

## REVIEW

**By:** Professor Dr. Hristo Tsekov Tsekov, PhD, Department of Neurosurgery, Acibadem City Clinic – Tokuda Hospital, Sofia, Bulgaria

**Regarding:** Competition for the academic position of "Professor" in the specialty of Neurosurgery, field of higher education 7. Healthcare and Sports, professional direction 7.1. Medicine, for teaching in English and Bulgarian in the discipline of Neurosurgery, announced in State Gazette issue 35 from April 19, 2024, and by approved proposal from the Faculty Council of the Faculty of Medicine at the Medical University – Plovdiv (protocol No. 6 from June 26, 2024).

**Candidate:** Assoc. Prof. Dr. Ivo Inkov Kehayov, PhD.

Assoc. Prof. Dr. Ivo Kehayov, PhD, was born on September 8, 1980, in Plovdiv, where he also completed his secondary education at the GHAP "St. St. Patriarch Evtimiy" with German and English language instruction. He graduated with a Master's degree in Medicine in 2005 from the Medical Faculty of the Medical University of Plovdiv (diploma Series MUP-05 No. 005325-2005). He specialized in the Clinic of Neurosurgery (2006-2011), and from 2006 to 2012, he was also a doctoral candidate at the same clinic. In 2012, he defended his specialty in Neurosurgery, and the following year, he completed his doctoral studies in Neurosurgery, defending his dissertation on "Monitoring of Neurocognitive Disorders and Their Impact on Quality of Life in Patients with Supratentorial Brain Tumors" – diploma No. 051 – PhD from September 19, 2013.

His career began (2005-2006) as a physician at the Regional Dispensary for Mental Diseases with inpatient care – Ltd., Plovdiv. He specialized in Neurosurgery at the Clinic of Neurosurgery, University Hospital "St. George" in Plovdiv (2006-2011), and since 2012, he has been working as a specialist – neurosurgeon at the same hospital. From 2012, after a competition, he was appointed as an assistant at the Department of Neurosurgery, Medical University of Plovdiv, and during the period 2014-2018, he was promoted to Senior Assistant at the same department. In 2018, he won a competition for the academic position of Associate Professor, which he currently holds. He has excellent computer skills, certified in MS Office, EndNote X3 Reference Manager, SPSS, and Internet usage. He is fluent in written and spoken Russian, German, and English. He has conducted specializations at Dubrava Hospital, Croatia, Zagreb (2017); Clinic of Neurosurgery, Lille University Medical Center, France (2017); Clinic of Neurosurgery, Tokyo Medical University, Japan (2015); Clinic of Neurosurgery, Salzburg, Austria (2012 and 2014). He has been a member of the Bulgarian Society of Neurosurgery since 2006, an Individual Member of the European Association of Neurosurgical Societies (EANS) since 2006, and a member of AO Spine since 2017. He has been a member of the Bulgarian Medical Association (BMA) since 2005, and in 2017, he was awarded the Honorary Badge of the BMA – Regional College, Plovdiv. He holds numerous certificates in various areas of medicine. His total scientific output includes 83 scientific reports and publications, contributions to separate chapters of collective medical publications – 7, participation in the publication of textbooks and manuals – 5, and one defended dissertation.

Dr. Kehayov is an established physician-specialist, respected by both patients and the medical community. He possesses exceptional organizational skills, allowing him to optimize work processes and rational use of equipment not only in the field of neurosurgery.

He delivers lectures, conducts practical exercises and seminars in the specialty of neurosurgery for students, interns, and resident doctors, supervises the postgraduate training of students, and participates in examination committees for semester and state exams, meeting the required minimum time for these activities. His total engagement with classroom, scientific, and extracurricular activities exceeds 1340 hours for the academic year 2020-2021, over 1412 hours in 2021-2022, and over 1923 hours for the academic year 2022-2023.

