

**UNIVERSITY OF MEDICINE AND PHARMACY “CAROL DAVILA”
BUCHAREST
DOCTORAL SCHOOL
DENTISTRY**



**PERSONALIZED PREVENTIVE DENTISTRY –
INTERDISCIPLINARY CONNECTIONS**

Abstract

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Abstract

The habilitation thesis entitled “*Personalized preventive dentistry – interdisciplinary connections*” describes the concept of *personalized preventive dentistry*, which is part of the general framework of *personalized dentistry*. Every preventive clinical procedure, every medical advice or attitude related to preventive dentistry must be personalized in accordance with the patient’s age and pathology (general and local). The thesis is written in accordance with the guidelines provided by the Doctoral School of the University of Medicine and Pharmacy “Carol Davila” Bucharest. It has 4 chapters and includes all my scientific, teaching, professional and academic work and career after I became PhD.

In the **first chapter** I described many of my research directions – preventive dentistry applied to different types of patients such as children and adolescents, the patients with lack of saliva (xerostomia), patients with dental and craniofacial anomalies or with orthodontic treatment, patient with different oral lesions, dental implants or with many general diseases like diabetes, renal failure, genetic syndromes or from different social environments. In this concept I also made many connections with other research areas than *preventive dentistry* such as pediatric dentistry, oral health, periodontics, orthodontics, implantology or oral pathology. The connections exceeded the dentistry area (genetics, diabetes, histology, biochemistry) or even medical area (software and hardware development, physics, chemistry, biosensors and communications).

The **second chapter** was dedicated to my research activity – results, articles, scientific events, research projects. The first category of results was about the caries, gingivitis, dental anomalies or oral hygiene background in case of children and adolescents. I discovered that oral health and oral hygiene backgrounds are usually worse when we dealt with children belonged to families with lower socio-economical condition. Another main category of results was dedicated to the patient with lack of saliva (xerostomia). In my research career I was part of a scientific project which had as main scope to build a smart lab-on-a-chip device made for saliva stimulation. The device was so small that it was part of a dental implant. It was also capable of reading and process the salivary data due to its nano-sensors and microcontroller inside. The device was also capable to increase the saliva flow rate due to two small electrodes made for

nerve stimulation (lingual and buccal nerves) and to prevent any other oral complications to these patients, such as dental caries, gingivitis, periodontitis and oral candidiasis.

I also designed a study about a smart software that was capable to measure the risk of having dental caries. That was part of my postdoctoral scholarship, which was also part of a European project. After a couple of clinical studies about many risk factors for dental caries I succeeded to integrate many parameters related to caries risk or protective factors. In this way, the dentist who used the software were capable of input all the data related to caries in order to have a prediction for the patient's caries feature.

I also developed many studies about:

- ICDAS II algorithm for caries detection;
- Periodontal risk in smokers;
- Preventive measures for the patients with oral lesions, orthodontic treatment or dental implants;
- Diet and caries;
- How local fluoridation are part of the main oral preventive protocols;
- Patients with many general diseases;
- Concepts in oral health;
- Preventive and dentists – what they think about prevention and how they protect themselves from the accidents and possible infections when they do their job.

My post-PhD research activity has 80 papers, 19 being part of ISI Web of Science. I was also part of 5 scientific projects (PCCA and Erasmus +), being the project leader for one of them. I also won a mobility project when I had the chance to present my work in a prestigious scientific event and won the *best poster award competition* (March 26-28, 2018, Vienna, Austria).

In the **chapter no. 3**, I made a short description of my academic and professional career. I was part of the teaching process in the 'Carol Davila' University and Pharmacy, Faculty of Dentistry since 2003. In 2010 when I became PhD, I was already teaching assistant and member of the Preventive Dentistry Division. In 2018 I became *Lecturer* and in 2021 *Associate Professor* at the same division. In 2020 I was elected head leader of the Preventive Dentistry Division. Since 2020 I coordinated the lectures and the clinical stages for the 3rd year students of the Faculty of Dentistry and the Preventive Dentistry module from the General Dentistry Residency curriculum. From 2024 I am the owner of the English Module lecture.

I have *primary dentist degree* in General Dentistry and *specialist degree* in Dental-Alveolar Surgery the second postgraduate specialization.

In the last chapter, the fourth, I propose a complete plan for develop my career.

I propose myself to extend the past studies, research and scientific projects to new area and limits. For example, I will try to access many financing lines for scientific projects in order to extend the research infrastructure and publish papers in many international journals. I also intent to apply for many educational programmes such as *Erasmus +*, in order to create more opportunities for my students and for my feature PhD students to explore new learning methods and environments.

My main scope will be to increase the international visibility for “Carol Davila” University of Medicine and Pharmacy, as well for the Faculty of Dentistry I am part of.