

DISSERTATION REVIEW

from **Prof. Petja Vassileva**, MD, PhD, DSc, FEBO, MPH (Johns Hopkins)
Member of Bulgarian Academy of Sciences, Vice-chair - Medical Sciences
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of a dissertation for obtaining an educational and scientific degree "**Doctor of Philosophy**"

Professional direction: 7.1 "Medicine", MU Varna, Bulgaria

Author: Dr. Ivelina Jordanova Pitakova

Department: „Ophthalmology and Visual Sciences“, MU Varna

Title: "Visual rehabilitation for low-vision people with socially significant eye diseases"

Supervisor: Prof. Zornitsa Zlatarova, MD, PhD, DSc

1. Summary of dissertation procedure and doctoral student

The presented set of documents is in accordance with the Regulations for the acquisition of educational and scientific degree "Doctor of Philosophy", MU Varna.

2. Brief biographical data of the doctoral student

Dr. Ivelina Jordanova Pitakova received her secondary education at "St. Kliment Ohridski" high school, Silistra, with top scores. She obtained her higher education at Medical University Varna with an excellent diploma (1995-2001). Dr. Pitakova gained pharmaceutical experience between 2001 and 2003 when she worked as a medical representative. She completed her residence in Ophthalmology in 2007 at SBALOB Varna, MU Varna. In the meantime, she studied homeopathy in MU Varna (period 2002-2004).

Dr. Pitakova's obtains experience in the problems of visual rehabilitation during her work at "Nova Optics", Varna. She received a major in "Public Health" in 2018 with master's degree in "Health Management". She works as an ophthalmologist at "Saint Nikolay Chudotvoretz" Eye Clinic from 2007. In 2020 she is employed as a specialist ophthalmologist at the "Black Sea" Medical Centre - marine medicine.

Dr. Pitakova has broad interests and capabilities in the main areas of ophthalmology. She completed courses on diagnostics (OCT, contact correction, AMT), as well as children's vision, retinopathy of prematurity, myopia, etc. In 2016 she trains aesthetic dermatology, and later (2018) she gained teaching qualification. During this period, she defended her diploma thesis at the Faculty of Public Health on the topic "Integrated approach for the visually impaired with an emphasis on low vision specialists". Dr. Pitakova participates in conferences, scientific projects and educational campaigns.

3. Relevance of the topic and expediency of the goals and tasks

The dissertation work representing a scientific research and analysis of modern possibilities for visual rehabilitation of the visually impaired is highly relevant. The patients studied in the dissertation suffer from socially significant eye diseases with high prevalence and the results point to ways of effective methods for improving the quality of life.

Eye diseases typical for aging population have the highest prevalence in Bulgaria. Existing difficulties in the health care network lead to late diagnosis in AMD, glaucoma, diabetic retinopathy. There is a growing need for eye care and rehabilitation, due to the changed age structure of the society and latest advances in medicine that allow us to treat eye conditions considered "incurable" a few years ago. "A loss of time is a loss of sight!"

Vision problems among the younger generations are also on the rise due to high professional demands and screen time abuse. I congratulate Prof. Zlatarova, research supervisor, for the timely idea to direct the attention of the doctoral student to the opportunities for quality of life improvement of the visually impaired. Our country needs research, development and application of a behavior algorithm and other innovative systems, including the creation of specialized ophthalmology centers for integrated care for the visually impaired.

4. Understanding of the problem

The literature review is presented in 48 pages, contains 166 titles and represents an ambitious attempt to summarize the history of knowledge on blindness, epidemiology, terminology, classification. It includes sources from international literature on the prevalence of blindness, including sources from recent years (Lancet, WHO, Public Health, etc.). Data on AMD, glaucoma, diabetic retinopathy are also briefly presented. The second part of the review is dedicated to the methods and means of visual rehabilitation and visual assistance. Dr. Pitakova also presents detailed data from a study of rehabilitation of children from School for blind.

