ABSTRACT

of the dissertation for the degree of Doctor of Philosophy (PhD) in the educational program 8D10101 - Public Health Taushanova Maiya Karibayevna «Improvement of dynamic monitoring of glaucoma patients at the Primary Healthcare level»

Relevance of the research topic:

Glaucoma is a significant medical and social issue on a global scale. By 2020, the global number of people with glaucoma was approximately 76 million, and it is projected to rise to 112 million by 2040 (Tham Y.C., 2014).

The growing trend in glaucoma incidence observed worldwide is also evident in Kazakhstan. The number of disability cases due to glaucoma has increased by 3.7 times, raising it from fifth to second place among the causes of vision-related disability. Since 2014, 37.8% of blind people in the country suffer from glaucoma, and one in five disabled individuals (21.6%) is of working age (Buribayeva Z., 2016). The rise in the prevalence of glaucoma is directly linked to the increase in the elderly population, making glaucoma a significant social and economic problem (Tashtitova L., 2022; Chan E., 2016).

For effective control of glaucoma progression, dynamic monitoring plays an important role. This involves systematic diagnostic procedures and active patient participation in the treatment process, such as through educational programs like the Glaucoma School. These programs educate patients about the basics of their condition, explain the importance of following medical recommendations, and provide psycho-emotional support (Abdullina V., 2015; Wahyuni A., 2023).

Research aim:

Forming evidence-based approaches to improving dynamic monitoring of glaucoma patients at the primary healthcare level.

Research objectives:

1.Conduct a retrospective analysis of key morbidity and disability indicators for glaucoma patients in the Aktobe region.

2. Study the organizational challenges faced by ophthalmologists at the primary healthcare level in the dynamic monitoring of glaucoma patients.

3.Develop an educational program «Glaucoma School» and assess its effectiveness in improving treatment adherence and enhancing the quality of life of glaucoma patients.

4.Develop evidence-based recommendations for improving dynamic monitoring of glaucoma patients at the primary healthcare level.

Research Methods:

In this dissertation, a combined research design was applied, which includes a cross-sectional study as well as a non-randomized experimental study.

To achieve the objectives of the dissertation, the study was divided into several stages:

Stage 1: In the first stage of the study, a retrospective analysis of key morbidity and disability indicators for glaucoma was conducted. For this purpose, statistical data from 2015-2023 from the Aktobe regional branch of the Republican State Enterprise «Salidat Kairbekova National Research Center for Health Development» Ministry of Health of the Republic of Kazakhstan, was used. To analyze disability indicators, statistical data from the Republican State Institution «Department of Control and Social Protection of Population in Aktyubinsk region», Ministry of Labor and Social Protection of the Republic of Kazakhstan for 2015-2023, Form N_{2} 7, were used.

Stage 2: To investigate the opinions of ophthalmologists regarding the organization of dynamic monitoring of glaucoma patients, an author-developed questionnaire was used (authors M. A. Kazanfarova, 2018). Permission to use the questionnaire was obtained from the author.

Inclusion Criteria:

- 1. Ophthalmologists working in primary healthcare institutions;
- 2. Availability of informed consent to participate in the study; Exclusion Criteria:
- 1. Lack of experience in working with glaucoma patients;
- 2. Ophthalmologists working with children;
- 3. Refusal to participate in the study.

Stage 3: As part of the study, the educational program «Glaucoma School» was developed for patients in collaboration with leading ophthalmologists and the regional glaucoma specialist. The program was implemented in the city's polyclinics N_{2} 1 and N_{2} 4 in Aktobe.

To assess the effectiveness of the «Glaucoma School» educational program, a non-randomized experimental study of the «before-after» type was conducted. The main goal of the study was to examine changes in treatment adherence and quality of life for glaucoma patients under dynamic monitoring. Patient participation in the study was based on voluntary informed consent and ensured complete anonymity.

Inclusion criteria for patients:

- 1. Patients over 18 years old diagnosed with glaucoma;
- 2. Availability of informed consent to participate in the «Glaucoma School» educational program;

3. Patients under dynamic monitoring at the primary healthcare level.

Exclusion criteria:

- 1. Patients under 18 years old with a glaucoma diagnosis;
- 2. Pregnant women;
- 3. Patients with cognitive function impairments;
- 4. Individuals who are blind;
- 5. Individuals who refused to participate in the study.

Patients were asked to complete questionnaires before and after attending the «Glaucoma School» sessions.

To assess treatment adherence, the MMAS-8 questionnaire (Morisky-Green scale) was used. To study quality of life, the NEI VFQ-25 questionnaire (National Eye Institute Visual Functioning Questionnaire) was used.

Stage 4: In the final stage of the research, based on the results of the dissertation work and the synthesis of the obtained data, scientifically grounded recommendations were developed to improve the dynamic monitoring system for glaucoma patients at the PHC level.

Key points to be defended:

1. A retrospective analysis of primary and overall morbidity, as well as disability rates due to glaucoma in the Aktobe region, revealed a steady upward trend. The Aktobe region ranks first in the Republic of Kazakhstan in terms of primary disability rates. Over the past five years, the primary morbidity rate has been found to be 1.68 times higher than the national average.

2. Key issues and shortcomings in the organization of dynamic monitoring of glaucoma patients at the primary healthcare level have been identified, including insufficient consultation time for ophthalmologists, inadequate material and technical equipment of workplaces, a reduction in the frequency and regularity of examinations for patients under dynamic monitoring, and the need for continuous professional development of physicians.

3.The «Glaucoma School» educational program was developed and implemented in the polyclinics of Aktobe, demonstrating proven effectiveness in improving treatment adherence and enhancing patients' quality of life.

