

Peri-implantitis and Systemic Diseases: A Systematic Literature Review

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Introduction

For most patients missing a tooth or multiple teeth, dental implant therapy is the most appropriate treatment plan due to their average survival rate of 95%. According to the National Center of Health Statistics (NCHS) over 120 million people in the U.S. are missing at least one tooth and over 40 million are edentulous in one or both arches (1,2). It is estimated that the dental implant market will grow to more than 2 billion dollars in the U.S. by the year 2021 and up to 6.8 billion dollars globally by 2024 (1,6). The number of patients in need of dental implants is expected to increase 12% every year (7). Some studies suggest dental implants may not be the best option for patients with some specific medical conditions. Osseointegration failure is often due to peri-implantitis and peri-implant mucositis. Peri-implant mucositis is plaque-related inflammation of soft tissue around an implant with bleeding on probing (3,4,8). Peri-implantitis is defined as the inflammation of hard and soft tissues surrounding a dental implant with consequent loss of bone attachment past normal bone remodeling (2,6). Peri-implantitis may be more likely to develop in patients with systemic diseases such as osteoporosis, diabetes mellitus, neurocognitive disease, HIV, cardiovascular disease, hypothyroidism, rheumatoid arthritis and in patients taking certain medications such as selective serotonin reuptake inhibitors(SSRIs), proton pump inhibitors (PPIs) and antihypertensive medications. Other risk indicators that may lead to peri-implantitis are periodontitis and smoking (5). Another study suggests other factors that may lead to early implant failure such as poor bone quality and quantity, patient’s general health condition, early infection, post-insertion pain, lack of primary stability, and inadequate surgical and prosthetic techniques (8). A study revealed peri-implantitis affects 15%-30% of implants (6). Implant placement is contraindicated in patients with uncontrolled or unstable medical conditions such as myocardial infarction or cerebrovascular incidents, valvular prosthesis surgery, immunosuppression, bleeding issues, active treatments for malignancies, drug abuse, psychiatric illness and its treatment medications, as well as intravenous bisphosphonate use (8).



Photo: McKinney Perioimplant.



Photo: CrownMedical

Objective

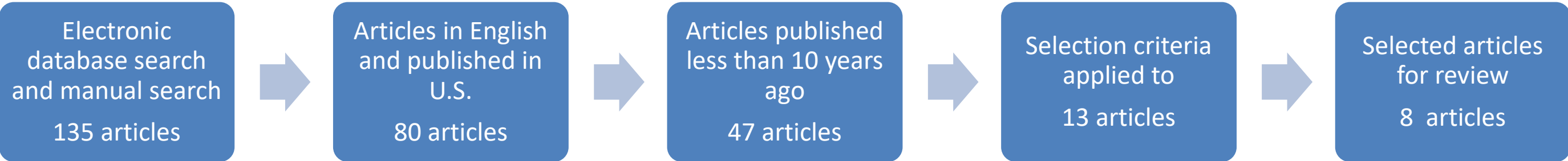
The purpose of this systematic literature review was to perform the most recent assessment of the extent to which patients with dental implants are affected by peri-implantitis and its relation to systemic diseases and medications. A better understanding of how patients with systemic diseases or patients taking certain medications is necessary to provide the most appropriate dental care and for patients to make informed decisions that best suits their needs and conditions.

Methods

The primary data base used was Medline (via Pubmed), EMBASE. Keywords used: peri-implantitis [tiab] AND diabetes [tiab] AND osteoporosis [tiab] AND HIV [tiab] AND cardiovascular disease [tiab]. Studies older than 10 years were excluded as well as studies published outside the U.S. Only studies in English were used. The PICO question format was (Population: patients with systemic diseases; Intervention: peri-implantitis; Comparison: patients with systemic diseases without peri-implantitis; Outcome: osseointegration/implant success).

Results

A total of 135 articles were first identified by their titles and abstract screening. Most results were excluded since they did not meet the search criteria. Screening and hand search determined eight studies to be most relevant and were read entirely. This study revealed there were inadequate number of studies to conduct the analysis for patients with neurologic disorder, HIV, cardiovascular disease, and rheumatoid arthritis. Most of the literature available are studies performed to review the success rate of dental implants. A study found osteoporotic patients had an average dental implant survival rate of 98%. For patients with controlled type II diabetes, the pooled estimate for implant survival was 98%. Patients with rheumatoid arthritis had a dental implant survival rate of 96%. In the same study, there were no differences observed in patients with cardiovascular disease regarding implant survival. Patients taking antihypertensive medications showed an increased implant survival rate of 99%. Patients taking SSRI’s and PPI’s showed a decrease in implant survival rates at 89% and 88% respectively (2).



Conclusion

With the limitations of this study, the lack of data and literature necessary to perform a systematic review is evident. Some of the studies reviewed are fairly young and lack the data necessary to perform a systematic review. The literature reviewed was insufficient to reach a conclusion for the intended question. Further research to study the relationship between peri-implantitis and systemic diseases is necessary and encouraged to improve the quality of care for patients with existing medical conditions. Also, further research is encouraged to educate oral health providers/students about the factors that contribute to a successful treatment. Risk factors and indicators for peri-implantitis and peri-implant mucositis should be identified, explained to the patient, and addressed (8) to be able to provide the most appropriate treatment. Appropriate instructions and maintenance intervals should be set for patients whose conditions require so. As the population in need of dental implants increases due to aging and longer life spans so does the dental implant market and the susceptibility of the patient suffering of medical condition(s). Implant failure has many consequences such as financial and health complications, a patient with systemic medical condition(s) should be informed if they are at a higher risk of dental implant failure.



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