

## R E V I E W

by

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Member of the Scientific Jury according to Order No. RD – 272/15.09.2022

of the Rector of Prof. Dr. Asen Zlatarov University, Burgas

Regarding the competition for the academic position of Professor in the field of higher education 7. Healthcare and sports, professional direction 7.1. Medicine, scientific specialty Nervous diseases, for the Faculty of Medicine, Prof. Dr. Asen Zlatarov University, Burgas, announced in State Gazette No. 45/17.06.2022

**Sole Candidate: Dr. Ivan Nikolov Dimitrov, MD, PhD, DSc**

### General characteristics of the candidate's scientific activity

The scientific activity of Dr. Dimitrov which is reflected in the scientific works subject to review in this competition, fully meets the legal requirements.

Dr. Dimitrov has 148 full-text publications in total. He has submitted 83 for review. The publications include one monograph, one abstract of a dissertation for Doctor of Science degree, 6 chapters of a collective monograph and 75 articles distributed in ten sections. Of these, 14 were published in referenced and indexed journals, and 61 in non-refereed, peer-reviewed journals. The main research areas are multiple sclerosis (MS), cognitive impairment, dementias and neuropsychology, electroencephalography, epilepsy, extrapyramidal diseases, neurooncology and neurosurgery, cerebrovascular disease, syndromes and clinical cases, occupational diseases, quality of life and nursing/healthcare.

Publications are sorted in a list with consecutive numbers. Dr. Dimitrov is the first author of 12 (14.5%) of the papers submitted for the competition. He is the sole author of 4, including one monograph, one dissertation abstract, and two review articles.

### Analysis of the works by sections

#### *Multiple sclerosis*

Attempts to clarify and evaluate the main pathological processes in multiple sclerosis are essential in scientific works. They refer to the possibilities given by novel neuroimaging techniques, and to the search for ways to bring the instruments for assessing patients' conditions as close as possible to standardization. By concentrating his efforts in MRI-volumetry and neuropsychological assessment, Dr. Dimitrov has obtained results that have a place in both theory and practice. Such is the nature of the contributions arising primarily from the thesis entitled "Brain Volumetry and Cognitive Status in Relapsing-Remitting Multiple Sclerosis" (83), but also from other publications on these topics. The concept of a study of brain volumetry and cognitive status (neuropsychological tests and evoked potentials) in relapsing-remitting multiple sclerosis is Dr. Dimitrov's personal contribution. The protocol for systematic collection of information on cognitive status and brain volumetric parameters in MS patients also deserves positive evaluation. The results and conclusions substantiate the qualities of the protocol. Drawing on his specific qualifications and years of experience in neuropsychological research, Dr. Dimitrov has compiled and used an original set of accessible neuropsychological tools to study cognitive impairment in MS patients. Again, the obtained results allow this set to be recommended for use in other future projects.

Publications addressing the importance of comorbidities in MS patients such as syringomyelia (24), structural epilepsy (38), and Lyme disease (54) have contributed to the literature and to clinical practice. So are the contributions of published analyzes of gastrointestinal (25), liver (37), and thyroid diseases (35), and those devoted to comorbidity and quality of life (55,63).

Although (18F)-FDG PET is not routinely applied in the diagnosis of MS, this method provides data that are included in the debate about pathogenetic mechanisms and the correlation of functional brain disorders with clinical manifestations. A co-authored review article on this problem is a contribution to the literature, research and clinical practice (39).

#### *Cognitive impairment, dementias and neuropsychology*

Dr. Dimitrov is one of the Bulgarian researchers in the field of neuroepidemiology. Consistent with his enduring interest and expertise in neuropsychology and dementology, he presents new information and discusses on the epidemiology of dementia. These review articles are a contribution to this important topic (36,70).

