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CONTENTS

ORIGINAL ARTICLES

Experimental and morphological rationale for applying a synthetic bone graft containing Hydroxyapatite and β-tricalcium phosphate in combination with a collagen sponge with polydeoxyribonucleotide in the treatment of mandibular bone defects
Vladyslav O. Malanchuk, Oleksii I. Hryniuk, Mykhailo S. Myroshnychenko, Tetiana V. Mykhailyk, Yaroslav M. Mazuryk, Oleksiy V. Prokuda , Igor S. Brodetskiy 565

Ultrasound assessment of optic nerve sheath diameter during surgery in the Trendelenburg position
Tomasz Skladzien, Emilia Kurdziel, Mikolaj Przydacz, Malgorzata Czogala, Michal Terlecki, Jerzy Wordliczek 573

Structural features of the endocardium, arteries, prostate and adrenal glands under the conditions of iodine deficiency
Liliia V. Sobol, Ivan S. Kuibida, Oleksandra T. Harhaun, Oksana H. Popadynets 580

Effect of short duration vitamin E supplementation on some reproductive hormones in infertile women
Mohammed Abdulrazzaq Assi, Shaymaa Galeel Shamran, Karar Abdulzahra Mahdi, Ali A. Al-Fahham 587

Building a child-centred, multilayered MHPSS eco-system for conflict-affected children (Ukraine)
Viktor Vus, Oleksii Nalyvaiko, Liliya Zotova, Natalia Kostruba, Evangelos Fradelos, Ioanna V. Papathanasiou 592

Effect of winter swimming on the cardiovascular system: adaptive mechanisms and potential hazards
Paweł Jurczak, Arian Saied, Klaudia Sztaba, Paulina Zdzieborska, Katarzyna Zubik, Karolina Osowiecka, Leszek Gromadziński 600

The effect of the phytotherapeutic agent *Desolis* on the cytokine profile in the secretion of paraurethral glands in the complex treatment of women with chronic urethritis
Serhii Yu. Tsiporenko, Liliia S. Babinets, Maksym M. Doroshenko, Andrii V. Gudzenko 607

The profile of the resistance of *Staphylococcus Aureus* against selected antibiotics in Najaf
Salim Kadhim, Ghufran Lutfi Ismaeel, Ali Hamid Abdul-Hussein, Hanan N. Najaf, Zeyad Kadhim Oleiwi 614

Depression, PTSD and psychological distress among Ukrainian youth: The impact of war on mental health
Nadiya O. Fedchyshyn, Arkadii H. Shulhai, Nataliia I. Hantimurova, Halyna I. Klishch, Solomiia I. Hnatyshyn, Halyna V. Bilavych, Larysa Ya. Fedoniuk 620

The impact of judo training on the morphofunctional state and physical fitness of healthy adolescents
Grygoriy P. Griban, Svitlana M. Dmytrenko, Svitlana V. Salnykova, Oleksandra Yu. Brezdeniuk, Oksana V. Khurtenko, Viktoriia V. Holovkina, Nataliia Liakhova 629

Evaluation of fructosamine as a new biomarker in the diagnosis of diabetes mellitus
Iman Mohammad Said Jallod, Sarah Sattar Jabbar, Safa Nihad Abed Shubar, Ali A. Al-Fahham 635

The effect of melatonin on antioxidant defense indicators in the blood of rats with insulin resistance
Oleksandra Yu. Kushnir, Iryna Yaremii, Kyrylo Pantsiuk, Volodymyr Vivsyannuk, Inna Buzdugan, Olga Bukach, Georgiy Prodanchuk 641

Analysis of the men's sexual dysfunctions impact on different aspects of their quality of life
Volodymyr I. Trishch, Oryna Z. Detsyk, Dmytro B. Solomchak , Rostyslav R. Antoniv 648

