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MULTIDISCIPLINARY TEAM CARE IN PROPHYLAXIS OF CHILDREN'S EYE HEALTH – A FOCUS OF THE NURSE'S PROFESSIONAL ACTIVITY

EXECUTIVE SUMMARY

of a dissertation for obtaining

an educational and scientific degree "Doctor of Philosophy "

Scientific speciality "Management of Health care"

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Varna, 2021

The dissertation contains 184 pages and is illustraited with 24 tables and 56 figures.The bibliography inclides 330 literature sourses, 83 in Cyrillic and 247 in Latin.

The dissertation is discussed and proposed for defense by the Department Council of the Department of Health Care at Medical University “Prof. Dr. Paraskev Stoyanov”-Varna on 3rd November 2021.

Scietific Jury:

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The official defense of the dissertation will be held on 18th January 2022 at an open meeting of the Scientific Jury. The materials on the defense are available in the Scientific Department of Medical University and are published on the web-site of Medical University of Varna.

Note: The numbers of the figures and the tables in the executive summary do not correspond to the numbers in the dissertation.

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LIST OF ABBREVIATIONS

БАПЗГ	Bulgarian assotiation of health professionals in nursing
ДОЗ	Children's eye health
ЕКР	European Qualifications Framework
ЕС	European Union
МДЕ	Multidisciplinary team
НРД	National framework agreement
ООН	United Nations
ОПЛ	General practitioner
ППО	Professional Lifelong Learning
СЗО	World Health Organization
ANA	American Nurses Association
AOA	American Optometric Association
EFN	European Federation of Nurses Associations
ICN	International Council of Nurses
NCBORN	National Certifying Board for Ophthalmic Registered Nurses
NHS	National Health Service
ONI	Ordre Nationale des Infirmières
UNESCO	United Nations Educational, Scientific and Cultural Organization

INTRODUCTION

«Learning from the past, striving for excellence in the present, bringing hope and health to the future: the multifaceted role of the ophthalmic nurse»

Caroline Cavanaugh

President of The American Certifying Board for Ophthalmic Registered Nurses

According to the World Health Organization, there are 314 million people with visual impairments in the world 45 million of them are blind. Children's blindness represents 4% of blindness and 1% of visual impairment worldwide. Over 80% of ophthalmic diseases diagnosed in early childhood can be prevented and treated.[1] [2] [3] World experience shows the importance of screening for early detection of visual impairments in childhood. Timely detection and correction of the visual problem are a condition for normal physical, psychological and emotional development, socialization and good quality of life.

Based on the knowledge of the physiological features of the child's eye health, its intensive development and limited time for adequate reaction, contemporary world standards for prevention determine:

- early first examination;
- periodic monitoring and evaluation of visual function;
- initiation of treatment when the deviation is detected, regardless of early age.

There is no national program for prevention of children's eye health in our country. The care over children's eye health is responsibility of the GP's and pediatricians. There is also a tendency of decreasing the number of ophthalmic pediatricians and ophthalmic nurses.

The profession of the modern nursing has its development and new philosophy, which are based on good theoretical and practical training, as well as on increased contribution to health and quality of life of the child, family and community. [4] [5] [6] [7] [8] [9]

Ophthalmic nursing is dynamic and constantly evolving. Ophthalmic nurses play a key role in every aspect of eye health. In order to respond, not only at the moment but also in the future, to the diverse needs of patients, to the expectations of society and the government, ophthalmic nurses must adapt, accept challenges, develop and expand their professional capacity. They also have to adopt innovative practices and new technologies, and to apply new highly specialized skills. The

dynamic development of ophthalmic nursing is a prerequisite for modern, high quality and cost-effective health care, provided by multidisciplinary team, in the field of children's eye health prophylaxis.[10] [11] [12]

The World Health Organization develops care models for professional practice using the multidisciplinary team (MDT) as a basis for care. The need and development of MDT is a result of the increasing complexity of health systems. [13]

The process of prophylaxis of children's ophthalmic health requires a multidisciplinary approach with participation of various specialists, every one with a specific role. Providing comprehensive care by a multidisciplinary team of eye specialists with different levels of competence, knowledge and skills (ophthalmologists, ophthalmic nurses, medical opticians and optometrists) is a prerequisite for improving children's eye health, improving the access to ophthalmologic health care, increasing the satisfaction of the population and lessening the economic burden on society.

The participation of the nurse in the multidisciplinary team for prevention of children's eye health is a real opportunity for changes and improvements in **four domains**:

- **Patient** – providing patient-centered, holistic, rational, cost-effective care; contributing to the health of healthy people;
- **Team** – improving team efficiency by contributing to cohesion, communication, coordination, management;
- **Nurse** – developing full professional potential, multifaceted activities, opportunity for current professional and career progress, professional satisfaction;
- **Nursing** – contributing to the development of the profession; investing in the future of the profession through implementing visionary ideas for qualitative change and for further development.

The expected long-term benefits of research are in two aspects:

- to improve the child's eye health and quality of life;
- to change the attitude to the nursing profession and to outline new perspectives for its development.

The various aspects, the relevance and the significance of the topic, as well as our many years of experience in the field of prevention of children's eye health are at the heart of the challenge to writing this dissertation.

AIM AND TASKS

The aim of this scientific research is to study and analyze the activities for prevention of children's eye health, to identify the features of multidisciplinary team care and to define the functions of the nurse in the team.

Tasks

To achieve the aim, the following tasks were formulated:

1. To present the essential characteristics of multidisciplinary team care in the prevention of children's eye health.
2. To study the legislation governing the activities for the prevention of children's eye health.
3. To study the best practices for the prophylaxis of children's eye health.
4. To study the awareness, health behavior and attitudes of parents in the city of Varna for the prevention of children's eye health.
5. To study the attitudes and barriers in front of the ophthalmic nurses in the country for providing multidisciplinary team care in the prevention of children's eye health.
6. To study the attitudes of ophthalmologists in the city of Varna to conduct activities for the prevention of children's eye health by a multidisciplinary team of specialists.
7. To study the attitudes of students from the Medical University of Varna to participate in a multidisciplinary team to carry out activities for the prevention of children's eye health.
8. To define the functions of the nurse in the multidisciplinary ophthalmological team.
9. To develop a model for multidisciplinary team care for prevention of children's eye health.

We make the following research hypotheses:

1. The surveyed specialists and students will demonstrate a positive attitude to participating in a multidisciplinary team for prevention of children's eye health.
2. Nurses participating in children's eye health preventive programs face objective difficulties to fully realization in a multidisciplinary team.
3. The nurses are aware of their multifunctional role in MDT in regard to the prevention of children's eye health.

We developed the hypotheses due to the need to refine the nurse's activities for prevention of children's eye health in a multidiscipilary team (consisting of four different specialists in children's vision).

MATERIAL AND METHODOLOGY

Subject of the research

The subbject of the study is the multidisciplinary team care in the prevention of children's eye health.

Object of the research

- legislative documents regulating the preventive activities for children and the activities of the nurses;
- literature sources on the nature, composition and functioning of multidisciplinary teams, international and Bulgarian practices for the prevention of children's eye health;
- practical activity of the teams involved in the protection of children's eye health;
- medical specialists providing ophthalmological health care;
- students majoring in “nurses”, “medical optician” and “optometry”;
- parents of children up to 16 years of age.

Study design

The design includes theoretical and empirical research.

Theoretical study

Study of the nature and conditions for the effectiveness of the multidisciplinary team as building blocks of health care.

Theoretical analysis of organizations and teams for preventive care in the prevention of children's eye health is applied. Analysis of the legislative documents regulating the preventive activities in Bulgaria. Comparative analysis of practices in the field of prevention, derived from international protocols and programs for children's eye health and visual screening.

For the needs of the systematic analysis of the content of the collected documentation a framework has been developed including:

• areas of activity;

• degree of integration;

• patient needs;

• levels of interaction.

Study of the professional roles and functions of the nurse in the multidisciplinary team for ophthalmic care.

Theoretical analysis of the professional activities of the nurse is applied, according to the international standards of the professions. Differentiation of the role of the nurse in the prevention of children's eye health, as an opportunity to apply models of ophthalmic health care.

Empirical research

The multidisciplinary, team care in the prevention of children's eye health has been assessed through the opinion of experts - ophthalmologists, nurses, students and parents.

Scope of the study

The study was aimed at 400 people, divided into four groups, as follows:

- first group: 150 parents of children up to 16 years of age from the city of Varna;
- second group: 50 ophthalmic nurses from the country;
- third group: 50 ophthalmologists (experts) from the city of Varna;
- fourth group: 150 students from the Medical University of Varna – nurses, opticians and optometrists.

Criteria for inclusion in the study

- parents of children under 16 years of age who visited the centers for conducting the research;
- doctors - specialists in ophthalmology from medical institutions for inpatient and outpatient care, which are centers for conducting research;
- nurses providing ophthalmic health care in inpatient and outpatient care facilities (research centers);
- students - from the Medical University of Varna, Veliko Tarnovo Branch of MU - Varna and Medical College of Varna– nurses, opticians and optometrists.

Criteria for exclusion from the study

- nurses working in medical institutions without ophthalmology department (clinic);

- doctors with a specialty other than "eye diseases";
- students majoring in other specialty than nursing, medical optics and optometry;
- parents who sought ophthalmic care outside the scope of prevention (injuries, eye diseases);
- medical establishments that refused to give consent to participate in the study;
- specialists, students and parents who refused to sign an informed consent;
- persons under 18 years of age.

Places for conducting the research

- **in Varna**
  - ✓ Specialized Eye Hospital- Varna
  - ✓ Medical Eye Center – Varna
  - ✓ Medical Eye Center Assoc. Prof. Dr. Evgenia Kontrova 2015
  - ✓ Medical Eye Center "St. Nikolay Chudotvorets"
  - ✓ Medical University – Varna: Department of Ophthalmology and Visual Sciences, Department of Health Care, Department of Optometry
  - ✓ Medical College – Varna: Department " Medical Optician "
- **In Pleven**
  - ✓ Medical Eye Center OKULUS
- **In Russe**
  - ✓ University Hospital MEDICA RUSSE
- **In Veliko Tarnovo**
  - ✓ Branch of Medical University - Varna
- **In Plovdiv**
  - ✓ University Hospital PLOVDIV
- **In Kardzhali**
  - ✓ Hospital for active traitment "Dr. Atanas Dafovski"
- **In Burgas**
  - ✓ Medical Eye Center MLADOST

Survey tools

For the purpose of the quantitative study, **two different types of questionnaires** have been developed.

A questionnaire №1 for conducting a standardized interview was developed to study the opinion of experts – doctors, working in ophthalmological practice on the professional activities of the multidisciplinary team for prevention of children's eye

health (Appendix №1). The questionnaire contains 10 questions, divided into the following groups:

- first group - examine the interaction of medical professionals in the multidisciplinary team;
- second group - study the main activities of the nurse in the prevention of children's eye health;
- third group - study the professional competence of medical specialists to perform preventive activities;
- fourth group - study the barriers to preventive activities.

The survey on team care for the prevention of children's eye health includes two versions of Questionnaire №1 and №2 (Appendix №2 and Appendix №3). *Questionnaire №1* examines the attitudes of nurses, providing ophthalmic health care for their participation in a multidisciplinary team for prevention of children's eye health, their functions in the team, the reasons for the lack of willingness to participate and their views on barriers to preventive activities.
Questionnaire №2 examines the opinion of students about their participation in a multidisciplinary team for prevention of children's eye health and about barriers to preventive activities.
The following groups of questions are included in each questionnaire:

- first group - professional experience for preventive activities in ophthalmological practice;
- second group - attitude and readiness to participate in a multidisciplinary team for conducting preventive programs for children's vision;
- third group - the need for continuing education for preventive activities in ophthalmic practice.

