

# **HABILITATION THESIS**

**Title: INTERDISCIPLINARY AND INTEGRATIVE MEDICINE ASPECTS IN THE PRACTICE OF BALANCE DISORDERS**

**Domain: MEDICINE**

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## **ABSTRACT/SUMMARY**

The habilitation thesis with the title "Interdisciplinary aspects and integrative medicine in the practice of balance disorders" includes the scientific, professional and academic achievements of the undersigned as well as my career development plans in the future.

I believe that my qualification in the field of medicine represents the achievement of the maximum level of professional, academic and scientific training, a goal that I have set for myself since the first steps in my university career.

The first part of this work includes the main results of the professional, academic and research activities, presented and in close correlation with the level of knowledge at that time, from the research fields, embodied in scientific articles published as the main author or collaborator.

Thus, the most important scientific articles, materials, summaries and other scientific contributions, published by the undersigned nationally and internationally, are mentioned.

At the same time, the stages and development stages of my professional career are highlighted and covered in a chronological way, in the next part of the work.

Chapter 1 presents the main results of the scientific research systematized on the respective research fields, with an emphasis on the multiple practical and interdisciplinary characteristics in the field of balance disorders: the complexity of the diagnosis and treatment of these conditions, the rich relationships with the cardiovascular part, the neurological field, infectious pathology, etc., as well as some aspects of integrative medicine (related to the possible uses in therapy of some traditional ethnobotanical products), being mentioned at the end and other research areas in my area of expertise.

A main field of research was that of researching of ENT conditions that cause balance disorders. Their involvement in human pathology, under all aspects, is one of the research topics that have preoccupied me since the beginning of my professional, academic and scientific career.

In this direction, my activity subscribes to the participation as a founding member of the first Romanian Society of Otoneurology (2008-2016), currently a subsidiary of the Romanian Society of Audiology and Communication Pathology, the only society of its kind in our country.

Moreover, a large part of the research activity and scientific works published and communicated at national and international level in journals with great scientific impact, addressed the complex issue of the diagnosis and treatment of balance disorders in the ENT area, a subject of great interest scientific. In these scientific articles, the main results regarding this field of research were published. Thus, we studied - with a special emphasis - the most frequent pathological situation generating balance disorders in human pathology, originating in the inner ear, benign paroxysmal positional vertigo (BPPV), but also other etiologies in the pathology of the ENT specialty, generating disorders of balance. In this direction we emphasized and highlighted their practical, correct approach, treatment, predictive value of their risk factors and evaluated the effectiveness of pharmacological and/or rehabilitation treatment, for reducing the risk of falling and implicitly with an emphasis on increasing quality life, both in patients with this pathology, but also in those with other balance disorders in the ENT field.

Another closely watched aspect was the effectiveness of modern medication, with potential in early vestibular rehabilitation, correlated with the reduction in the incidence of falls, anxiety and cardiovascular events, through more effective control of the balance function, and implicitly preserving a good quality of life. I also described the importance of understanding the pathogenesis and implicitly of the correct assessment of both the function of the inner ear, as the main organ in achieving the function of balance, as well as the appreciation of the extremely complex impact of this type of dysfunction on the main vital systems (cardiovascular, neurological, etc.). In original papers and articles we evaluated both the practical and pharmacological approach to therapy in the main vestibular syndromes, as well as the aspects regarding the evolution of the generated balance disorders, in correlation with their major impact on the cardiovascular, neurological systems, correlating the importance of decline of vestibular function, with the prevention of the major risk of falling of the elderly.

In this context, the published scientific articles, informative materials, courses, and communications in the number of more than 73, at national and international conferences, are integrated. Another main area of research has been related to the aspects of interdisciplinarity generated by the complex interrelationships, still insufficiently understood, between balance disorders and the main organic systems of the human body, especially the cardiovascular system, the neurological system, but also other important systems.