The monograph "The Clock Drawing Test in Clinical Practice" has a substantial place among the papers submitted for review (83). The test is actually very popular and has been available for a long time. The monograph presents a broad, analytical review of the literature,

describing a large part of the known and frequently applied scoring systems. Dr. Dimitrov also includes 62 patients' clock drawings showing varying degrees of cognitive impairment, assessed by five different methods. An opportunity has been created for immediate familiarization with the evaluation criteria and with the different strategies in terms of complexity and time needed for administration. The analysis of the results is presented systematically. The characteristics of the monograph determine its contributions to the theory and practice of cognitive neurology. Neurologists, neuropsychologists and other specialists are provided with information about the features of this affordable screening tool. The contribution of the presented own experience, accompanied by statistical analysis, which also fulfills didactic purposes, should be emphasized. Particularly useful is the presented analysis of the combined application of the test with other neuropsychological instruments.

A direct contribution to neuropsychological practice is contained in the publication devoted to the calculation of a total score of the CERAD neuropsychological battery (9). The application of the method in Bulgarian subjects has shown qualities that allow it to be recommended for routine use.

#### *Electroencephalography, epilepsy*

The principal contribution in this direction is the participation of Dr. Dimitrov as a co-author of 6 chapters of a handbook for training in clinical electroencephalography (76-81). The book presents practically oriented information on the implementation and interpretation of EEG, useful for neurologists, residents, EEG technicians, etc. The publication meets the needs for practically oriented literature on this problem in Bulgaria.

By presenting changes in visual and auditory evoked potentials in patients with epilepsy, it is suggested that this sensitive and non-invasive method of recording brain dysfunction would find routine application in such cases. The information and position contained in this publication is a contribution to clinical practice (16).

Of interest are the application of quantitative EEG in patients with autism spectrum disorders (7), and PET/CT co-registration for localization of epileptogenic brain lesions in patients with structural epilepsy (15).

#### *Extrapyramidal diseases*

Two articles examine some aspects of comorbidity in patients with Parkinson's disease (PD) - with type 2 diabetes mellitus (13) as a potential risk factor, as well as with gastrointestinal disease (36). Another contribution to this problem, as well as to the neurological

literature, is the description of olfactory disturbances in PD compared with normal olfactory function in patients with essential tremor (ET), progressive supranuclear palsy, and corticobasal degeneration (30).

A contribution to the research in this direction is also the data on altered laboratory parameters in ET, a possible indicator of different pathophysiological mechanisms underlying PD and ET (6). Preliminary results from (18F)-FDG PET/CT in ET patients for possible changes in Broca's area, visual areas, and anterior cingulate cortex are of a contributing nature in this understudied area (4). Of interest are the articles dealing with sleep disorders (60) and psychosis (59) in PD, as well as brain trauma and anesthesia in PD and ET (58).

The article concerning the dental health of patients with PD can be considered an example of interdisciplinary approach and contribution to the promotion and mastery of a problem rarely commented on in the literature (23).

#### *Neuro-oncology and neurosurgery*

A review article on the quality of life in patients with brain tumors is included, especially important in clinical trials on new treatment methods, but also in practice, given the nature of the disease (24). There is no doubt the publications related to the methodology and practice of risk prevention / control and to the detection and reporting of incidents in neurosurgery are important for clinical practice (19,20,22).

#### *Cerebrovascular disease*

This section is not among the key ones for the candidate, and contains analyzes of various laboratory parameters and of comorbidity in patients with cerebrovascular disease (26, 27, 28, 32, 33).

#### *Syndromes and clinical cases*

Contributions to neurological practice are the clinical case descriptions of keratoconus and of syphilis with hypertrophic spinal meningitis, manifesting as a transverse spinal cord lesion, as well as the review article on neurosyphilis (1,2,17). Articles on Parry-Romberg syndrome (34), Gerstmann syndrome (14), Huntington's disease (71), Miller Fisher syndrome (72), Ollier's disease and its neurological complications (73), Stiff man syndrome (74), brain abscess in a child (62), and anti-NMDAR encephalitis (11) also describe interesting, mostly rare conditions. A contribution to practice is also contained in a published case report showing

the influence of stigmatizing beliefs and prejudices of ethnic minorities on mental health issues, which affects the ability of professionals to provide comprehensive medical care (8).