The survey for opinion and awareness research on the manifestations and aspects of the health behavior of parents of children seeking medical care for prevention includes *Questionnaire №3* (Appendix №4). The distribution of the questions is in the following groups:

- first group - benefit from preventive activities carried out by specialists in children's eye health;
- second group - awareness of preventive programs for children's vision;
- third group - awareness of eye problems in childhood.

Organization of the study

Ethical framework of the study

The study was conducted after obtaining approval from the Commission on Ethics of Research of the Medical University - Varna (protocol №96 / 24.09.2020).

The main part of the study was conducted independently by the author to ensure proper application of the tools and reliability. The cooperation of managers, directors and head nurses in the cities of Pleven, Ruse, Veliko Tarnovo, Burgas, Plovdiv and Kardzhali was used - they are familiarized with the purpose and the target group of participants and gave written consent to conduct the research.

The organization of the study includes stages, activities, tools, time period and venue. (table 1)

Table 1 Organization of the study

Stage	Activity	Tools	Time period	Venue
First stage	Analysis and systematization of information from specialized scientific literature and legislation relevant to the studied problem.	Specialized databases of foreign and Bulgarian scientific literature, national legislation.	July 2020 – September 2020	MU-Varna
Second stage	Formulation of aim, tasks, hypotheses; choice of methodology, development of tools.	questionnaire №1 for standatrized interview for experts - doctors questionnaire №1 for a survey for ophthalmic nurses questionnaire №2 for a survey for students questionnaire №3 for a survey for parents	September 2020	MU-Varna
Third stage	Applying for obtaining approval from the Commission on Ethics of Research of the Medical University – Varna	Required set of documents to be submitted to the Commission	September 2020	MU-Varna
	Conducting a sociological survey	questionnaires	October 2020 – March 2021	Varna,Pleven, Russe, Veliko Tarnovo, Plovdiv, Kardzhali, Burgas

Fourth stage	Statistical processing and analysis of results	The data acquisition and statistical analysis was conducted with the statistical program IBM SPSS vol.19.0. The measured data and results were transferred to the program Excel *(Microsoft Office Excel)* and displayed as figures.	April – July 2021	MU-Varna
Fifth stage	Summarizing results, formulating conclusions, contributions, recommendations. Finalizing the dissertation and the executive summary.		August – September 2021	MU-Varna

Methods of the survey

General scientific methods for conducting research have been applied in the dissertation paper:

- **Sociological methods**
  - Documentary method - national laws and regulations on the problem have been studied;
  - Historical method - a review of the scientific literature - Bulgarian and foreign, on children's eye health, prevention and participation of a multidisciplinary team in preventive activities, the functions of the nurse have been done;
  - Quantitative sociological method
  - ✓ A survey was conducted with three groups of respondents - parents, students, ophthalmic nurses. Three different questionnaires were developed for the purpose of the study;
  - ✓ Standardized interview to reflect the opinion of proven experts in the field of ophthalmic practice in the prevention of children's eye health.
- **Statistical methods**
  - For the statistical analysis we used the Kolmogorov-Smirnov Test (KS-Test) to evaluate the normality of distribution.
  - The Descriptive statistics was used to summarize the collected variables and to determine a presence of a normal distribution of the data. In case of normal distribution, the results for quantitative variables are presented by arithmetic mean and standard deviation. Variables differentiating

from the normal distribution are presented with Median. Qualitative variables are represented by relative shares (%).

- For the comparisons of mean values of variables, the Independent Samples (Student) t-test and for comparison of the average values between several groups, the ANOVA-parametric method could be used. As well as Mann-Whitney U- test - non-parametric method for comparison of a given indicator between 2 groups; and Kruskal -Wallis test - a non-parametric method for comparison between more than 2 groups.
- Hi-square analysis (χ 2) was used to establish the relationship between two categories. The significance level of the null hypothesis was assumed to be alpha = 0.05; 95% confidence intervals were calculated to estimate the values in the population.

The data acquisition and statistical analysis was conducted with the statistical program SPSS IBM (Statistical Package for Social Sciences), v. 19.0.

Graphic analysis

The method was applied to illustrate the studied processes, phenomena and discovered patterns and dependencies. The measured data and results were transferred to the program Microsoft Office Excel and displayed as diagrams.

CONCEPTUAL FRAMEWORK

The study of the possibilities for application of a multidisciplinary team approach for prevention of children's eye health is a new aspect in the professional activity of the nurse in our country. The presentation of a conceptual framework will contribute to a fuller understanding and clarification of the overall concept of this dissertation.

- ✓ **Health care** - specific professional activity, science and art for solving existing and potential problems with human health, family and community, performed by a nurse; helping a person - sick or healthy, through actions for his health, recovery or peaceful death, which he himself would have taken if he could have done so, if he had the strength, knowledge and will to regain independence, as much as fast possible.
- ✓ **Prevention of children's eye health** - a set of medical and non-medical measures aimed at better eye health with a view to early detection of visual impairments, timely treatment and prevention of adverse health consequences for the quality of life of the child.
- ✓ **Team** - a small group of people with complementary skills, bound by a common intention, goals and approach for which they are mutually responsible.
- ✓ **Multidisciplinary team** - a real, conditional group of medical professionals from different specialties, with complementary knowledge, skills and competencies related to common goals, values and responsibilities, providing patient-centered, adaptive, comprehensive and adequate to human needs care that contributes for increased satisfaction of patients and specialists.
- ✓ **Autonomy** - independence, self-government (in decision-making, in formulating judgment, in carrying out any activity).

ANALYSIS, DISCUSSION OF RESULTS AND PRACTICAL ASPECTS OF SCIENTIFIC RESEARCH

1.Characteristics of the surveyed groups of respondents.

Characteristics of the surveyed parents

The study was aimed at 150 parents of children up to 16 years of age from the city of Varna. An empirical sociological study was conducted using a direct, individual, anonymous survey for the period October - December 2020 in Varna, in the Spicialized Eye Hospital, in the Medical Eye Center – Varna and in the Medical Eye Center Assoc. Prof. Dr. Evgenia Kontrova 2015. The analysis of the socio-demographic characteristics shows that the largest share of parents is in the age group 30-40 years (60.7%), most of the parents have higher education (60.7%) and the opinion of mothers prevails (70.7%), (table 2).

Table 2 Socio-demographic characteristics of the sample

Characteristics		N	Percentage share (%)	Cumulative share (%)
Gender	men	44	29,3	29,3
	women	106	70,7	100
Age	18-29	22	14,7	14,7
	30-40	91	60,7	75,3
	41-60	37	24,7	100
Education	higher	91	60,7	60,7
	secondary	52	34,7	95,3
	primery	7	4,7	100

Characteristics of the studied students

The study was aimed at 150 students from the Medical University of Varna. The study was conducted in the period October - December 2020, in the following research centers:

- Medical University – Varna: Department of Ophthalmology and Visual Sciences, Department of Health Care, Department of Optometry
- Medical College – Varna: Department Medical Optician
- Branch of Medical University – Varna in Veliko Tarnovo
- Specialized Eye Hospital -Varna

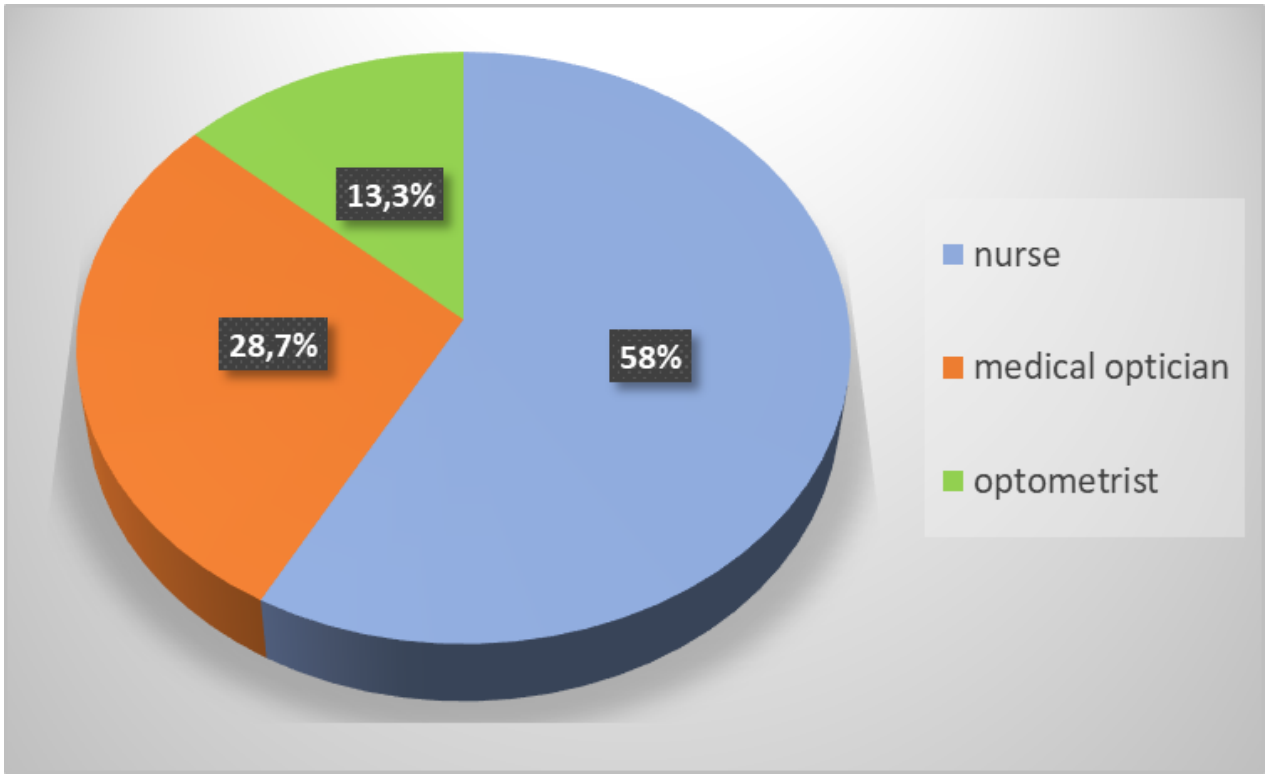

Figure 1 Percentage (relative share) of students by specialities

The study included 150 students from three specialties - "nurse" (3rd and 4th year), "medical optician" (1st, 2nd and 3rd year) and "optometrist" (1st and 2nd year), who were currently training in eye diseases, eye care and clinical practice in ophthalmological structures, (figure 1). The average age of students is 22 years, in the age range between 18 and 41 years.

Characteristics of the surveyed nurses

The study included 50 ophthalmic nurses on the territory of the following research centers:

- **In Varna**
  - ✓ Specialized Eye Hospital - Varna
  - ✓ Medical Eye Center – Varna
  - ✓ Medical Eye Center "Assoc. Prof. Dr. Evgenia Kontrova 2015"
  - ✓ Medical Eye Center "St. Nikolay Chudotvorets"
- **In Pleven**
  - ✓ Medical Eye Center "OKULUS"
- **In Russe**
  - ✓ University Hospital MEDICA RUSSE
- **In Plovdiv**
  - ✓ University Hospital PLOVDIV
- **In Kardzhali**

- ✓ Hospital for active traitment “Dr. Atanas Dafovski”

- **In Burgas**
  - ✓ Medical Eye Center “MLADOST”

The study was conducted in the period October 2020 - March 2021. The average age of the surveyed nurses is 48 years and the age range is between 26 and 72 years. The average age of ophthalmic nurses is lower than the average age in the country (55 years). The high average age of the respondents in the survey fully corresponds to the aging trend of nursing in Bulgaria. A large proportion of the surveyed nurses have professional experience over 30 years (36%). Nurses with less than 10 years of experience have the same relative share (figure 2).

