in appropriately selected patients with stable metabolic control.	
Elective invasive procedures	Increased procedural risk in metabolic instability	Consider postponement or medical coordination when substantial metabolic instability, acute systemic complications, or uncontrolled infection is present. No single HbA1c threshold should independently determine treatment eligibility.	American Diabetes Association Professional Practice Committee, 2026a,b; Singh et al., 2026
Postoperative follow-up	Delayed healing or postoperative complications	Provide procedure-specific postoperative instructions and monitor pain, swelling, infection, wound healing, and other relevant outcomes. Closer follow-up may be appropriate in patients with metabolic instability, systemic complications, extensive surgery, or other factors that may compromise healing.	Singh et al., 2026

Note: This table represents an evidence-informed clinical synthesis derived from the literature reviewed and is intended to support individualized clinical decision-making. It does not constitute a validated clinical guideline or a substitute for patient-specific medical assessment.

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

3. Discussion

The present review reinforces the need for an individualized approach to the dental management of patients with diabetes mellitus. Rather than representing an automatic contraindication to dental treatment, diabetes should be considered an important systemic modifier whose clinical relevance depends on glycemic status, treatment regimen, diabetes-related complications, oral conditions, and the complexity and urgency of the planned procedure. This perspective is consistent with current recommendations emphasizing coordination between medical and dental professionals and assessment of the patient's overall clinical condition rather than reliance on a single laboratory parameter (American Diabetes Association Professional Practice Committee, 2026a).

Glycemic assessment is particularly relevant before invasive dental procedures. HbA1c provides useful information regarding the patient's recent glycemic control and may contribute to risk stratification; however, it should not be interpreted as an isolated criterion for determining whether dental treatment is permissible. The absence of a universally applicable HbA1c threshold for dental treatment reflects the heterogeneity of patients with diabetes and the influence of additional factors, including current symptoms, recent glycemic excursions, treatment regimen, comorbidities, and the invasiveness of the procedure. Therefore, clinical decisions should be based on an integrated assessment rather than on a predetermined HbA1c cutoff (American Diabetes Association Professional Practice Committee, 2026a,b).

An important practical concern is the risk of hypoglycemia during dental care. This risk is particularly relevant among patients treated with insulin, sulfonylureas, or meglitinides, especially when dental procedures interfere with normal food intake or are performed around periods of fasting. Consequently, the dental team should obtain information regarding the patient's usual meals, diabetes medications, recent hypoglycemic episodes, and ability to recognize and manage hypoglycemia. When feasible, access to blood glucose monitoring and rapidly available sources of carbohydrate should be incorporated into the clinical setting. These measures emphasize that prevention of acute glycemic events is an important component of safe dental care (American Diabetes Association Professional Practice Committee, 2026a,b).

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

The relationship between diabetes and periodontal disease further illustrates the bidirectional nature of oral and systemic health. Patients with diabetes may experience greater periodontal disease severity, while periodontal inflammation may adversely affect glycemic control. Importantly, periodontal treatment appears to provide a modest improvement in glycemic parameters in patients with type 2 diabetes and periodontitis. A meta-analysis reported an approximately 0.29 percentage point reduction in HbA1c at six months following periodontal treatment, although the magnitude and clinical significance of this effect should be interpreted in the context of the available evidence. Periodontal therapy should therefore be viewed as an important component of comprehensive diabetes care, but not as a substitute for medical management of the disease (Oliveira et al., 2023; American Diabetes Association Professional Practice Committee, 2026a).

The evidence regarding invasive dental procedures suggests that diabetes should not be considered a uniform predictor of impaired healing or postoperative complications. The potential risk is influenced by the degree of metabolic stability, the presence of active infection, the patient's systemic condition, and the complexity of the surgical intervention. Findings from relatively uncomplicated tooth extractions should not automatically be extrapolated to extensive oral surgery, bone grafting, sinus augmentation, or multiple implant placement. This distinction is clinically relevant because the biological and postoperative demands of these procedures differ substantially. Accordingly, elective invasive procedures should preferably be performed when the patient's systemic condition is stable, while urgent treatment of active odontogenic infection should not be unnecessarily delayed solely because the patient has diabetes.

The use of antibiotics also requires a similarly individualized approach. Diabetes alone does not constitute sufficient justification for routine antibiotic prophylaxis in dental procedures. Antimicrobial therapy should instead be determined according to the presence and characteristics of infection, the type of procedure, the patient's systemic condition, and established dental indications. This distinction is particularly important because prophylactic antibiotic use and therapeutic treatment of an established odontogenic infection represent different clinical situations and should not be conflated.

With respect to endodontic treatment, the literature suggests an association between diabetes and the occurrence or persistence of apical periodontal disease. However, the available evidence does not support interpreting diabetes as an independent or universal determinant of endodontic treatment failure. Endodontic prognosis remains strongly influenced by local factors, including infection control, quality of instrumentation and obturation, coronal sealing, and the characteristics of

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

the affected tooth. Diabetes should therefore be regarded as a systemic factor that may modify the biological response rather than as a contraindication to root canal treatment.

