

OPINION

By

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Member of the Scientific Jury according to Order No. R-109-365/21.09.2022 of the Rector of
the Medical University "Prof. Dr. Paraskev Stoyanov" – Varna

About the dissertation and abstract

Of Dr. Ivelina Yordanova Pitakova

On the topic "Visual rehabilitation for the visually impaired with socially significant eye diseases"

For the awarding of the educational and scientific degree "DOCTOR" in the scientific specialty
"Ophthalmology", code 03.01.36

With scientific supervisor prof. Zornitsa Zlatarova, MD, PhD

Biographical data

Dr. Ivelina Pitakova was born in Silistra. She finished her secondary education in 1995 with an excellent diploma from the Science and Mathematics High School in his hometown, studying English and biology. During the period 1995-2001, she was a medical student at the Medical University "Prof. Dr. Paraskev Stoyanov" - Varna. She graduated with honors and began a specialization. In 2007 acquires a specialty in "Eye Diseases". Dr. Pitakova continuously improves her qualifications by annually attending courses and conferences, for which she has provided a detailed list. She won a SOE grant twice, respectively for Ljubljana and Munich, participated in the Wet Lab "Dexamethasone intravitreal Implant" EURETINA London and the 6th EGS European Residents Glaucoma Course – Geneva, Switzerland. She has held a course for teaching eligibility at Medical University - Varna and a course "Innovative means for correction of the visually impaired" - 22 - 23.02.2020 in the town of Velingrad.

Dr. Pitakova is the author of a collection of test tasks on eye diseases "Test Problems in Ophthalmology" - Varna, 2019. She speaks English, Russian and Italian, has very good computer literacy.

General characteristics of the candidate's research

The structure of the dissertation defense is in accordance with modern and institutional requirements and standards. The dissertation is written on 152 standard pages and illustrated with 42 tables and 51 figures. The paper includes the following sections: content - 1 page, introduction - 1 page, abbreviations used - 1 page, literature review - 43 pages, purpose, tasks and hypotheses - 1 page, materials and methods - 9 pages, results – 35 pages, discussion – 20 pages, summary and suggestions – 3 pages, conclusions – 2 pages, contributions – 1 page, publications and participation in scientific forums – 1 page, useful links – 1 page, appendices – 15 pages, bibliography – 10 pages, summary – 2 pages, abstract – 2 pages.

Actuality and significance of the topic of the dissertation

The dissertation is a prospective scientific study, performing a complex analysis of the possibilities for socialization and rehabilitation of the visually impaired. The analysis includes eye

diseases leading to impaired vision, the public-social aspect of impaired vision, and modern means of correction. The unsatisfactory awareness of society and the limited knowledge of ophthalmologists on the problems of blindness and the visually impaired are an obstacle for which the author is looking for solutions. There are significant barriers and difficulties in accessing visual rehabilitation of an organizational and personnel nature, such as limited resources, lack of trained specialists, lack of an integrated approach and a formed multidisciplinary team. The author is convinced that overcoming them will provide comprehensive care for the visually impaired.

The literature review is competently and thoroughly written. Covers 45 pages and shows an analytical approach. A systematic study of literary sources was carried out. It is divided into 13 subsections. Emphasis is on socially significant diseases: age-related macular degeneration, diabetic retinopathy and glaucoma in adults and specific diseases in children. Particular attention is paid to rehabilitation and the legal basis for it in the Republic of Bulgaria.

Purpose and tasks of the dissertation work. The aim is formulated according to the requirements: "To study and analyze the modern possibilities for visual rehabilitation of the visually impaired and to develop a behavior algorithm and a model for integrated care for these patients."

To achieve this ambitious goal have been set six tasks, as follows:

1. To make a literature review on the topic of blindness, low vision and the possibilities of visual assistance, as well as to study innovative technologies for compensating and improving visual deficits.
2. To study the awareness of the population, as well as the opinion of medical specialists on the issues of blindness and low vision.
3. To study the adaptation of visually impaired patients with socially significant eye diseases - age-related macular degeneration (ARMG), diabetic retinopathy (DR) and glaucoma to their prescribed vision aids and satisfaction with their use.
4. To analyze the means of visual assistance and the results of their use in children/students with impaired vision.
5. To develop an algorithm for the selection and prescription of the optimal visual aid by ophthalmologists specializing in working with the visually impaired.
6. To create a model of an integrated approach to patients with impaired vision and different degrees of blindness.