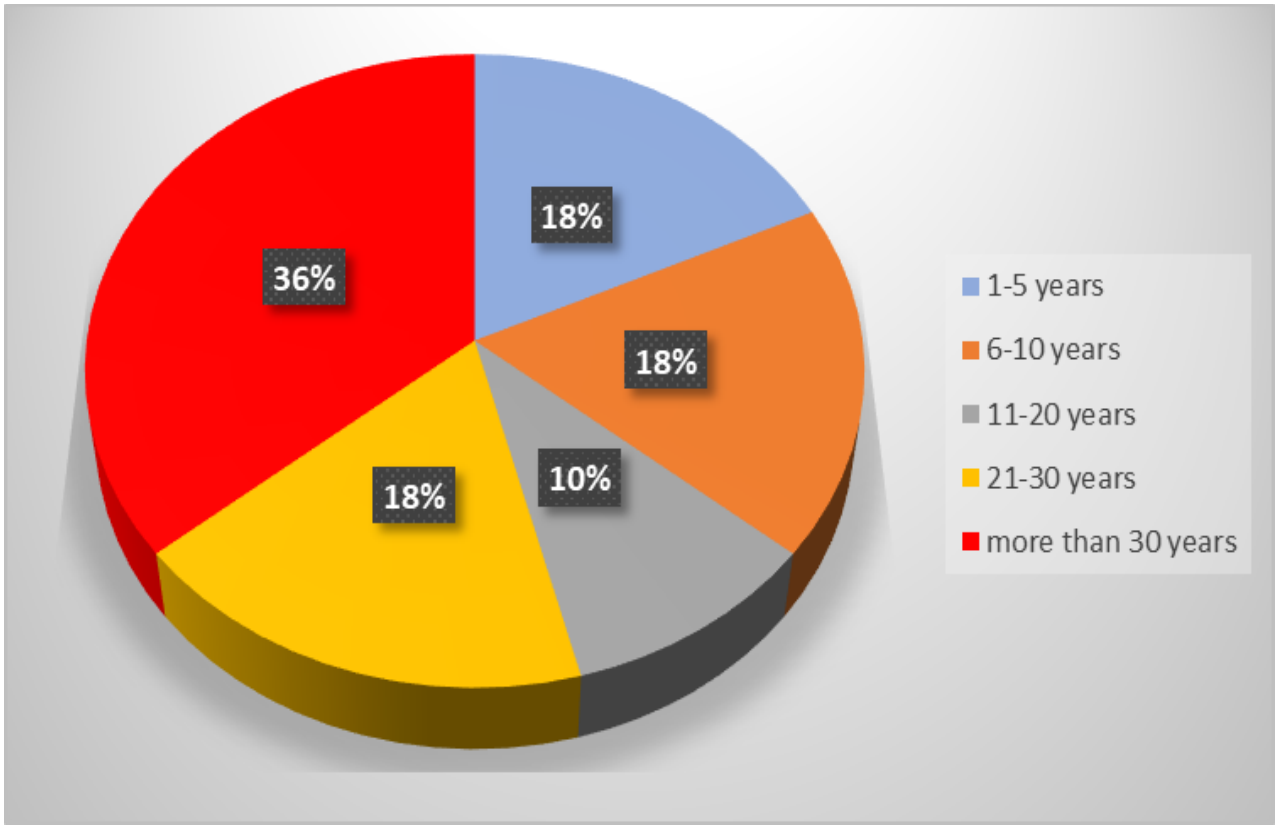

Figure 2 Duration of the professional experience of the sampled nurses

These data show, on the one hand, the presence of nurses with good experience in the field of ophthalmic health care, possessing skills to care for human health and disease. On the other hand, the data give hope for continuity and interest in ophthalmic health care on the part of young nurses.

Characteristics of the surveyed ophthalmologists

The study was aimed at 50 ophthalmologists from the city of Varna on the territory of the following research centers:

- ➢ Specialized Eye Hospital - Varna

- Medical Eye Center – Varna
- Medical Eye Center "Assoc. Prof. Dr. Evgenia Kontrova 2015"
- Medical Eye Center "St. Nikolay Chudotvorets"

The survey was conducted for the period October 2020 - March 2021. The surveyed doctors represent 40.98% of the ophthalmologists practicing in our city. The average age of the respondents is 42.5 years and the age range is between 26 and 75 years. The largest relative share of doctors is with professional experience between 1 and 5 years (30%), (table 3).

Table 3 Duration of the professional experience of the ophthalmologists in the study

Duration of the professional experience of ophthalmologists	N	Percentage share (%)	Cumulative share (%)
1-5 years	15	30%	30%
6-10 years	10	20%	50%
11-20 years	5	10%	60%
21-30 years	11	22%	82%
More than 30 years	9	18%	100%
Total	50	100%	

The data from the study reflect the trend of interest and preference of doctors to the high-tech and dynamically developing specialty "ophthalmology" and a good ratio of ophthalmologists to population.

2.Study of the awareness and health behavior of the parents. Discussion.

We studied the health behavior and awareness of parents about the care of children's eye health using a direct individual anonymous survey. The study included parents of children from 1 to 16 years of age who had seen ophthalmologists in the centers of scientific research for preventive examination and consultation.

To the question "In your opinion, if the child does not have an eye problem, when should you take him for a preventive eye examination?", one third of the parents (30.0%) answer in accordance with contemporary trends in prevention – at 1,3, 5,7 years of age, and every year at school age. The majority of parents have a high level of awareness about the periodicity of preventive examinations during childhood (figure 3). The statistical analysis did not establish a statistically significant correlation between awareness and age of parents (C =0.096; p = 0.243), as well as

the education of parents (C=-0.109; p=0.184).

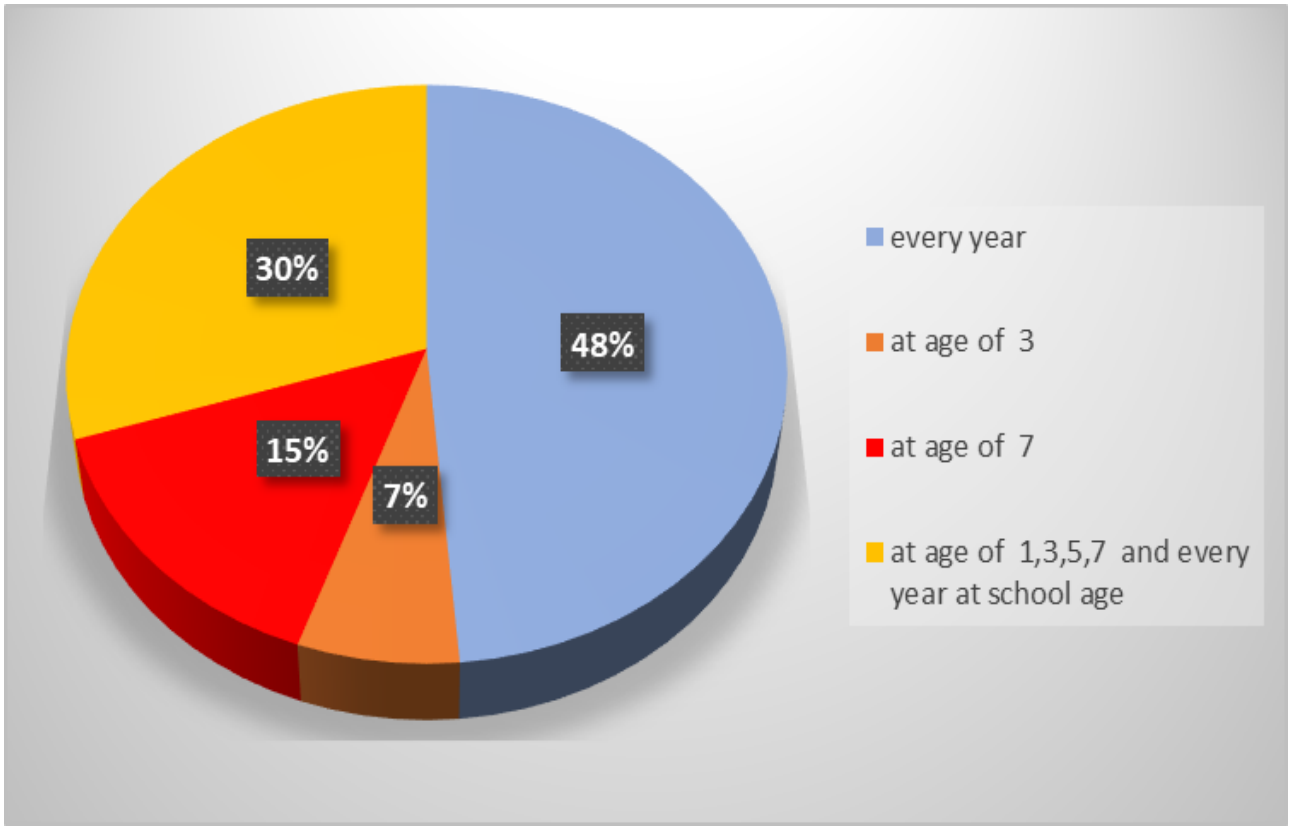

Figure 3 Parents' awareness of the periodicity of preventive examinations and follow-up of children's eye health

It is encouraging that according to 52% of respondents, child eye health care should be the subject of a partnership between parents and pediatric eye health professionals. 16.7% of the respondents express proactivity and personal responsibility for the eye health of their child (figure 4). The statistical analysis did not establish a statistically significant correlation between the responsibility for the care of children's eye health and the age of the parents (C=-0.009; p=0.917).

To study the manifestations and aspects of the health behavior of families, we asked the parents about the time of the first eye examination of their child. It is worrying that for 16% of the children, according to the parents, the reason for the first examination was an eye problem. The same is the relative share of children who visited an eye clinic only before starting school and approximately the same of children who had not been examined by an ophthalmologist before the study (figure 5).