These fields of research are closely interconnected through their pathophysiological mechanisms involved and sometimes initiated by the occurrence of cardiovascular and other related events observed during or after balance disturbances in the ENT area. These observations led to the interdisciplinary continuation of the research, in multiple directions, with a subsequent focus on the research study of the general reactivity of the body with the final involvement of oxidative stress in the studied pathologies.

We studied the interrelationships both in the cardiovascular and neurological spheres, but also in other organ systems, emphasizing the impact on the quality of life of patients and the specific existing or proposed curative possibilities.

The results of the studies in this field have been validated through the creation of numerous scientific papers published and communicated at the national and international level in rated journals ISI of Web of Science as well as in undergraduate theses of my students.

In the third field of research, we approached particular aspects of integrative medicine, namely studies of several natural compounds, from two large fields: some with strong antioxidant capacity, with possible therapeutic applications within the studied pathology, considered to be potential useful remedies and against the cardiovascular collateral effects of balance disorders or on other organ systems and other compounds, with antiviral and antimicrobial activity, considered to be of great future in the therapy of ENT conditions in my area of expertise.

We approached this field understanding that integrative medicine is a viable alternative that achieves the logical interconnection between conventional medical practice, complementary medicine and alternative medicine. This interconnection touches both the fields of therapy and research. Integrative medical approaches in human pathology have been shown to play an important role in improving the prognosis and quality of life of patients. Natural compounds play an important role in integrative medicine research, historically being the first therapeutic agents used and preferred in therapy, having lower adverse effects and better tolerability for patients.

Oxidative processes are involved in the initiation and especially the "completion" of most diseases in human pathology as well as their collateral, indirect effects on the other vital organ systems involved, including in conditions that cause balance disorders. Conclusively, this generated my presumption that by possible combating oxidative stress - with the help of natural compounds with an antioxidant effect - the resultant could only have a beneficial effect for patients with these conditions.

As a result of the increased interest given internationally to studies in the field of oxidative stress, in recent years I have participated in collectives together with other Romanian and foreign researchers from other universities to carry out research works in this field of integrative medicine, the studies being related to the capacity antioxidant effect of some natural compounds, but also on some traditionally used compounds with diverse anti-infective effects (antiviral and antimicrobial), considering their potential beneficial effects in the pathology studied by me. The results of these studies have been published in prestigious journals, ranked by the ISI Web of Science.

As a secondary line of research, I continued my studies in the direction of classical pharyngeal pathology as well as the less known one, on the border with psychiatric and gastro-esophageal pathology, studies initiated in the early years of the profession and concretized through the Doctoral Thesis ("The place of pharyngeal paresthesias in ENT practice"). Later these studies were concretized through scientific articles and communications in numerous specialized publications.

I have demonstrated the ability to lead and work in research teams, collaborating with top specialists at the international level, participating in clinical studies (national and international) as principal investigator or co-investigator. The results of these studies have materialized in the

numerous articles published in collaboration with specialists from the country and abroad, in reviews with a high scientific impact or communicated at national and international congresses and conferences.

Summarizing, my results obtained in all research fields briefly include: 74 articles and scientific communications, 43 published in extenders or volumes of abstracts, of which 28 published in cited journals and 21 indexed Web of Sciences, having citations generating an H -Index of 8.

All these results contribute to the national and international recognition of both the institution under whose aegis I carried out my activity, as well as a personal recognition, through his contributions to clinical research, fundamental or applied in daily medical practice.

In the end, the result of the twinning of the didactic activity with the scientific research resulted in the increase in the quality of the medical educational process, the intended final goal of any academic endeavor in my field.

Chapter 2 of this part presents my professional and academic achievements.

They started with the graduation from the Faculty of Medicine, Cluj Napoca Institute of Medicine and Pharmacy, general medicine section, 1989.

