REPUBLIC OF AZERBAIJAN

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ABSTRACT

of the dissertation for the degree of Doctor of Sciences

THE ROLE OF OPHTHALMOLOGICAL DISEASES IN MORBIDITY AND DISABILITY RATE OF POPULATION IN GANJA-DASHKESEN AND GAZAKH-TOVUZ REGION OF THE AZERBAIJAN REPUBLIC AND RATIONALIZATION OF THE REGIONAL MODEL OF THE NETWORK OPHTHALMOLOGICAL AID

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Applicant: **Yazgul Jahangir Abdiyeva**

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The work was performed at Academician Zarifa Aliyeva National Ophthalmology Centre.

Scientific consultant: Corresponding Member of ANAS,
Honored Scientist,
Doctor of Medical Sciences, Professor
Elmar Mustafa Kasimov

Official opponents: Doctor of Medical Sciences, Professor
Chingiz Jarulla Jarullazadeh

Professor
Suleyman Kaynak

Doctor of Medical Sciences, Professor
Leyla Musa Rzaguliyeva

Doctor of Medical Sciences
Rafael Gurban Eyvazov

Dissertation council BED 1.03 of the Supreme Attestation Commission under the President of the Republic of Azerbaijan operating at Academician Zarifa Aliyeva National Ophthalmology Centre

Chairman of the Dissertation council:

Corresponding Member of the ANAS,
Honored Scientist,
Doctor of Medical Sciences, Professor
Elmar Mustafa Kasimov

Scientific secretary of the Dissertation council:

Doctor of Medical Sciences, Assoc. Prof.
Nazila Mammad Rustamova

Chairman of the scientific seminar:

Doctor of Medical Sciences, Assoc. Prof.
Anar Azam Aghayev

INTRODUCTION

The actuality and processing degree of the subject. For providing the adequate state of visual function, high quality and effectiveness of ophthalmic care it is necessary to carry out treatment and diagnostic measures in accordance with the needs of the population.

The most important characteristics of prevalence of eye diseases is changing of their morbidity rate every year, their significant difference from each-other in different countries, regions of countries, in different groups and segments of the population. Cases of myopia and hyperopia detected in cities Dezful, Shiraz, Bojnurd, Shahroud, Mashhad and Tehran in Iran correspondingly changed within the interval of 3.4% – 38.3% and 5.0% – 56.5%, myopia and hyperopia are more common among women, astigmatism and anisometropia are more common among men[1]. Nejad M.K. and co-authors indicate that vision problems occured in 90.1% of children examined in the United Kingdom, in 40.4% of children examined in Turkey, in 24% of children examined in India, in 57.6% of children examined in Malaysia, in 61.1% of children examined in the United States, in 35.8% of children examined in China, in 73.2% of children examined in Nigeria, in 33% of children examined in Australia and in 53.2% of children examined in Iran, frequency of refractive anomalies was within the interval of 17.9% (in China) – 73.2% (In Nigeria), strabismus -within the interval of 1.3% (in India) – 24% (in Great Britain).[2]

Nejad M.K. and co-authors noticed that uncorrected refractive disorders changed within the interval of 3.7 – 22.57%, visual impairment - (<6/18) 5.2 – 10.5%, blindness – 2.2 – 4.8%.[2] The age-related blindness was recorded in 0.1 – 14% of population of the state of Sao Paulo, Brazil. Azizoglu and co-authors noticed that different levels of

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[1] Hashemi, H. The prevalence of refractive errors among Iranian University students / H.Hashemi, M.Khabazkhoob, N.Yazdani et al. // Iranian Journal of Ophthalmology, - 2014. 26 (3), - p. 129 – 135

[2] Nejad, M.K. The prevalence of refractive errors and binocular anomalies in students of Deaf boys schools in Tehran / M.K.Nejad, M.R.Akbari, M.R.Pozooki et al. // Iranian Journal of Ophthalmology, - 2014. 26(4), - p.183 – 188.

myopia, hyperopia, astigmatism, strabismus, amblyopia and other pathologies were among children in Istanbul, Ankara, rural areas of Elazig, Malatya, Diyarbakir and other regions of Turkey.[3;4]

The prevalence of myopia and hyperopia changed within wide intervals in different periods in various European countries and populations (14.2% in Greece, 48.7% in the UK and 53.6% in France).[5] Prevalence of myopia, hyperopia and astigmatism significantly depended on age and gender. The severe eye disease such as glaucoma was recorded in 4.51 – 4.79% of 40-80 years old population of Africa and Latin America, and in 2.93% of 40-80 years old population of Europe.[6] The morbidity risk is higher for 1.75 times depending on age, for 1.36 times - depending on gender, for 1.5 times more among urban people in comparison with rural people. A meta-analysis of 39 studies on the prevalence of age-related macular degeneration shows that its frequency changes between 0.37 – 8.01%.[7] Meta-analysis of Iranian scientists proves that the variaty range of the disease is wider: 3.0% in China, 34.4%, in Oklahome Indians[8]. A meta-analysis of 472 studies on diabetic retinopathy in Arabian countries shows that the

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[3] Ferraz, F.H. Influence of uncorrected refractive error and unmet refractive error on visual impairment in a Brazilian population / F.H.Ferraz, J.E.Corrente, P.Opromolla et al. // BMC Ophthalmology, - 2014. 14(84), - p.2 of 10

[4] Azizoglu, S. Evidence for the need for vision screening of school children in Turkey / S.Azizoglu, S.Crewther, F.Sherefhan et al. // BMC Ophthalmology, - 2017. 17, - p.230

[5] Williams, K. Prevalence of refractive error in Europe: Eur J Epidemiol., Eye Epidemiology (E3) consortium / K.Williams, V.Verhoeven, P.Cumberland et al. // Eur. J. Epidemiol, - 2015. 30, - p.305 – 315.

[6] Tham, Y. Global prevalence of glaucoma and projections of glaucoma burden through 2040 / Y.Tham, B.Hons, X.Li et al. // American Academy of ophthalmology, - 2014. 121, - p. 2081-2090.

[7] Wong, W.L. Global prevalence of age – related macular degeneration and disease burden projection for 2020 and 2040: a systematic review and meta – analysis / W.L.Wong, X.Su, X.Li et al. // Lancet Glob health, - 2014. 3, - p. 2. e106 – 16.

[8] Hashemi, H. Age – related macular degeneration in an Iranian population / H.Hashemi, E.Ghafari, M.Khabazkhoob et al. // Iranian journal of Ophthalmology, - 2014. V. 26, № 4, - p. 203 – 211.

prevalence rate of the disease in Sudan is 0.04-0.43%, 0.01-0.44% in Saudi Arabia, 0.50 – 0.90% in Morocco, 0.05 – 0.15% in Libya, 0.02 – 0.28% in Egypt, 0.23 – 0.39 % in Algeria[9].

Based on the review of 25 articles on the prevalence of presbyopia we can tell that the difference in regional prevalence is typical for the disease and according to forecasts for 2050, this gap will deepen[10]. Differences between regions and countries on prevalence of other eye diseases also are: the lowest level of prevalence of cataracts in the cartogram for Europe is 6.0%, the highest level is 25.2%.[11]Due to the spread of keratoconus, the difference between countries reaches 1000 times.[12]As it is seen, epidemiological characteristics of eye diseases are not standard, there are specific features for each country and region. It also concerns Azerbaijan. That is why the Azerbaijan scientists conducted several studies on prevalence of eye diseases.[13;14;15;16.17;18]

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[9] Zayed, H. Retinopathy of type I diabetes in Arab Countries systematic review and meta – analysis / H.Zayed, U.Motal, A.Gopalakrishnan [et al.] // Ophthalmic research, - 2019. 61, - p. 125 – 136.

[10] Fricke, T.R. Global prevalence of presbyopia and vision impairment from uncorrected presbyopia / T.R.Fricke, N.Tahhan, S.Resnikoff [et al.] // Ophthalmology, - 2018. V.125, № 10, - p. 1493 – 1499.

[11] Prokofyeva, E., Weganer, A., Zrenner, E. Cataract prevalence and prevention in Europe: a literature review // Acta Ophthalmologica, - 2013. 91, - p.395 – 405.

[12] Абдулалиева, Ф.И. Эпидемиология кератоконуса в разных странах // Вестник офтальмологии, - 2018. № 1, - с. 104 – 106.

[13] Qəhrəmanova, C.F. Uşaqlarda və yeniyetmələrdə refraksiya anomaliyalarının profilaktik müayinələrdə aşkarlanması // Azərbaycan Təbabətinin müasir nailiyyətləri, - 2015. № 1, - s. 46 – 49.

[14] Агаева, К.Ф., Мамедова, Н.О., Набиев, Т.Ф. Распространенность и факторы риска глаукомы среди населения города Гянджа Азербайджанской Республики // Казанский медицинский журнал, - 2017. Т. 98, № 1, - с. 125 – 128.

[15] Агаева, Р.Б. Изучение заболеваемости органа зрения среди взрослого населения старше 30 лет в Азербайджане // Казанский медицинский журнал, - 2016. № 6 (97), - с. 945 – 949.

[16] Агаева, Р.Б., Касимов, Э.М. Заболеваемость органа зрения среди взрослого населения и пути её снижения в Азербайджанской Республике // Oftalmologiya, - 2016. №1(20), -с. 42 – 46.

But the complex assessment of prevalence of eye diseases, their regional epidemiological characteristics and the volume and structure of population needs are not studied. Therefore, the topic of our research work is relevant.

The subject and object of the study. Cases of morbidity and disability of population of Ganja-Dashkesen and Gazakh-Tovuz Economic Regions (GDGTER) by eye diseases are object of the study, pathologies of the visual organ were chosen as its subject.

The purpose of the study: Comprehensively assess the role of eye diseases in the morbidity and disability of the population and substantiate the regional model of optimal ophthalmic care on sample of Ganja-Dashkesen and Gazakh-Tovuz Economic Region.

Objectives of the study:

– To assess the role of the medical-demographic situation, the characteristics of eye diseases and the causes of disability based on the requests of the population in Ganja-Dashkesen and Gazakh-Tovuz Economic Regions;

– To study the nosological structure and prevalence rate of eye diseases among population in early childhood (0-4) in Ganja-Dashkesen and Gazakh-Tovuz Economic Regions;

– To analyse prevalence rate and risk factors of eye diseases among children (5–14) and teenagers (15–19) in Ganja-Dashkesen and Gazakh-Tovuz Economic Regions;

– To analyse prevalence rate and risk factors of eye diseases among adults (20 and more) in Ganja-Gazakh Economic Regions;

– To identify the needs of population on treatment and diag-

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[17] Назарли, Д.А. Распространенность аномалий рефракции среди студентов высших учебных заведений Азербайджанской Республики. Опыт мобильной клиники Национального Центра Офтальмологии имени академика Зарифы Алиевой // Oftalmologiya, - 2017. 2 (24), - с. 55 – 60.

[18] Никифорова, Е.Б. Клинико – эпидемиологический анализ глазной заболеваемости, инвалидности и стационарной офтальмологической помощи населению Самарской области за период 2010 – 2014 гг // Вестник Оренгбургского Государственного Университета, - 2015. № 12 (187), - с. 160 – 166.

nostic measures related with eye diseases,substantiate the optimal model of ophthalmic care in Ganja-Dashkesen and Gazakh-Tovuz Economic Regions;

Methods of the study:

– Methods of clinical ophthalmological examination;

– Ophthalmological instrumental examination methods;

– Methods for assessing morbidity and disability;

– Planning methods based on the ratio of ophthalmic treatment and diagnostic measures to the population;

– Methods of expert assessment;

– Extrapolation method;

– Method on planning based on need of treatment and diagnostic services;

– Biostatic methods.

The main provisions to be defended:

–Administrative territorial units of Ganja-Dashkesen and Gazakh-Tovuz Economic Regions (republican cities and districts) differ from each other to the extent that it may affect the volume and quality of ophthalmic care due to demographic characteristics (birth, natural increase, population, age, settlements), morbidity with eye pathologies and appeals for medical care, disability due to visual impairment and risk of disability;

– Eye diseases are widespread (58.2±1.6%) among children of early age in Ganja-Dashkesen and Gazakh-Tovuz Economic Regions, nosological structure has different features (high relative risk of conjunctivitis and pathology of tear ducts). The morbidity rate of eye diseases among 0-4 years old children living in rural areas due to physical limitations (consultation with an ophthalmologist in the district centre) of their opportunity to receive ophthalmological care, meeting their needs is a priority;

– Eye diseases, especially refraction anomalies, among children and young population of Ganja-Dashkesen and Gazakh-Tovuz Economic Regions are significantly affected by habitat, age, perinatal pathologies, hereditary predisposition, as the result needs of residents in villages, small towns and large city for ophthalmological care due

to different nosological forms changes;

– Features of prevalence of eye diseases (cataracts, presbyopia, glaucoma and macular degeneration are priority areas) among adults in Ganja-Gazakh Economic Region, their different manifestation in villages, small towns and large city are key factors for the different needs of the population for ophthalmological care;

– The regional ophthalmology model should be formed as a single system based on the integration of the family doctor, the ophthalmology office, the ophthalmology department and the centre as the place of settlement of the population has an important role in prevalence of eye diseases and changes in the nosological structure.