4. Based on the obtained data and an analysis of international experience, scientifically substantiated recommendations have been proposed to improve the system of dynamic monitoring for glaucoma patients.

Research results:

1. A study conducted from 2015 to 2023 revealed a steady increase in the incidence and disability rates due to glaucoma in the Aktobe region and the city of Aktobe. The growth rate of primary incidence was 16.03% in the city of Aktobe and 23.48% in the region. The overall incidence growth rate was 11.14% and 11.17%, respectively. The growth rate of primary disability reached 43.8%, while the overall disability growth rate was 28.6%.

2. The main factors contributing to the decline in the quality of dynamic monitoring of glaucoma patients at the primary healthcare (PHC) level were identified as insufficient consultation time for ophthalmologists, inadequate material and technical equipment in workplaces, reduced frequency and regularity of patient examinations, and the need for continuous professional development of physicians.

3.The study revealed that after attending the glaucoma school, the average adherence score of patients increased from 47 (±16) to 53 (±16), and the median increased from 48 (35; 6) to 55 (4; 66), p < 0.001. These results indicate a significant improvement in treatment adherence after attending the glaucoma school, demonstrating its effectiveness. The study also showed a significant improvement in the quality of life of patients after attending the glaucoma school. Improvements were also noted in the reduction of ocular pain (from 40 to 41.9), near vision activities (from 38.1 to 50), distance vision activities (from 41.6 to 45.8), social functioning (from 33.6 to 38.9), role limitations (from 52.3 to 55.1), driving (from 24.3 to 30.4), and color vision (from 29 to 34.9). The overall quality of life score increased from 38.4 to 42.1, p < 0.001.

4. Based on the obtained data, scientifically grounded recommendations were developed to improve the system of dynamic monitoring of glaucoma patients at the PHC level. Specifically, measures were proposed to establish the Glaucoma School, enhance the qualifications of healthcare professionals, strengthen patient adherence to treatment, and promote preventive healthcare initiatives. The implementation of these measures is expected to reduce morbidity and disability rates, improve treatment adherence and quality of life, alleviate the burden on the healthcare system, and strengthen public health.

The scientific novelty:

1. A retrospective analysis of morbidity and disability indicators among glaucoma patients in the Aktobe region was conducted for the first time, revealing regional features of glaucoma prevalence and risk factors.

2. For the first time, organizational issues related to the dynamic monitoring of glaucoma patients at the primary healthcare level were systematized and analyzed.

3. The educational program «Glaucoma School» for patients at the primary healthcare level was developed for the first time, and its impact on improving treatment adherence and quality of life for patients was evaluated.

Practical and theoretical significance:

1. The development of scientifically grounded recommendations for improving dynamic monitoring of glaucoma patients at the primary healthcare level contributes to deepening theoretical knowledge about the structure and organization of this type of care.

2. Systematizing knowledge about the factors influencing treatment adherence among glaucoma patients, as well as the relationship between these factors and their quality of life, will contribute to the development of the theory of medical prevention and patient-centered healthcare approaches.

3. The methodological framework based on the development of educational programs aimed at increasing patient awareness about their condition can be used in research focused on the prevention and management of chronic non-communicable diseases.

4. Conducting a retrospective analysis of morbidity and disability among glaucoma patients in the Aktobe region provides an opportunity to develop and implement effective preventive measures and early detection strategies at the regional level.

5. The implementation of the educational program «Glaucoma School» enhances patient awareness about their condition, improves treatment adherence, reduces the risk of complications, and enhances quality of life.

6. The recommendations developed for improving dynamic monitoring can be integrated into primary healthcare practice, improving the management of glaucoma and reducing the frequency of complications associated with late diagnosis and ineffective treatment.

7. The professional development of healthcare workers involved in the dynamic monitoring of glaucoma patients, through the implementation of our scientifically grounded recommendations, can enhance the quality of medical care.

The personal contribution of the doctoral candidate:

The author's personal contribution lies in the development of the theoretical and methodological framework of the study, the formulation of the research goal and objectives, and the organization and execution of the research. The author was directly involved in all stages of the research work: in the statistical data analysis, writing the sections of the dissertation, interpreting and discussing the results, formulating the conclusions to be defended, as well as in the development of conclusions and practical recommendations.

Approbation of the dissertation results:

The main results of the dissertation research were presented at the following scientific events: International Conference «Modern Medicine: A New Approach and Current Research» (Aktobe, October 20, 2021); International Scientific and Practical Conference «Current Issues in Medicine and the IV Satellite Forum on Public Health and Healthcare Policy» (Baku, Azerbaijan, April 27–28, 2023); LXII International Scientific Conference of Young Scientists «Science: Yesterday, Today, Tomorrow» (Aktobe, 2023).

Published works based on the dissertation research:

A total of 24 scientific papers have been published on the topic of the dissertation, including:

- Articles in international journals indexed in Scopus and Web of Science Core Collection -2;

- Articles in journals recommended by Science and Higher Education Quality Assurance Committee of the Ministry of Science and Higher Education of the Republic of Kazakhstan -4;

- Abstracts at international scientific and practical conferences – 11;

- Certificates of inclusion in the State Register of Rights to Copyright Objects – 7.

The structure and volume of the dissertation:

The dissertation consists of the following sections: definitions, abbreviations and symbols, introduction, literature review, methods and materials of the study, research results and discussion, conclusion, bibliography, and appendices. The dissertation consists of 155 pages of computer-typed text. The structure includes 32 tables and 34 figures. The reference list comprises 231 sources, including 48 domestic and 183 foreign publications.