Emotional burnout, anxiety, and depression in patients with chronic pain undergoing rehabilitation during the war in Ukraine: A clinical-psychological study
Lidiia V. Butska, Hanna B. Varina, Natalia M. Falko 655

Detection and prevention of gambling disorder among Ukrainian law enforcement personnel under high operational stress: Institutional experience and comparative analysis
Olena A. Kozeratska, Mykola A. Pogoretskyi, Diana B. Serhiieva, Oleksandr S. Starenkyi, Grygorii V. Denysenko 664

Hospital stay duration prediction score system for Covid-19 patients: Evaluation of proposed practical models
Artur V. Kurakh, Mykhailo M. Hechko, Khrystyna A. Hechko, Yurii Marian V. Ploskina 671

Study of ophthalmologists' opinions on the influence of current conditions in Ukraine on the organization of medical care for glaucoma patients
Volodymyr O. Melnyk, Kateryna O. Bobkovych, Maryna O, Pavlovska, Borys I. Palamar 676

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ORIGINAL ARTICLE

Study of ophthalmologists' opinions on the influence of current conditions in Ukraine on the organization of medical care for glaucoma patients

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ABSTRACT

Aim: To investigate the professional opinions of ophthalmologists who provide medical care to glaucoma patients in current conditions in Ukraine, particularly regarding the impact of Russia's full-scale invasion of Ukraine on the organization, quality, and timeliness of medical care for these patients.

Materials and Methods: The research materials were data from a voluntary anonymous questionnaire survey of 322 ophthalmologists from various regions of Ukraine who work in public and private medical institutions. Data from the Kyiv City Information and Analytical Center of Medical Statistics were also analyzed.

Results: According to the ophthalmologists, the proportion of patients with secondary glaucoma (62,9±3,5%) and open-angle glaucoma (34,4±3,5%) has increased, as well as the proportion of patients with stage III glaucoma (61,6±3,4%). Since the onset of the full-scale invasion, the number of glaucoma patients seeking ophthalmological help late (74,8±2,4%) or irregularly (83,5±2,1%) has increased. A total of 62,7±2,7% of ophthalmologists report that glaucoma patients are effectively refusing surgical treatment, mostly due to a lack of financial resources to undergo the operation (82,7±2,7%).

Conclusions: The war has had a negative impact on the ability to provide quality ophthalmologic care, particularly to patients with open-angle glaucoma. The findings may be used to identify opportunities and strategies for improving the quality of ophthalmologic care.

KEY WORDS: Ophthalmology, glaucoma, medical care, ophthalmologists, prevention

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INTRODUCTION

Glaucoma is a leading cause of irreversible blindness worldwide [1, 2]. Between 1990 and 2019, the global prevalence of glaucoma increased to 7,47 million cases, and the global disease burden measured in DALYs (disability-adjusted life years) rose to 0,75 million – an increase of 92,5% and 69,2%, respectively. It has been established that the disease burden caused by glaucoma is closely associated with socioeconomic status, age, and gender [3]. In 2022, the global incidence rate of open-angle glaucoma was 23,46 cases per 10 000 person-years among individuals aged 40 to 79. Specifically, the incidence was 5,51 cases per 10 000 person-years in the 40-44 age group, and 64,36 per 10 000 person-years in the 75-79 age group [4].

It is known that many people with glaucoma are unaware that they have a progressive yet preventable disease [5, 6]. As the severity of glaucoma increases, its progression becomes more difficult to control, and the cost of treatment rises with the stage of the disease [7]. Therefore, early, rapid, and accurate diagnosis of glaucoma is crucial. Currently, diagnosis is typically made through opportunistic case detection, usually by optometrists or general ophthalmologists. Optimal screening-based diagnosis allows for early detection of glaucoma in patients who are at high risk of developing the disease or are particularly vulnerable to vision impairment and decreased quality of life. Screening also helps determine the most effective treatment among the various available options [8].