Scientific novelty of the study results:

– Inconsistencies between the resources of the health system and the medical demographic situation were found and the ways of their solution were shown

– The prevalence of the main nosological forms of eye diseases among the population is characterized as complex for the first time in sample of Ganja-Dashkesen and Gazakh-Tovuz Economic Regions;

– The degree of dependence of the general level of eye diseases and the prevalence of various nosological forms on the age, sex, anamnesis, place of residence of the population has been determined for the first time;

– A methodology for studying the need for ophthalmological treatment and diagnostic measures related to eye diseases has been developed and the norms are substantiated in the example of the most common diseases for the first time;

– The optimal model of the ophthalmological care network is substantiated taking into account the prevalence of eye diseases among population and the need for ophthalmological care.

Theoretical significance of results of the study:

The mechanism of the health state formation process as a result of the integration of the individual biological characteristics of the environment is substantiated in the example of human visual function. It was detected that eye diseases occur as the result of violation of the mechanism of adaptation to the environment depending on age and

gender. Their prevention is possible by stimulating the process of adaptation. Health care including ophthalmological care positively influence the process of adaptation of the organism and the visual organ as an integral part of the social environment.

Practical significance of the study results:

– The achieved results of the study can be used for creating the model of ophthalmological care scientifically substantiated for rural and urban population.

– The features of prevalence of eye diseases allow to detect opportunities for planning and managing the regional healthcare.

– Substantiation of formation of eye diseases by combination of biological and environmental factors is the scientific basis for the formation of their system of treatment and prevention.

– Types and scope of ophthalmic treatment and diagnostic measures based on the actual prevalence of individual eye diseases allows to organize and stimulate the activity of doctors.

Approbation and application of the dissertation work: The outcomes of the dissertation work have been reported in conferences and congresses in our republic and foreign countries:

– The International Conference on "Present and Future of Ophthalmology" dedicated to the 10th anniversary of the National Ophthalmological Centre named after academician Z.Aliyeva held on May 24, 2019;

– Congress held in France (Nice) on June 13-16, 2019 (SOE, 2019);

– Congress held in France (Paris) on September 14-18, 2019 (ESCRS, 2019);

– Congress TOD 53 held in Turkey (Antalya) on November 6-10, 2019);

– Congress held in Singapore on January 17-19, 2020 (APOİS);

– Symposium held in Morocco on Februaty 21-23, 2020 (Morocco ESCRS);

– Congress held in Cape Town (Africa, WOC), on June 26-29, 2020.

Preliminary discussion of the dissertation work was held at the

meeting in the National Centre of Ophthalmology named after Academician Zarifa Aliyeva (protocol № 3; 7 december 2022). It was reported and discussed in the scientific seminar of the Dissertation council BED 1.03 under National Centre of Ophthalmology named after Academician Zarifa Aliyeva (27 october 2023; protocol №15).

Publications. The main results of the research were published in 15 journal articles, including three in Russia and two in Ukraine (journals in Web of Science and Scopus international indexing system), one in Belarus and 9 in Azerbaijan. The journals in which the articles were published are the journals recommended by the Higher Attestation Commission.

Application of the dissertation. Materials of the dissertation work are used as approved information in education of doctors residents and medical professionals.

Organization where the dissertation work is conducted: The National Centre of Ophthalmology named after academician Z.Aliyeva.

Structure and volume of the dissertation:

Introduction – 11874 symbols; Chapter I. Morbidity of population with eye diseases and prevalence of the diseases (literature review) – 93088 symbols; Chapter II. Materials and methods of the study – 13326 symbols; Chapter III. Medical-demographic situation in Ganja-Dashkesen and Gazakh-Tovuz Economic Regions, general characteristics of eye diseases and their role in disability – 35192 symbols; Chapter IV. Characteristics of the structure and prevalence of eye diseases in children of early age (0-4) – 22763 symbols; Chapter V.Characteristics of the structure and prevalence of eye diseases among 5years old and older children – 74876 symbols; Chapter VI. Prevalence of eye diseases among adults – 76038 symbols; Chapter VII. Comparison of information on prevalence of eye diseases in Ganja-Dashkesen and Gazakh-Tovuz Economic Regions and substantiation of the network of ophthalmological care in the region – 47137 symbols; Conclusion – 2222 symbols; Practical recommendations – 592 symbols.

The list of literature consists of 7 publications in Azerbaijan

language, 45 – in Russian and 292 in English. The total volume of the dissertation consists of (excluding spaces, tables, graphs, abbreviations, and bibliographies) 377108 symbols,70 tables and 2 figures, 13 diagrams and 3 schemes.

MATERIALS AND METHODS OF THE STUDY

Appropriate materials were selected for each one of problems attracted in the study. Official reports determined by the Ministry of Health of the Republic of Azerbaijan (No. 12 - diseases registered in the territory of the medical institution), electronic versions of statistical collections posted on the official website of the State Statistics Committee of the Republic of Azerbaijan were used as preliminary observation and analysis materials for the medical demographic situation and general characteristics of eye diseases in Ganja-Dashkesen and Gazakh-Tovuz Economic Regions, the level of occupational disability associated with them.

Three types of settlements can be determined in Ganja-Dashkesen and Gazakh-Tovuz Economic Regions:

– Big city – Ganja city;

– Small towns (Shamkir, Gazakh, Tovuz, Agstafa, Gedebey, Naftalan, Samukh, Dashkesen, Goygol, Goranboy);

– Villages of districts of republican subordination.

An equal number of children and adolescents from all types of settlements were represented in our study.

Totally 2700 children and adolescents were observed (900 in big city, 900 in small towns and 900 in villages), 300 children and adolescents from each age group were selected (150 boys and 150 girls). This contingent was comprehensively examined in the mobile clinic of the National Ophthalmology Centre named after academician Z.Aliyeva.

People aged 20 years and more were observed as adults. 20-40 years old 1516, 864 and 415 (total 2795 people), 40-60 years old 1654, 1014 and 901 (3569 people in total), 60 and older 3044, 1379 and 1568 (total 5991 people) patients were respectively selected from big city, small towns and villages. Thus, 6214 resi-

dents of the big city, 3257 residents of small towns and 2884 rural residents (totally 12355 people) were comprehensively examined and all diseases observed at the time of examination were detected and recorded. The following ophthalmological diagnostic methods were used in the examination of children, adolescents and adults:

– Ophthalmoscopy;
– Visometry;
– Perimeter;
– Measurement of strabismus angle;
– Skiascopy;
– Tonometry;
– Detection of accomodation;
– Definition of convergence;
– Biomicroscopy of the eye;
– Gonioscopy;
– Refractometry;
– Ultrasound biometry of the eye;
– Ophthalmometry;
– Ultrasound examination of the eyeball;
– Other necessary methods.

Statistical methods of quality indicators were used for statistical processing of collected materials.

Stable (stationary) and progressive types of myopia which was diagnosed as congenital and acquired, were detected. There are 3 degrees of myopia: low (<3 dptr), moderate (3-6 dptr) and high (>6 dptr).

There are three forms according to the course of the pathology (obvious, latent and complete), three according to the degree of severity (low <2dptr; moderate 2-5 dptr and high >5.0 dptr) in patients diagnosed with hyperopia.

Simple, complex and mixed forms of astigmatism have been found, and corneal and crystalline forms have been found due to their optical structure.

Congenital and acquired, early, immature, mature and late forms of cataract were distinguished according to the stages of development when the diagnosis was confirmed.

Open and closed angle glaucoma, its association with pseudo-exfoliative syndrome, its hypertensive and normotensive, primary, advanced and terminal forms have been detected.

Information about forms of diabetes, treatment options, duration of the disease, complications and co-morbidities was collected in patients with diagnosed diabetic retinopathy. Stages of diabetic retinopathy were detected, blood sugar levels were taken into account.

HbA1c, total cholesterol, lipoproteins, tri-glycerides, height and body mass index were determined in such patients.

In case of diagnosis of macular degeneration the nature and diameter of the salts were determined.Atrophic (non-exudative) and neovascular (exudative) forms of pathology were distinguished.

There are 4 stages according to the Amsler-Krumeich classification in grouping of patients with diagnosis of keratoconus: Stage I (eccentric growth of the cornea, myopia or astigmatism <5.0 D, etc.), Stage II (myopia or astigmatism 5 - 8 D, no turbidity in the cornea, etc.), Stage III (myopia or astigmatism 8 - 10 D, thickness of cornea 300-400 microns), stage IV (refraction is not determined, cornea is cloudy, its minimum thickness is 200 microns).

The range and number of treatment and diagnostic measures for each identified disease were defined for determining the rate of the need for ophthalmological care of population in Ganja-Dashkesen and Gazakh-Tovuz Economic Regions. Healthstatus of patients, clinical situation and requirements of existing standards were taken into account while substantiating the range of treatment and diagnostic measures.

The rate of treatment and diagnostic measures required for each patient has been identified based on mentioned standards (TDM_i^j).

TDM – treatment and diagnostic measures;

i – diagnosed disease; j – name of the measure).

The normative rate of treatment and diagnostic measures required for people was calculated by the following formula:

$$TDM_{standard} = \dot{I}_n \times TDM_i^j \ / \ N \times 100,$$

Where

$\dot{I}_n$ – is quantity of patients with diagnosis of *i*;

TDM_i^j - is quantity of treatment and diagnostic measures *j* for each patient with diagnosis *i*;

N – number of population. TDM standards were calculated per 100 persons.

Statistical methods of quality indicators were used for statistical processing of the collected materials.

Eye diseases (nosological forms) and disability cases related to eye diseases were studied as quantitave signs and they were calculated per 100 persons (diseases) and 10 000 persons (disabilities) as a relative quantity.

$$P_{(\text{relative quantity})} = \frac{number\ of\ nosological\ forms(n) \times 100}{number\ of\ examined\ people\ (N)}$$

The average error (m) of each quantity is calculated by a certain formula:

$$m = \pm\sqrt{P\ (100 - P)/N}.$$

While calculating the 95% reliability interval of relative quantities (P±tm) was intended as t = 1.96:

$$(P - 1{,}96\ m)(P + 1{,}96\ m)$$

The difference in relative quantities in large cities, villages and small towns, in different age and gender groups was assessed as χ^2 (Pearson's eligibility criterion).

$$\chi^2 = \sum \frac{(G-F)^2}{G},$$

where F – is the actual number of diseases in the group, G – is the expected number of patients in the group.

Subgroups were formed against the background of a factor that may increase the risk of eye disease and against the background of the absence of this factor when determining the risk factors for eye diseases. The factor under study was taken as a risk factor when the difference between the subgroups is statistically significant as a result of the comparison and the level of relative and attributive risk was calculated for it (critical limit <0,05):

– Relative risk = the level of relative quantity against the background of the risk factor/the level of relative quantity in a non-risk factor (control, reference subgroup);

– Attributive risk = the level of relative quantity against the background of the risk factor – the level of relative quantity in a non-risk factor.

MEDICAL AND DEMOGRAPHIC SITUATION, GENERAL CHARACTERISTICS OF EYE DISEASES AND THE ROLE IN POPULATION DISABILITY İN GANJA-DASHKESEN AND GAZAKH –TOVUZ ECONOMİC REGİONS

The qualified ophthalmological outpatient care in GGER is conducted in the polyclinics of Ganja and the central hospitals of all region. There is nospecialized ophthalmological care in villages and settlements. The quantity of the rural population is more than the urban population in the regions: 68584 people in 16 (connecting several villages) in Gazakh, 60075 persons in 19 rural circles in Agstafa, 130907 persons in 18 rural circles in Tovuz, 124761 persons in 17 rural circles in Shemkir, 83573 persons in 17 rural circles in Gadabay, 18481 persons in 18 rural circles in Dashkesen, 33350 persons in 16 rural circles in Samukh, 33450 persons in 17 rural circles in Goygol and 74084 persons in 17 rural circles in Goranboy do not have access to specialized ophthalmological care in the area where they live. These population can get specialized ophthalmological care only in the regional centre or at other stages.

