

PEER REVIEW

by **Assoc. Prof. Galen Dimitrov Shivarov, MD, PhD**

internal member of the Scientific jury in the field of higher education: 7
Public Health and Sports, professional direction: 7.1 Medicine, scientific
speciality: 03.01.35. Otorhinolaryngology and doctoral programme of

‘Otorhinolaryngology’
of the dissertation work entitled:

‘Impacts of COVID-19 on Otorhinolaryngology’

of **Kameliya Milcheva Korucheva, MD**

Department of Neurosurgery and ENT Diseases, Faculty of Medicine, Medical
University ‘Professor Paraskev Stoyanov’ of Varna

for awarding the educational and scientific degree of **‘Doctor of Philosophy’**

Scientific adviser:

Prof. Nikolay Rumenov Sapundzhiev, MD, PhD

1. Public defense procedure

The present dissertation work has been approved for public defence according to Order No R-109-126/March 11, 2026, of the the Rector of the Medical University ‘Prof. Paraskev Stoyanov’ of Varna based on a report with incoming No 103-1852/March 19, 2026 by Prof. Yoto Trifonov Yotov, MD, PhD, Dean of the Faculty of Medicine at the Medical University ‘Prof. Paraskev Stoyanov’ of Varna on the grounds of art. 24, paragraph 6 and art. 30, paragraph 3 of SBLDASRB, art. 68, paragraph 1 of the Statute-book for the development of the academic staff in the Medical University ‘Prof. Paraskev Stoyanov’ of Varna.

2. Presentation of the PhD student

Kameliya Milcheva Korucheva was born on October 6, 1971 in the city of Varna. She finished her secondary education in Frederic Joliot-Curie 4th Secondary School for Foreign Languages in Varna in 1989 and her higher medical education in the Medical University 'Prof. Paraskev Stoyanov' of Varna in 1995. She started her professional path as a physician at the Centre for Specialized Medical Aid in the town of Aksakovo in 1996 where she worked until 2000. During the period from 2000 to 2005, she worked as an expert at the Regional Health Insurance Fund of Varna, during the period between 2005 and 2009 - as a physician at St. Marina University Hospital of Varna, during the period between 2009 and 2019 - as a physician-otorhinolaryngologist at St. Marina University Hospital of Varna, while since 2019 until present - as a physician-assistant at St. Marina University Hospital of Varna. In 2009, she acquired the speciality of otorhinolaryngology in the Medical University 'Prof. Paraskev Stoyanov' of Varna. During the period between 2009 and 2019. she was part-time assistant, while since 2019 until present she is assistant in the Clinic of Neurosurgery and ENT Diseases at the Medical University 'Professor Paraskev Stoyanov' of Varna. She is a participant in the project entitled 'Impact of COVID-19 on Otorhinolaryngology' of the Medical University 'Professor Paraskev Stoyanov' of Varna. She is member of the Bulgarian Union of Physicians and of the Bulgarian National Association of Otorhinolaryngology, Head and Neck Surgery. She has a very good command of English and Russian languages. She possesses certificates of otoneurology, audiology, microlaryngeal surgery, functional endonasal sinus surgery with cadavers, and introduction into otosurgery.

Kameliya Milcheva Korucheva's ORCID ID is 0000-0003-3628-7018, while her registered profile is Kamelia Milcheva-Google Scholar.

3. Technical data of the dissertation work

The dissertation work is written on 204 standard pages with adherence to layout requirements. It is illustrated with 84 tables and 65 figures. The cited literature includes a total of 320 titles, 316 in Latin and four in Cyrillic. During the last five years, only 34,06% of the cited sources have been published. Incomplete bibliographic descriptions are present in 11 publications.

The dissertation follows a chronological consistency and it is structured into nine single chapters: introduction - two pages, literature review - 32 pages, aim and tasks - two pages, materials and methods - six pages, results - 86 pages, discussion - 33 pages, conclusions - one page, contributions - one page, and references - 27 pages. There is one appendix, too - seven pages. The list of the publications associated with the dissertation work is included in its author's summary only. The study was approved by the Research Ethics Committee at the Medical University 'Prof. Paraskev Stoyanov' of Varna under decision No 118/June 23, 2022.

4. Actuality of the theme

The challenges of the coronavirus disease pandemic (COVID-19) which started at the end of 2019 were manifested by its considerable influence on public health and health systems and they resulted in substantial alterations of the organization of the medical activities within the prehospital and the specialized hospital aid during the last years worldwide and in Bulgaria.

The clinics of otorhinolaryngology represent these highly specialized structures which belong to a particularly risky zone in terms of the virus exposure and of the restructuring of their activity. The otorhinolaryngologists are exposed to a much higher risk of SARS-CoV-2 infection due to the close contact with patients' upper respiratory tract and the high viral load present in them.

The absence of detailed published data from Bulgaria necessitates the performance of specific investigations for the documentation of the deviations within the clinical otorhinolaryngological practice during the pandemic period and for the analysis of the long-term consequences and specialists' adaptation in the post-COVID-19 pandemic era.

In resonance with this topical problem, Kameliya Milcheva Korucheva's dissertation work represents a profound investigation of the organizational consequences for the otorhinolaryngology as a whole and in its Bulgarian context illustrated by means of a multi aspect inquiry study.

5. Literature review of the dissertation work

The literature review includes six subchapters in which a brief analysis of a series of essential aspects of 11 pandemics since the antiquity until the onset of the 21st century (four of pest, six of various influenza viruses, and two of coronaviruses), of the organizational consequences for the otorhinolaryngological practice during the pandemics, of COVID-19, of the impact of COVID-19 pandemic, of the Bulgarian context, and of the rhino-orbital-cerebral mucormycosis in the context of this pandemic.

