To a scientific jury, determined by order No. R-109-279/ 24.06.2025 of the Rector of the Medical University "Prof. Dr. Paraskev Stoyanov" – Varna

REVIEW

by

Prof. Dr. Snezhana Veselinova Murgova-Balcheva, MD

of the dissertation work of

Dr. Slavyana Dimitrova Malcheva-Marinova

on the topic "Ophthalmological perspectives of children's eye health",

presented for the award of the educational and scientific degree "Doctor"

in the professional field: Medicine

Scientific specialty: Ophthalmology

Scientific supervisor: Assoc. Prof. Dr. Yana Manolova Manolova, MD.

Brief biographical data:

Dr. Slavyana Dimitrova Malcheva-Marinova was born in 1986 in the city of Shumen. She completed her higher medical education at the Medical University "Prof. Dr. Paraskev Stoyanov" - Varna. She specialized in "Eye Diseases" at the same university and successfully acquired a qualification in this field. Since 2020, she has been a full-time doctoral student at the "Department of Eye Diseases and Vision Sciences" - Medical University of Varna. Her professional career has passed through various structures - both in Bulgaria and in Germany, including work at the University Hospital "St. Marina" - Varna, DCC 1 - Shumen and a German practice in the city of Bottrop. She currently practices as an ophthalmologist at the "MCOB Dr. Marinovi" – Shumen. She is the author of scientific publications on topics related to myopia, the influence of screens on children's vision and UV-profiling in ophthalmology. Dr. Slavyana Dimitrova Malcheva-Marinova has successfully completed a series of specialized training courses in the field of ophthalmology. These include a course in ultrasound diagnostics, training in intravitreal administration of medications, a course in modern methods for examining the retina through fluorescein angiography (FAG) and optical coherence tomography (OCT), as well as a course in laser treatment of eye diseases. He is a member of the Bulgarian Society of Ophthalmology and participates in national and international conferences. He has a deep interest in the prevention and preservation of eye health in childhood.

Relevance of the problem:

The topic is extremely relevant in view of the alarming increase in vision problems in children worldwide. They are mainly a result of the modern lifestyle – long stay in front of screens, reduced physical activity. The COVID 19 pandemic also left a significant mark. It led to accelerated development and progression of myopia and accommodative disorders. In addition to all this, the lack of national statistical data on the state of children's eye health in the country makes the topic timely and socially significant.

Structure of the dissertation:

The dissertation is structured according to the established requirements and is written on 148 pages, including 39 figures and 23 tables. The dissertation contains the following sections: Table of Contents – 3 pages, Summary – 3 pages, Abstract – 3 pages, List of abbreviations used – 1 page, List of figures – 2 pages, List of tables – 2 pages, Introduction – 2 pages, Literature review – 54 pages, Aims and objectives of the study – 1 page, Methods – 2 pages, Results – 44 pages, Discussion – 18 pages, Conclusions – 1 page, Contributions – 1 page, Publications – 1 page and Bibliography – 8 pages. 255 literary sources are cited, of which 14 are in Cyrillic and 241 – in Latin. The text is structured logically and clearly.

The literature review presents eye diseases in childhood - inflammatory, refractive, amblyopia, strabismus, injuries, retinopathy of prematurity, congenital pathologies and rare diseases. Therapeutic methods for myopia are separately examined. Emphasis is placed on the influence of digital devices and the COVID-19 pandemic on children's vision. A separate section is dedicated to the impact of digital devices on children's eye health - a factor recognized as a serious risk in the modern environment. Global epidemiological data are also presented with examples from Asia, Africa, Australia, North America (USA), Europe and Bulgaria, emphasizing the need for national programs for the prevention of children's eye health. As a drawback, I note the lack of my own photographic material and a conclusion from the review, which would determine the purpose of the dissertation.

Goals and objectives:

The aim of the study is to create an epidemiological profile of childhood eye morbidity in the city of Shumen, to analyze the influencing factors and, based on the results, to propose effective measures to protect and improve children's eye health.

To achieve the goal, the doctoral candidate has set himself five clearly formulated tasks, including collecting data from ophthalmological examinations, analyzing the frequency and structure of childhood eye morbidity, monitoring the impact of the pandemic on children's eye health and preparing recommendations for screening and prevention.

Research methods:

A retrospective analysis of primary outpatient ophthalmological examinations of children (0–17 years) in the city of Shumen was performed for the period 2019–2022. The data were collected from the medical records of three healthcare facilities and included basic demographic characteristics and a leading diagnosis according to ICD-10. The study analyzed only primary eye examinations, with secondary visits excluded, in order to prevent double counting of the same diagnosis in a given patient. The diagnoses were grouped thematically to facilitate the analysis. The information was processed in Excel and subjected to statistical analysis. The study is methodologically clearly structured.

The results of the study present a clear and structured epidemiological picture of childhood eye morbidity in the city of Shumen for the period 2019–2022. 2,579 children aged 0 to 17 were analyzed. The most common pathology is refractive anomalies, especially among adolescent girls, which is in line with global trends. The frequency of accommodative disorders and asthenopia in school-age children is also high - a problem directly related to increased screen time. Inflammatory conditions, such as infectious conjunctivitis and blepharitis, are also common, especially in younger children. The data reveal gender and age differences in the prevalence of individual diagnoses, which reinforces the need for targeted prevention.

Of particular interest is the reported increase in myopia and visual fatigue during the COVID-19 pandemic, in parallel with a decrease in infectious conjunctivitis - a result that supports the influence of social and behavioral factors on vision. An interesting fact is the reported decreasing incidence of strabismus during the study period. Rare diseases, such as amblyopia, congenital and tumor pathologies also find their place in the analysis. The study offers a reliable basis for future policies in the field of children's eye health and emphasizes the need for national screening and prevention programs.

The "**Discussion**" chapter presents an in-depth interpretation of the results, emphasizing the limitations arising from the specific profile of the study group and emphasizing the importance of systematic eye screening in childhood. The doctoral student makes a comparison between her own data and those with national and international literature sources, which gives scientific validity to the analysis.

The dissertation formulates six main **conclusions** that are clearly justified and related to the results of the study.

I accept the **contributions** made in the dissertation, the most important of which are those of a scientific and applied nature:

1. A statistical analysis of the distribution of ophthalmic diseases in childhood for the period 2019-2022 on the territory of the city of Shumen was conducted.

2. The dynamics of childhood eye morbidity were monitored in the period before, during and after the COVID-19 pandemic.

3. Recommendations were formulated for improving eye screening programs in childhood.

Dr. Marinova has presented two publications related to the topic of the dissertation. The abstract is written on 72 pages, presents the dissertation and meets the requirements adopted in our country.

Conclusion:

The dissertation work of Dr. Slavyana Marinova represents a comprehensive and in-depth scientific study, covering all the requirements for awarding the educational and scientific degree "doctor". It is the personal work of the doctoral student. There is no violation of the procedure and all the requirements of the regulatory framework have been met.

All this gives me reason to recommend to the esteemed members of the Scientific Jury to deservedly award the educational and scientific degree "Doctor" in the professional field of "Medicine" to Dr. Slavyana Marinova, for which I vote with a convinced "Yes".

Date: 11.08.2025

Reviewer