In GDGTER adequate network of specialized ophthalmological care is available only in Ganja city (ophthalmologists and specialists of ophthalmological hospitals, polyclinics). Due to the fact that GDGTER is not in the administrative jurisdiction,the ophthalmological hospital of Ganja city does not have a regional status and is unable to provide organizational and methodological guidance to ophthalmological care in the region.

The age distribution of the population on GDGTER and its administtrative city and districts (according to the latest census database) is given on the Table 1.

Providing the health system with human resources and resources according to the number of settlements and population in the regionsdiffers sharply: number of doctors per 10 000 population is 6.3 – 32.6; number of paramedics is 33.3 – 65.0; number of hospital beds is 18.0 – 62.7. Therefore, access to medical care, including ophthalmological care, is not similar.

Table 1

Age structure of the population of Ganja-Dashkesen and Gazakh-Tovuz Economic Regions (%)

Cities and regions	0-4	5-9	10-14	15-19	20-29	30-39	40-49	50-59	60-69	70 +
Ganja city	5,56	6,66	7,22	6,97	16,91	18,34	12,63	12,90	8,27	4,54
Gazakh r.	7,94	7,59	6,09	6,37	17,67	16,46	11,76	13,31	7,50	5,31
Agstafa r.	8,34	7,53	6,35	6,71	17,69	16,83	11,82	13,08	7,15	4,50
Tovuz r.	8,73	8,62	6,30	7,08	17,85	15,08	12,36	12,64	6,76	4,58
Shemkir r.	8,78	7,91	6,89	7,90	17,35	16,17	11,37	12,77	7,08	3,78
Gadabay r.	7,61	7,62	6,07	6,93	17,49	15,80	13,92	11,66	6,38	6,52
Dashkesenr.	7,34	7,71	6,85	7,89	18,15	16,56	13,21	11,82	5,86	4,61
Samukh r.	8,42	6,96	6,39	6,05	17,36	16,74	12,31	14,45	7,47	3,85
Goygol r.	7,96	8,14	5,55	6,42	17,51	17,01	12,43	13,41	7,21	4,36
Goranboy r.	8,37	8,63	6,28	6,30	17,57	16,25	11,99	13,27	7,16	4,18
Naftalan t.	6,97	7,07	6,84	5,18	16,04	18,87	12,09	13,62	9,54	3,78

Available resources of healthcare in GDGTER (Table 2) proves that there are more serious problems of medical provision of the population.

The first problem is inconsistency in the provision of the population with doctors. Provision of the population with doctors (6.4 and 7.4 per 10,000 people) in Dashkesen and Gadabay is less for 2.5-3.5 times in comparison with Gazakh, Tovuz and Shemkir (23.5; 17.3 & 16.5). Compared to Ganja, the provision of the population with doctors in all regions is 1.4-5 times higher.

Thus, provision of the population with health resources in GGER is low and is not proportional to the population. Such incompatibility may reduce the accuracy of the population applications registration to medical institutions and related morbidity cases.

The quantity of eye and peripheral diseases per 1,000 children and adolescents in Ganja city was 182.7±1.3(95% reliability interval 180.1 - 185.3 ‰).

Table 2

Resources of the public health system in Ganja-Dashkesen and Gazakh-Tovuz Economic Regions (%)

Cities and regions	Number of doctors	Number of nurses	Number of hospi-tals	Number of hospital beds	Number of out patient clinics
Ganja city	1089/32,6	2171/65,0	18	2094/62,7	30
Gazakh r.	243/23,5	629/64,4	8	364/37,3	23
Agstafa r.	103/11,6	399/45,4	2	191/21,7	20
Tovuz r.	303/17,3	973/55,4	10	452/25,8	38
Shemkir r.	358/16,5	1207/55,6	13	789/36,3	44
Gadabay r.	74/7,4	255/25,4	6	196/19,5	25
Dashkesen r.	22/6,4	117/33,3	3	110/31,3	8
Samukh r.	52/8,9	207/35,5	3	105/18,0	9
Goygol r.	75/12,3	253/39,6	3	181/28,3	13
Goranboy r.	131/12,7	435/41,8	3	215/20,7	23
Naftalan t.	19/18,5	47/46,2	1	50/49,2	1
Ganja-Dashkesen and Gazakh-Tovuz Economic Regions	2499	6693	70	4747	234

According to the application of children and adolescents administrative districts of GGER can be divided into four groups due to morbidity rate of eye and peripheral diseases:

– Areas where the indicator is very low (≤70±1.5 ‰): Gadabay and Goranboy districts;

– Areas with relatively low indicators (≥74.8±2.1‰ - 80.0± 5.3‰): Samukh, Agstafa, Gazakh districts and Naftalan town;

– Areas with relatively high indicators (≥82.8±1.2 ‰ - 84.0± 2.1 ‰): Tovuz and Goygol districts;

– Areas where the index is very high (≥92.7±2.8 ‰): Dash-

kesen and Shemkir districts.

The refractive anomalies (code H51 and H52) occupy the first place among diseases of the eye and its appendix in children and adolescents in all districts and cities, their special share is 53.0 – 61.9%.

The second place of pathologies of the eye and its accessory apparatus in children and adolescents is occupied by diseases of the conjunctiva (code H10 - H13). The special share of these diseases is 23.06% in Ganja, 19.2% in Gazakh, 20.6% in Agstafa, 21.3% in Tovuz, 22.1% in Shemkir, 18.4% in Gadabay, 20.8% in Dashkesen, 16.9% in Samukh, 18.4% in Goygol, 19.5% in Goranboy and 19.7% in Naftalan.

According to the application materials eye injuries are in the third place among pathologies of the eye and its accessory apparatus in children and adolescents (code S05). The special share of eye injuries was between 9.4% and 16.3%, its lower level was registered in Ganja and its upper level in Naftalan. Districts of GGER can be classified due to the rate of eye traumas as following:

–Areas with very low rate of traumas (Gadabay);

–Areas with low rate of traumas (Goranboy and Samukh);

–Areas with the intermediate rate of traumas(Gazakh, Agstafa, Tovuz, Shemkir and Goygol);

–Areas with high rate of traumas(Ganja city and Naftalan town).

The first place among the cases of eye diseases in the adult population in Ganja city is occupied by refraction anomalies (40.0± 0.39%), and crystal pathologies (≤29.5±0.48 %) in other districts of the region.

The morbidity rate of crystal pathologies changed between 15.8±0.46% (Gadabay) and 33.8±0.36% (Ganja).

The third place among the cases of eye diseases in the adult population in Ganja city is occupied by diseases of the vascular and retinal membranes (10.3 ± 0.20 %). The morbidity rate of these pathologies in GGER changed between 7.1±0.41% (Samukh) and 10.3±0.20% (Ganja), the difference between the minimum and maximum levels was statistically significant (P<0,05).

CHARACTERISTICS OF THE STRUCTURE AND PREVALENCE RATES OF EYE DISEASES IN CHILDREN OF EARLY AGES (0-4)

The observation plan and program for detecting the features of eye diseases among children of early ages are designed to ensure that the results are representative. First of all the quantity of 0-4 years old children in the region and its administrative territories (cities and districts of the republic subordination) has been determined (Table 3).

Table 3
Characteristics of children aged 0 - 4 years selected for ophthalmological examination

Cities and regions	0 – 4 years old population	Selected for ophthalmological examination	Examined		Coverage of the 0 - 4 years old population with examination, ‰	The share of urban population among those examined, %
			Urban population	Rural population		
Ganja city	18580	185	185	-	1,0	100
Gazakh r.	7753	80	40	40	1,0	50
Agstafa r.	7327	80	39	41	1,1	48,8
Tovuz r.	15320	155	80	75	1,0	51,2
Shemkir r.	19077	160	84	76	0,8	52,5
Gadabayr.	7634	80	38	42	1,0	47,5
Dashkesen r.	2579	50	20	30	1,9	40
Samukh r.	4907	50	20	30	1,0	40
Goygol r.	5088	85	25	60	1,7	29,4
Goranboy r.	8715	65	25	40	0,8	38,4
Naftalan t.	709	10	10	0	1,4	100
Total	97689	1000	566	434	1,0	56,6

In Ganja-Dashkesen and Gazakh-Tovuz Economic Regions the number of eye diseases per 100 0-4 years old children is 58.2±1.6 (95% reliability interval 55.1 – 61.3), conjunctivitis is detected in 10.4±1.0%, pathology of tear ducts - in 5.0±0.7%, myopia - in 2.4±0.5%, hyperopia - in 10.2±1.0%, astigmatism - in 7.0±0.8%, anisometropia - in 2.2±0.5%, strabismus - in 4.3±0.6%, visual impair-

ment - in 12.6±1.0%, other diseases - in 4.1±0.6% of children.

The morbidity rate of conjunctivitis due to age (4.1±1.4; 5.3± 2.1; 10.6±2.1; 15.3±2.5 and 13.3 ± 2.1%) is increased and morbidity rate of pathology of tear ducts (11.2±2.3; 10.5±2.8; 2.8±1.1; 2.3±1.0 and 2.0±0.8%) is decreased.

The prevalence of other pathologies has not changed statistically significantly. The total morbidity rate of eye diseases among 0-4 years old children, prevalence of conjunctivitis, pathology of tear ducts and poor eye sight in children born with birth weight <2500 grams (juveniles) and asphyxia has increased statistically accurately, although the prevalence of other diseases was high, the difference was not statistically significant. The overall morbidity rates of eye diseases among 0 – 4 years old urban and rural children (per 100 children - 62.9±2.3 and 54.6±2.1 cases) are different, The prevalence of separate nosological forms does not differ statistically. The overall morbidity rate of eye disease found in boys and girls aged 0-4 years and prevalence rate of separate nosological forms does not differ statistically.

MORBIDITY CHARACTERISTICS OF EYE DISEASES AMONG 5 YEARS OF AGE AND OLDER CHILDREN AND ADOLESCENTS

The distribution of patients of different age groups with refractive anomalies by place of residence (big city –Ganja, small towns – centres of administrative regions of GGER and rural areas) is given in Table 4.

As it is seen, all types of refraction anomalies in children aged 5-9 years (myopia, hyperopia, astigmatism and anisometry) are detected more in big city (54.8% myopia, 37.1% hyperopia, 72.7% astigmatism, 46.2% anisometropia). Special shares of refraction anomalies in this age group in urban and rural areas were mostly close to each other. It is noticable that the specific share of the hyperopia detected among 5-9 years old children living in rural and urban areas were close to each other.

Table 4

Distribution of refractive anomalies according to the place of residence of patients (per total %)

Age, years	Types of anomalies	Big city	Small towns	Villages	Total
5 – 9	Myopia	54,8	26,2	19,0	100
	Hyperopia	37,1	30,6	32,3	100
	Astigmatism	72,7	18,2	9,1	100
	Anisometropia	46,2	30,8	23,0	100
	Total	48,5	27,9	23,6	100
10 –14	Myopia	54,7	29,9	15,4	100
	Hyperopia	38,9	19,4	41,7	100
	Astigmatism	56,3	28,1	15,6	100
	Anisometropia	46,7	32,0	21,3	100
	Total	50,4	28,8	20,8	100
15– 19	Myopia	58,1	26,5	15,4	100
	Hyperopia	27,8	36,1	36,1	100
	Astigmatism	46,7	32,0	21,3	100
	Anisometropia	45,3	40,6	14,1	100
	Total	49,2	31,8	20,0	100
5 – 19	Myopia	56,3	27,8	15,9	100
	Hyperopia	35,1	29,1	35,8	100
	Astigmatism	53.5	28,7	17,8	100
	Anisometropia	48,8	31,0	20,2	100
	Total	50,2	28,9	20,9	100

Most of 10-14 years old children with diagnosed myopia, astigmatism and anisometropia live in big city (54.7; 56.3 and 46.7%). But most of patients with diagnosis of hyperopia (41.7%) live in rural areas and less (19.4%) in small towns. In the distribution of all children with refractive anomalies by place of residence the inhabitants of the big city prevalied(50.4%), the special shares of those living in big city and small towns were respectively 20.8 and 28.8%.