Russia's full-scale military invasion of Ukraine has significantly affected various aspects of life across all regions of the country – not only those located near the front lines. The war's negative socio-economic impact is the result of extensive infrastructure destruction, reduced workforce availability, inflation, population debt, unemployment, social fragmentation, and large-scale population migration [9].

A direct correlation has been established between the presence of glaucoma and worsening socio-economic indicators, particularly in relation to the patient's ability to bear direct treatment costs (such as purchasing medications, attending regular medical appointments, undergoing diagnostic examinations, and having surgery) [10].

AIM

To investigate the professional opinions of ophthalmologists who provide medical care to glaucoma patients in current conditions in Ukraine, particularly

regarding the impact of Russia's full-scale invasion of Ukraine on the organization, quality, and timeliness of medical care for these patients.

MATERIALS AND METHODS

The study employed a questionnaire-based survey using a custom-designed questionnaire consisting of 33 questions. The questionnaire aimed to assess the physician's ability to ensure timely and comprehensive medical examinations for diagnosis, prescribe appropriate treatment, and organize disease monitoring. Part of the questionnaire focused on patient adherence to collaboration with ophthalmologists, including compliance with medical prescriptions and timeliness in seeking care when glaucoma symptoms arise. The survey also provided insight into ophthalmologists' perceptions of how the full-scale Russian invasion of Ukraine has affected the quality of medical care for glaucoma patients. The data from the Kyiv City Information and Analytical Center of Medical Statistics were also analyzed.

The primary source of data for the study was a questionnaire survey completed by 322 ophthalmologists. Among the surveyed ophthalmologists, women predominated (88,2%). In terms of age distribution, the majority (53,2%) were between 40 and 59 years old, while nearly one-third (30,5%) were under 40. Notably, more than a quarter (26,3%) of respondents were of retirement age. It is important to note that 43% of ophthalmologists had more than 26 years of total medical experience; 24,3% had between 16 and 25 years of experience; and the remaining 32,7% had up to 15 years of experience. As for their experience specifically as ophthalmologists, the corresponding distribution was as follows: 38,6%, 25,0%, and 36,4%, respectively. Data were presented as absolute and relative (rate per 100 respondents [%] ± standard error [SE]) frequency.

ETHICS

The research was conducted in accordance with the standards and principles of the Council of Europe Convention on Human Rights and Biomedicine, the World Medical Association Declaration of Helsinki on the ethical principles for medical research involving human subjects, and current Ukrainian regulatory documents. The questionnaire used in this study was approved by the Ethics Committee of Bohomolets National Medical University, Protocol No. 190, dated 23.12.24. The survey was voluntary and anonymous.

RESULTS

Glaucoma is a fairly common eye disease, and only five respondents (1,6%) reported that they had not encountered this condition in their practice – most likely due to their limited professional experience. More than half of the surveyed ophthalmologists (57,8%) stated, based on their observations, that the epidemiological structure of glaucoma has changed since the beginning of the full-scale invasion. They primarily believe that there has been an increase in the proportion of patients with glaucoma, particularly with secondary glaucoma (60,2±3,6%) and open-angle glaucoma (34,4±3,5%). Nearly two-thirds of the physicians (63,0%) believe that the distribution of glaucoma cases by stage has changed since the onset of the full-scale invasion, specifically noting a significant increase in the proportion of patients with stage III glaucoma (61,6±3,4%) (Table 1).

The majority of doctors consider the quality of ophthalmological care provided in the healthcare institutions where they work to be high (30,4 ± 2,6%) or rather high (31,1 ± 2,6%). However, 36,3 ± 2,7% of respondents believe that the quality of ophthalmological care has changed since the beginning of the war. Opinions among doctors regarding the direction of these changes were divided: overall, 56,4% believe that the quality of care has improved, while 29,1% think it has worsened. Furthermore, 59,6% of respondents believe that all necessary resources for providing quality ophthalmological care are available in healthcare institutions, although 32,6% think these resources have changed since the start of the war, with 65,7% of them considering these changes to be improvements. These resources are largely determined by the state of material and technical equipment in healthcare institutions. A significant portion of ophthalmologists evaluate this state, particularly regarding glaucoma diagnosis and treatment, as excellent (15,2 ± 2,0%) or good (39,4 ± 2,7%). Only 31,1% of respondents believe that the material and technical support for glaucoma diagnosis and treatment has changed during the war, with 68,0% of them stating that it has improved.

