

ABSTRACT

This habilitation thesis presents the research activity carried out after defending my doctoral dissertation and being confirmed as Doctor in Medicine with the distinction MAGNA CUM LAUDE, by Order of the Minister of National Education and Scientific Research No. 3769 of April 20, 2017.

The doctoral thesis entitled “THE CONTRIBUTION OF CT EXAMINATIONS TO THE EVALUATION OF ABDOMINAL FAT,” supervised by Prof. Univ. Dr. Dan Dobreanu, covered the research activity from 2010 to 2017 and built upon the research I had begun as a student. Afterward, in the post-doctoral period, the same topic was expanded and developed through studies aimed at comprehensive abdominal evaluations. Moreover, relying on the principles of imaging assessments developed during my PhD, I proceeded to evaluate patients with cardiovascular pathologies; this, in fact, constituted the starting point and opened the way to my current research directions.

Scientific Achievements:

Study and research fellowships: Graz University Hospital (2022), Vienna Universitätsklinikum AKH (2021), London Guy and St Thomas' NHS Foundation Trust (2019), Zurich Kinderspital (2018), München Deutsches Herzzentrum (2015), Southampton General Hospital (2014)

Research grants: 2 grants total, of which 1 as principal investigator (in an internal competition at UMFST GE Palade Tîrgu Mureş) and 1 as a member of the local implementation team for a Horizon 2020 project

Publications: 4 books (3 in print as sole author and 1 in electronic format as co-author), 16 articles in ISI-indexed journals with impact factor (11 as first author and 5 as co-author), with a total accumulated impact factor of 35.089, 3 articles in ISI-indexed journals without impact factor, and 10 articles in B and BDI journals

Supervision of multiple student papers at national and international congresses, senior thesis work, and, more recently, dissertation papers for graduates of the George Emil Palade University of Medicine, Pharmacy, Science, and Technology of Târgu Mureş

To facilitate easier quantification, I have grouped the results obtained from my scientific and research activity into three main sections:

- Cardiovascular Imaging
- Metabolic Pathology and Clinical-Imaging Correlations
- Epidemiological Study of Physical and Pubertal Development

In the first section — Cardiovascular Imaging — I present articles resulting from my research activity covering the following topics: evaluation of the effectiveness of contrast substances in CT angiography (CTA), the use of CTA in congenital cardiovascular pathology in early ages, as well as techniques for optimizing acquisition in patients with aortic dissection. I have also included several interesting

case reports, some of which are the first worldwide descriptions of certain anatomical variants.

The second section, which includes articles dedicated to metabolic pathology and clinical-imaging correlations, contains both articles in which, as first author, I explored reference limits for abdominal fat and identified new connections between clinical laboratory parameters and imaging parameters, as well as those in which, as principal author, I contributed to studies evaluating non-alcoholic fatty liver disease (NAFLD) from anthropometric perspectives as well as in relation to hematological biomarkers.

The third section — the Epidemiological Study of Physical and Pubertal Development — explores the clinical relevance of secular trends by analyzing changes in height, weight, and average age in Romanian children and adolescents between 1936 and 2016, and correlating these changes with socio-economic transformations.

Professional Achievements:

Junior physician (2002), radiology and medical imaging resident (2003–2007), radiology and medical imaging specialist (2008–2012), senior radiology and medical imaging physician (since 2012), residency coordinator, and Head of the Clinical Radiology and Medical Imaging Laboratory at the Târgu Mureș County Emergency Clinical Hospital (2024–present).

Academic Achievements:

Associate teaching staff (2012–2018); Lecturer (2018–2022) in the Department of Biostatistics and Medical Informatics at UMFST GE Palade Tîrgu Mureș

Associate Professor (2023–present) in Radiology and Medical Imaging in Department ME2 of the Faculty of Medicine in English at UMFST GE Palade Tîrgu Mureș

Member of the ME2 Department Council (2024–present), member of the Faculty Council of the Faculty of Medicine in English (2024–present), and member of the Senate of UMFST GE Palade Tîrgu Mureș (2024–present)

From the perspective of the coming years, I view scientific publications not only as a goal but also as a professional responsibility. I intend to continue publishing regularly in international journals with high visibility, choosing topics with a direct clinical impact, relevant to modern imaging practice. I will uphold methodological rigor, transparency of the research process, and interdisciplinary collaboration, involving young researchers who need guidance and support. In addition, I will continue to organize or actively participate in conferences, working groups, and international congresses, using these occasions to share research findings and promote academic collaborations. I believe that scientific events are not merely dissemination platforms but also spaces for mentoring, training, and the development of new ideas.

At the institutional level, I wish to contribute to strengthening a culture of innovation at UMFST. To this end, I will encourage the formation of interdisciplinary research teams, support colleagues in their scientific endeavors, and promote results

through all available channels—publications, conferences, and external partnerships. I also intend to become involved in developing internal mechanisms to stimulate scientific performance, through formal recognition and financial support, thereby increasing the University's visibility.

After obtaining my habilitation, I plan to supervise doctoral theses on current topics that address real clinical needs. I will support doctoral students in joining international scientific networks and in publishing in prestigious journals. For me, academic mentorship is a duty, and I will take responsibility for the professional and ethical training of young researchers by organizing periodic meetings, thematic sessions, workshops, and journal club-style events. I want to help shape a generation of researchers who are well-prepared, independent, and ethical.

Medical education must constantly evolve. In this regard, I will be involved in developing interactive courses, 3D simulations, case studies, and modern digital resources designed to make learning an engaging and practical process, supporting students' and residents' autonomous learning. The educational process will be continuously adjusted based on responsibly and openly analyzed feedback.

In the realm of postgraduate education, I plan to develop modern courses tailored to the current needs of specialists. In collaboration with international experts, I will organize courses and scientific events that, while meeting the standards of the Romanian College of Physicians, offer not only professional training but also opportunities for collaboration and academic recognition.