The vast majority of children and adolescents aged 14-19 years diagnosed with myopia, astigmatism, and anisometropia (respectively 58.1; 46.7 və 45.3%) live in the big city. A relatively small number of children diagnosed with hyperopia live in the large city, and relatively more in small towns (36.1%) and villages (36.1%).

The majority of children and adolescents with refractive anomalies aged 5 – 19 years live in large cities (50.2%), 28.9% in small cities, 20.9% live in rural areas.

Thus, different numbers of myopia, hyperopia, astigmatism and anisometropia were found during the complex ophthalmological examination of an equal number of children and adolescents in the large city, small towns and villages. The proportions of patients among 5-9 years old residents of the big city diagnosed with myopia (28.8%), hyperopia (28.8%), astigmatism (20.0%), and anisometropia (22.4%) are close, but in small towns (high rate of hyperopia - 41.3%, low rate of astigmatism - 8.7%) and in rural areas (high rate of hyperopia - 51.3%, low rate of astigmatism - 5.1%) differs sharply.

Distribution of 10-14 years old patients living in the big city, small towns and villages according to nozological forms is similar: the specific share of myopia is high (48.9; 46.7 and 33.3%), but share of astigmatism is low (13.7; 12.0 and 9.3%), the specific share of anisometropia (26.7; 32.0 and 29.6%) is moderate.

Distribution of 15-19 years old patients with refractive anomalies living in the big city, small towns and villages according to nozological forms is different: the specific share of myopia, hyperopia, astigmatism and anisometropia respectively is 51.6; 6.5; 22.9 and 19.0% in the big city, 36.4; 13.1; 24.2 and 26.3% in small towns, 35.6; 22.0; 27.1 and 15.3% in rural areas.

Thus, the distribution of refractive anomalies found among the same age groups of children and adolescents in the large city, small towns and villages by nosological forms and habitats differs from each other.

The prevalence rate of miopia among children in the Ganja-Dashkesen and Gazakh-Tovuz Economic Regions changes depending on type of place of residence: relatively low in villages

(5.2±0.7%), more in the big city (18.4±1.3%). The risk of morbidity of eye diseases in big city in comparison with children residents of villages is higher for 3.48 times and for 1.75 times in small towns.

In the model of the Ganja-Dashkesen and Gazakh-Tovuz Economic Regions of the Azerbaijan Republic the prevalence of hyperopia among children in large cities, small towns and villages is largely consistent with that in other parts of the world. In the Ganja-Dashkesen and Gazakh-Tovuz Economic Region hyperopia was recorded in 5.3±0.4% (5.2±0.6% in boys, 5.4±0.6% in girls) of 5-19 years old children, no difference between small towns (5.2±0.7%) and rural areas (5.3±0.7%) was detected ($p>0.05$). Hyperopia in children aged 5-9 years (6.9±0.8% in the general population, 7.1±1.2% in boys, 6.7±1.2% in girls) are statistically very detectable in comparison with children aged 15-19 years (4 respectively) 0±0.7; 3.8±0.9 and 4.2 ± 0.9%).

The prevalence rates of astigmatism among 5-19 years old children and adolescents in the big city (Ganja), small towns (centres of districts of the region) and villages of the Ganja-Dashkesen and Gazakh-Tovuz Economic Regions are different, the risk of astigmatism in the big city is higher for 3 times, 1.6 times – in small towns. Probability of astigmatism in children and adolescents significantly increases ($p<0.05$) at the age of 15-19 years.Gender differences in the prevalence of astigmatism is formed in the age range of 15-19 years, the morbidity risk among girls is higher for 1.4 times. Hyperopic astigmatism is 3.8 times more common than myopic astigmatism. Anisometropia is found at different levels depending on the age and sex of the children, the prevalence rate of the pathology is high among the urban population and significantly less among the rural population.

The majority of anisometropia cases (178) were caused by hyperopic anisometropia (95 or 53.4%). The specific share of myopic and mixed type of anisometropia respectively was 37.1 and 9.5%. Anisometropia was associated with amblyopia in 56.7% of cases.

Structures of hyperopia by types (hyperopic, myopic and mixed) differ from each other in the big city (46 or 56.1%; 30 or 36.6%; 6 or 7.3%), small towns (23 or 37.1%; 33 or 53.2%; 6 ot 9.7%), in

villages (10 or 29.4%; 17 or 50%; 7 or 20.6%): the share of mixed type of anisometropia is relatively high in rural areas, the share of hyperopic anisometropia in large city and myopic anisiometropia in small towns is relatively high.

Data on the prevalence of potential risk factors for refractive anomalies are presented in Table 5. As it is seen, most variants of prevalence of depending on place of residence didn't differ from each-other.

Potential risk factors for refractive anomalies (heredity, physical condition at birth, asphyxia and trauma, chronic diseases, especially parasitosis and allergic pathologies) are prevalent among children and adolescents living in the large city, small towns and rural areas. Relative risk of refractive anomalies in the adolescent population against the background of potential risk factors increases for 1.5-6.0 times, level of attributive risk is 1.3-23.6%.

The sensitivity of potential risk factors for refractive anomalies as a precursor is low (≤38.8%), specificity is strong (≥79.3%), predictive significance of positivity and negativity varies in the range of 19.0-73.4 and 72.4-79.4%, respectively.

The prevalence rate of strabismus among children (5-19 years) in Ganja-Dashkesen and Gazakh-Tovuz Economic Regions is 3.8±0.4% (95% reliability interval 3.0 – 4.6%).

Urban and rural child populations differ statisti-cally due to the prevalence of strabismus (4.6±0.7 and 2.7±0.5%). The specific share of premature births and those with refractive anomalies is statistically significant in the group of children with strabismus.

The prevalence rate of amblyopia in society as a whole is 2.6±0.3% (95% confidence interval 2.0 - 3.2%). The prevalence rate of amblyopia in the boy and girl groups is different (3.0±0.5 and 2.2±0.4%), but their comparison proves that the zero hypothesis is fair (P>0.05). Gender differences in the prevalence of amblyopia in the region are not statistically accurate.

Amblyopia in GDGTER is found in 2.6±0.3% of children and adolescents aged 5-19 years, the risk of amblyopia varies depending on age, and is similar in the large city, small towns and villages, as well as in boys and girls.

Table 5

The prevalence rate of risk factors among the population of large city, small towns and rural areas in Ganja-Dashkesen and Gazakh-Tovuz Economic Regions

Factors	Factors variations	Big city N=900		Small towns N=900		Villages N=900	
		n	%	n	%	n	%
Presence of refractive anomalies in the family	Father	214	23,8±1,4•	189	21,0±1,4	17	19,0±1,3
	Mother	201	22,3±1,4•	176	19,6±1,3	160	17,8±1,3
	Sisters and brothers	244	27,1±1,5•	202	22,4±1,4	188	20,9±1,4
	Father and mother	101	11,2±1,1•	90	10,0±1,0	75	8,3±0,9
Body weight at birth (grams)	<2500	88	9,8±1,0•	97	10,8±1,0	112	12,4±1,1
	≥4000	24	2,7±0,5	20	2,2±0,5	16	1,8±0,4
Perinatal pathology and problems in the anamnesis	Asphyxia	98	10,3±1,0	104	11,6±1,1	112	12,4±1,1
	Birth traumas	84	9,3±1,0	96	10,7±1,0	104	11,6±1,1
	Operative birth	228	25,3±1,5	212	23,6±1,4	199	22,1±1,4
History of helminthiasis	Askeridosis	56	6,2±0,8•	67	7,4±0,9	75	8,3±0,9
	Others	72	8,0±0,9	84	9,3±1,0	91	10,1±1,0
Body mass index (kg / m^2)	25,0-29,9	60	6,7±0,8	51	5,7±0,8	47	5,2±0,7
	≥30	58	6,4±0,8•	48	5,3±0,8	41	4,6±0,7
Chronic diseases	Chronic tonsillitis	184	20,4±1,3	170	18,9±1,3	165	18,3±1,3
	Chronic rhinitis	171	19,0±1,3•	152	16,9±1,3	141	15,7±1,2
	Chronic otitis	64	7,1±0,9	52	5,8±0,8	45	5,0±0,7
Pathologies of the oral cavity and teeth	Pulpit	90	10,0±1,0	98	10,9±1,0	102	11,3±1,1
	Untreated caries	181	20,1±1,3•	134	14,9±1,2	145	16,1±1,2
	Gum diseases	164	18,2±1,3•	184	20,4±1,3	199	22,1±1,4
Allergic diseases	Bronchial asthma	18	2,0±0,5•	9	1,0±0,3	4	0,4±0,2
	Conjunctivitis	39	4,3±0,7•	28	3,1±0,6	21	2,3±0,5
Spinal anomalies	Scaliosis	75	8,3±0,9	79	8,8±0,9	88	9,8±1,0
	Kyphosis and lordosis	61	6,8±0,8	70	7,8±0,9	76	8,4±0,9

• - $p<0,05$

The state of children's visual function is one of the main conditions for their development.Deterioration of visual function is common in children due to the common eye diseases, especially refractive disorders.

Visual impairment (visual acuity <6/18) is observed in the right eye in 4.0±0.6% of children aged 5-9 years (95% confidence interval 2.8-5.2%), in the left eye (95% confidence interval 3.2-5.6%) of 4.4 ±0.6% of children, in both eyes (95% confidence interval 1.2-3.2%) of 2.2±0.5% of children. Although the specific share of 5-9 years old children with visual impairment is different in the big city 3.0± 1.0% in the right eye, 3.3±1.0% in the left eye, 1.7±0.7% in both eyes), in small towns (respectively 4.0±1.1%; 4.3±1.2; 2.3±0.9) and in villages (5.0±1.2; 5.2±1.3; 2.6±0.9%, respectively), their difference was not statistically significant (P>0.05).

Visual impairment among 10-14 years old children of the region is 4.2±0.7% in the right eye (95% confidence interval 2.8-5.6%), 4.9±0.7 in the left eye (95% confidence interval 3.5-6.3%), 3.4±0.6% in both eyes (95% confidence interval). The specific shares of 5-9 and 10-14 years old children with visual impairment do not differ statistically accurately from each other (P>0.05). The specific shares of 10-14 years old children with visual impairment are in large cities (3.3±1.0; 4.0±1.1; 3.0±1.0%), in small cities (4.3±1.2; 5.0±1,3; 3.3±1.0% respectively) and in villages (5.0±1.2; 5.6±1.3; 4.0±1.1% respectively) and differed statistically from each other.

The prevalence rate of visual impairment among 15-19 years old adolescents living in villages of the region (7.6±1.5% in the right eye, 7.0 1.5% in the left eye, 6.0±1.4% in both eyes) did not differ statistically significantly from the corresponding indicator of 15-19 years old adolescents living in the big city and small towns of the region. The rural children and adolescents do not differ statistically (P>0.05) from eachother due to the prevalence rate of visual impairment.

Thus, visual impairments (visual acuity <6/18) among children and adolescents aged 15-19 years, in 5.1±0.4% of cases are observed in the right eye, 5.3±0.3% in the left eye and 3.7±0.4% in both eyes in the Ganja-Dashkesen and Gazakh-Tovuz Economic Regions. The

prevalence rate of visual impairment among children and adolescents depends on age: relatively low in 5-9 years old children (4.0±0.6% in the right eye, 4.4±0.6% in the left eye, 2.2±0.5% in both eyes), statistically significant in the 15-19 age range (7.0±0.9% in the right eye, 6.7±0.8% in the left eye, 5.4±0.8% in both eyes).There is no statistically significant difference between the population of children and adolescents living in large cities, small towns and villages due to the prevalence rate of visual impairment in the Ganja-Dashkesen and Gazakh-Tovuz Economic Regions.

Allergic conjunctivitis is one of the pathologies which mostly depends on regional factors. In 21.0±0.8% of children and adolescents of GGER which are under our control allergic conjunctivitis has been detected (95% confidence interval 19.4 - 22.6%). The level of the indicator is relatively high in girls (22.5±1.1%; 95% confidence interval 20.3 - 24.7%), relatively low in boys (19±1.1%; 95% confidence interval 17.2 - 21.6 %) and differed statistically accurately ($P<0.05$).

It was found in respectively 26.4±1.5% (95% confidence interval 23.4 - 29.4%), 21.3±1.4% (95% confidence interval 18.5 - 24.1%) and 15.1±1.2% (95% confidence interval 12.7 - 17.5%) of 5-19 years old children and adolescents living in the big city, small towns and villages and their difference was statistically significant ($P<0.05$): risk was low in rural areas and high in large cities.