The focus on visually impaired children is justified: if we consider the significance of the problem as "years spent in blindness", childhood blindness is of major importance. Both previously denied and quite innovative techniques for visual rehabilitation (including hardware and software) are described. The review concludes with important data on legal provisions: medical standard (including vision rehabilitation), legislation on the examination of work

capacity. Annually confirming lists of vision aids, social integration, including critical analysis of recent decrees (No. 144, July 29, 2022). The author summarizes the need for legal regulation of prevention, rehabilitation and adaptation activities for the visually impaired. The creation of specialized centers for the prevention of vision loss, low vision and vision rehabilitation is presented as a suitable model based on MU-Tübingen.

5. Methods

The methods that the author used are suitable for the volume of the research. Difficulty presents obtaining statistical significance of some conclusions due to insufficient number of patients and lack of randomization.

6. Characterization and evaluation of the dissertation work

The results present useful information for future work on the problem. It is difficult to discuss definite results according to diagnoses. I fully accept the proposed methods of visual rehabilitation, evaluated and accepted by the patients. The discussion contains valuable analysis, ideas and suggestions.

Important contribution is demonstration of a statistically significant difference in reading speed "without" and "with magnification". The same significance in reading speed "without" and "with magnification" was maintained at the 3rd month examination. Establishment of the three months period for the examination is an important practical contribution, and can be included in a new regulatory framework.

Significant information is provided from results of consecutive studies of children from blind school: 23 children examined in 2009, and 16 in 2018. In the period between the first and the second visit, the students were systematically trained by a visual therapist with good results. Visual rehabilitation was provided by auxiliary magnification devices.

7. Contributions and significance for science and practice

The main results beneficial for scientific application are obtaining and proving new data about patient awareness levels, as well as apprehension of medical specialists about blindness and low vision. These results point to the need of creating a new action plan with the expectation of great efficiency when implemented in practice.

Significant contribution presents the analysis of the existing difficulties and barriers in the field of visual rehabilitation. The necessity of creation of functional offices with modern equipment for visual rehabilitation is scientifically based. The causes for lack of motivation in this field from ophthalmologist is explained by necessity of slow and prolonged work with visually impaired patients. This dissertation work opens up a neglected and very promising topic for future research in ophthalmology.

8. Assessment of dissertation publications

The results of the dissertation are reflected in publications No. 1, 3, 4 and 5.

Ranking by type: articles - 4 pcs., reports - 2 pcs., popular publications - 2 pcs.

Importance rank: articles with an impact factor - 1, reports in proceedings of national scientific conferences - 4.

Published in English – 1, citation in Bulgarian journal – 1.

9. Personal participation of the doctoral student, originality and authenticity of the dissertation work

The nature and volume of the scientific research conducted point to an active personal interest and dedication to the problem.

10. Abstract of the dissertation

The abstract presents the main scientific and practical achievements and prospects for future research and application of the ideas and practices presented in the dissertation.

11. Remarks and recommendations

I consider as omissions the absence of some of the main research in blindness, including the monographs of Academician Pashev and Professor Vassilev. The ratio between the number of patients with AMD and glaucoma does not correspond to their real importance in terms of the need for visual rehabilitation. It would be appropriate to mention the fundamental difference between the nature of the visual impairment: in AMD - loss of central vision, and in glaucoma - preservation of a central visual field until the late stages of the disease and early loss of peripheral vision. We note the presence of certain difficulties due to the restrictive measures during the Covid epidemic.

12. Recommendations for future use of dissertation contributions and results

Any visual impairment leads to difficulties in daily household and professional activities - reading, driving, sports, care giving, as well as the risk of trauma and fractures in the event of a fall. Blindness is the most severe disability. It is a personal tragedy and social burden. The level of medical and surgical activity in our country fully meets the highest standards according to global requirements. On the other hand, it is necessary to take into account the fact that preventive and rehabilitation activities in our country are seriously neglected.

I would recommend to Dr. Pitakova to continue to actively work on the problems presented in the dissertation for the development of the first specialized center, dedicated to the problems of

blindness, prevention and rehabilitation of the visually impaired in our country. Preventive and rehabilitative strategies should be a common goal.

13. Conclusion

Based on the scientific and practical significance of the results of Dr. Pitakova's research, I give a **positive** assessment of her dissertation.

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