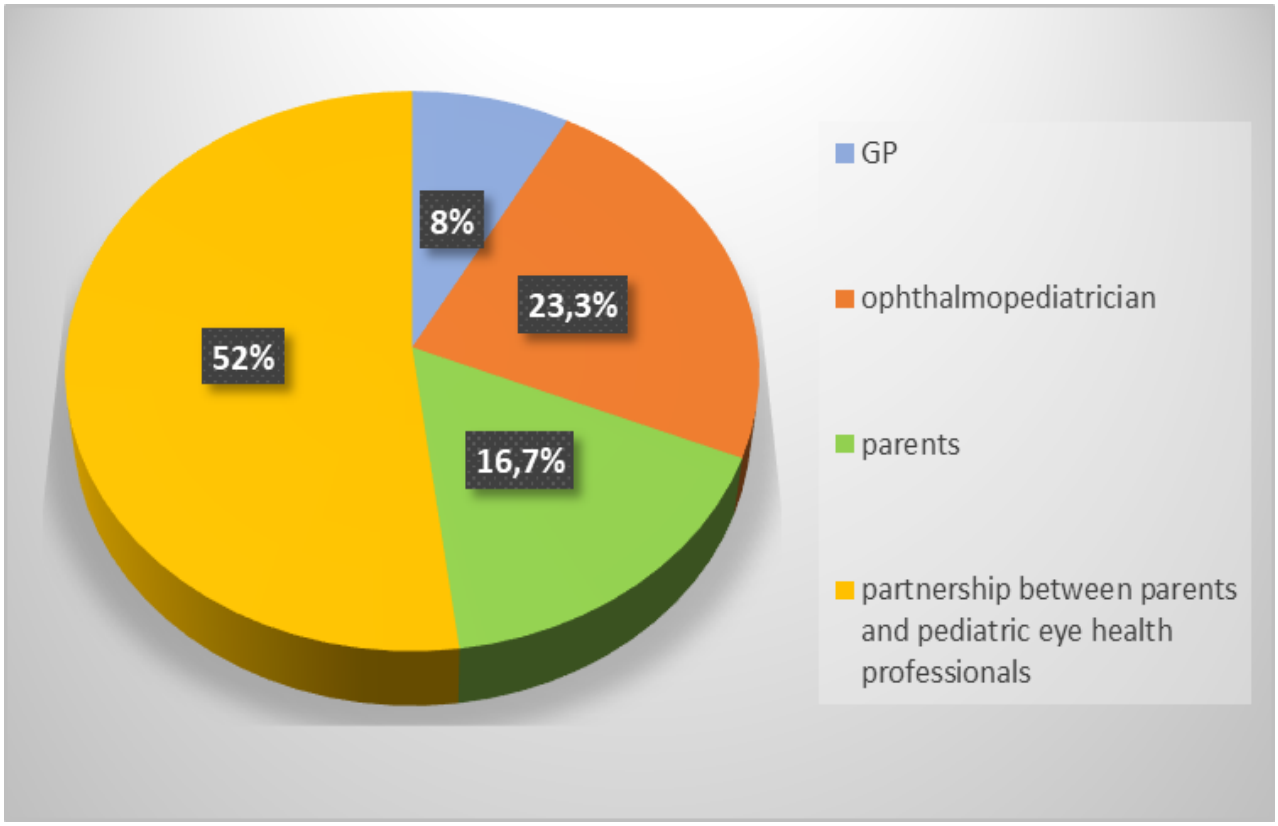

Figure 4 Parents' assessment of responsibility and care for children's eye health

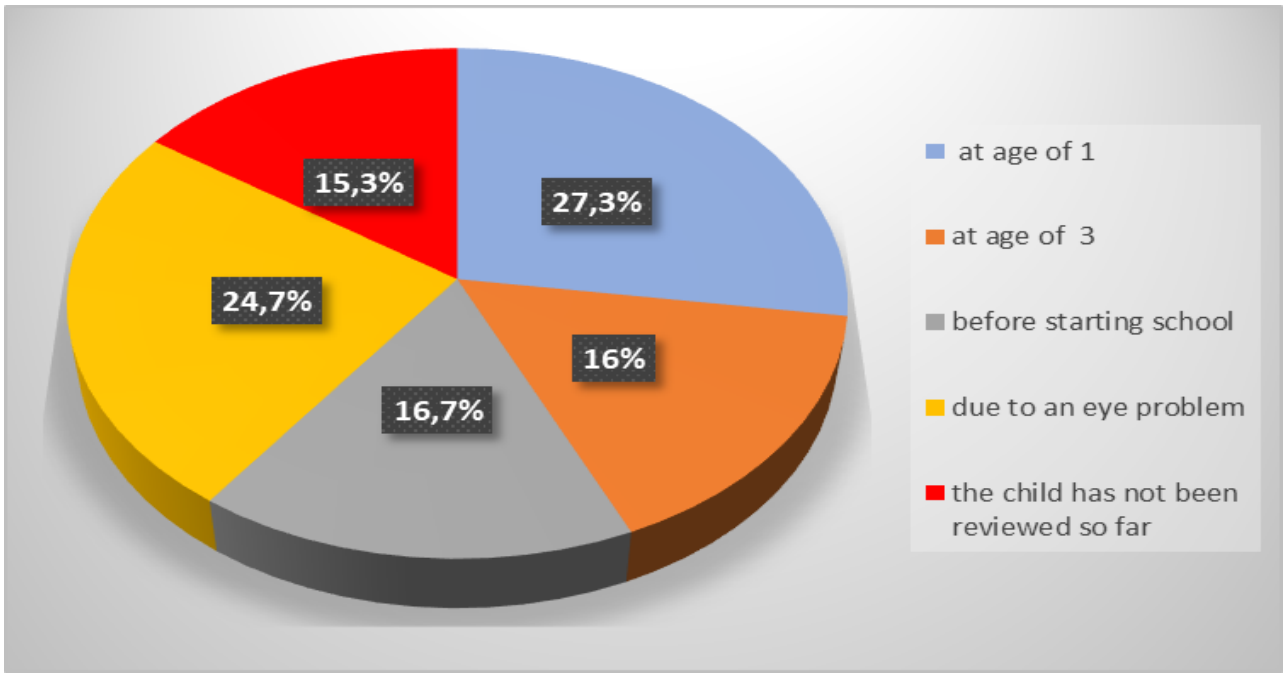

Figure 5 Information from parents about the first eye examination of their children

The statistical analysis found a weak positive correlation between the education of the parents and the first eye examination of the child - the more educated parents take the child for an eye examination earlier (C=0.086; p = 0.298). No statistically significant relationship was found between the age of the parent and the first prophylactic examination of the child (C=0.096; p = 0.243).

In the survey we included a question about parents' awareness of the periodicity of preventive examinations to study whether there is a connection between this factor and the health behavior of parents. The performed statistical analysis did not establish a statistically significant correlation between the first eye examination of the child and the parents' awareness of the topic. (C = 0.119; p = 0.148).

We also examined parents' awareness with questions about their knowledge of "amlyopia" (a specific eye problem for children that can be treated during this period only) and the refractive error "myopia". More than half of the parents are not familiar with the eye problem "amblyopia", and 15.3% say that their child has such a problem (table 4).

Table 4 Awareness of parents about the eye problem "amblyopia"

Awareness of parents about the eye problem "amblyopia"	**N**	**Percentage share (%)**	**Cumulative share (%)**
I am not familiar with the eye problem “amblyopia”	87	58%	58%
I am familiar with the eye problem of amblyopia, it is treated until the age of 7	40	26,7%	84,7%
My child has amblyopia	23	15,3%	100%
Total	150	100%	

The statistical analysis did not establish a statistically significant correlation between parents' knowledge of the treatment of the eye problem "amblyopia" and their education (C = -0.032; p = 0.700) and their age (C=0.156; p = 0.056). According to the data from the study, the level of awareness of parents about modern methods for correction and control of myopia is similar to that about amblyopia (table 5).

Table 5 Awareness of parents about the modern methods for correction and control of "myopia"

Awareness of parents about modern methods for correction and control of "myopia”	**N**	**Percentage share (%)**	**Cumulative share (%)**
I'm not familiar	98	65,3%	65,3%
no, this is the responsibility of the ophthalmologist	18	12	77,3%
I'm familiar	20	13,3%	90,7%
I know, my child has myopia	14	9,3%	100%
Total	150	100%	

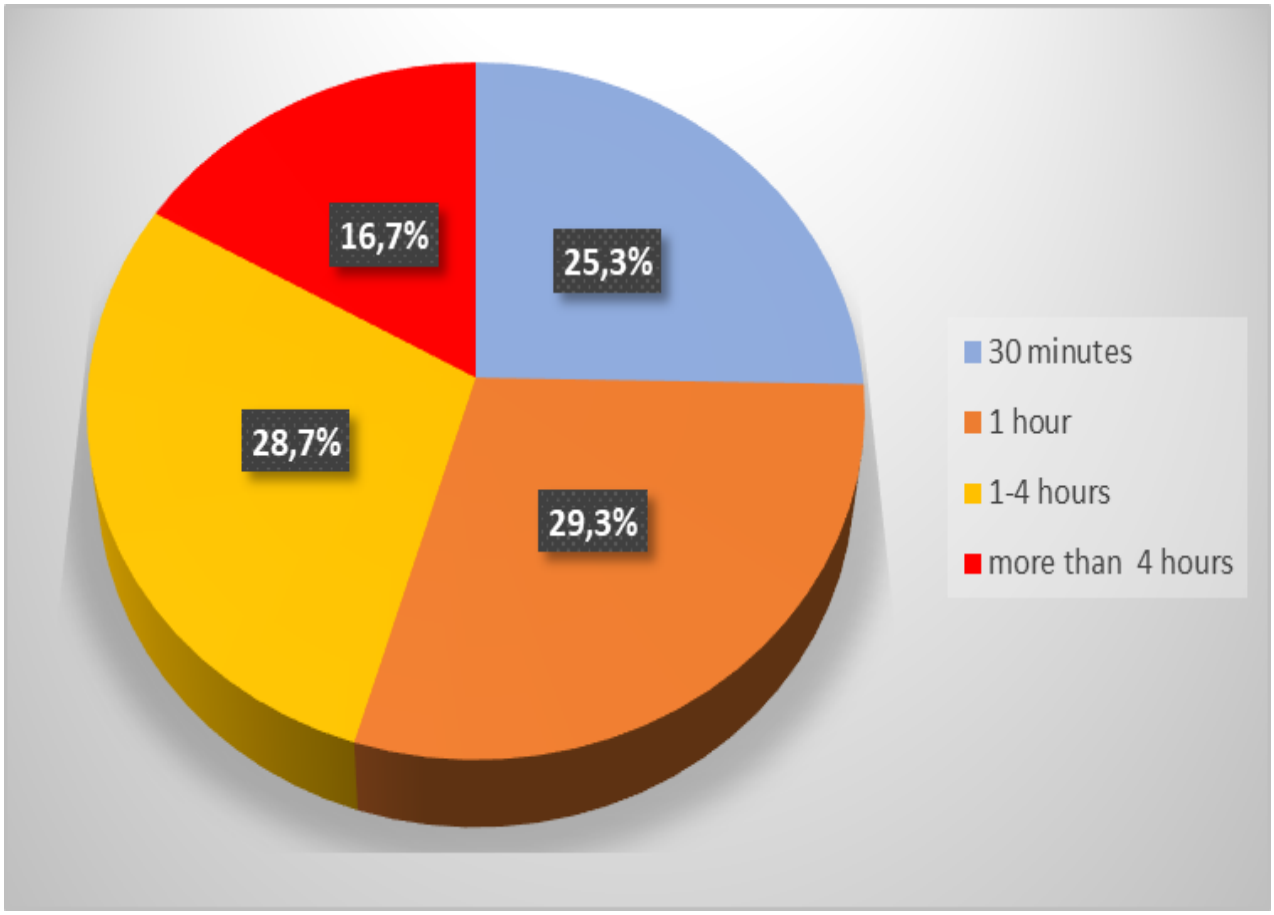

Figure 6 Information from parents about the time spend by the child in front of monitors daily without interruption

According to parents, 28.7% of children spend 1 to 4 hours non-stop daily in front of monitors of electronic devices. The fact that for 16.7% of children, the duration is more than 4 hours a day is alarming (figure 6).

The statistical analysis showed that the length of time spent by the child in front of monitors does not depend on the educational level of the parent (C=0.133; p=0.103), but a statistically significant positive correlation was found with the age of the parent (C = 0.288; p = 0). Parents appreciate the usefulness and contribution of preventive activities for the early detection of eye problems (78.7%) and for the normal development of the child (12.7%). According to only 1.3% the prevention can raise families' awareness of children's eye health (figure 7). Despite this low percentage and the lack of a statistically significant correlation between the usefulness of preventive activities, the education of parents (C = -0.021; p = 0.794) and their age (C = 0.127; p = 0.122), we are convinced that medical professionals need to be proactive in the process of informing families about health issues.