The age-related dynamics of the prevalence of allergic conjunctivitis is similar in large cities, small towns and villages; the indicator was recorded only at the age of 15-19 years. The frequency of allergic conjunctivitis among 5-9 years old children doesn't differ in the big city (24.0±2.5%; 95% reliability interval 19.0 - 29.0%) and small towns (20.3±2.3%; 95% reliability interval 15.7-24.9%), both are statistically significantly differ compared to rural children (14.0± 2.0%; 95% confidence interval 10-18%).

The frequencies of allergic conjunctivitis in the big city (24.9±2.0 and 28.0±1.5%), in small towns (19.6±1.9 and 23.1± 2.0%) and in villages (13.8±1.6 and 16.4±1.8%) are statistically differed from each other depending on gender of children and adolescents.

Thus, the prevalence of allergic conjunctivitis varies depending on the place of residence, age and sex.

The anamnestic symptoms characteristic for children and adolescents with allergic conjunctivitis are followings: the presence of allergic conjunctivitis in siblings (42.1±2.1%), the presence of this pathology in the father and mother (22.6±1.8 and 28.1±1.9%, respectively). Allergic conjunctivitis in both parents and all family members was detected in respectively 7.4±1.1 and 6.4±1.0% of patients.

The noticeable factor is detection of other pathologies of allergic origin in patients with allergic conjunctivitis. So, in children and adolescents with and without allergic conjunctivitis, bronchial asthma ($P<0.05$; relative risk 16.4 times), 13.5±1.4 and 0.8±0.2%, respectively, 32.5±2, 0 and 13.8±0.2% of cases of rhinitis, sinusitis and rhinosinusitis ($P<0.05$; relative risk 2.4 times), 14.3±1.5 and 7.6±0.6% of cases otitis ($P<0.05$; relative risk 1.8 times), tonsillitis ($P<0.05$; relative risk 2.0 times) in 38.0±2.0 and 19.5±0.9% of cases have been registered.

Thus, the high prevalence of allergic conjunctivitis in GGER and the allergic background in patients are associated with a high risk of other diseases.

The pathology of tear ducts is a relatively uncommon disease. Chronic pathology of tear ducts was detected in 1.5±0.2% (95% confidence interval 1.1 - 1.9%) of 5-19 years old children and adolescents. According to anamnesis in most children pathology of tear ducts occurred in the neonatal period, treatment was not fully effective and periodic exacerbations were observed. It can be assumed that pathology of tear ducts, found in people aged 5-19 years, is the result of incomplete treatment of neonatal pathology of tear ducts. The majority of patients complained of tearing (95%). Swelling in the inner corner of the eye was observed in 50% of patients. Hardly breathing through the nose was observed in 60% of children.

The prevalence rate of pathology of tear ducts did not differ statistically accurately in separate age (1.3±0.4 in 5-9 years;

1.7±0.4% in 10-14 years and 1.4±0.4% in 15-19 years) and gender (1.5±0.3% in boys; 1.4±0.3% in girls) groups. The morbidity rate in the big city (1.2±0.3%) and small towns (1.3±0.4%) is nearly similar, but in villages is slightly higher (1.9±0.4%). The rates of diagnosing of pathology of tear ducts in children and adolescents depending on place of residence do not differ statistically accurately.

Eyelid diseases are also relatively rare in children and adolescents. The incidence of eyelid disease in the general population (5-19 years) was 1.4±0.2% (95% confidence interval 1.0-1.8%). The frequencies of eyelid diseases detected among 5-9, 10-14, 15-19 years old residents respectively are 1.3±0.4; 1.4±0.4 and 1.6±0.4% and do not differ statistically accurately. These pathologies are more common among girls (2.4±0.7%), but it doesn't differ statistically accurately from the same indicator among (1.6±0.6%).

The different morbidity rates of eyelid diseases in 5-19 years old residents of big city, small towns and villages was detected (1.1±0.3; 1.2±0.4 and 2.0±0.4%) and they differed from each-other statistically accurately (P=0.05). The risk of eyelid disease is high among children and adolescents in rural areas.

THE PREVALENCE OF EYE DISEASE AMONG ADULT POPULATION

The distribution of patients according to the level of intraocular pressure in the right and left eyes of patients in observation group is close to each other: <12 mm cs 41.86 and 41.24%; 12 - 16 mm cs 40.24 and 40.44%; 17 - 21 mm cs 10.98 and 11.19%; 22 - 26 mm cs 3.50 and 3.83%; 27 - 31 mm cs 2.44 and 2.36%; ≥32 mm cs 0.98 and 0.94%.

Intraocular hypertension (intraocular pressure> 21 mm Hg) in 6.92±0.22% (95% confidence interval 6.48 - 7.36%) of cases was recorded in the right eye, and in 7.13±0.23% (95% confidence interval 6,67 - 7.59%) was recorded in the left eye. The difference between these indicators is not statistically accurate. Intraocular pressure (<12 mm Hg) was seen in 39.84±0.6% of residents of the big city, in 41.23±0.9% of residents of small towns and 43.76±0.9% of

rural residents. Due to the level of these indicators, residents of the big city, small towns and villages statistically differ from each other, this indicators is relatively high among the rural population.

Intraocular hypertension (intraocular pressure >21 mm Hg) was respectively 7.73±0.33%; 7.28±0.45% and 6.17±0.44% of population in the big city, small towns and villages. There is no statistically accurate difference due to this indicator between population of the big city and small towns (P>0.05), however, the difference between the corresponding figures for residents of the big city and rural residents is statistically significant (P<0.05). The difference between the prevalence rate of intraocular hypertension between residents of small towns and villages (t=1.8) is not considered precise with 95% of accuracy, but with 90% of accuracy (χ^2=2.8; ϑ=1.0; p=0.1; t=1.8; P>0.05<0.1) their difference can be considered significant.

Intraocular pressure <12 - 16 mm Hg is also relatively common among patients. At this level, intraocular pressure was detected in 40.46±0.6% of the adult population in the big city, in 39.67±0.9% - in small towns, and in 41.26±0.9% - in villages, indicators do not differ statistically from each other (P>0.05).

The most noticeable difference is due to the frequency of intraocular pressure of 17 to 21 mm Hg (11.97±0.4% in large cities, 11.82 ±0.6% in small towns and 8.81±0.5% in villages). The population of the big city and small towns does not differ due to this feature; however, both groups of the population are statistically higher than the rural population.

Intraocular pressure changed in the range of 17-26 mm Hg in respectively 7.18±0.87 and 7.47±1.29% 12.53±0.86% of residents of the big city, small towns and villages. The relevant indicator for the big city is statistically significantly (P<0.01) greater than the corresponding figure for small towns and villages, the difference in the level of the comparable indicator between small towns and villages is not statistically significant (P>0.05).

Cases of intraocular pressure of 27 mm Hg or more was very rare among 20 – 40 years old residents of the big city (0.66±0.28%), small towns (0.23±0.16%) and rural areas (0.48±0.34%), the difference is not statistically significant (P>0.05).

Intraocular pressure in respectively 75.82±0.77; 76.2±1.14 and 85.08±0.89% of residents of the big city, small towns and villages aged 60 years and more was ≤16 mm Hg, in 18.79±0.71; 18.06±1.04 and 11.61±0.80% was 17 – 26 mm Hg and in 5.39±0.41; 5.73±0.62 and 3.31±0.45% of residents was 27 mm Hg and more. All three compared types of settlements statistically differ from each other according to all these indicators (P<0.05). In respectively 0.4±0.12; 1.9±0.2 and 4.8±0.3% of residents aged 20 – 40, 40 – 60 and ≥60 years glaucoma was diagnosed. The prevalence rates of the disease differ statistically depending on age: the risk of glaucoma is 4.7 times higher in the age group of 40-60 years and 10.2 times higher in the age group of 60 and older compared to the age range of 20-40 years.Glaucoma was diagnosed in 3.0±0.15% (95% reliability interval 2.7 - 3.3%) of residents of the region aged 20 years and more.

The prevalence rates of glaucoma among residents aged 20–40 (0.3±0.5 and 0.5±0.18%; P> 0.05), 40-60 (1.6±0.3 and 2.3±0.3%; P=0.05), 60 years and more (4.1±0.4 and 5.5±0.4%; P<0.05) differ from each other; the morbidity risk among women is higher. Prevalence rates of glaucoma in the region's male and female populations aged 20 and older differs from each other statistically accurately: 2.5±0.2 and 3.4±0.2% (P<0.05).

Prevalence rates of glaucoma among both – men (0.4±0.2% per year in urban areas, 0.2±0.2% in small towns and “0” in villages) and women (0.5±0.2; 0.5±0.3 and 0.5±0.5%, respectively) residents of the region did not differ statistically accurately. Similar result is also observed among men aged 40-60 years (1.9±0.5% in the big city; 1.4±0.5% in small towns and 1.1±0.5% in villages and women (2.5±0%, respectively) 5; 2.3±0.6 and 1.8 ± 0.6%) when comparing populations. But in 60 years old and older people the results are different. Thus, glaucoma was diagnosed in respectively 4.7±0.5; 4.2±0.8 and 2.7±0.6% of 60 and more years old male residents (P<0.05) and in 6.4±0.6; 5.1±0.8 and 3.9±0.7% of female residents (P<0.05) of the big city, small towns and villages. The prevalence of glaucoma in both the male and female populations does not differ in the big city and small towns,however, the figure is statistically higher

than in rural areas.

Thus, glaucoma is relatively rare among the rural population, and in the big city and small towns is statistically very high and close to each other.

Open-angle glaucoma (92.3±1.4% of all glaucoma cases) detected 12 times more than closed-angle glaucoma (7.7±2.4% of all glaucoma cases). This ratio does not change significantly depending on types of settlements: 93.0±1.7 and 7.0±0.7% in the big city (ratio - 13), 91.3±3.1 and 8.1±3.1% (ratio - 11,5) in small towns, 90.0±3.5 and 9.1±3.5% (ratio - 10) in villages.

7.9±1.4% of diagnosed glaucoma was on initial stage, 21.6±2.2% was in advanced stage, 31.2±2.4% was in late stage and 39.3±2.6% was in terminal stage. Division of glaucoma according these stages sharply differ from each-other in the big city (respectively 9.8±2.0; 20.6±2.8; 34.6±3.3 and 35.0±3.3%), small towns (8.1±2.9; 27.9 ±4.8; 23.3±4.6 and 40.7±5.3%) and in villages (1.5±1.5; 16.7±4.6; 30.3±5.7 and 51.5±6.2%)($P<0.05$).

25.9±2.3% of diagnosed cases of glaucoma is normatensive and 74.1 ± 2.3% are hypertensive glaucoma. According to this distribution the composition of glaucoma diagnosed in the big city (28.5±3.1 and 71.5±3.1%), small towns (23.3±4.6 and 76.7±4.6%) and villages (21.2±5.0 nd 78.8±5.0%) did not differ from each other.

Keratoconus occupies a special place among eye diseases due to its social severity. The main features of the disease are its onset at a young age and a serious deterioration in quality of life, the treatment of which requires large financial resources.One of the peculiarities of keratoconus is that its level of distribution fluctuates in a wide range (0.0003 - 2.3%).

According to the information on long-term applications to medical institutions the prevalence rate of keratoconus among population of Ganja-Dashkesen and Gazakh-Tovuz Economic Regions was 2.77±0.46$^0/_{0000}$ (95% confidence interval 1.85-3.69 $^0/_{0000}$). The prevalence rate of keratoconus among population in Ganja city (big city) was relatively high (4.53±1.17$^0/_{0000}$; 95% confidence interval 2.19-9.06$^0/_{0000}$), 2.09±1.09$^0/_{0000}$ (95% confidence interval 0-4.27$^0/_{0000}$)

in Agstafa-Gazakh districts, 2.90±1.29$^0/_{0000}$ (95% confidence interval 0.32-5.48$^0/_{0000}$) in Tovuz district, 2.82±1.15$^0/_{0000}$ (95% confidence interval 0.52-5.12$^0/_{0000}$) in Shemkir district, 1.36±0.61$^0/_{0000}$ (95% confidence interval 0.14 – 2.58$^0/_{0000}$) in other districts (Goranboy, Goygol, Samukh, Dashkesen, Gadabay and Naftalan). According to the information on comparison of prevalence of keratoconus among the population of districts and towns, only the difference between the indicators of Ganja city and other districts was revealed (P<0.05). The average age of patients was 34.5±2.0 years, although the average age of female patients (37.4±2.8 years), and male patients (32.1±2.4 years) were different in comparison the zero hypothesis cannot be denied (P> 0.05).The vast majority of patients (68.6%) are under 40 years.The specific share of patients under 40 years of age in the male and female groups were 71.4% and 64.3%, respectively. The distribution of patients according to the Amsler-Krumeich classification shows that, most of them were in stage III and II (37.0 and 28.6%, respectively), a small part of them were in stage IV (20.1%) and stage I (14.3%).