6. Essence of the dissertation work

PhD student Kameliya Milcheva Korucheva's investigation has a clear purpose: 'To investigate and analyze the impact of the COVID-19 pandemic on the activity of a specialized otorhinolaryngology clinic by comparing the hospital activity prior to and during the COVID-19 pandemic (2018-2021)'. The experience, attitudes, and opinion of the physicians working in the field of otorhinolaryngology in terms of the changes in the clinical activity due to the

pandemic are comprehensively studied in an inquiry investigation. Five concrete tasks are formulated and fulfilled.

A retrospective, monocentre, and descriptive analysis of the effect of COVID-19 pandemic on a series of basic aspects of the hospital activity in the Clinic of Neurosurgery and ENT Diseases within the structure of St. Marina University Hospital of Varna during the period between January 1st, 2018 and December 31st, 2021 was carried out. It dealt with a total of 992 hospitalized patients. Besides a national inquiry anonymous investigation with 38 questions distributed in five groups among 120 specialists of otorhinolaryngology in Bulgaria was performed. A constellation of appropriate contemporary methods for statistical analysis of the numerous results obtained was made use of.

7. Evaluation of the results and conclusions of the dissertation work

The results presented in the dissertation work were systematized in three subchapters.

The first subchapter is devoted to the analysis of the activity of the Clinic of ENT Diseases during this four-year period. In a comparative plan, patients' distributions according to sex, age and diagnosis of the diseases as well as the monthly and annual dynamics of the elective and urgent hospitalizations and the tracheostomies performed are followed-up. The emergency cases with malignant diseases considerably increase as these patients are more commonly admitted to the hospital at a later and complicated stage. The results from χ^2 analysis demonstrate that COVID-19 pandemic exerts a significant influence on the structure of the diseases having led to hospitalization. It deals with reorientation towards more severe, acute and oncological cases on the account of elective and urgent interventions. These changes should be born in mind when planning the

resources and evaluating the consequences from the restrictive measures for the medical aid.

In the second subchapter, the main results from the inquiry investigation carried out are systematized. The risk for coronavirus infection between different medical and dental specialities is compared. The prevailing part of the otorhinolaryngologists inquired define this risk as high. A statistically significant association between the perceived risk of COVID-19 infection and otorhinolaryngologists' professional experience is established ($\chi^2=14,25$; $p=0,0026$).

The evaluation of otorhinolaryngologists' awareness in Bulgaria in terms of COVID-19 pandemic indicates a predominant positive attitude. Most respondents define themselves as sufficiently aware about the development of this pandemic and the professional challenges related to it. Scientific literature and websites of the official institutions represent the information sources most commonly used during the COVID-19 pandemic. The majority of the respondents share the substantial change that occurred in the organization of their working process because of the COVID-19 pandemic and the various organizational and clinical strategies undertaken aiming at reducing the risk of COVID-19 infection during work. The role of the introduction and usage of the new protective equipment during the COVID-19 pandemic for the organization and safety of the clinical otorhinolaryngological practice is emphasized. A statistically significant association between the financial impact of COVID-19 pandemic not only on otorhinolaryngologists' incomes and labour experience ($\chi^2=44,0$; $p<0,001$), but also in terms of the different working environment (in the hospital and outpatient aid) ($\chi^2=11,7$; $p=0,0086$) is established.

The majority of the respondents worked in COVID-19 wards, only six of them - in outpatient COVID-19 structures, while one respondent - in a

vaccination centre. The predominant part of the respondents experienced substantial psycho emotional burden. Most commonly, it dealt with a high or even with a very high level of stress. A statistically significant relationship not only between otorhinolaryngologists' level of stress and duration of the length of service during the COVID-19 pandemic ($\chi^2=22,9$; $p=0,029$), but also between this level and their working place ($\chi^2=12,4$; $p=0,015$) is observed.

In the third subchapter, three cases of rhino-orbito-cerebral mucormycosis diagnosed and treated in the Clinic of ENT Diseases for the first time during the period between January 2021 and May 2022 are described. They are with medical history of experienced COVID-19 and accompanying type 2 diabetes mellitus. A successful surgical treatment is performed.

Based on her own results and on the systematized data from the publications in the world scientific literature available, Kameliya Milcheva Korucheva, MD, formulates six scientifically well-grounded conclusions from the present investigation as convincing proof of its significance.

The dissertation work finishes with six well-formulated scientific contributions. In my modest opinion, four of them are of original scientific and applied nature.

8. Scientific and publication activity

Three collective articles are published on the theme of the present dissertation. Two of them are in the prestige foreign journal *Cureus* and one in the Bulgarian journal *Medinfo*. Kameliya Milcheva Korucheva, MD, has also three participations with scientific communications, one in two national congresses of otorhinolaryngology in Bulgaria each and one in one scientific forum in Ireland.

9. Conclusion

In conclusion, I would like to express in front of the honoured members of the Scientific jury my positive evaluation of the qualities and merits of the dissertation for awarding the PhD student Kameliya Milcheva Korucheva, MD, the educational and scientific degree of 'Doctor of Philosophy' in the doctoral programme of 'Otorhinolaryngology' at the Department of Neurosurgery and ENT Diseases, Teaching Sector of ENT Diseases of the Faculty of Medicine of the Medical University 'Professor Paraskev Stoyanov' of Varna.

April 9, 2026

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