Examples of comorbidity between some of the frequent neurological diseases requiring diagnostic precision and adequate neurosurgical intervention are presented. They can be defined as a significant contribution to enriching and updating knowledge and behavior in clinical practice: the rare combination of glioblastoma, multiple sclerosis and epilepsy (3) and osteoid-osteoma of the femoral head and disc herniation at the level of L4-L5 (5).

#### *Occupational diseases*

This section contains only 2 articles. They looked at the correlations between vibration exposure and the development of amyotrophic lateral sclerosis (12), resp. the chronic neurotoxicity of lead as a possible risk factor for cognitive impairment during long-term exposure (13).

#### *Quality of life*

The single publication included here has significant scientific and applied contributions. It presents the translation and adaptation into Bulgarian of the KINDL<sup>R</sup> quality of life questionnaire (75). The questionnaire was published for the first time in Bulgarian, and Dr. Dimitrov actively participated in the entire process.

#### *Healthcare / Nursing*

Although not directly related to the candidate's specialty, the publications in this section are co-authored and related to his professional career between 2013 and 2021. Prominent among the scientific issues addressed are pregnancy in women with epilepsy (41,42), care for patients with multiple sclerosis (46,48), application of the Glasgow Coma Rating Scale by nurses (47), risks of infection for those performing parenteral manipulations (39, 51, 52, 68), cervical cancer prevention (69), nursing care in Waterhouse-Friderichsen syndrome (66). Other publications (43, 50, 56, 65) address the care for children with diabetes mellitus. Studies of adolescent sexual health (44, 49), hospital nutrition (40), patient communication, patient satisfaction with health care (53,57), as well as pedagogical issues (53, 57) are included.

#### *Education and teaching activity of the candidate*

Ivan Dimitrov graduated from secondary school at IV Language High School "Fr. J.-Curie" - Varna, French department, and obtained his degree in medicine at Medical

University - Varna. He has been a specialist in Nervous Diseases since 2007, and acquired an educational and scientific degree "Doctor" for his "Study of dementia and mild cognitive impairment among the population of the city of Varna" in 2009. In 2017, he was attributed the "Doctor of Sciences" degree for the thesis entitled "Brain volumetric parameters and cognitive status in relapsing-remitting multiple sclerosis". He has acquired professional qualifications in: Clinical neuropsychology, Clinical electroencephalography, Evoked potentials, Doppler sonography and Pedagogical qualification of trainers from medical institutions. Information on training courses held on various neuroscience topics is presented.

In 2003 he became a full-time doctoral student, assistant professor in 10.2003, senior assistant professor in 2006. From 2010 to 2013 he was chief assistant professor at the Department of Neurology of the Faculty of Medicine at Medical University-Varna. From 2013 to 2015 he worked as associate professor and Head of the Department of Nursing, Sliven affiliate, Medical University-Varna, then from 2015 to 2021 - Director of the affiliate, and from 2018 to 2021 he held the position of "Professor" at the university.

He has more than 18 years of work and teaching experience and a sufficient academic horary for the period of his work at Medical University-Varna. He conducted lecture and practical neurology training for medical and dental students in Bulgarian and English, lecture-based and practical neuroscience training for medical students in English, practical neurology training for Nursing and Midwifery students, lecture and practical training of neurology and general medicine specialists, lecture training of medical students in Neurobiology and Basics of Neuropsychology. He supervised three successful PhD students.

Dr. Dimitrov is fluent in written and spoken French and English and intermediate in Russian, and has adequate computer skills. He has participated in several projects. He received a scholarship from the French Government for a three-month specialization in France in 2005, as well as scholarships to attend congresses and conferences abroad.