Materials and methods

In this section, the author describes in detail the entire methodology and progress of the study of patients with impaired vision. The study was conducted in the Eye medical center "St. Nikolay Chudotvoretz"—Varna for the period 04.2019-04.2022. Eighty visually impaired patients/160 eyes were clinically examined, 23 children with impaired vision were analyzed retrospectively, data from a total of 195 (150+45 medical personnel) respondents on the problems of impaired vision and blindness were processed. Clear definitions of the methods are given, a detailed algorithm for their implementation and repeatability is ensured. The surveys are provided, but detailed information on their validation is missing.

Results

The results in the dissertation work follow the set tasks.

Task 1 is detailed executed in the literature review commented on in the text above.

Task 2 was completed through the survey and gives an indicative picture of the lack of knowledge on the subject of the visually impaired and visual rehabilitation. The results strongly confirm the working hypothesis.

Task 3 summarizes the author's findings and analyzes regarding adaptation by diagnosis group: For ARMG, it is found that this is the largest (61.25%) group in the study, with the most decisions (35%) of Territorial expert medical commissions (TEMC). In these patients, therapy with anti-VEGF drugs was most often administered. These patients preferred a loupe for correction, and 9 of 16 visually impaired, having previous experience with magnifying device, were again of this group.

For the group with glaucoma, the author self-critically finds that the number (9 visually impaired) is small. The patients were female, and almost all of them, 77.8% (7 out of 9), had TEMC. They show the lowest read speed with the least improvement when correction is attempted. Only in this group there is a patient using a device for distance correction - telescopic glasses. For near, glaucoma patients have no preference and use both a magnifying glass and an electronic magnifier.

For the group with DR, women again predominate (66.7%) and the same percentage have TEMC certified. Only one patient underwent anti-VEGF therapy. Improves the reading speed of 11.16 d/min. up to 43.83 d/min. at the first examination and 15.33 d/min, respectively, and 47.83 d/min. Regardless of lack of previous experience, 66.7% prefer the magnifying glass as a means of rehabilitation. These are also the patients who most follow the specialists' recommendation, namely, in the highest percentage, 83.3%, purchase the recommended optical correction.

For the group with heterogeneous pathology "other", which includes 20% of all patients, is the youngest age. Again, the female gender dominates there. The group has 75% patients with TEMC, their reading speed at both visits corresponds to the average established values. What is interesting here is that due to the different included diagnoses and the recommended means of visual rehabilitation, the results are heterogeneous - magnifying glass in 25%, electric magnifier in 43.8%, max detail in 12.5% and talking glasses in 18.8%. In 31.25% of the groups, they had previous experience that is why 50% (the highest percentage of all groups) did not buy the device recommended to them. They do not have either good functional results in near or far activities. They also have the worst indicators of motivation and adaptation.

The summary of the results of **task 4** shows that the most preferred optical device of correction for visually impaired students is the magnifying glass, and the most frequently prescribed magnification of the magnifiers used is 5x. The high motivation to deal with the magnifying device in 81.25% of the students coincides with their good adaptation and developed skills (also in 81.25%). At 50%, however, additional training with the aid is still required, which the author considers a problem for the health system as well.

The results obtained in the implementation of **tasks 5 and 6** show that there are difficulties and limitations in the implementation of visual rehabilitation of a different nature. The author points out the main reasons:

1. Lack of definition of a functional consulting room, equipped with tests and devices for visual aids. The author pays special attention to the price of such an investment.
2. Lack of sub specialization in the field of vision rehabilitation.
3. Lack of motivation for this activity on the part of ophthalmologists and staff responsible for eye health.
4. The consultation/examination consumes time and resources, and disrupts the normal work schedule in the daily busy activity of eye offices.
5. Difficult psycho-emotional working environment with many disabled patients and their relatives

Based on her researched data and vision rehabilitation models, the author proposes that the integrated model of work should consist of the following specialists: ophthalmologist, optometrist, optician, typhlopedagogue, social worker and psychologist. This is perhaps one of the most important contributions of the overall work on the dissertation, which has a practical and applied significance.

In the summary and commentary on the results, the author provides information from the published literature on world and European trends with an emphasis on national characteristics.