Keratoconus was detected in respectively 0.24±0.06, 0.09±0.05 and 0.07 ± 0.04% of persons living in the big city, small towns and rural areas and involved in the examination. The frequency of keratoconus detection in settlements differs statistically (P<0.05). In comparison with rural areas in the big city the frequency of keratoconus detection is 3 times higher.

Thus, the gender and age differences in the frequency of keratoconus detected among those who visited the mobile clinic are not statistically significant, but the level of indicator depended on place of residence differs statistically significant (P<0.05).

5178 patients with type I diabetes mellitus and 25879 patients with type II diabetes mellitus were registered in Ganja-Dashkesen and Gazakh-Tovuz Economic Regions. This is sufficient to represent the patients to be treated. Diabetic retinopathy was found in 22.5±2.5 and 37.0±3.4% of patients, respectively, with or without endocrinology services at the place of residence. The difference of indicators is statistically significant (P<0.05). In places of residence without local

endocrinological care the probability of developing diabetic retinopathy is 1.64 times higher. The prevalence rate of diabetic retinopathy is 28.8± 2.1% (95% reliability is 24.6-33.0%).

The morbidity rate of diabetic retinopathy in the Ganja-Gazakh Economic Regions (28.9±2.1%) compared to the literature is moderate and its main risk factors are: inaccessibility of endocrinological care; gender, type and duration of diabetes; presence of arterial hypertension and neuropathy and treatment options (insulin therapy).

Age-related macular degeneration of the retina is mainly observed in people aged 60 and older. According to the official statistics, age of macular degeneration of the retina and dependence of the prevalence rate on the age did not differ statistically per 1,000 people aged 60 and older: 0.3±0.01 in Ganja, 0.4±0.2 in Gazakh, 0.3 ± 0.2 in Agstafa, 0.5±0.2 in Tovuz, 0.6±0.2 in Shamkir, 0.2±0.1 in Gadabay, 0.3±0.3 in Dashkesen, 0.7±0.3 in Samukh, 0.9±0.3 in Goygol, 1.0±0.3 in Goranboy and 1.0±1, 0 in Naftalan. According to registration information of patients registered in the region the total morbidity rate of age related macular degeneration of the retina per 1,000 people aged 60 and older is:2.0±0.2 in Ganja, 2.3±0.5 in Gazakh, 2.1±0.5 in Agstafa, 2.2±0.4 in Tovuz, 2.8±0.4 in Shamkir, 1.0±0,3 in Gadabay, 2.4±0.8 in Dashkesen, 2.2±0.6 in Samukh, 2.6 ±0.6 in Goygol, 3.1±0.5 in Goranboy and 2.0±1.4 in Nafthalan. In respectively 3.5±0.5% (95% confidence interval 2.5 - 4.5%) of people aged 40 years and older living in the big city, in 4.0±0.5% (95% reliability 3.0 - 5.0%) of people living in small towns, in 8.1±0.7% (95% reliability interval 6.7 - 9.5%) of people living in rural areas the age-related macular degeneration was detected in the interval. The figures for the big city and small towns do not differ from each other, and in male and female subgroups is: 3.3±0.7 and 3.6±0.7% in the big city, 3.9±0.7% and 4.1±0.7% in small towns, 7.6 ±1.0 and 8.5±1.0% in rural areas.

The frequency of age-related macular degeneration of the retina detected in examination of 40-49 years old population living in the big city (1.8±0.6%), small towns (1.6±0.6%) and rural areas (2.6±0.7%) do not differ statistically from each other.

The frequency of age-related macular degeneration of the retina detected in examination of 50-59 years old population living in the big city (2.6±0.7% and 1.8±0.6%) and small towns (3.4±0.8% and 1.6±0.6%) did not differ statistically from each other. But in rural areas (10.2±1.4% and 2.6±0.7%) the difference was significantly higher ($P < 0.01$).

36.6±4.6 and 40.5±4.5% of those with age-related macular degeneration of the retina living in urban and rural areas are smokers, body weight of 48.2±4.7 and 51.2±4.5% of patients is ≥30 kg / m^2, 50.0±4.7 and 48.8±4.5% have arterial hypertension, 10.7±2.9 and 11.6±2.9% have diabetes mellitus, 51.8±4.7 and 55.4±4.5% have hereditary predisposition. Groups comparable in frequency of all these risk factors did not differ statistically from each other.

Presbyopia, a relatively common disease among the elderly population, has become much younger in recent years (premature presbyopia). Risk factors of presbyopia(age, occupational activity, systemic diseases, traumas etc.)cause this pathology at different levels depending on the geographical environment. The problem of presbyopia is more relevant in the regions. In the representative population selected for observation, the prevalence of presbyopia (30.5±1.6 and 33.1±1.7%) among the 40-49 year old male and female groups did not differ from each other ($P>0.05$). Similar results were obtained in 50 - 59 (45.7±1.8 and 48.4±1.8%; $P>0.05$), 60 and older (55.2±1.8 and 57.7±1.8) age groups ($P>0.05$). It is noteworthy that the prevalence of presbyopia in all age groups is slightly higher among women than among men, and the accuracy of the difference is not proven due to the relatively high standard error.

The prevalence rate of presbyopia in 40-49, 50-59, 60 and older age groups of men (30.5±1.6; 45.7±1.8 and 55.2±1.8%) and women (33.1±1.7; 48.4±1.8 and 57.7±1.8%), but also in society as general (31.8±1.2; 47.1±1.3 and 56.5±1.3%) is dynamically increasing ($P<0.01$).

The prevalence rate of presbyopia among 40-49 years old men, women and in groups of both genders is statistically significantly less in rural areas (26.0±2.7; 28.4±2.8 and 27.2±1.9%), sta-

tistically significantly high in the big city (35.6±3.0; 39.2±3.1 and 37.4± 2.1%), is moderate in small towns (30.8±2.8; 31.6±2.9 and 30.8± 2.1%). In groups of 50-59 years old men, women and in groups of both genders the prevalence rate of presbyopia is much higher than in 40-49 age group and respectively is:51.2±3.1; 52.4±3.1 and 51.8±2.2% in the big vity city, 44.8±3.1; 48.4±3.1 and 46.6±2.2% in small towns and 41.2±3.1; 44.4±3.1 and 42.8±2.2% in rural areas ($P<0.01$). In 60 and older age group the frequency of presbyopia is statisticaly higher than in 50-59 age group, but the growth rate is less than the growth rate in the 50-59 age range. In this age period in groups of men, women and both genders the prevalence rate of presbyopia in the big city (58.0±3.1; 60.8±3.1 and 59.4±2.1%), in small towns (55.6±3.1; 57.2±3.1 and 56.4±2.2%) and in rural areas (52.0±3.1; 55.2±3.1 and 53.6±2.2%) were statistically significant different ($P<0.05$).

Thus, presbyopia is a widespread pathology in the population (26.0±2.7 - 60.8±3.1%), the risk of which depends on age and place of residence.

Refraction and accomodation are assessed in all applicants of the mobile clinic of the National Ophthalmology Centre named after Academician Z.Aliyeva. Among the population aged 40-49 years myopia was registered in 35.8±1.2%, 7.2±0.6% and astigmatism in 15.0±0.9% of cases.In the next age range (50 - 59 years), the prevalence of all three pathologies was different (28.9±1.2% myopia, 13.5±0.9% and astigmatism 19.9%).In this age group the level of myopia decreased ($P<0.01$), the frequency of hyperopia and astigmatism increased ($P\leq0.05$) compared to the previous (40-49) age group. The frequency of refractive anomalies recorded in the 60 years old and older population aged (myopia 15.7±0.9%; hyperopia 27.6±1.2% and astigmatism 22.9±1.1%) changed according to the following pattern:the prevalence of myopia decreased, the prevalence of hyperopia and astigmatism increased.Thus, myopia is relatively high (26.8±0.6%), astigmatism (19.3±0.6%) and hyperopia (16.1±0.5%) are relatively less common among the population aged 40 and older.

The trend of the prevalence rate of refractive anomalies in the big city, small towns and rural areas is similar,the difference was recorded according to the prevalence rates of different clinical forms.

Thus, myopia was detected in 40.0±2.2% in the big city, in 37.4±2.2% in small towns and in 30.0±2.0% in rural areas of 40-49 years old population (the difference is statistically significant, $P<0.05$). The level of this indicator in 50-59 years old patients (35.2±2.1; 25.2±1.9 and 26.4±1.9%, respectively) decreased, and at the same time the difference in the type of accommodation compared remained statistically significant.This trend is also observed in the age group of 60 and older(respectively 19.6±1.8% in the big city, 15.2 ± 1.6% in small towns, 12.4±1.5% in villages).

Hyperopia was recorded in 8±1.2% of the population of the big city, 7.6±1.2 and 5.8±1.0% of the population of small towns and villages aged 40-49 years, the level of the indicator is statistically small in the villages. This pathology has increases in all types of settlements among 50 and 59years old patients (15.0±1.5, respectively; 13.8±1.5 and 11.6 ± 1.4%; $P<0.05$). The increasing trend was higher in the 60s and later (31.2±2.1; 28.6±2.0 and 23.0±1.9%).

Thus, after the age of 40 the prevalence of hyperopia among the population increases, the rate is high in the big city and low in rural areas.

The prevalence rate of astigmatism detected in examination of residents of the big city, small towns and rural areas characterized by a dynamic reproduction trend in 40 - 49 (17.0±1.6; 15.0±1.6 and 13.0±1.5%), 50 - 59 (22.4±1.8; 19.6±1.7 and 17.8±1.7%). 60 years and older (26.8±2.0; 22.2±1.8 and 19.6±1.8%) age groups. In all age groups this indicator was high in the big city and small towns and low in rural areas.

The pathology of tear ducts was found in 2.3±0.2% of 40 years old and older population (95% reliability interval 1.9 - 2.7%) selected in Ganja-Dashkesen and Gazakh-Tovuz Economic Regions. Age dependence of tear ducts of pathology of prevalence is noteworthy: 1.5±0.3% inages 40-49, 2.4±0.4% in ages 50-59, 2.9±0.4% in ages 60 and older. A statistically significant increase in the prevalence of age-related pa-

thology of tear ducts is confirmed (P<0.05).The prevalence of pathology of tear ducts in the big city and small towns of the region (among the population aged 40 and over) does not differ statistically significantly (1.8±0.4 and 2.0±0.4%, respectively; P>0.05).

The prevalence rates of pathology of tear ducts among 40 – 49, 50 – 59, 60 years old and older population examined in the big city are different (1.2±0.5; 1.8±0.6 and 2.4±0.7%, respectively), the level of the indicator increases with age, however, the increase in the indicator level is not statistically significant (P>0.05).

The pathology of tear ducts was found in 1.2±0.5, respectively; 2.2±0.6 and 2.6 ± 0.7% of 40 – 49, 50 – 59, 60 years old and older patients examined in small towns. Although the growth of these indicators is dynamic, it is not statistically accurate (P> 0.05).

The prevalence rate of pathology of tear ducts among 40 – 49, 50 – 59, 60 years old and older population of rural areas is respectively 0.2±0.6; 3.2±0.7 and 3.8±0.8%. Although the level of the indicator in the age groups has increased dynamically, the increase is not statistically significant.

Thus, pathology of tear ducts was detected in 2.3±0.2% of the population aged 40 and older in the Ganja-Gazakh Economic region, in general, the change in the indicator depending on age and place of residence is statistically significant.

In 1.0±0.3 (1.0±0.1% of the total population) of examined 40-49, 50-59, 60 years old and older population (1.0±0.1% of the total population) the level of the indicator was 0.9±0.2% in the big city, 1.0±0.3% in small towns and 1.1±0.3% in rural areas and did not differ statistically (P>0.05). A similar result is observed in different age groups.

Regmatogenous retinal detachment is a relatively rare pathology.The frequency of regmatogenous retinal detachment among the examined persons aged 40-60 years was $84.1\pm48.5^{0}/_{0000}$. The level of the indicator was not high even among people aged 60 and older ($66.7\pm33.3^{0}/_{0000}$). In general, the prevalence of the disease among individuals aged 20 and over was $56.7\pm21.4^{0}/_{0000}$.