Table 1. Assessment by ophthalmologists of changes in the glaucoma patient population related to the war

No.	Question	Answer	Distribution of respondents by answers, N (% ± SE)
1	How has the epidemiological structure of glaucoma in practice changed after the full-scale invasion? (n=186)	Increased percentage of open-angle glaucoma	64 (34.4 ± 3.5)
		Increased percentage of angle-closure glaucoma	10 (5.4 ± 1.7)
		Increased percentage of secondary glaucoma	112 (60.2 ± 3.6)
2	How has the distribution of patients by stage of glaucoma changed after the full-scale invasion? (n=203)	Increased percentage of patients with early-stage I-II glaucoma	45 (22.2 ± 2.9)
		Increased percentage of patients with advanced stage III glaucoma	125 (61.6 ± 3.4)
		Increased percentage of patients with terminal stage IV glaucoma	33 (16.2 ± 2.6)

Source: compiled by the authors of this study

Only 18,2% of respondents indicated that the equipment and materials they work with do not meet modern scientific and technical standards or current ophthalmological care standards for patients with glaucoma (Table 2).

An integral and critically important part of an ophthalmologist's work is preventive care, especially in terms of secondary and tertiary prevention. Only timely and regular examinations by an ophthalmologist can ensure the early detection of glaucoma, as believed by the vast majority of respondents (95,9%). The key to stabilizing glaucoma and preventing its progression is undoubtedly the strict adherence to the ophthalmologist's prescribed treatment, which is supported by 94,1% of respondents. In cases where non-surgical treatment methods are ineffective, timely surgical treatment is considered essential for stabilizing glaucoma and preventing its progression, according to 92,9% of the surveyed ophthalmologists (Table 3).

The analysis of respondents' answers to questions about changes in the behavior of patients with glaucoma regarding the implementation of doctors' recommendations turned out to be important. Physicians note that since the beginning of the full-scale invasion, the number of glaucoma patients who seek ophthalmological care late (74,8±2,4%) and irregularly (83,5±2,1%) has increased. According to 73,9±2,5% of respondents, the number of glaucoma patients who violate the ophthalmologist's treatment prescriptions has also risen. Furthermore, 62,7±2,7% of ophthalmologists report that glaucoma patients often refuse surgical treatment. The main reasons for this refusal are lack of financial resources to undergo surgery (82,7±2,7%), psychological problems related to the war (51,9±3,5%), and residence in occupied territories with logistical difficulties (42,6±3,5%). The least significant factors were distrust of the ophthalmologist (4,5±1,5%) or the ophthalmic surgeon (4,9±1,5%) (Table 4).

According to available data on glaucoma morbidity in Kyiv, the prevalence of this disease has decreased: if in the pre-war year 2021 it was 69,1 per 10,000 population, by 2024 it had dropped to 52,2 per 10,000 population. Thus, during the period of full-scale invasion, the prevalence of glaucoma decreased by 24,5%. However, at the same time, the incidence of newly diagnosed cases during this period increased from 3,7 to 5,6 cases per 10 000 population (an increase of 51,3%). Therefore, not all previously established glaucoma cases were registered, but the number of newly detected cases increased. Such divergent trends can be explained by the untimely and irregular visits to ophthalmologists, which is

Table 2. Results of the survey of ophthalmologists regarding the organization of ophthalmological care in healthcare institutions where they work and changes after the full-scale invasion of Russia into Ukraine and the introduction of martial law in Ukraine