Based on this thorough analysis of the collected results, the author offers **7 conclusions**:

1. In Bulgaria, a comprehensive analysis of the overall information regarding the long-term follow-up of the visually impaired and the possibilities of access to the high-tech achievements of optics and medicine for visual rehabilitation has not been carried out. There are also no studies on the degree of improvement and optimal use of functional vision when adapting to different types of aids. There is limited information regarding the possibilities for social assistance and integration of the visually impaired.
2. The level of awareness of patients, as well as medical professionals, about blindness and the visually impaired is unsatisfactory. A large part of them do not have information about the activities of the Union of the Blind or schools for the visually impaired, they do not know the legal possibilities for prescribing optical aids, and they do not show interest in specialized training in visual rehabilitation. However, more than 90% of the participants in the survey expressed a positive attitude towards participation in national campaigns aimed at increasing awareness and integration of visually impaired patients.
3. From the study of visually impaired adult patients, it is clear that due to the fact that the distance visual acuity of most of them is very low, between 0.01 and 0.05, they do not show a desire for optical correction for distance. Magnifiers are the preferred aids of correcting near vision deficits, followed by electronic magnifiers.
4. There is a statistically significant difference in reading speed "without" and "with magnification", and in the second case it is about three times higher in all groups of patients studied. The same significance in reading speed "without" and "with magnification" was maintained at the third month review. However, no difference was found in the two groups of indicators between the first and the second examination.
5. Of all 80 patients who passed an initial examination, one third did not implement visual rehabilitation, although they were recommended an appropriate aid. The functional vision assessment of those who purchased such devices showed that patients with age-related macular degeneration had the best motivation for their use and adaptation to them, followed by those with glaucoma and DR. Group 4 patients, who have heterogeneous and more severe diagnoses, experience the greatest difficulties.
6. The study of visually impaired children found that with the help of education, magnifying aids and other advances in technology, they could make the most of their residual vision. The most preferred magnifying device for visually impaired students is the magnifying glass. Their high motivation to deal with the magnifier coincides with their good adaptation and developed skills.
7. There are significant barriers and difficulties in access to visual rehabilitation of an organizational and personnel nature - limited resources, lack of trained specialists, lack of an integrated approach and a formed multidisciplinary team. Overcoming them will significantly contribute to improving the visual assistance of the visually impaired and will provide complex care based on modern standards and competencies of all specialists participating in the integrated model: ophthalmologist, optometrist, optician, vision therapist/typhlopedagogue, social worker and psychologist.

The contributions described by the author of the dissertation follow the conclusions drawn and are correctly divided into those of a cognitive nature, of a scientific-applied nature and of a confirmatory nature.

The **most important** of them are:

An analysis of the visual rehabilitation of adult patients and children with socially significant eye diseases (cognitive nature) was carried out.

The first long-term follow-up of visually impaired patients and a profound analysis of the auxiliary magnifying devices used in children and adults for the purpose of visual rehabilitation (scientific-applied nature) were made.

Barriers and difficulties in the implementation of visual rehabilitation have been studied and defined, and a model of integrated care for patients with impaired vision (scientific-applied nature) has been built.

Weaknesses and disadvantages in integrated care for the visually impaired have been identified (confirmatory nature).

In connection with the dissertation work, Dr. Pitakova presented **4 publications**.

The abstract presents in a concise form the most essential part of the dissertation work.

I have known Dr. Pitakova since her first steps as a specialist in "Ophthalmology" and she has always impressed me with her enthusiasm and willingness to accept the challenges of the profession. This work proves precisely these professional qualities of hers.

In conclusion, the evaluation of the dissertation work presented by Dr. Ivelina Pitakova on the topic "VISUAL REHABILITATION FOR VISUALLY IMPAIRED PEOPLE WITH SOCIALLY SIGNIFICANT EYE DISEASES" is of important practical and scientific significance. The dissertation fully meets the requirements for awarding the educational and scientific degree "Doctor", specified in the Law on the Development of the Academic Staff and the rules of Medical University "Prof. Dr. Paraskev Stoyanova" – Varna. I strongly recommend the esteemed ophthalmology jury to award the ESD "Doctor" to Dr. Ivelina Pitakova.

Date:

17th March 2023

Reviewer:

Prof. Hristina Grupcheva, MD, PhD