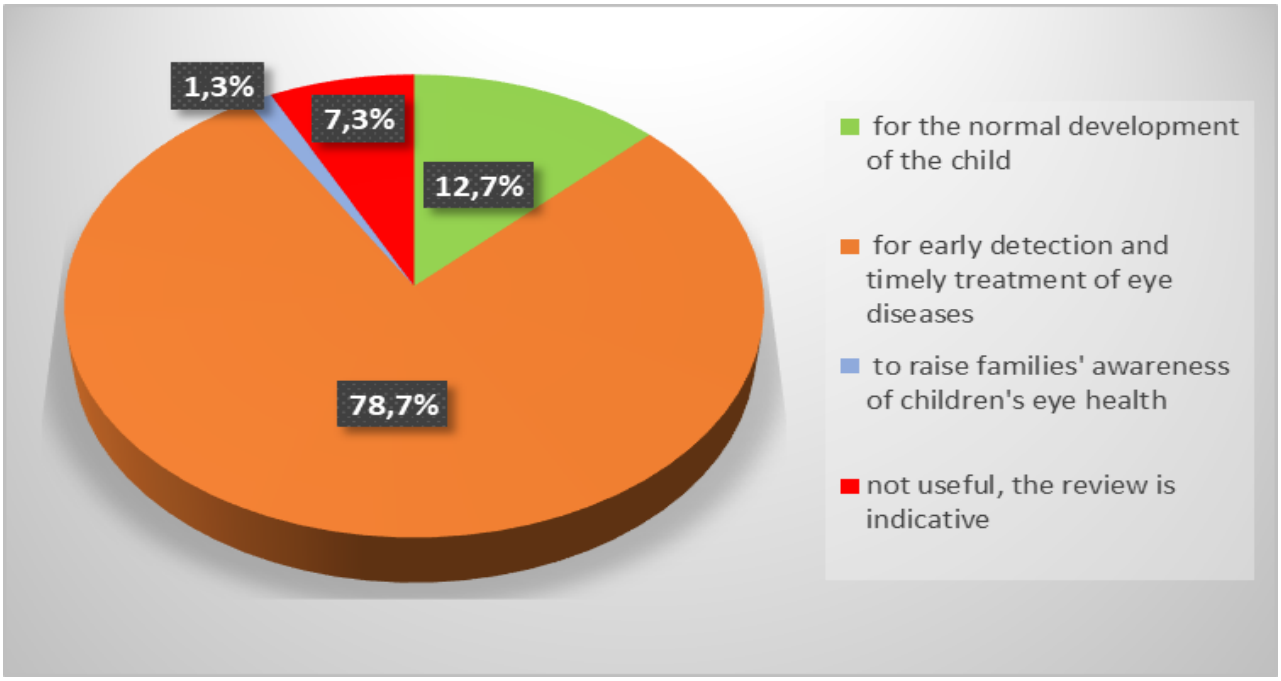

Figure 7 Parents' assessment of the usefulness of preventive activities by ophthalmopediatric's specialists

A significant proportion of parents (78.7%) have confidence in the competence of the nurse in the team that conducted a preventive examination of their children (figure 8). The high trust in the nurse is supported by the fact that 78.7 %% of the parents will follow the given recommendations for annual prophylactic examination or mandatory full eye examination in a children's eye clinic. The performed statistical analysis found a weak positive statistically significant correlation between the observance of the recommendations given by the nurse and the education of the parents (C = 0.240; p = 0.003) and did not establish such with the age of the parents (C = -0.021; p = 0.391).

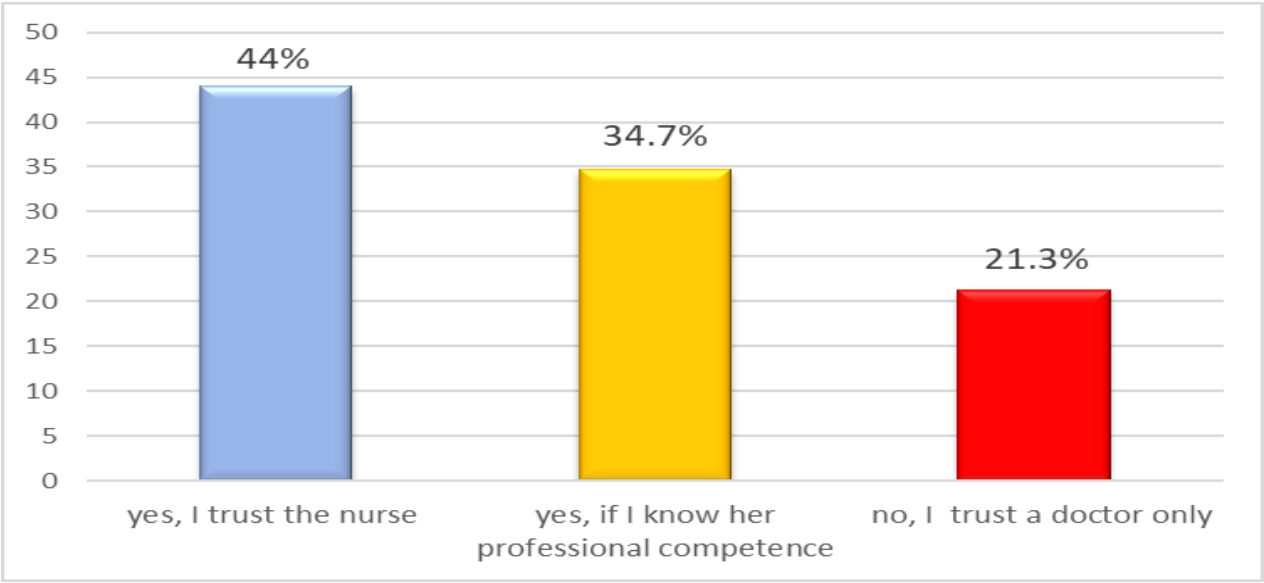

Figure 8 Parents' trust in the expertise of the nurse in the team

Our belief in the need for annual prevention programs is supported by the fact that medical professionals are listed as the preferred source of information on eye health issues (figure 9). The performed statistical analysis did not establish a statistically significant correlation between the preferred source of information, the age of the parents (C=0.067; p=0.416) and the education of the parents (C = 0.045; p = 0.584).

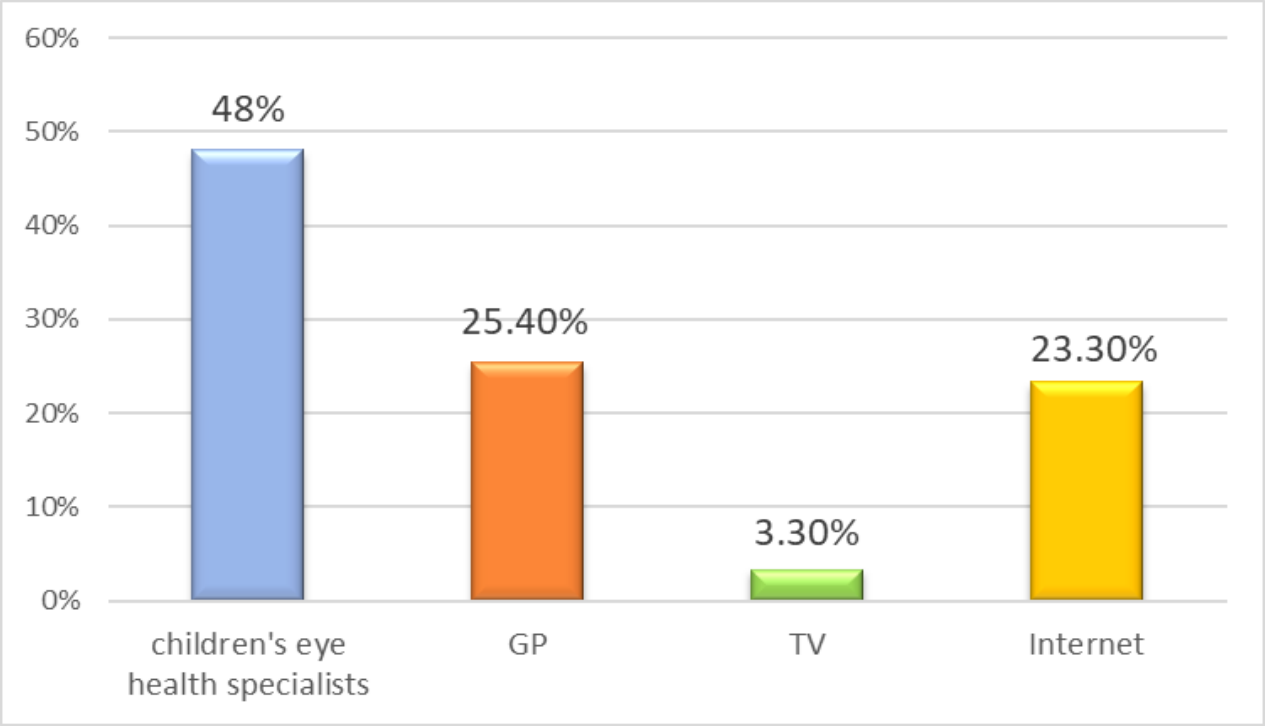

Figure 9 Parents preferred source of information about children's eye health

Discussion

Monitoring the development of the visual system, timely detection and correction of the visual problem are a condition for normal physical, neuro-psychological and emotional development, as well as for socialization and good quality of life of the child. [72] [178] [183] Parents' knowledge of the importance of childhood for the development of the visual system, the need for periodic monitoring of visual function and the typical children's eye problems are crucial for the family's attitude to eye health.

The results of our study on parental awareness and health behavior are confirmed by scientific publications on the subject. A number of authors share a thesis about existing barriers to the prevention of children's eye health on the part of parents - misconceptions and stigmas, low awareness, logistical problems, lack of funds, leading to poor health behavior of families. The authors appreciate the important parental role for children's eye health, as well as the need for assistance

from medical specialists to parents for good vision care during childhood.

Sukati (2018) published data from studies that 50% of parents have no knowledge of the child's visual system, and 30% of them think that children do not have eye problems.[256] According to a study by Donaldson (2018), some parents believe that glasses are not useful for children's vision and only 15% of them are familiar with the eye prevention programs that are held in kindergartens and schools where their children study. [257] Bartczak (2018) examines the impact of children's long stay in front of monitors on their health and emotional balance. According to the author, the consequences for children are the development of functional myopia and eye discomfort, slowing of speech function, manifestations of poorer vocabulary, lower academic results, decreased concentration, lack of communication skills.[258] In connection with the trend of increasing the relative share of myopia among students, McCrann (2018) emphasizes the need to inform parents and change their attitude to refractive errors and their correction. Some parents see the squinting of a child with myopia as a sign of good luck, and the intake of certain foods (carrots and eggs) as a method for treating eye diseases. [259] According to Holton et al. (2019) family health behavior influences the risk of occurrence and severity of myopia in childhood. The authors share the view of the important role of the nurse in promoting a healthy lifestyle, which includes spending more time outdoors, increasing physical activity and reducing the time for visual load of children. [260] Research on the subject supports our thesis that the lack of knowledge among parents about the development of the child's visual system is crucial for the health behavior of families.