The prevalence rates of regmatogenic rupture of the retina in

the big city (64.4±32.1$^{0}/_{0000}$), small towns (61.4±43.4$^{0}/_{0000}$) and rural areas (34.7±34.7$^{0}/_{0000}$) of the region are not different (P>0.05).

The prevalence rate of cataracts was 28.3±0.5% among the examined population (95% reliability interval 27.3 - 29.3%).The level of this indicator is 29.0±0.7% in the big city (95% confidence interval 27.6 - 30.4%), in small cities 25.5±0.9% (95% confidence interval 23.7 - 27.3 %), and in the villages it was 29.8±0.9% (95% reliability interval 28.0-31.6%) and differed statistically from each other. Cataracts are relatively rare in small towns and statistically significant in the big city and villages.

Cataracts were found in 11.9±0.5% of the population aged 40-60 years (95% confidence interval 10.9 - 12.9%). The prevalence rate of the disease in this age group in the big city (12.0±0.8%), in small towns (11.1±1.0%) and rural areas (12.5±1.1%) did not differ statistically from each other (P>0.05). Cataracts were found 3 times more in the examination of residents aged 60 and over (38.1±0.6%; 95% confidence interval 36.9 - 39.3%). The prevalence rate of the disease in this age group in small towns was 36.0±1.3% (95% confidence interval 33.4 – 38.6%). The prevalence rate of cataracts among residents aged 60 and over in the big city was 38.2±0.9% (95% confidence interval 36.4 - 40.0%) and in rural areas was 39.8± 1.2% (95% confidence interval 37.4 - 42.2%), statistically significant different than in small towns (P<0.05).

Prevalence of pseudoexfoliation syndrome among the contingent aged 40 and older was 8.1±0.3% (95% confidence interval 7.7 – 8.7%). The level of the indicator was relatively high in rural areas (9.1±0.5%), and statistically low in small towns (5.1±0.4%). In the big city this indicator (9.0±0.4%) did not differ statistically from the indicator of villages (9.1±0.5%).

The pseudoexfoliation syndrome very few was found among 40-60 years old population (1.0±0.2%),at the age of 60 and older, its prevalence is more than 12 times higher (12,3±0,4%; 95% confidence interval 11.5–13.1%). Pseudoexfoliation syndrome found among the population age 60 and older living in the big city, small towns and rural areas statistically different from each other (13.5±

0.6; 8.1±0.7 and 13.5±0.9%), the difference is not big due to the small size of the indicator in small towns.

The prevalence rate of immature cataract detected among 40-60 years old population of the big city, small towns and rural areas significantly different from each other in right (0.48±0.17; 0.39± 0.19 and 0.55±0.24%; P>0.05), left (0.42±0.16; 0.49±0, 22 and 0.67± 0.27%; P>0.05) and both eyes (0.54±0.18; 0.39±0.19; P>0.05) were not statistically significant the overall level of the indicator is 1.44, 1.27 and 2.05 respectively; and their difference was not statistically significant.

The prevalence rate of immature cataract detected among 60 years old and older population of the big city, small towns and rural area sdiffer statistically from each other in right (2.92±0.31; 1.45±0.32 and 1.45±0.27%; P<0.05), left (2.60±0.29; 1.67±0, 34 and 1.08±0.26; P<0.05) and in both eyes (2.89±0.30; 1.16±0.29 and 1.28±0.28%; P<0, 05), level of the indicator is high in the big city and low in rural areas. The overall rate of immature cataracts (8.41; 4.28 and 3.81%, respectively) is high in large cities and low in small towns and villages.

The prevalence rate of mature cataract detected in right (0.12±0.08; 0.10±0.10 and 0.33±0.19%; P>0.05), left (0.18±0.10; 0.20±0.13 and 0.22±0.15%; P>0.05) and both eyes (0.06±0.06; 0.10±0.10 and 0.22±0.15%; P>0.05) of 40-60 years old population of the big city, small towns and villages was very low and did not differ statistically accurately from each other.The total level of mature cataracts in these individuals (0.36; 0.40 and 0.77%) is close to each other (P>0.05).

The prevalence rate of mature cataract detected among 60 years old and older population of the big city, small towns and rural areas differ statistically from each other in right (0.59±0.14; 0.36±0.11 and 0.70±0.21%; P>0.05), left (0.88±0.16; 0.44±0, 18 and 0.45±0.17%; P>0.05) and both eyes (0.36±0.11; 0.51±0.19 and 0.51±0.18%; P>0, 05) do not differ from each other,the overall level of the indicator is 1.83, 1.31 and 1.66%, respectively;and their difference is not statistically accurate (P>0.05).

The prevalence rate of artifakia of 40-60 years old population of the big city, small towns and villages in right (0.12±0.08; 0.09±0.09 and 0.11±0.1%; P>0.05), left (0.18±0.10; 0.20±0.14 and 0.11±0.11%; P>0.05) and both eyes (0.06±0.06; 0.10±0.10 and 0.11±0.11%; P>0.05) do not differ from each other. The overall level of articulation in these groups was 0.364, 0.39 and 0.33%, respectively (P>0.05).

The prevalence rate of mature cataract detected among 60 years old and older population of the big city, small towns and rural areas differ statistically from each other in right (0.66±0.14; 0.44±0.17 and 0.26±0.13%; P<0.05), left (0.82±0.16; 0.51±0, 19 and 0.19±0.11%; P<0.05) and both eyes (0.49±0.12; 0.36±0.16 and 0.32±0.14%; P>0.05). The overall level of the indicator (2.03; 1.31 and 1.77%) is statistically higher than in rural areas.

Thus, people living in the big city, small towns and villages differ in the prevalence of different forms of cataracts. Primary cataracts are more common in rural residents, and immature cataracts are more common among urban residents. The overall level of cataracts is statistically lower in small towns (25.5±0.9%) among the population aged 40 and older, statistically significant in big cities and villages (29.0±0.7 and 29.8±0.9%). Pseudoexfoliative syndrome associated with cataracts is also relatively low in small towns (5.1±0.4%) and relatively high in the big city and villages (9.0±0.4 and 9.1±0.5%).

The prevalence rate of dry eye syndrome among individuals aged 40 and over in Ganja-Dashkesen and Gazakh-Tovuz Economic Regions was 9.9±0.4% (95% confidence interval 9.1-10.7%). The level of the indicator is relatively low in the big city (7.9±0.7%; 95% confidence interval 6.5-9.3%), relatively high in rural areas (12.1±0.6%; 95% confidence interval 10.9-13.3%), and in small towns it is intermediate (9.6±0.7%; 95% confidence interval 8.2-11.0%).

The prevalence rate of dry eye syndrome among40-49, 50-59, 60 years old and older population living in the big city 4.2±0.9; 8.2 ± 1.2 and 11.2±1.4%), small towns (6.2±1.1; 9.8±1.3 and 12.8±1.5%) and villages (8.6±1.2; 13.0±1.5 and 14.8±1.6%)statistically differ from each other. The general pattern is that the prevalence of age-

related dry eye syndrome in all types of settlements increases proportionally (6.3±0.6; 10.3±0.8 and 12.9±0.8%).

Amblyopia is detected in 3.0±0.35% (95% confidence interval 2.4 - 3.6%) of aged 40 years and over population of Ganja-Dashkesen and Gazakh-Tovuz region. The level of the indicator is 2.3±0.4% (95% confidence interval 1.5 - 3.1%) in the big city, 2.9±0.4% in small towns (95% reliability interval 2.1 - 3.7%) and 3.7±0.5% in rural areas (95% reliability interval 2.7 - 4.7%) and statistically significant differed ($P<0.05$).

The prevalence rate of amblyopia among 40-49, 50-59, 60 years old and older population living in the big city (1.2±0.5; 1.8±0.6 and 3.8±0.8%; $P<0.05$), in small towns (1.4±0.5; 2.4±0.7 and 5.0±0.9%; $P<0.01$) and in villages (1.8±0.6; 3.2±0.8 and 6.2±1.1%; $P<0.01$) differed statistically from each other. The morbidity rate increases depending on age, the rate is higher in rural areas than in urban areas.

The prevalence rate of chronic keratoconjunctivitis among polulation aged 40-49, 50-59, 60 and over living in the big city (2.6±0.7; 3.0±0.7 and 4.4±0.9%; $P>0.05$), small towns (3.4±0.8; 3.8±0.8 and 5.6±1.0%; $P>0.05$) and in villages (4.2±0.9; 4.8±0.9 and 7.4±1.2%; $P>0.05$) did not differ statistically accurately from each other.

Although the prevalence rate of keratoconjunctivitis among polulation aged 40 and over (3.3±0.5%) smaller than the corresponding figure for small towns (4.3±0.5%) no statistically significant difference is found. But the prevalence rate of chronic keratoconjunctivitis among polulation aged 40 and over in rural areas (5.5±0.6%) statistically higher than the corresponding indicator of the big city (3.3±0.5%).

Thus, on different nosologies (myopia, hyperopia, astigmatism, amblyopia, dry eye syndrome, pathology of tear ducts, strabismus, keratoconus, keratoconjunctivitis, regmatogenic rupture of the retina, diabetic retinopathy, macular degeneration, glaucoma) - epidemiological characteristics of the adult population in the Ganja-Dashkesen and Gazakh-Tovuz Regions prove that they depend on age and place of residence (large cities, small towns and villages).

COMPARISON OF EYE DISEASE DISTRIBUTION DATA IN GANJA-GAZAKH ECONOMIC REGIONS AND ESTABLISHMENT OF REGIONAL OPHTHALMOLOGICAL CARE NETWORK

The human resources of the ophthalmological care network in Azerbaijan was formed more than 50 years ago in accordance with the norms established during the Soviet era, there were intended 0.8 ophthalmologists per 10,000 children; 0.6 ophthalmologists per 10,000 adults and 1.0 ophthalmologists per 25 beds.Currently, there are 0.9 ophthalmologists per 10 people in the country. When these norms were substantiated, the prevalence and nosological structure of eye diseases among the population was different. At present, an adequate ophthalmological care model cannot be justified without taking into account the prevalence and nosological structure of eye diseases among the population. Having an extra ophthalmologist is not economically viable, but the shortage of ophthalmologists is a problem for providing the population with qualified ophthalmological care. Therefore, the network of ophthalmological care should be formed taking into account the prevalence rate and nosological structure of ophthalmic diseases, which determines the real needs of the population. For this, it is necessary to study both the actual appeals of the population and their potential needs.

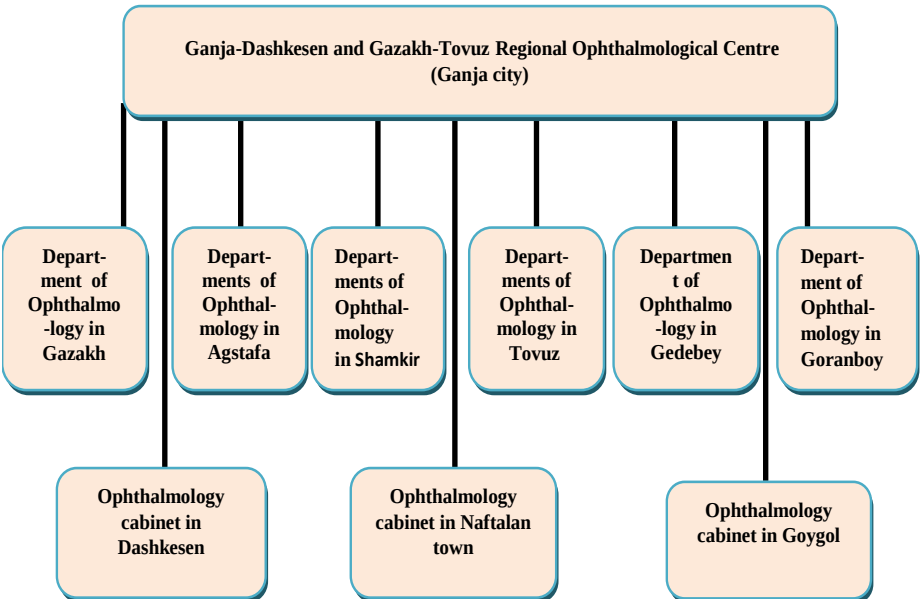
The total morbidity rate of eye diseases detected by actual appeals of the population in Ganja-Gazakh Economic Regions (Chapter III) was 106.2 and 91.3 per 1,000 children and 1,000 adults, respectively.