Dental implant therapy represents one of the areas in which the evidence requires particular caution. Although implant treatment can be successfully performed in selected patients with diabetes, pooled evidence has suggested a higher risk of implant failure and greater marginal bone loss among patients with diabetes compared with individuals without diabetes (Al Ansari et al., 2022). At the same time, more favorable outcomes have been reported in well-managed patients with type 2 diabetes, whereas poorer glycemic control may be associated with less favorable peri-implant parameters (James et al., 2024). These findings indicate that implant survival, implant failure, and peri-implant health should be considered as distinct outcomes. Furthermore, whenever evidence allows, type 1 and type 2 diabetes should be analyzed separately, since the magnitude and determinants of risk may differ between these populations.

Taken together, these findings support a shift from a disease-centered to a risk-based approach to dental care in patients with diabetes mellitus. The relevant clinical question is not simply whether the patient has diabetes, but whether the disease is currently stable, what treatment the patient is receiving, what complications or comorbidities are present, whether there is active oral infection, and what biological and surgical demands are associated with the planned procedure. This approach allows necessary dental treatment to proceed while recognizing situations in which additional precautions, medical coordination, treatment modification, or postponement of elective procedures may be appropriate.

The clinical synthesis presented in this review also highlights the importance of communication between dental and medical professionals. Coordination may be particularly relevant for patients receiving glucose-lowering medications associated with hypoglycemia, those with recent glycemic instability, and those undergoing procedures that may alter food intake or require substantial postoperative recovery. Rather than routinely excluding patients with diabetes from invasive dental care, clinicians should identify modifiable risks and establish an individualized perioperative plan.

This review has some limitations. Although a structured literature search was conducted, the present study was designed as a critical narrative review rather than a systematic review or meta-analysis. Study selection was guided by clinical relevance, and no quantitative synthesis was performed. The available literature is also heterogeneous with respect to diabetes type, degree of glycemic control,

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

treatment modalities, definitions of complications, follow-up periods, and clinical outcomes. These differences limit direct comparisons between studies and reinforce the need for cautious interpretation of isolated findings.

Future studies should prioritize standardized definitions of glycemic control and metabolic instability, clearly distinguish type 1 from type 2 diabetes, and stratify outcomes according to the complexity of dental procedures. Prospective studies evaluating clinically relevant outcomes such as postoperative infection, wound healing, periodontal response, endodontic healing, implant survival, and peri-implant health may further clarify which patient and treatment characteristics are associated with clinically meaningful risk.

Overall, the available evidence supports the concept that diabetes mellitus should be viewed as a condition requiring individualized risk assessment rather than as a blanket contraindication to dental treatment. Safe dental care depends on the integration of metabolic status, medication-related risks, systemic complications, oral disease, and procedural complexity, with medical-dental coordination whenever clinically indicated.

4. Conclusion

Diabetes mellitus is an important systemic condition that may influence oral health and modify the biological and clinical response to dental treatment. However, the available evidence does not support considering diabetes alone as an automatic contraindication to routine or invasive dental procedures. Instead, clinical decision-making should integrate glycemic status, diabetes treatment, medication-related risks, systemic complications, local oral conditions, and the complexity and urgency of the planned procedure.

A comprehensive pre-treatment assessment is therefore essential. HbA1c may contribute to risk stratification but should not be used as an isolated criterion for treatment eligibility, as no universal glycemic threshold can adequately define the safety of dental procedures for all patients. Particular attention should also be given to the risk of hypoglycemia, especially in patients using insulin, sulfonylureas, or meglitinides, as well as to recent episodes of glycemic instability, dietary intake, and the presence of relevant systemic complications.

Periodontal disease and odontogenic infections require appropriate management because of their potential interaction with systemic inflammation and

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

glycemic control. Periodontal therapy may provide a modest improvement in glycemic control in patients with type 2 diabetes and periodontitis, while dental infections should be managed according to clinical indication rather than the diagnosis of diabetes alone. Similarly, extraction, endodontic treatment, and implant therapy should be approached according to the specific procedure, the patient's metabolic and systemic condition, and the available evidence, with particular caution when considering complex surgery and implant therapy.

Ultimately, safe dental care for patients with diabetes is best supported by an individualized, evidence-informed, and patient-centered approach. Coordination between dental and medical professionals is particularly important when metabolic instability, hypoglycemia risk, systemic complications, or complex procedures are present. Such an approach can help avoid unnecessary delays or restrictions in dental treatment while ensuring appropriate risk assessment, prevention of complications, and patient safety.

REFERENCES:

AMERICAN DIABETES ASSOCIATION PROFESSIONAL PRACTICE COMMITTEE FOR DIABETES. *4. Comprehensive Medical Evaluation and Assessment of Comorbidities: Standards of Care in Diabetes—2026.* Diabetes Care. 2026;49(Suppl 1):S61-S88. doi:10.2337/dc26-S004.

AMERICAN DIABETES ASSOCIATION PROFESSIONAL PRACTICE COMMITTEE FOR DIABETES. *6. Glycemic Goals, Hypoglycemia, and Hyperglycemic Crises: Standards of Care in Diabetes—2026.* Diabetes Care. 2026;49(Suppl 1):S132-S149. doi:10.2337/dc26-S006.