As a result of the exams held later, I obtained the confirmations as a ENT specialist doctor and later a primary doctor in the specialty of Otorhinolaryngology, under the coordination of Prof. Dr. Ermil Tomescu, a prominent figure in the field of ENT, at the University of Medicine and Pharmacy "Iuliu Hatieganu" Cluj Napoca. Professionally, I have been senior physician in the ENT specialty since 1999.

My academic career began in 2016 as a result of passing the entrance exam in the university environment and later, by going through the stages of the academic hierarchy, I became a university lecturer in 2021, coordinator of the discipline of ENT and Medical Scientific Research Methodology within the Department of Medical and Surgical Specialties and of the Interdisciplinary Doctoral School, Faculty of Medicine, Transilvania University of Braşov.

The coordination capacity of the research and professional teams, as well as the degree of professional expertise that I possess, are also argued by the position of Coordinator of the Integrated Ambulatorium Clinic of SCJU Brasov-Marzescu , which I held for 6 years, as well as as a medical ENT expert, appearing in the "National list of specialists in the field of medicine, psychology and social assistance who can participate in the re-evaluation of adults with disabilities" (Order MS 1487 of 10 Dec 2010).

Membership as a member of international and national scientific societies also contributes to the international recognition of my activity: the Romanian Society of ENT and Cervico-Facial Surgery, the Romanian Society of Audiology and Communication Pathology, Alliance Francaise Brasov, Brasovian Medical Forum Association, Founding Member of the Romanian Society of Neuro-Otology (2014-2020) and of the Multiple Sclerosis Society (1994), but also a member of the Societe internationale d Otoneurologie.

My involvement in scientific activity as a reviewer for various international and national journals also plays an important role in increasing personal and institutional visibility: American Journal of Therapeutics, Bulletin of Transilvania University and Braşov Medical Journal Review.

The second part of the habilitation thesis is dedicated to future scientific research and the development of my academic career.

Eligibility in the field of medicine represents the highest level of professional, academic and scientific training and I consider it the most prestigious way of personal career development at this time.

My own professional development and evolution plans are based on the history of my teaching and professional activity so far, and obtaining the right to coordinate doctoral theses through habilitation, represents the key to success in my future teaching and scientific activity, coordinated by great personalities of the academic community headed by the Interdisciplinary Doctoral School of Transilvania University in Braşov.

This achievement will allow me a personal development, and in addition, it will give me the opportunity to coordinate young PhD candidates towards a successful academic career, to be included later in the academic elite of Transilvania University in Braşov.

In this context, the research fields in which I have excelled so far represent the basis of my professional development and represent a priority and continuity for the future.

The field of study of balance disorders and the interrelationships generated in the body, represents for me and my research team a continuous process in the scientific activity, reflected including in the personal development plan of further research. I will continue to address the two main directions of research: the correlations between the complex manifestations of balance disorders, with practical aspects of diagnosis and treatment, as well as the role of medicines with an antioxidant effect in controlling these mechanisms, in order to improve the quality of life of patients with this type of affections. In the framework of future scientific research in the field of integrative medicine, the field of therapeutics will continue to be found, research topics regarding the effectiveness of traditional ethnobotanical varieties with an impact in reducing oxidative stress and reducing oxidant activity, in cardiovascular, neurological and psychological manifestations, related to disorders of balance.

In the research area of pharyngeal pathology, I will evaluate therapeutic approaches in patients with pharyngeal paresthesias and concomitant gastroenterological or psychiatric pathology.

The academic and scientific development plan will assume as estimated results the participation in competitions for obtaining national and international grants as a partner or project coordinator and the publication of their results.

Organization, participation in conferences, involvement in national and international research teams, coordination of future generations of students, medical residents and PhD students will increase scientific visibility by disseminating research results by publishing research results in ISI-rated international journals with a high impact factor. The development of the academic activity will be based on the continuous process of improving the teaching methodology of the subjects in my area of competence, on helping, coordinating, supporting and permanently involving students and doctoral students in the process of deepening medical knowledge and in research activity, for ensuring and providing updated information in accordance with national and international diagnostic and treatment guidelines.