No.	Question	Answer	Distribution of respondents by answers, N (% ± SE)
1	Assess changes in the quality of ophthalmological care related to the war (n=117)	Significantly improved	19 (16.2±3.4)
		Improved	47 (40.2±4.5)
		Worsened	28 (23.9±3.9)
		Significantly worsened	6 (5.2±2.0)
		Difficult to answer	17 (14.5±3.3)
2	Assess changes in opportunities for quality ophthalmological care for glaucoma patients related to the war (n=105)	Significantly improved	11 (10.5±3.0)
		Improved	58 (55.2±4.9)
		Worsened	34 (32.4±4.6)
		Significantly worsened	2 (1.9±1.3)
3	Assess the state of material and technical support for glaucoma diagnosis and treatment (n=322)	Excellent	49 (15.2±2.0)
		Good	127 (39.5±2.7)
		Satisfactory	124 (38.5±2.7)
		Unsatisfactory	22 (6.8±1.4)
4	Assess changes in the state of material and technical support for glaucoma diagnosis and treatment related to the war (n=100)	Significantly improved	12 (12.0±3.3)
		Improved	56 (56.0±4.9)
		Worsened	30 (30.0±4.6)
		Significantly worsened	2 (2.0±1.4)
5	Assess the compliance of the equipment and materials you work with to modern scientific and technical standards and current standards of ophthalmological care for glaucoma patients (n=322)	Compliant	132 (40.9±2.7)
		No	58 (18.2±2.1)
		Partially	132 (40.9±2.7)

Source: compiled by the authors of this study

Table 3. Ophthalmologists' assessment of the importance of secondary and tertiary glaucoma prevention measures (n=322)

No.	Question	Distribution of respondents by answers, N (% ± SE)				
		Definitely yes	Probably yes	Probably no	Definitely no	Difficult to answer
1	Is timely and regular examination by an ophthalmologist the key to early detection of glaucoma?	272 (84.5±2.0)	36 (11.2±1.8)	11 (3.4±1.0)	0	3 (0.9±0.5)
2	Is strict adherence to the ophthalmologist's prescriptions the key to stabilizing and preventing progression of glaucoma?	218 (67.7±2.6)	85 (26.4±2.5)	6 (1.9±0.8)	3 (0.9±0.5)	10 (3.1±0.9)
3	Is timely surgical treatment, in case of ineffectiveness of non-surgical methods, the key to stabilization and prevention of glaucoma progression?	178 (55.3±2.8)	121 37.6±2.7)	10 (3.1±0.9)	1 (0.3±0.3)	12 (3.7±1.1)

Source: compiled by the authors of this study

Table 4. The ophthalmologists' assessment of changes in patient behavior regarding adherence to doctors' recommendations (n=322)

No.	Question: Do you observe in your practice since the full-scale invasion an increase in the number of glaucoma patients who	Distribution of respondents by answers, N (%±SE)		
		yes	no	difficult to answer
1	seek ophthalmological care late?	241 (74.8±2.4%)	44 (13.7±1.9%)	37 (11.5±1.8%)
2	seek ophthalmological care irregularly?	269 (83.5±2.1%)	24 (7.5±1.5%)	29 (9.0±1.6%)
3	violate the ophthalmologist's treatment recommendations for glaucoma?	238 (73.9±2.5%)	38 (11.8±1.8%)	46 (14.3±1.9%)
4	do not comply with the ophthalmologist's recommendations regarding surgical treatment of glaucoma?	202 (62.7±2.7%)	48 (14.9±1.9%)	72 (22.4±2.3%)

Source: compiled by the authors of this study

confirmed by the results of the study. Additionally, during the war, there was a qualitative change in the population of Kyiv: part of the native population left the city, while it was replenished by internally displaced persons [11, 12].