The sharp difference in the level of eye diseases in the regions according to the application data is noticable. Thus, in Ganja, where the availability of ophthalmological care is satisfactory, the morbidity rate among adult population is high (119.6 ±0.7 ‰),in regions (where there are few ophthalmologists) this indicator was low: 80.0±1.0 ‰ Gazakh, 67.8±1.05‰ Agstafa, 98.4±0.85‰ Tovuz, 85.1‰ Shamkir, 75.0±0.98‰ Gadabay, 75.1±1.67‰ Dashkesen, 66.5±1.21‰ Samukh, 65.1±1.15‰ Goygol, 81.5±1.15‰ Goranboy, 78.6±3.08 ‰ Naftalan.

The level of disability in Ganja-Gazakh Economic Region,

where the morbidity rate of eye diseases is not high on the basis of application materials (2.22±0.2‰ child population; 2.28±0.1‰ adult population; 1.02±0.9 - 7.69±5.2‰ for children; 1.76±0.2 - 3.70±1.0‰ inter-district variability for the adult population) slightly above the national average (1.5 - 1.7‰ in 2017 and 2018, respectively) is high. It also approves that there is a problem with eye diseases in the region, it is necessary to study the real prevalence of eye diseases among the population.

Eye diseases detected in Ganja-Gazakh Economic Regions (Chapters IV, V and VI), comparison of the obtained results with the relevant data of other countries and regions (Chapter I and Chpater VII) shows that the network of ophthalmological care in the region can be based on the standards approved in Azerbaijan during the Soviet era and now in the Russian Federation. As it is known, during the Soviet period according to the order of the Ministry of Health of the USSR No. 999 of 1981, the position of ophthalmologist was 0.8 for 10,000 children and 0.6 for 10,000 adults and this norm is used in most polyclinics of the country.Currently, 1.0 ophthalmologist per 10,000 population in the Russian Federation are accepted as the norm. According to these norms it is necessary to provide 10 units of ophthalmologists for Gazakh region, including 2 units for Gazakh town, 2 units for Chayli and Dash Salahli villages (1 unit each), 6 units for the population of other villages. Taking into account the compactness of the settlements of Gazakh region, the optimal model for Gazakh is to create an ophthalmology department in the centre of the region.In this case, an additional 1 unit of chief of department may be added to the staff. For Agstafa region (population in 2019 - 8.9 thousand) 9 ophthalmologists are considered optimal. As there are no big villages in the district, all ophthalmologists should be included in the staff of medical institutions in the district centre. Tovuz region should have 17.5 units of ophthalmologists (175.5 thousand people in 2019). A full workload for ophthalmologists can be provided in Govlar, Ashagi Ayibli and Ashagi Gushchu villages and settlements of the region.



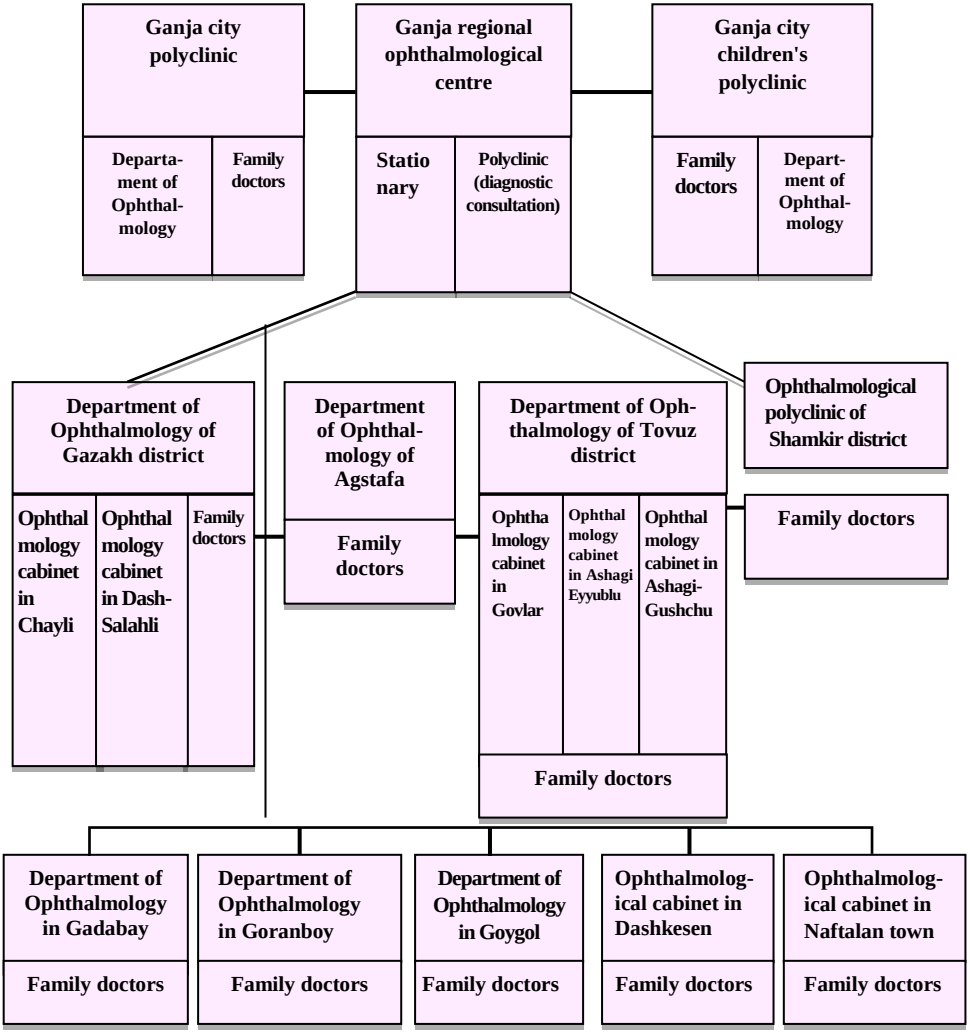
Scheme 1. Model of ophthalmological care taking into account the needs (diseases) of the population in GGER

Shamkir is the largest region in the district (217.2 thousand population in 2019). According to the existing standards there should be 22 ophthalmologists in Shamkir. The villages in this district are compact and a large network of ophthalmological care (hospital, polyclinic) can be established in the district. An ophthalmology care centre can be integrated into the needs of Shamkir, Gedebey, Tovuz, Gazakh and Agstafa districts and established as a regional centre.

The need for ophthalmological care in Gadabay region provides the workload of 10 doctors. There is a strong ophthalmological network in the region. There is a real need for 3.5 units of ophthalmologists in Dashkesen, 6 units in Samukh, 6.5 units in Goygol, 10.5 units in Goranboy and 1.0 units in Naftalan.

Thus, 129.5 units of ophthalmologists should be provided for the Ganja-Gazakh Economic Regions in order to fully meet the needs of the population. At present 897 ophthalmologists work in Azerbaijan (2019), it means 0.9 units per 10,000 population. As medical services are planned in the model of family doctor in Azerbaijan Healthcare

system, some functions of the ophthalmologist can be entrusted to family doctor, and in this case the following model of ophthalmological care in the region may be optimal.



Scheme 2. 4 structural units that can provide ophthalmological care of the population in GDGTER: family doctor, ophthalmology office, ophthalmology department, ophthalmological centre

Thus, ophthalmological care of the population in Ganja-Gazakh region should be provided by 4 structural units - family doctor, ophthalmological cabinet, ophthalmological department, ophthalmological centre.

The following should exist in the family doctor's office for ophthalmological care: eye lamp, binocular forehead magnifier, transpalpebral tonometer to measure intraocular pressure, perimeter (to determine the visual field), set of glasses, skioscopic ruler, diagnostic set for ophthalmoscopy, table and illuminator for determining visual acuity, ophthalmoscope table lamp. The family doctor should be able to perform clinical examination of the visual organ, examination of the anterior and lateral areas of the eye with side light, ophthalmoscopy, determination of visual acuity and light perception, optical correction of the eye with spectacle lenses in myopia, hyperopia and presbyopia, measurement of intraocular pressure, intraocular pressure local application of drugs.

Diagnosis of visual acuity, glaucoma, tear ducts, eyelids, cornea, conjunctivitis and cataracts is a necessary skill of the family doctor.In view of this, the diagnosis of some of the eye diseases given in Chapters IV, V and VI may be entrusted to family doctors. According to the ophthalmological competence of the family doctor, most of the treatment and diagnostic measures in Tables 7.1 to 7.8 in Chapter VII can be entrusted to him.

In world practice the ophthalmology cabinet should be provided by the following equipment as minimum: set of test lenses, Rabkina table for color perception, automatic refractometer, set of skioscopic rulers, stationary hole punch, electric ophthalmoscope, diagonoscope, automatic pneumo-tonometer, Maklakov tonometer, exophthalmometer, binocular ophthalmoscope, linimetry ophthalmoscope, diagnostic ophthalmologist gonioscope, ophthalmic lantern, ophthalmic tweezers, tests for Shirmer test, magnetic kit, tear wash kit, scalpel, microsurgical scissors, eyelid enlargement and lifting tools. The ophthalmology department can provide all types of specialized ophthalmological care. The Ophthalmology Centre should be mainly engaged in high-tech assistance.

Thus, the organization of staged ophthalmological care in the

Ganja-Gazakh Economic Regions in the form of a single system can create a basis for high quality and timely delivery of the treatment-diagnostic process.

CONCLUSION

1. The settlement options of the population (small villages, large villages, settlements, small towns and large cities), age distribution, features of urbanization in Ganja-Dashkesen and Gazakh-Tovuz Economic Regions creates the need to neutralization with the help of organizational models in the formation of the future ophthalmological care network as objective reasons that make it difficult for them to enjoy equal ophthalmic care.
2. The prevalence rate of eye diseases among 0 – 4 years old children (35.1±3.5 - 80.0±12.6 per 100 people) and nosological structure (predominance of refractive anomalies 22.8 per 100 people) strengthens primary ophthalmic care (through the formation of a family doctor) as a key factor in providing them with ophthalmic care.
3. The morbidity rate of eye diseases among children and adolescents is very high in the big city, high in small towns and medium in villages (61.7±2.8; 78.3±2.4 and 97.0±1.0 diseases per 100 people aged 5-9, 10-14 and 15-19 years; 44.7±2.9; 58.3±2.8 and 69.3±2.6 diseases; 36.7±2.8; 43.0± 2.8 and 52.3±2.9 diseases). The nosological structure of eye diseases is similar and the first five places are occupied by conjunctival diseases (38.2 - 45.5%), hyperopia (12.4 - 18.2%), myopia (7.3 - 12.4%), anisometropia (8.2 - 9.7 %) and heterotropy (4.3 - 6.7%).
4. The prevalence rate of chronic eye diseases is 61.5±0.6 per 100 people aged 20 and over in the big city; 81.8±0.7 in small towns and 96.8±0.3 in rural areas, the morbidity rate is relatively low among people aged 20-40 years (29.6±1.1; 47.0±1.7 and 86.7±1.7), relatively more among 40-60 years old population (64.3±1.2; 84.4±1.1 and 96.8±0.6),significantly higher in people aged 60 and older (75.9±0.8; 101.7; 99.4±0.2).The first five places in the nosological structure of the disease are cataracts (23.1 - 36.0%), presbyopia (11.6 - 15.8%), myopia (11.6 - 14.1%), astigmatism (10.9 -

13, 5%), hyperopia (8.2 - 10.8%).

5. The population's need for ophthalmological treatment and diagnostic measures varies depending on the place of residence in comparison with small towns and villages cataracts and glaucoma are more prevailed in big cities, presbyopia, myopia, astigmatism and hyperopia are prevailed in small towns and villages compared to big cities, diabetic retinopathy, macular degeneration are prevailed in rural areas compared to large cities and small towns. The optimal model of ophthalmological care in accordance with the real needs of the population can be provided on the basis of a combination of options of family doctor, ophthalmological office, ophthalmological department and ophthalmological centre.

PRACTICAL RECOMMENDATIONS

1. Training of doctors of rural medical centres with the program of first aid and providing of their workplaces with appropriate equipment for meeting the needs of the rural population for ophthalmological care.
2. To include ophthalmologists in medical institutions in villages and settlements with a population of more than 10,000.
3. To create ophthalmology departments in the district centre with ophthalmological centralization.
4. To establish regional ophthalmological centres in large regions (population 1 million and more).
5. To provide a management model of primary ophthalmology service (family doctor)as a single system of specialized and high-tech ophthalmological care networks.

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