The authors of the studied scientific literature point out the need to provide up-to-date information to parents through training programs by medical professionals and teachers, the use of brochures, videos, billboards and social networks. [128] [256] [259] Kovarski (2014) considers the parent-medical collaboration as a guiding principle for changing the health behavior of families. [261] Hinterlong et al. (2019) identifies the work of the school nurse with children, parents and teachers as key to the perception of healthy behavior and practices. [238]

An example of good practice in the process of informing parents is the preventive program "Children's vision", held in Varna - one of the main activities in the program is training parents and children in proper care for eye health and good visual hygiene.[128] According to Grupcheva et al. (2017) during the Municipal Program "Children's Vision" in Varna for the period 2013 - 2016 a survey was conducted among 3987 parents. It was found that only one third of parents (38.02%) have a high level of awareness of the need for periodic monitoring of children's vision, and for 33.39% of children the examination under the program was their first

eye examination. The level of awareness of parents maintains the trend over the years and explains the fact that 2/3 of them take the child for examination when a problem occurs, at the age of 7 or never before the time of the study. Parents' desire to participate in a preventive program reflects their positive attitude towards the opportunity for prophylactic examinations. The attitude towards the nurses participating in the team is also positive. One third (30.48%) of the examined children were recommended for a complete eye examination due to detected visual problems. The trust in the medical specialists is

manifested in the statement that the parents will follow the recommendations given during the preventive examination. [162]

The possibility for active participation of the nurse in the process of promotion of eye health in our country is regulated by Ordinance №1 / 08.02.2011 of the Ministry of Health. [246]

Scientific research confirms the expansion of the spheres in the professional activity of the modern nurse in the direction of training and counseling of families. Lee et al. (2018) develop and test an eye health program for children and their parents, including educational and visual training. According to the authors, the educational activities that medical professionals perform, based on the theory of social learning, give good results in terms of visual acuity of children. [262] In 2019, the National Center for Children's Eye Health and the National Association of School Nurses in the United States developed guidelines for annual screening of children's vision. The main aspects in the activity of the nurse are good communication and ability to train families in the care of children's eye health.[263] According to Kodjebacheva et al (2015,2016), the training and counseling of parents is based on explaining the importance of wearing glasses in childhood, not only for the prevention of easy fatigue, headaches, lack of concentration and interest in the learning process, but also for creating normal conditions for the proper development of the child's visual system. Overcoming the prejudices of families ("children should not wear glasses", "glasses make the eyes lazy") and negative attitudes on the part of other children is the goal of adult and children's education.[264] [265] In order to achieve the most effective changes in health behavior, the support of families in the period of early childhood must be the most intensive. In order to have a strong influence on health behavior, a family-oriented approach is recommended, which contributes to social cohesion and improvement of competence in the "specialist-parent-child" axis. [265] [266]

The current role of the nurse as a trainer of children and parents and the accompanying professional changes are the subject of research by other authors. [92]

[267] [268] [269] [270] Dittman et al. (2018) examine the "education and qualification" factor of the nurse for the successful learning process of parents.[271] According to Forslund et al. (2016) the modern nurse needs to expand professional competencies, to realize the role of a trainer and a leader in the relationship with parents, which requires specific skills. [269] Chevallier et al. (2018) complement the contemporary role of the nurse by "support for children and families". The authors point to the contribution of nurses to reducing health inequalities in France.[272] Clerke et al. (2017) focus on the partnership between parents and nurses.[273] Pavlova (2015) gives the traditional nursing role a pedagogical and social aspect.[92]

According to Hopwood et al. (2018) modern nursing professional activity is expanding and requires better expertise.[274] The updating of the role of the nurse places new demands on education, professional qualification and life-long learning. [267] [268] [275] While studying the process of nurses' work with parents and children, some authors found a deficit of skills for teaching and managing group dynamics.[269] [270] The solution of the problem is aimed at providing specialized training for nurses, participation of nurses who would act as mentors and supervisors to train, support and promote this modern aspect in nursing professional activity.[268] [269]

The nurse's education in Medical University is a prerequisite for the development of nursing, for the expansion and improvement of professional competencies in response to the dynamically changing health needs of the child and the family. [72] [268] [276]

The data obtained from the scientific study of awareness, manifestations and aspects of the health behavior of parents give grounds for placing as a priority for all medical professionals the process of training in good visual hygiene and care for children's eye health. Nurses, as part of the ophthalmology team, have made a significant contribution to raising parent awareness. Opportunities for counseling and training are a result of both the development of the profession and the established partnership and trust between parents and nurses.

In our opinion, the parent-nurse collaboration and the partnership in preventive activities are guiding principles for changing the health behavior of families and improving health care for children's vision.

3. Study of the attitudes of students (nurses, medical opticians and optometrists) to participating in a multidisciplinary team for prevention of children's eye health. Discussion.

According to the survey data, students have a good theoretical knowledge, and they answer the question about preventive examination of healthy, risk-free children in accordance with world standards for the periodicity and follow-up of children's vision (figure 10). By the time of the study a small proportion of students had participated in prophylactic programs for children's eye health (12.7%). 92.7% of the respondents expressed a desire to participate in the MDT. Although the statistical analysis did not establish a statistically significant correlation between the specialty of the students and their activities in the team (C = -0.048; p = 0.559), some differences were noticed.

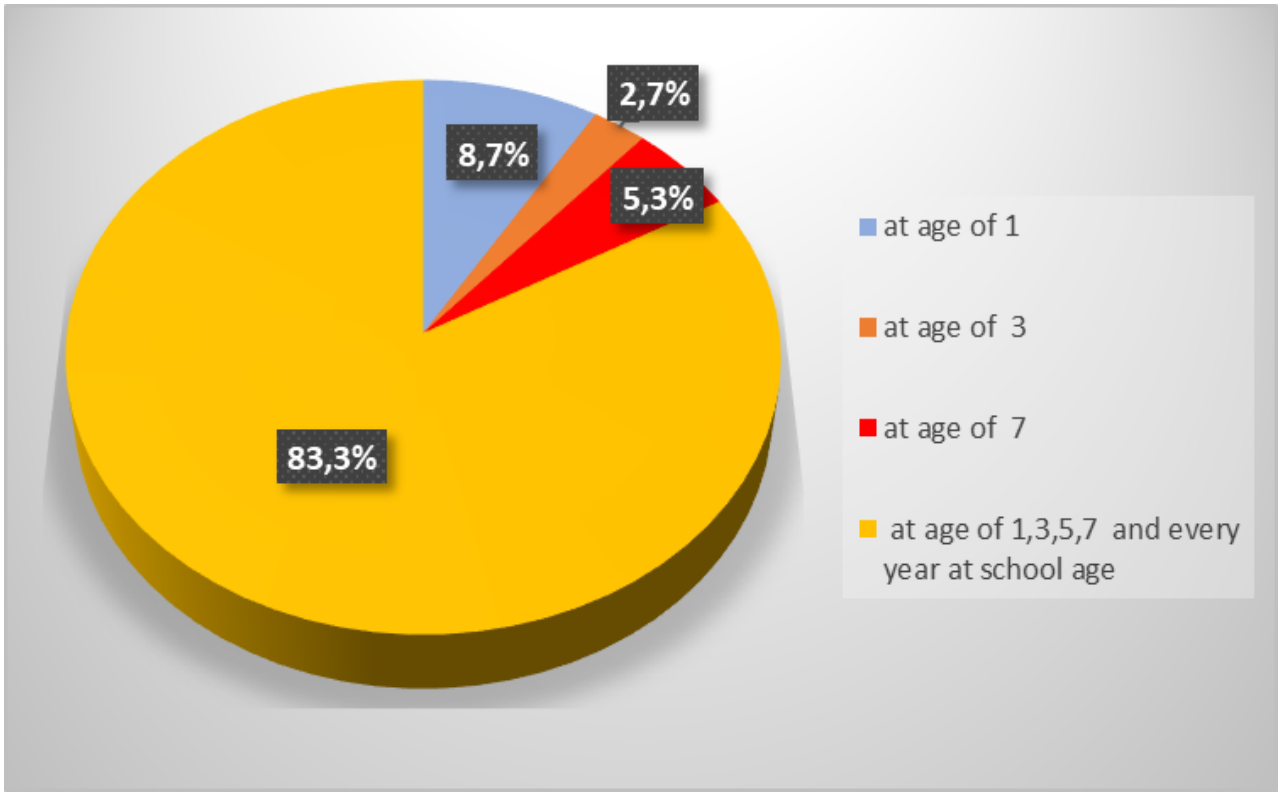

Figure 10 Awereness of students about the periodicity of the eye prophylactic examination among children without eye problem

Among the students "medical opticians" and "optometrists" only 2% recognize themselves as a specialist who can carry out preventive activities. Significantly more often (14%), the students “nurses” have a disposition to independent prophylactic activities. We assume, this difference is due to the knowledge of Ordinance №1/08.02.2011 of the Minister of Health on the professional activities that nurses, midwives, associated medical professionals and health assistants can perform by appointment or independently. A large part of the respondents determine the

multidisciplinary team as the most suitable for performing preventive activities for children's vision (figure 11).

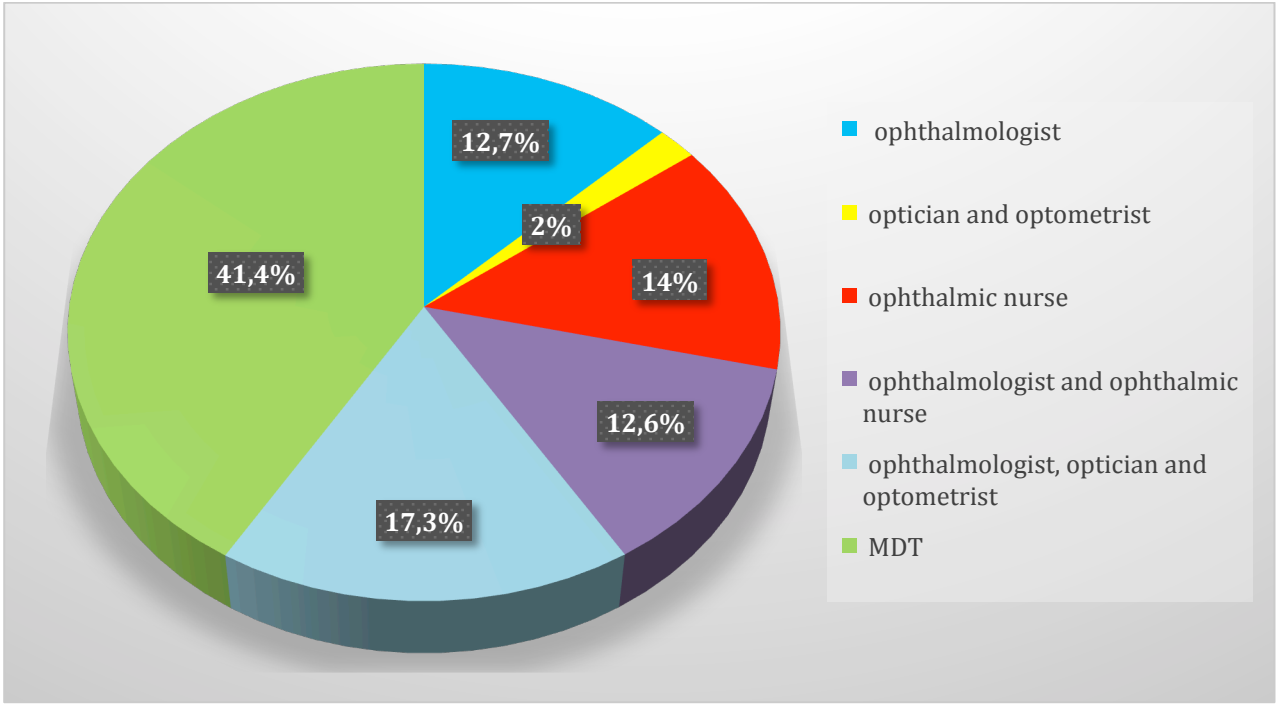

Figure 11 Students' opinion about the specialists who should carry out preventive activities for children's eye health