The number of ophthalmologists in Kyiv has slightly increased to 340 (by 6%), and the number of ophthalmological hospital beds also rose to 183 (by 14,3%) against the backdrop of a decreasing city population, the exact size of which cannot currently be determined. Therefore, the accessibility of ophthalmological care requires further analysis. It should also be noted that the situation in Kyiv is not fully representative of the entire country, as it is the capital where the largest concentration of the best resources is located [11, 12].

DISCUSSION

The data obtained in this study from the survey of ophthalmologists are consistent with the results of other studies. For example, non-compliance with treatment regimens is observed in 32% of patients [13]. Risk factors for non-adherence to ophthalmologist visit schedules among glaucoma patients include lower levels of education and income, cost-saving on medications, and concerns about differing opinions on diagnosis and treatment among various doctors [14].

Ophthalmologists have also identified an insufficient level of patient knowledge about glaucoma and its treatment methods. The lack of knowledge was associated with a low level of education, a short duration of the disease, advanced age, and the absence of the Internet as a preferred source of information. A study of information needs and preferred providers revealed that a patient education program should cover a wide range of topics with an emphasis on general information through written materials and information tailored to the needs of each glaucoma patient. The ophthalmologist should be the key

person, but others (nurses, optometrists, and members of glaucoma patient associations) also play an important role in patient education [15].

Access to glaucoma treatment is influenced by early intervention in at-risk patients, duration of treatment, and patient adherence to treatment regimens. Socioeconomic factors such as insurance status, education, income, marital status, and access to technology can significantly impact the diagnosis and long-term treatment of patients with glaucoma. People facing these barriers tend to avoid annual eye examinations, leading to a higher incidence of untreated glaucoma. Therefore, the severity and urgency of treatment are important for patients' adherence to ophthalmologist visits and glaucoma therapy. Thus, regular eye care leads to earlier detection and may improve treatment outcomes and reduce disease severity [16].

The paradigm of glaucoma treatment is beginning to shift from a more reactive approach, which relies on topical medications, to a more interventional one involving minimally invasive procedures with lower risk, such as laser trabeculoplasty. However, this transition is accompanied by an increasing need for early, rapid, and accurate diagnosis based on cutting-edge technologies. These include home-based intraocular pressure monitoring, new visual field platforms, photo-based imaging and optical coherence tomography, mitochondrial flavoprotein fluorescence imaging, detection of apoptotic retinal cells, collector channel imaging, and genetic testing enhanced by artificial intelligence [17].

Nevertheless, there are differences within each diagnosis, and optimal treatment requires a personalized approach. As a result of thoughtful application of these recommendations, the benefit to the patient becomes more significant than the ophthalmologic service itself – meaning that a more patient-centered approach should be adopted in glaucoma care [18]. The choice of treatment should aim at long-term intraocular pressure reduction while remaining reasonable and manageable. Currently, approximately 5–10% of glaucoma patients undergo surgical treatment [13].

Glaucoma poses a significant burden on healthcare systems. To reduce glaucoma incidence and prevent blindness – which presents an even greater public health threat among glaucoma patients – it is essential to implement regular screening, including genetic counseling for individuals with high-risk factors. Additionally, efforts should focus on improving patient education, promoting telemedicine for glaucoma care, and increasing the number of scientific studies on both pharmacological and surgical interventions [1].

Timely and effective glaucoma treatment that slows disease progression can reduce the long-term economic burden of this chronic condition on the healthcare system [7]. Direct patient costs associated with ophthalmologist visits, glaucoma surgeries, and medications increase with disease severity. Notably, medication expenses account for the largest share of total direct costs across all stages of the disease (24%-61%). Ophthalmologists bear primary responsibility for understanding and implementing treatment strategies that provide the highest quality of care and quality of life for patients [19].

A holistic approach, including lifestyle modifications and the reduction of chronic stress, should be an integral part of the treatment of patients with glaucoma, as this may help prevent disease progression [20].

