

**"VICTOR BABEȘ" UNIVERSITY OF  
MEDICINE AND PHARMACY TIMIȘOARA  
DOCTORAL SCHOOL  
MEDICINE DOMAIN**



**ACHIEVEMENTS AND NEW PERSPECTIVES IN PEDIATRIC  
GASTROENTEROLOGY**

**ABSTRACT**

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## **ABSTRACT**

I structured this habilitation thesis in three sections, according to the recommendations of the National Council for Attestation of Titles, Diplomas and University Certificates (CNADTCU).

The current thesis is a corollary to my scientific, professional and didactic research activity carried out during the post-doctoral period 2010-2024.

In the first three chapters of the habilitation thesis, I described the research activity mirrored by the main scientific publications from the stream of specialized literature to which I contributed. Next, I mentioned my didactic activity in relation to the students and resident doctors that I coordinate, the personal academic achievements highlighted by the research and educational projects in which I participated, the administrative processes carried out within the academic community and the professional societies that I belong to, as well as clinical medical activity at the patient's bedside.

The first part of the habilitation thesis includes a description of my scientific trajectory, followed by 6 sub-chapters that address the lines of research followed in the subsequent period of the doctoral thesis entitled "Clinico-morphological and immuno-genetic studies in celiac disease in children".

### **Scientific activity**

My achievements in the context of the scientific and research activity from the post-doctoral period until now are embodied in the capacity of author or co-author of the following works: first author of one monography, first author of 6 chapters in two medical treatises, first author and co-author of 3 chapters in specialized medical books, 22 articles published in full in ISI indexed journals with impact factor (11 main author and 11 co-author), 3 articles published in ISI Proceedings journals (2 first author and one co-author) and 18 articles published in BDI indexed journals.

I am also author and co-author of more than 80 abstracts published in supplements of some ISI indexed journals and respectively in the volumes of national and international scientific meetings with ISBN and more than 60 communicated works. I have presented numerous oral and poster communications at national and international medical scientific events.

In recognition of my research activity carried out so far, I mention the fact that I am the first author of three award-winning articles - two in 2018 and one in 2021 within the competitions Prize for Research Results - Web of Science (WOS) Articles by The Executive Unit for the Financing of Higher Education, Research, Development and Innovation (UEFISCDI).

I also mention that my papers published in high impact factor journals have received a total of 149 citations without self citations, resulting in a Hirsh index of 7 (WOS), with a total impact factor of 24.501 for the articles I have the quality of principal author.

In the first part of the habilitation thesis, I highlighted my contributions in the research area carried out from the moment of presenting the doctoral thesis until now. The research directions addressed are organized in six important subchapters, correlated with my scientific topics in the field of pediatric gastroenterology or which raised later in the context of interdisciplinarity in pediatric digestive pathology.

Each spectrum of research is described in the habilitation thesis organized as follows: the importance of the topic addressed and the argumentation of integration in the current context of knowledge, followed by the presentation of the results obtained from my personal research and the dissemination of the obtained information (through publications in high impact factor journals, citations or awards obtained).

In the second sub-chapter of the first section, the importance of maintaining the eubiosis status and the necessity of manipulating the intestinal microbiota in various pediatric gastrointestinal conditions is presented. I am a pioneer of Romanian research with reference to the correlation of small intestinal bacterial overgrowth syndrome with metabolic disorders in nonalcoholic fatty liver disease in children. I also studied the role of probiotic administration in children treated long-term with proton pump inhibitors to prevent the occurrence of intestinal dysbiosis proven by hydrogen breath test with glucose. Last but not least, I investigated the role of intestinal microbiota imbalance in the perpetuation of inflammation and villous lesions in celiac disease in children and adults.

The third sub-chapter of this section refers to the particularities of the vast etiological spectrum of acute and chronic diarrhea diseases in children. In this direction, both as first author and as co-author, I carried out research that mainly focused on aspects related to the pharmacological or dietary manipulation of acute or

chronic enterocolitis in children. The studies focused on celiac disease and the restoration of villous architecture under a gluten-free diet, chronic secretory diarrhea induced by neuro-endocrine tumor pathology (vasoactive intestinal peptide-secreting ganglioneuroblastoma) or motility intestinal disorders induced by chronic pancreatitis.

The fourth sub-chapter of the first section focuses on the importance of diagnostic and interventional/therapeutic pediatric digestive endoscopy in the case of upper digestive hemorrhages caused by ulcers in children. The research compares two pharmacological methods - administration of proton pump inhibitors in continuous infusion with bolus administration in addition to the performance of the second look gastroscopy for the prevention of rebleeding, after the initial performance of endoscopic hemostasis.