ALWITHANANI, Naif. Periodontal Diseases and Diabetes Mellitus: A Systematic Review. *Journal of Pharmacy and Bioallied Sciences*, v. 15, supl. 1, p. S54-S63, 2023. DOI: 10.4103/jpbs.jpbs_515_22.

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

OLIVEIRA, Victor Bento; COSTA, Fábio Wildson Gurgel; HAAS, Alex Nogueira; MONTENEGRO JÚNIOR, Renan Magalhães; RÊGO, Rodrigo Otávio. Effect of subgingival periodontal therapy on glycaemic control in type 2 diabetes patients: meta-analysis and meta-regression of 6-month follow-up randomized clinical trials. *Journal of Clinical Periodontology*, v. 50, n. 8, p. 1123-1137, 2023. DOI: 10.1111/jcpe.13830.

CORBELLA, Stefano; ALBERTI, Alice; DONOS, Nikolaos; MORANDI, Benedetta; ERCAL, Pinar; FRANCETTI, Luca; CALCIOLARI, Elena. Efficacy of different protocols of non-surgical periodontal therapy in patients with type 2 diabetes: a systematic review and meta-analysis. *Journal of Periodontal Research*, v. 60, n. 5, p. 417-437, 2025. DOI: 10.1111/jre.13327.

WEIJDIJK, L. P. M.; THOMASSEN, T. M. J. A.; DE KEYZER, N. C.; MAYER, E. E. J.; VALKENBURG, C.; VAN DER WEIJDEN, G. A.; SLOT, D. E. The Effect of Diabetes on Outcomes of Non-Surgical Periodontal Therapy: A Systematic Review With a Meta-Analysis and Trial Sequential Analysis. *International Journal of Dental Hygiene*, v. 24, n. 2, p. 321-352, 2026. DOI: 10.1111/idh.70003.

SINGH, Anupam; GADICHERLA, Srikanth; PENTAPATI, Kalyana C.; SAHA, Mehul; SHETTY, Premalatha K.; SHETTY, Aditya. Tooth Extraction Outcomes and Complications in Diabetic and Nondiabetic Individuals: A Systematic Review and Meta-Analysis to Inform Evidence-Based Guidelines. *International Journal of Dentistry*, v. 2026, art. 6899990, 2026. DOI: 10.1155/ijod/6899990.

LIU, Xinyue; HE, Guiying; QIU, Zhengjie; CHEN, Feng; WANG, Jiapeng; HUANG, Zheng; ZHANG, Pengtao; ZHANG, Jian; ZHONG, Liangjun; DING, Cheng; CHEN, Xing. Diabetes Mellitus Increases the Risk of Apical Periodontitis in Endodontically-Treated Teeth: A Meta-Analysis from 15 Studies. *Journal of Endodontics*, v. 49, n. 12, p. 1605-1616, 2023. DOI: 10.1016/j.joen.2023.07.016.

BUDREIKAITĖ, Karolina; VARONECKAITĖ, Mariam; OLEINIKAITĖ, Danielė; ŽILINSKAS, Juozas. Association between apical periodontitis and root canal treatment in patients with type II diabetes. A systematic review. *Stomatologija*, v. 24, n. 4, p. 100-103, 2022.

JAMES, Yashab; BUTT, Wajeeh Mohsin M.; SHAHID, Habiba; AHMAD, Shayzmin; IMRAN, Muhammad Talha Bin; ANTHONY, Nouman. Success Rates of Dental Implants in Patients With Diabetes: A Systematic Review. *Cureus*, v. 16, n. 12, e76361, 2024. DOI: 10.7759/cureus.76361.

CC BY 4.0
Attribution 4.0 International
Deed

REMUNOM
ISSN 2178-6925

Received: 13/08/2026 - **Accepted:** 08/09/2026
Vol: 13.19
DOI: 10.66104/j7kg1358
Pages: 1-31

AL ANSARI, Yasmin; SHAHWAN, Halime; CHRCANOVIC, Bruno Ramos. Diabetes Mellitus and Dental Implants: A Systematic Review and Meta-Analysis. *Materials*, v. 15, n. 9, art. 3227, 2022. DOI: 10.3390/ma15093227.

XIE, Xuejie; XU, Jun; LI, Yiming; TANG, Li; AWUTI, Gulinuer. Efficacy of nonsurgical periodontal treatment on patients with periodontitis and type 2 diabetes mellitus: a systematic review and Bayesian network meta-analysis. *Acta Odontologica Scandinavica*, v. 84, p. 201-211, 2025. DOI: 10.2340/aos.v84.43344.

LV X, ZOU L, ZHANG X, ZHANG X, LAI H, SHI J. *Effects of diabetes/hyperglycemia on peri-implant biomarkers and clinical and radiographic outcomes in patients with dental implant restorations: a systematic review and meta-analysis.* Clinical Oral Implants Research. 2022;33(12):1183–1198. DOI: 10.1111/clr.14010.

CC BY 4.0
Attribution 4.0 International
Deed