The candidate has 39 citations in refereed and indexed publications, as well as 7 in peer-reviewed publications.

He is a member of professional and scientific organizations.

#### *Main scientific and applied contributions*

##### *Original contributions:*

1. For the first time, a monograph is presented in Bulgarian, dealing with the different systems for evaluating the clock drawing test, with a practical part, useful for various specialists

2. The KINDL<sup>R</sup> quality of life questionnaire in childhood has been translated and adapted into Bulgarian for the first time. It is approved for use in Bulgarian for research as well as in pediatric patients
3. For the first time, Chandler's method for calculating a total score for the CERAD neuropsychological battery was applied to a Bulgarian cohort

*Contributions of applied character:*

1. The handbook for training in clinical electroencephalography is a contribution to the Bulgarian educational medical literature
2. The described clinical cases of Keratoconus personality, spinal syphilitic meningitis, Parry-Romberg syndrome, psychopathological dynamics of a disaster victim, and anti-NMDAR encephalitis represent a contribution to the Bulgarian neurological literature and clinical practice
3. The risks of infection when performing manipulations by practicing nurses and students in the specialty were examined, and strategies for their reduction were proposed
4. Some problems in patients with neurological diseases (pregnancy in epilepsy, quality of life and level of awareness in multiple sclerosis) have been recognized and opportunities for healthcare professionals to be involved in solving them have been highlighted
5. The involvement of healthcare specialists with specific actions in the prevention of diabetes, obesity and reduced physical activity, and in improving the lifestyle of school-aged children is motivated
6. Emphasis is placed on the growing problem of sexual health in adolescence, highlighting the need for timely education with the participation of healthcare professionals
7. Guidelines are proposed to overcome some shortcomings of the communication with the patient, leading to insufficient information regarding the treatment process and to dissatisfaction with in-hospital care.

The contributions of Dr. Dimitrov's scientific works are indisputable, sufficient and have an original character. They satisfy the requirements for occupying the academic position of "professor".

*Scientometric indices*

Dr. Dimitrov submitted a detailed report on scientometric indices for participation in this competition. He has met the relevant requirements specified in the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for its application, and the criteria of the University. Looking at the attached table comparing the minimum requirements of the University to the candidate's achievements, it can be concluded that in some aspects the requirements are significantly exceeded. With a minimum of 670 points in total, the candidate has 1673.29.

*Table 1. Scientometric points: minimum requirements of Prof. Dr. Asen Zlatarov University and candidate's achievements*

<b>Group</b>	<b>Contents</b>	<b>Minimal requirements</b>	<b>Candidate (Dr. Dimitrov)</b>
A	Indicator 1	50	50
B	Indicator 2	100	100
C	Indicators 3 и 4	250	656.49
D	Sum of indicators 5 to 9	150	615
E	Sum of indicators 10 and 12	120 (F14=60 p.)	251.8 (F14=80 p.)
<b>Total</b>		670	1673.29

*Diagnostic and therapeutic activity*

From 2003, shortly after his graduation, until 2021, Dr. Dimitrov worked at the First Clinic of Nervous Diseases, UMHAT St. Marina - Varna as a neurologist. As an established specialist with many years of experience, from the beginning of 2022 he was appointed Head of the Nervous Diseases Ward at MHAT Heart and Brain - Burgas.

*Conclusion*

The presented scientific production, contributions, qualifications, educational and clinical activities, which fully meet the accepted criteria, allow me to propose to the respected members of the Scientific Jury to vote positive for Dr. Ivan Nikolov Dimitrov, MD, PhD, DSc, to occupy the academic position of Professor in the field of 7. Healthcare and sports, professional direction 7.1. Medicine, specialty "Nervous diseases", for the needs of the Faculty of Medicine at Prof. Dr. Asen Zlatarov University, Burgas.

**Sofia, 10.11.2022**

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/Acad. Prof. Dr. L. Traykov, MD, PhD, DSc/