The fifth sub-chapter of the first section addresses topical issues related to pediatric hepatology. The number of pediatric patients with diffuse chronic liver diseases has registered a significant increase in recent years and the etiological spectrum has widened its range from chronic viral infections to metabolic, genetic or autoimmune liver diseases. The progression of untreated chronic liver inflammation has an evolutionary trend towards liver fibrosis of varying degrees of severity, up to liver cirrhosis. Liver fibrosis is a cicatricial lesion of the liver parenchyma, determined by chronic necrotic-inflammatory changes of various causes, which evolve progressively during the persistence of etiopathogenic factors. The non-invasive techniques designed to evaluate the degree of fibrosis in adult patients represent an important direction of research in the field of pediatric hepatology. Recently, there has been a trend to replace liver biopsy with elastographic techniques for evaluating the degree of fibrosis in pediatric patients with chronic diffuse liver conditions. In collaboration with the team of the Gastroenterology and Hepatology Clinic of the Pius Branzeu Emergency County Hospital in Timisoara, I conducted the first research carried out in Romania focused on the applicability of elastographic methods to children with chronic liver diseases of various causes. In this original study, I investigated the feasibility of quantifying the degree of liver fibrosis in children with diffuse chronic liver disease using Acoustic Radiation Force Impulse Elastography (ARFI) and 2D-Shear Wave Elastography (SWE) techniques, compared to FibroScan elastography considered as the reference method. Also, in my research focused on the area of hepatology, I addressed an etiopathogenic factor less often described in

acute and chronic infectious hepatitis in children and adults - the hepatitis E virus. I studied the natural evolution of this infection in various population groups, identifying possible reservoirs and the way of transmission. I have described in an exhaustive review the epidemiological and clinical features, the extrahepatic manifestations and the response to treatment of cases with viral hepatitis E.

The sixth sub-chapter of the first section presents the standardization of functional respiratory tests (exhaled hydrogen and methane breath tests) in digestive pathology and systematizes the indications adjacent to the performance and interpretation of these tests in children and adults.

The second part of the habilitation thesis details the personal achievements on the academic level, since the graduation of the PhD thesis.

#### Didactic activity

Currently, I am lecturer at Pediatrics Department at the "Victor Babes" University of Medicine and Pharmacy in Timisoara, a title won through a competition. My academic career followed all the steps necessary for promotion in the higher education institution: preparator, university assistant, then lecturer in XI<sup>th</sup> Department, First Pediatric Clinic of the "Victor Babes" University of Medicine and Pharmacy in Timisoara. During my entire teaching career so far, I have been involved in administrative activities, at the discipline and department level.

The third part of my habilitation thesis describes the activities on a medical professional level, after completing the PhD thesis.

#### Professional activity

I currently hold three related medical specialties. I am a consultant physician in pediatrics, consultant physician in pediatric gastroenterology and specialist in adults gastroenterology.

I hold a number of two certificates/medical competencies, respectively certificate of complementary studies in pediatric gastroenterology, hepatology and nutrition (Certificate Serie C, No 30614) and competence in general ultrasonography (Certificate Serie C, No 026794).

My professional goals are in close connection with the lines of development in the didactic activity in the university and post-university trajectory, described in the framework of the habilitation thesis. My professional career has been dedicated to the continuous improvement of skills for the evaluation and management of pediatric

patients with digestive pathology. I emphasized integrated clinical evaluation and targeted biological investigation, correlated with the use of the most modern imaging techniques appropriate for diagnostic and curative purposes, such as diagnostic and therapeutic pediatric digestive endoscopy or interventional ultrasound (example:ultrasound guided liver biopsy).

The fourth chapter of the habilitation thesis highlights the strategies based on which I propose to continue my development on the three main professional levels: scientific research activity, academic activity and medical professional activity.

The quality of clinician and physician doctor (PhD) in medicine brings me the chance and the challenge to practice in three directions: clinical practice, teaching in the academic environment and research activity. Each of these three directions involves a process of continuous learning, in order to be able to respond to the specific standards that are in permanent development. Career advancement in these circumstances requires achieving and maintaining professional performance in all three areas.

Having a triple specialization, in pediatrics, pediatric gastroenterology and adults gastroenterology, I will exploit this advantage in favor of creating new research trajectories, but also to improve the educational act of teaching in the university environment, both for students and resident doctors.

