Implementation of advanced technologies – basis for development of modern dentistry

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Abstract

Statement of the Problem: In the last decade, conventional dentistry has been rapidly replaced by digital dentistry. This change is due to the continuous development of dental materials, implementation of advanced production technologies and application of digital systems. The purpose of the present study is to analyse the development of dentistry from ancient times to the present days, to reveal the role of advanced technologies in the development of modern dentistry and to outline the requirements for the knowledge and skills of dentists and dental technicians in the digital era of the new global world. The work is based on own research and shows how the implementation of digital and CAD/CAM technologies can change the conventional treatment plan with fixed partial dentures (FPD) to a semi- or full digitalised protocol. It is proved that for the successful application of advanced technologies in clinical practice, clinicians should have interdisciplinary knowledge in the field of dentistry, new materials, CAD-CAM design and production processes. The advanced technologies, improved world communications, and globalisation allow for flexibility in selecting a dental laboratory with the most suitable equipment for the production of a particular dental construction. Therefore, the profession of dental technician requires a high level of computer skills, working with specialised automated equipment and constant upgrading of qualifications.

Conclusion & Significance: Nowadays, dental treatment is synergistically dependent on the new technologies in both clinics and dental laboratories. Therefore, the development of modern dentistry is based on the mutual understanding between the dentist and the dental technician on the specifics, implementation and application of advanced technologies.

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Image

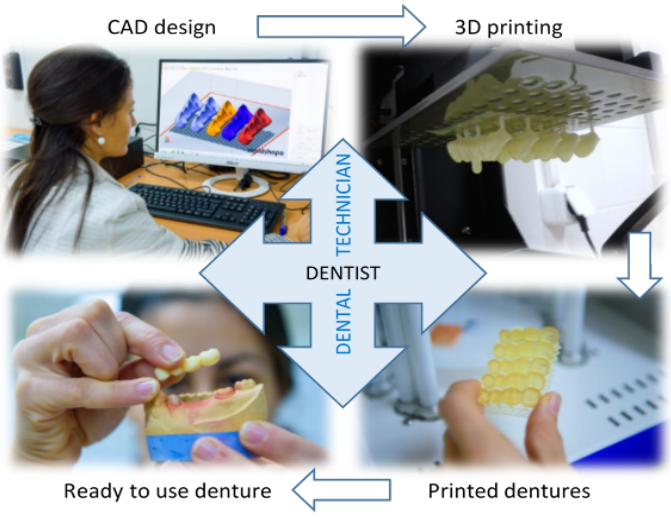

Fig. 1 Collaboration between dentist and dental technician in application of advanced technologies for production of dental prostheses.

Recent Publications

1. Dikova, T., Dzhendov, D., Simov, M., et al. (2015). Modern trends in the development of the technologies for production of dental constructions. Journal of IMAB–Annual Proceeding Scientific Papers, *21*(4):974-981.
2. Dzhendov, D., Katreva, I., & Dikova, T. (2018). Prosthetic treatment protocol with fixed dental constructions made on 3D printed cast patterns. Archives of Materials Science and Engineering, 90(1):33-40.
3. Katreva, I., Dikova, T., & Tonchev, T. (2018). 3D printing–an alternative of conventional crown fabrication: a case report. Journal of IMAB–Annual Proceeding Scientific Papers, 24(2):2048-2054.
4. Dobrzański, L. A., & Dobrzański, L. B. (2020). Dentistry 4.0 concept in the design and manufacturing of prosthetic dental restorations. Processes, 8(5):525.
5. Dobrzański, L. A., Dobrzański, L. B., Dobrzańska-Danikiewicz, A. D., & Dobrzańska, J. (2020). The concept of sustainable development of modern dentistry. *Processes*, *8*(12):1605.

Photograph

Biography

Prof., DSc, PhD, Eng Tsanka Dikova is a full professor in the Department "Dental Materials Science and Prosthetic Dental Medicine" at the Faculty of Dental Medicine, Medical University of Varna, Bulgaria. She worked as a Fulbright visiting professor at Rice University Houston, USA, and as a visiting researcher at Tokai University, Japan. Dr Dikova published more than 140 scientific papers, 5 book chapters, 3 monographs, 3 books and 4 textbooks. She has participated in more than 100 national and international congresses and conferences; in more than 30 of them, she was a member or head of scientific or organising committees. Dr Dikova was invited to lecture at 18 international conferences. She gave lectures in Tokai University (Japan), Rice University (USA) and Xidian University, China. She is a reviewer of more than 20 international scientific journals published by Elsevier, MDPI, SAGE and Springer. Her scientific interests are in the field of laser surface treatments, dental materials and materials for implants, biomaterials, nanomaterials, nanocoatings and nanotechnologies, application of 3D printing and selective laser melting in general and dental medicine.

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