The extraordinary situation in Ukraine due to the war has further exacerbated problems related to ophthalmic health and care. Extensive bombing across the country has resulted in numerous serious eye injuries and has exposed millions of civilians and military personnel to clouds of fragmented debris and harmful irritants. Unsanitary conditions in combat zones, shelters, and during population displacement have increased the risk of eye infections. In many regions, access to ophthalmological care has been disrupted due to the destruction of healthcare facilities and the migration of both the population and medical personnel [21].

CONCLUSIONS

The study of ophthalmologists' professional opinions regarding the current state of ophthalmic care provision has made it possible to assess the impact of the full-scale invasion of Russian troops into Ukraine on changes in the epidemiological situation related to glaucoma, the quality of medical care for glaucoma patients, and their adherence to treatment. According to the ophthalmologists, there has been an increase in the proportion of patients with secondary glaucoma and open-angle glaucoma, as well as patients in stage III of the disease. Since the beginning of the full-scale invasion, the number of glaucoma patients who seek ophthalmic care late or irregularly has increased, and many patients are effectively refusing surgical treatment due to a lack of financial resources.

Two-thirds of surveyed physicians consider the quality of ophthalmic care to be high or relatively high, and rate the state of material and technical resources as excellent or good. This paradox can be explained by the incredible dedication of Ukrainian doctors, who, even under extremely difficult conditions, continue to improve technologies and enhance their professional qualifications. The war has had a negative impact on the ability of glaucoma patients to receive quality ophthalmic care. Preserving vision in glaucoma patients depends on timely diagnosis, which largely relies on the technical capabilities of medical facilities. Equally important, however, is patients' adherence to doctors' prescriptions, which, in turn, depends on the accessibility of ophthalmic services and medications for glaucoma treatment. The results obtained may be used to identify opportunities and strategies for improving the quality of ophthalmic care.