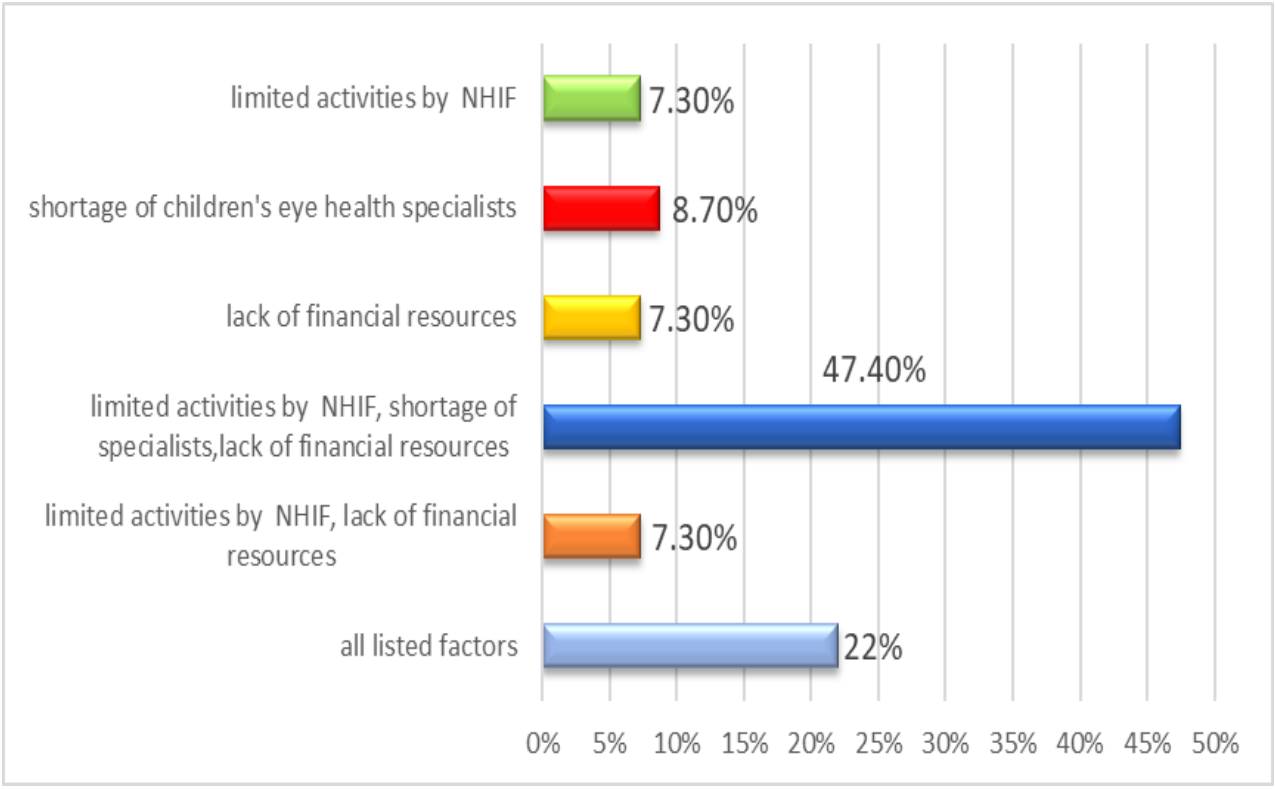

Figure 12 Student's opinion about the barriers to conducting preventive activities for children's eye health

Regarding the barriers to the implementation of preventive activities, students attach the greatest importance to the combination of three factors - "limited preventive activities by the NHIF, shortage of specialists in children's eye health and lack of financial resources for annual prevention programs." Despite the lack of practical experience and observations on the topic, students have a good assessment of the critical points in the field of prevention and the factors hindering preventive activities (figure 12).

When analyzing the results of the study, it is noticeable that 2/3 of the students are aware of and comprehend their multifaceted role in the multidisciplinary team for preventive activities. A small part (17.4%) thinks their professional function in the team is limited to "recording the results and assisting the doctor during the examination". Most of them have a vision of themselves as professionals with good communicative, training and organizational skills as well as participants in research activities (figure 13).

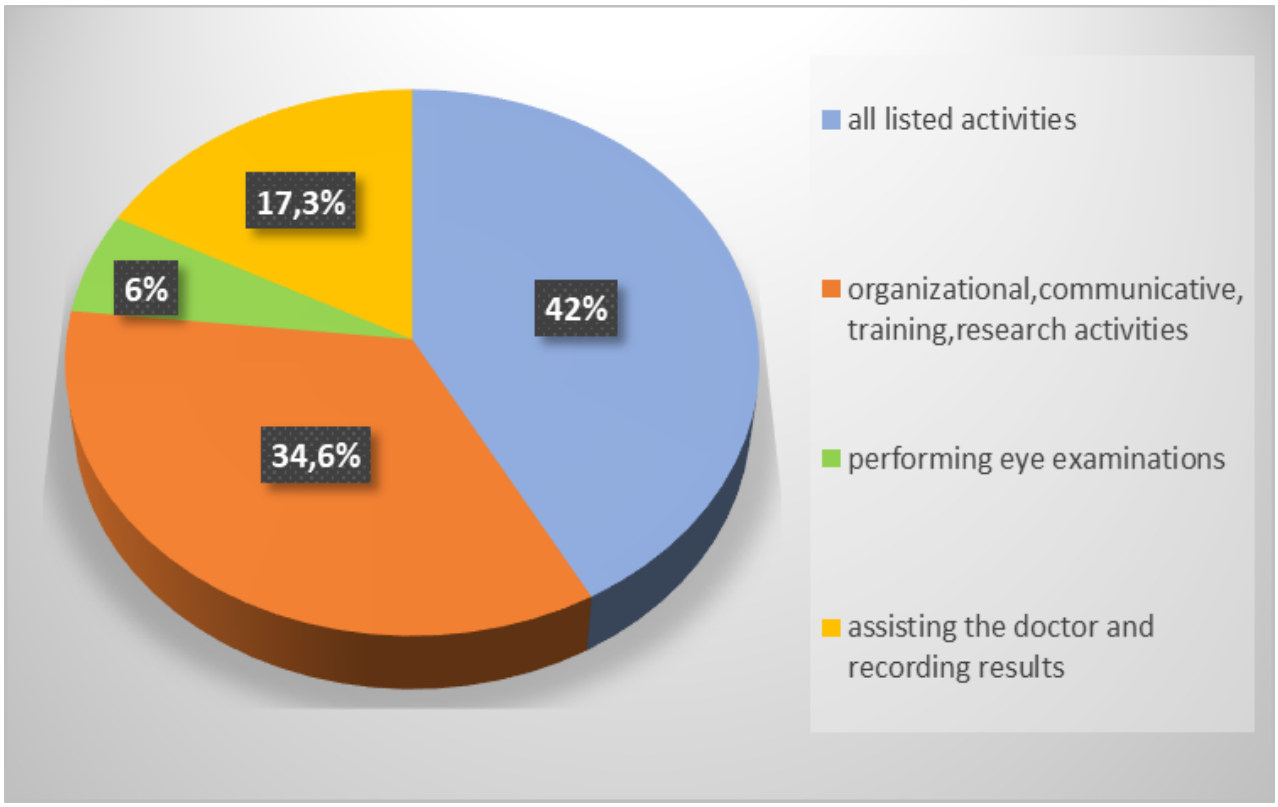

Figure 13 Students' assessment of their activities in the multidisciplinary team for prevention of children's eye health

According to the majority of students (85.3%), the knowledge and skills for preventive activities for children's vision acquired during basic education are insufficient. 96% of the respondents wish to be included in specialized training in the field of child's eye health care. These facts are confirmed also by their answers about the reasons why they do not participate in prevention programs (figure 14).

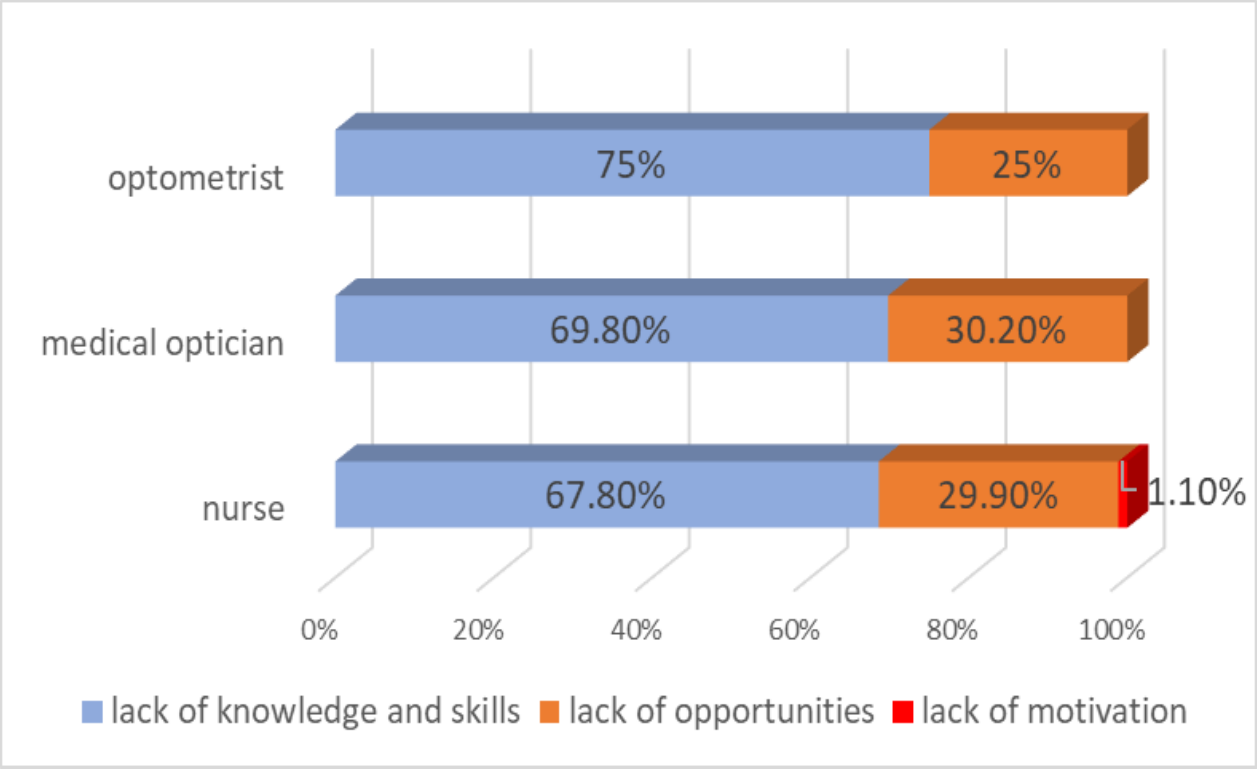

Figure 14 Students' self-assessment about non-participation in preventive activities (by specialties)

Discussion

The dynamic development of health care is a prerequisite for providing modern ophthalmic care in the field of prevention.[146] The creative practice of the Medical University - Varna for training students in new specialties provides an opportunity for a wider range of eye health professionals and the application of a multidisciplinary approach. A modern aspect of education is to focus on the results of the training - what the specialist knows, understands and can practically do after graduation. The medical specialists in the team can really apply their knowledge and skills in the field of promotion, prevention and prophylaxis for children and families. [72]

There is limited data in the Bulgarian scientific literature on the application of a multidisciplinary approach to the protection of children's eye health. The structure of the teams usually includes doctors from different specialties.[146] There are single cases of participation of nurses.[72] [147] There are no data on participation of another profile of medical specialists in preventive activities. [75] [146]

In comparison with the Bulgarian practice, the international experience shows a delegated role of trained medical specialists in the prevention of children's eye health in the period of early childhood and school age. In most European countries a nurse, an orthoptist and an optometrist are part of a multidisciplinary team for the

prevention of children's eye health.[242] Youngson-Reilley et al. (1995) describe the multidisciplinary team for working with children with eye problems as effective, due to the involvement of specialists from different professions, whose roles are clearly defined. [277] According to Jessup (2007), the effect of treatment improves when a nurse participates in a team.[278] Wilson and Hoffman (2012) argue that the participation of optometrists in MDT ensures the complexity, comprehensiveness and continuity of care.[279] Holden and Resnikoff (2002) explain the role of optometrists in MDT for eye health, because of their ability to diagnose and correct refractive errors, which are the most common cause of visual impairment and preventable blindness.[280] Claude Speeg – Shatz (2012) found that new technologies, such as portable pediatric autorefractometers, portable tonometers, and portable digital fundus cameras, also contributed to the effectiveness of orthoptist screening.[281]

In their study Stefanova et al. (2013) point out that "nursing" students are aware of the important role of promotional health care and the need for additional knowledge on health promotion.[282] This finding is also confirmed by our study. In this sense, the students' assessment of the need for specialized training in children's eye health is adequate.

