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EDITORIAL
published: 10 May 2022
doi: 10.3389/fdmed.2022.900576

Editorial: Reviews in Periodontology - Future Challenges in Periodontology and Peri-Implantology

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Keywords: probiotics, periodontal regeneration, genetic disorder, peri-implantitis, review

Editorial on the Research Topic

Reviews in Periodontology - Future Challenges in Periodontology and Peri-Implantology

Periodontitis and peri-implantitis are major reasons for tooth and implant loss, respectively, and up to date, a plethora of unanswered questions remains. Despite decades of research, development and education, the global burden of severe forms of periodontitis continuously increases and remains substantially high. In 2019, it was estimated that 1.1 billion individuals suffered globally from severe periodontitis (1). Regarding peri-implantitis uncountable different case definitions have been circulating in the past years, impeding a clear picture of the actual prevalence rate, but approximately every fifth to fourth patient is affected (2). An overall picture will hopefully become clearer in the future due to diagnostic advances with the inclusion of peri-implant diseases and conditions in the currently valid classification (3). However, considering the aging population with associated systemic comorbidities and tooth loss, and the increasing number of implants being globally placed per year, peri-implant diseases will certainly confront us with important health-economic issues (4).

Periodontitis and peri-implantitis do not only have a devastating effect on the biological tooth, respectively, implant status and survival, but also on the overall patients' quality of life and systemic diseases. Therefore, both diseases represent a financial burden for the patients as well as for the health care system rendering disease prevention as our pivotal goal (5). However, we will be inevitably faced with a variety of clinical consequences from both diseases, which drives us to improve prophylaxis and treatment outcomes. Based on the efforts of the European Federation of Periodontology, S3 level clinical practice guidelines have been published for stage 1–3 periodontitis patients (6) and are in progress for stage 4 periodontitis patients. Such guidelines should help clinicians in decision making and point out for researchers the current state of knowledge as well as potential knowledge gaps and thus put a more distinct light on future clinical and scientific strategies.

The Research Topic "*Reviews in Periodontology*" invited clinicians and researchers to summarize the current knowledge and present an outlook to future challenges of various aspects ranging from genetics to treatment approaches within periodontology and peri-implantology. The final submissions successfully cover genetic disorders, adjunctive treatment approaches as well as non-augmentative and augmentative surgical approaches within periodontology and peri-implantology, which will be briefly highlighted and summarized as follows:

- *Probiotics in the Management of Gingivitis and Periodontitis. A Review.* (Schlagenhauf and Jockel-Schneider)

Within dentistry, a probiotic-based treatment approach is still considered as a relatively new and developing field, which could not yet be recommended by the S3 level clinical practice guidelines as

OPEN ACCESS

Edited and reviewed by:
Martha J. Somerman, Frontiers in Dental Medicine, United States

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Specialty section:
This article was submitted to Periodontics, a section of the journal Frontiers in Dental Medicine

Received: *20 March 2022*
Accepted: *08 April 2022*
Published: *10 May 2022*

Citation:
Bertl K and Schmidlin PR (2022) Editorial: Reviews in Periodontology - Future Challenges in Periodontology and Peri-Implantology. Front. Dent. Med. 3:900576. doi: 10.3389/fdmed.2022.900576

an adjunct to subgingival debridement in periodontitis patients. However, these conclusions were based on a limited number of studies using different probiotic formulations. This review provides an important overview on the potentials of probiotic-based treatment approaches and outlines reasons, which have at least partly led to the present controversies in terms of probiotic-based treatment approaches within dentistry, and future perspectives.

- *Periodontal Wound Healing and Regeneration: Insights for Engineering New Therapeutic Approaches.* (Fraser et al.)

Our knowledge on regenerative periodontal treatment approaches is well-established for intrabony defects and buccal class-II furcation defects. The recent S3 level clinical practice guidelines provide us with evidence-based recommendations for regenerative treatment approaches, such as the use of either barrier membranes or enamel matrix derivatives with or without the addition of bone-derived grafts in intrabony defects and enamel matrix derivative alone or bone-derived graft with or without resorbable membranes in buccal class-II furcation defects. A future challenge will be to further improve these standard techniques, for example with tissue engineering approaches. These promising treatment options are summarized in this review.

- *Rare Genetic Disorders Affecting the Periodontal Supporting Tissues in Adolescence.* (Kapferer-Seebacher et al.)

The association of periodontitis with frequent systemic diseases has a long history, which led to the inclusion of diabetes mellitus in the diagnostic process for staging and grading of periodontitis, i.e., an uncontrolled diabetes mellitus is considered as a grade modifier (7). The interaction between periodontitis and diabetes mellitus is probably one of the most investigated ones, closely followed by atherosclerotic diseases, but there are many other systemic diseases, which have been associated with periodontitis. However, such interactions are also present in rare genetic disorders, which—unfortunately—have often been overseen, but were highlighted in this important review.

- *A Mini Review on Non-augmentative Surgical Therapy of Peri-Implantitis—What Is Known and What Are the Future Challenges?* (Bertl and Stavropoulos)
- *Regenerative Surgical Therapy of Peri-implantitis: An Umbrella Review of Answered/Unanswered Questions and Future Perspectives.* (Solderer and Schmidlin)

As delineated above, treatment guidelines have only recently been published for the first time for periodontitis but are still vastly lacking for the treatment of peri-implant mucositis and peri-implantitis. Indeed, the number of available studies on different approaches for non-surgical and surgical treatment of peri-implantitis is scarce, i.e., in a recent systematic review only 17 and 27, respectively (randomized) controlled clinical trials were identified (8). This Research Topic succeeded to include two reviews covering the status and future challenges in non-augmentative (Bertl and Stavropoulos) and augmentative surgical treatment of peri-implantitis (Solderer and Schmidlin).

With these various and highly relevant aspects being covered in this issue, it represents an interesting collection for both clinicians and researchers. But—on the other hand—one also notes with humble disillusionment that there are still various gaps in this regard. Thus, there is still a lot to do—so let's do it! Frontiers will help to explore these fields and offer a fruitful scientific ground for disseminating innovative and top-notch research in the fields of periodontitis and peri-implant diseases and conditions.

AUTHOR CONTRIBUTIONS

Both authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.