REFERENCES

1. Allison K, Patel D, Alabi O. Epidemiology of Glaucoma: The Past, Present, and Predictions for the Future. Cureus. 2020;12(11):e11686. doi: 10.7759/cureus.11686.
2. Bou Ghanem GO, Wareham LK, Calkins DJ. Addressing neurodegeneration in glaucoma: Mechanisms, challenges, and treatments. Prog Retin Eye Res. 2024;100:101261. doi: 10.1016/j.preteyeres.2024.101261.
3. Chen W, Xu Y, Liu Z, Zhao J. Global, regional and national burden of Glaucoma: an update analysis from the Global Burden of Disease Study 2019. Int Ophthalmol. 2024;44(1):234. doi: 10.1007/s10792-024-03222-6.
4. Shan S, Wu J, Cao J et al. Global incidence and risk factors for glaucoma: A systematic review and meta-analysis of prospective studies. J Glob Health. 2024;14:04252. doi: 10.7189/jogh.14.04252.
5. De Francesco T, Bacharach J, Smith O, Shah M. Early diagnostics and interventional glaucoma. Ther Adv Ophthalmol. 2024;16:25158414241287431. doi: 10.1177/25158414241287431.
6. Susanna R Jr, De Moraes CG, Cioffi GA, Ritch R. Why Do People (Still) Go Blind from Glaucoma? Transl Vis Sci Technol. 2015;4(2):1. doi: 10.1167/tvst.4.2.1.
7. Lee PP, Walt JG, Doyle JJ et al. A multicenter, retrospective pilot study of resource use and costs associated with severity of disease in glaucoma. Arch Ophthalmol. 2006;124(1):12-19. doi: 10.1001/archopht.124.1.12.
8. Anton A, Serrano D, Nolivos K et al. Cost-Effectiveness of Screening for Open Angle Glaucoma Compared With Opportunistic Case Finding. J Glaucoma. 2023;32(2):72-79. doi: 10.1097/IJG.0000000000002132.
9. Stukalo N, Simakhova A. Social and economic effects of the war conflict in Ukraine for Europe. Geopolitics under Globalization. 2018;2(1):11-18 doi: 10.21511/gg.02(1)2018.02.
10. Newman-Casey PA, Aliancy J, Lu MC et al. Social Deprivation and the Risk of Screening Positive for Glaucoma in the MI-SIGHT Telemedicine-Based Glaucoma Detection Program. Ophthalmology. 2023;130(10):1053-1065. doi: 10.1016/j.ophtha.2023.05.021.
11. Osnovni pokaznyky zdorovia ta medychnoi dopomohy naselenniu m. Kyieva v 2021 rotsi. [Key Indicators of Health and Medical Care for the Population of Kyiv City in 2021]. Medstat. Kyiv. 2022, p.128. https://medstat.kiev.ua/wp-content/uploads/2022/04/%D0%94%D0%BE%D0%B2%D1%96%D0%B4%D0%BD%D0%B8%D0%BA-_2021.pdf [Accessed 18 June 2025] (Ukrainian)
12. Osnovni pokaznyky zdorovia ta medychnoi dopomohy naselenniu m. Kyieva v 2024 rotsi. [Key Indicators of Health and Medical Care for the Population of Kyiv City in 2024]. Medstat. Kyiv; 2025. 69 p. https://medstat.kiev.ua/wp-content/uploads/2025/04/Dovidnyk_2024.pdf [Accessed 18 June 2025] (Ukrainian)
13. Wolfram C, Schuster AK. Glaukomversorgung in Deutschland – Ergebnisse einer Mitglieder-Umfrage von DOG und BVA: Teil 2: Therapie [Glaucoma care in Germany-results of a survey among German ophthalmologists-part 2: treatment]. Ophthalmologie. 2022;119(11):1140-1148. doi: 10.1007/s00347-022-01667-7. (German)
14. Wu JH, Varkhedi V, Radha Saseendrakumar B et al. Social and Health Care Utilization Factors Associated With Ophthalmic Visit Nonadherence in Glaucoma: An All of Us Study. J Glaucoma. 2023;32(12):1029-1037. doi: 10.1097/IJG.0000000000002300.
15. Hoevenaars JG, Schouten JS, van den Borne B et al. Knowledge base and preferred methods of obtaining knowledge of glaucoma patients. Eur J Ophthalmol. 2005;15(1):32-40. doi: 10.1177/112067210501500106.
16. Musa I, Bansal S, Kaleem MA. Barriers to Care in the Treatment of Glaucoma: Socioeconomic Elements That Impact the Diagnosis, Treatment, and Outcomes in Glaucoma Patients. Curr Ophthalmol Rep. 2022;10(3):85-90. doi: 10.1007/s40135-022-00292-6.
17. De Francesco T, Bacharach J, Smith O, Shah M. Early diagnostics and interventional glaucoma. Ther Adv Ophthalmol. 2024;16:25158414241287431. doi: 10.1177/25158414241287431.
18. European Glaucoma Society Terminology and Guidelines for Glaucoma, 5th Edition. Br J Ophthalmol. 2021;105(1):1-169. doi: 10.1136/bjophthalmol-2021-egsguidelines.
19. Gallardo M, Smith O, Trubnik V, Reiss G. Interventional glaucoma and the patient perspective. Expert Review of Ophthalmology. 2024;19(5):311-318. doi: 10.1080/17469899.2024.2382149.
20. Gc K, Mahalingam K, Gupta V et al. Stress and Allostatic Load in Patients With Primary Open Angle Glaucoma. J Glaucoma. 2024;33(2):87-93. doi: 10.1097/IJG.0000000000002332.
21. Pavlenko D, Shultz JM, Kaler CJ, Johnson TE. Ocular Health and Eye Care Services During the Full-Scale War in Ukraine. Am J Ophthalmol. 2022;242:A1-A3. doi: 10.1016/j.ajo.2022.06.004.

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CONFLICT OF INTEREST
The Authors declare no conflict of interest

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