In 2013, he defended his dissertation on "Monitoring of Neurocognitive Disorders and Their Impact on Quality of Life in Patients with Supratentorial Brain Tumors," with three full-text publications in English published in Bulgarian Medicine (2) and Folia Medica (1). The contributions in these works are multifaceted, being the first in the country to conduct such a comprehensive analysis of cognitive disorders in diverse tumor pathology. The impact of affected cognitive functions on quality of life during different postoperative periods is analyzed, as well as the possibility of recovering some cognitive functions through ongoing treatment. Neuropsychological tests are developed to study cognitive disorders in patients of mature and advanced age operated for supratentorial tumors with different localization and histological structure. The set of tests in combination with corresponding scales for quality of life assessment is an effective, reliable, and practically valuable tool for evaluating treatment outcomes in these patients. A statistical analysis is made of the dependence between the removed volume of the tumor mass and its correlation with cognitive disorders. Besides these contributions of scientific-practical nature, some confirmatory contributions should also be noted:

- Analysis of the most common cognitive disorders in patients operated on for supratentorial tumors.
- Established specific profile of cognitive disorders in patients with supratentorial brain tumors depending on their volume, localization, and degree of malignancy.

Outside his dissertation work, Dr. Kehayov has numerous other contributions related to his research and publications. During an international, multicenter study, he examined factors contributing to the development of spontaneous chronic subdural hematomas. He conducted, for the first time in the world literature, a comparative analysis of treatment outcomes between patients with spontaneous subdural hematomas and patients with mixed acute and chronic traumatic subdural hematomas, which is extremely significant for predicting treatment outcomes. His interest in subdural hematomas also extends to a study on the impact of age, gender, acuity, and etiology on prognosis in treating this pathology. With scientific and practical significance is the development of guidelines for image-guided spinal instrumentation using a spinal navigation system with a 0-arm radiographic apparatus. Another point of interest is a case study of an epidural hygroma in early childhood. Optimism is also generated by the comparison of surgical treatment outcomes for spinal metastases, making chronological comparisons over three ten-year periods, showing that improved diagnostics and work organization make treatment in these cases promising for maintaining quality of life. Dr. Kehayov's interest in spinal cord pathology is further expanded by an

interesting study on the combination of degenerative changes and oncological progressive involvement of the spine, emphasizing diagnostic difficulties and complex prognosis of the final outcome. An important place in Dr. Kehayov's scientific endeavors is comparative studies on the pathogenesis, prognosis, and treatment of spontaneous epidural hematomas in children and the elderly. A significant portion of his scientific output comprises studies on the clinical features and possibilities for early diagnosis and surgical treatment of subdural-extramedullary spinal cord tumors. He reports an isolated case of a brain abscess caused by Paenibacillus lactis, conducts a long-term study of a case with spinal dysraphism complicated by the progression of accompanying anomalies. He makes an extremely important review of the current understanding of the development, treatment, and evolution of axonal injury in severe traumatic brain injury.

In the current competition for Professor, Assoc. Prof. Kehayov participates with ten scientific publications, which are referenced and indexed in globally recognized databases with scientific information. These publications are printed in several internationally reputable journals: Surgical Neurology International, Cureus, Eur Spine, Folia Medica, Roentgenologia Radiologia, Journal of IMAB. These publications are indexed in Scopus and Web of Science and analyze issues of etiopathogenesis, diagnostics, early clinical manifestations, difficulties in differential diagnosis, treatment, prognostic factors, and prognosis in primary and secondary spinal cord tumors.

Assoc. Prof. Ivo Kehayov is an outstanding physician-neurosurgeon with proven professional qualities and skills, respected by his patients and colleagues alike. He demonstrates strong qualities such as responsibility, collegiality, ethics, exceptional organizational skills, and communicativeness. He effectively uses modern medical equipment, developing its application not only within the Medical University of Plovdiv. He actively leads surgical teams performing high-complexity operations at a high technological level.

He has excellent language skills and computer proficiency, allowing him to use various literary sources and communicate with other higher education institutions. The presented scientific documentation is referenced by authoritative organizations with exceptional databases. The ten full-text scientific publications submitted for the competition meet the necessary criteria for participation. The presented documentation confirms his exceptional teaching load.

Based on my personal impressions of Assoc. Prof. Ivo Kehayov and the presented evidence proving his scientific activity, credibility, teaching load, and professional and social activity, I believe he fully meets the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria and the regulations of the Medical University of Plovdiv. I strongly advocate for awarding Assoc. Prof. Ivo Kehayov the academic position of "Professor" for the needs of the Medical University of Plovdiv. I categorically vote "YES" for conferring the academic position of "Professor" to Assoc. Prof. Ivo Kehayov at the Medical University of Plovdiv, Department of Neurosurgery.

**Date:** July 22, 2024

**Reviewer**

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