In the direction of scientific research, my projects for further studies derive from the research themes addressed in the first chapter of the habilitation thesis (the role of the microbiota in digestive diseases in children, the particularities of chronic diarrhea conditions in pediatric patients, the performance of diagnostic and interventional digestive endoscopy in children, the accuracy of new elastographic techniques in pediatric liver pathology, the implementation of respiratory tests - the exhaled hydrogen test in children with gastrointestinal or liver disorders).

I also propose new research trajectories: the research of the spectrum of bilio-pancreatic diseases in children, the study of extradigestive manifestations in children with celiac disease and inflammatory bowel disease, new nutritional and pharmacological therapeutic directions in Crohn's disease and pediatric ulcerative colitis, the impact of psychological factors in the occurrence of functional digestive disorders in children and the way in which the results of these studies could be applied in clinical practice.

An essential goal of my career is the development of research nucleus and implementation of collaborations with already established research teams. Although there is already an active research center in the department where I work, I intend to create a new research center focused on the study of digestive pathology, pediatric nutrition and particular endoscopic aspects in children, expanding the research area both for my colleagues and for residents and students by exploiting new topics.

I supported interdisciplinarity and will continue to be adept at expanding collaboration with researchers from different clinical fields such as adult gastroenterology, pediatric surgery, medical imaging, genetics, neurology and child psychiatry, psychology, but also with researchers from preclinical fields such as biochemistry, physio-pathology or pharmacology.

The perpetuation of the previously described research directions, but also obtaining the quality of PhD supervisor/coordinator, will allow me to increase the degree of scientific productivity, by disseminating the results of scientific research.

Together with my future doctoral students, I will publish original articles in WOS indexed journals with a high impact factor, I will encourage their participation in specialized courses/workshops, national and international scientific events, increasing the visibility and prestige of the discipline, the department where I belong to, and the University of Medicine and Pharmacy "Victor Babeș" from Timișoara.

The main objective of my teaching career is the constant improvement of my teaching skills. I developed psycho-pedagogical skills by participating in professional training courses focused on educational topics. I learned to approach classical, but also modern teaching and evaluation methods, giving my students and residents the ability to coherently transmit information and to evaluate them objectively.

Resizing the educational offer to the current standards of today's medicine is an imperative requirement but also a window of opportunity. This aspect requires in my academic career a permanent professional improvement, an improvement of didactic interaction techniques with students and residents regarding their training in the field of pediatrics and pediatric gastroenterology in order to meet European standards.

In 2019, I was awarded the title of residency coordinator in the pediatric gastroenterology specialty by the Ministry of Health and the Vice-Rectorate of Postgraduate Studies of the "Victor Babeș" University of Medicine and Pharmacy,

Timișoara (Decision No 20688/10 12 2019). I made a commitment to contribute to the improvement of the residency curriculum in the pediatric gastroenterology medical specialty. I will perpetuate this aim in the context of the desire to increase the quality of my academic and didactic activity, improving the residency program especially in terms of teaching the practical skills of performing diagnostic and therapeutic digestive endoscopy in pediatric patients.

I will continue to take part in the local and national educational projects proposed by the Romanian Society of Pediatrics and the Romanian Society of Pediatric Gastroenterology, Hepatology and Nutrition. Together with my colleagues from these professional associations, I will organize educational scientific events addressed to resident doctors and pediatric specialists, pediatric gastroenterologists and family doctors/general practitioners. Thus, I will contribute to the improvement of the medical qualities of colleagues and graduates of the "Victor Babeș" University of Medicine and Pharmacy, Timișoara.

On a medical professional level, I propose to increase the quality of the medical act, especially in the direction of the development of a core of diagnostic and interventional pediatric digestive endoscopy in the western part of the country. The paucity of specialists in this subfield is a real challenge in current pediatric clinical practice. Being relatively new as an independent specialty in Romania, Pediatric Gastroenterology is an orphan in terms of pediatric gastroenterologist endoscopist mentors involved in performing complex interventional techniques in children such as retrograde endoscopic cholangiopancreatography (ERCP). I propose to improve my practical skills in the direction of implementing complex methods of interventional and therapeutic endoscopy in children and training as many residents as possible in the specialty of pediatric gastroenterology who, after obtaining the title of specialist doctor, will take part in the formation of the core of pediatric digestive endoscopy in Timisoara University Center, that will serve both endoscopic emergencies and usual cases scheduled for all pediatric patients from the west of the country who will require an endoscopic approach.

The last chapter, chapter 5, includes a number of 209 bibliographic references related to the presented themes that have been cited in this thesis, correlated with the included articles.