The continuous updating of the curricula and programs for the educational qualification degrees "Bachelor" and "Master" is a prerequisite for the development and sustainability of the trend to increasing the scope of independent activities related to child and family care. These also contribute to the full, real use of health professionals' potential and competences.[86] According to UNESCO, the main guidelines that determine the development of education are creativity and innovation. The concept of productive training, aimed at acquiring professional skills in real situations, favoring professional orientation and realization, is becoming more and more important.[283] Situational interactive teaching methods are suitable for acquiring knowledge and skills for preventive activities for children's eye health. (method of specific situations, solving cases, role-playing games, etc.) [284]

The students' attitudes towards multidisciplinary team care and their role in the team correspond to the current trends in the prevention and prophylaxis of visual impairments in childhood. The positive attitude towards the multidisciplinary team approach and the striving for improvement are prerequisites for full professional realization in the field of promotion of children's eye health.

4.Survey of the opinion of ophthalmologists about conducting activities for prevention of children's eye health by a multidisciplinary team. Discussion.

According to the survey, the majority of ophthalmologists (68%) have participated in a prophylactic program for children's vision. According to the respondents, the traditional team "doctor-nurse" is significantly inferior to MDT - 64% of surveyed doctors say that prevention should be a professional activity of various medical specialists in eye health, united in a multidisciplinary team (figure 15).

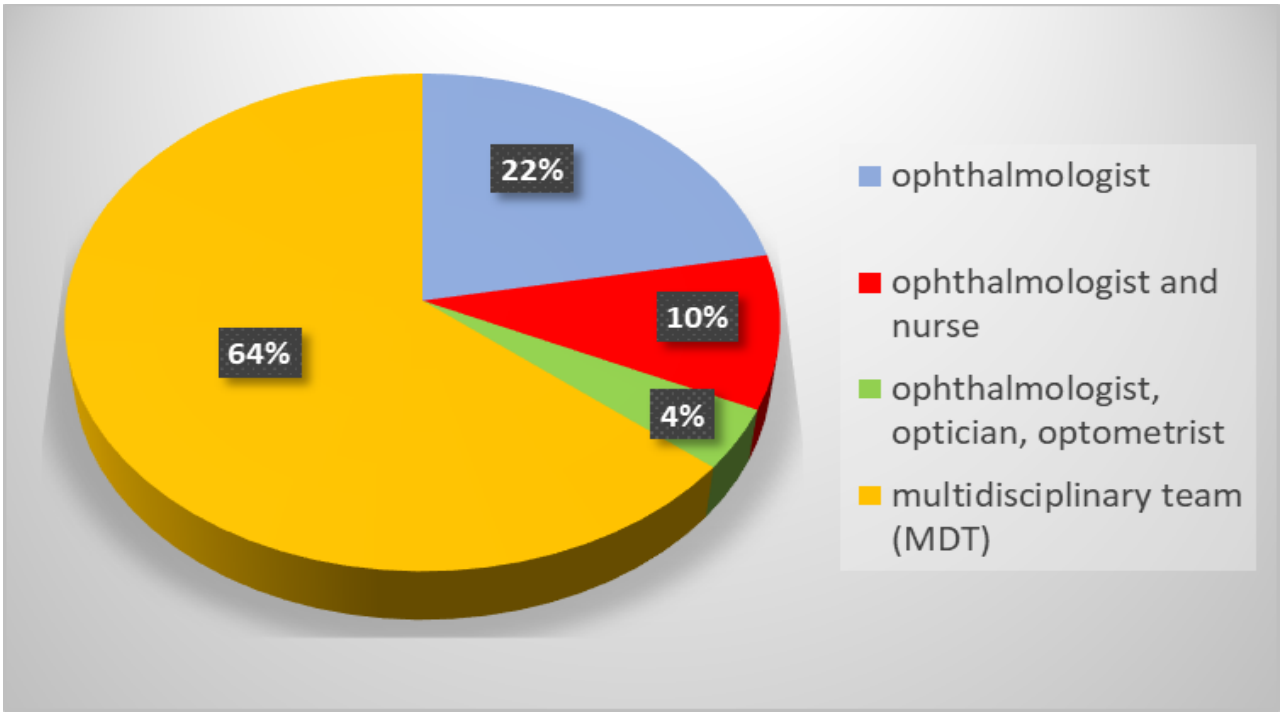

Figure 15 Opinion of ophthalmologists about the specialists who should carry out activities for prevention of children's eye health

A very large number of ophthalmologists (86%) express a desire to participate in the MDT for the prevention of children's eye health. Regarding the assessment of ophthalmologists about the activities to be performed by the nurse in MDT, a larger proportion of respondents believe that she should participate in the full range of activities. Only 12% of the respondents still give preference to the traditional activities - assisting the doctor in examining and recording results ($C = 0.233$; $p = 0.103$).

The share of ophthalmologists (78%), who trust the results of the activities of other specialists in the team is high (if they know their professional competence and skills). The statistical analysis revealed a weak statistically significant negative correlation between the duration of the professional experience of the ophthalmologist and his confidence in the activities of other specialists in MDT:

longer professional experience directly correlates with a lower degree of confidence in the results of ophthalmological examinations by nurses, medical opticians and optometrists in the team (C = -0.364; p = 0.009).

Analyzing the survey data we found that according to ophthalmologists the barriers to preventive activities in the country are the same as indicated by other groups of respondents: a set of three factors - limited preventive activities under the NHIF, lack of funds for annual prevention programs and insufficient number of medical specialists in pediatric eye health.

Examining the issue of theoretical training of medical professionals needed to perform preventive activities, we found that according to the majority of ophthalmologists (76%) the knowledge acquired during basic education is insufficient. There logically follows the question of ways to improve the knowledge and skills of medical professionals in the team (figure 16).

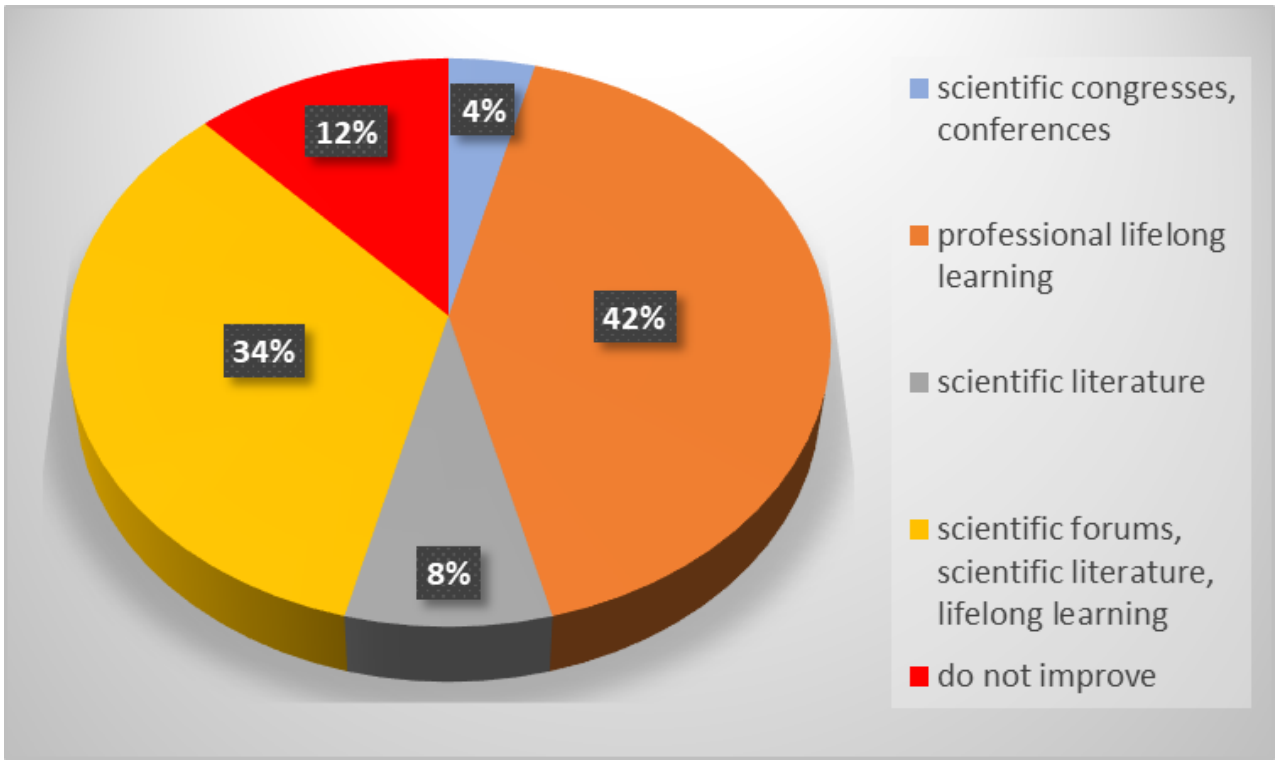

Figure 16 Evaluation of ophthalmologists about approaches for professional self-improvement of the specialists from the team

According to ophthalmologists, a small relative share (12%) of the specialists in the team do not update their knowledge. This is a worrying number in discord with the concept of continuing professional development and lifelong learning, embedded in national and European strategies.

Discussion

Scientific publications on the topic of teamwork in the provision of ophthalmic health services support the results of our study namely the prevalence of the multidisciplinary team over the traditional (ophthalmologist-nurse) one.

Qureshi (2014) shares the view that the MDT for eye health is composed of an ophthalmologist, a nurse and an optometrist. Each team member has unique skills, perspective and energy.[285] According to the author, teamwork requires effort to establish a culture of relationships and values in the team at the time of formation, "good leadership" to ensure focus on goals and good team members ”To ensure effective functioning. [285] A good leader provides vision, goals, models attitudes, behavior, relationships, team development. Transformational leadership is increasingly needed to raise the motivation and satisfaction of specialists in the team. [102] [109] [286]Goo d team members are highly competent and diligent, motivated to improve and develop, supporting the leader and trusting each specialist in the team. [287] [288] A basic principle in ophthalmic MDT is the delegation of tasks to each specialist according to the spectrum of his competence. [285] [289]

The functioning of ophthalmic MDT is accompanied by some difficulties. In the 90s of the last century, there already was a tendency to reducing the number of ophthalmological structures (departments, clinics) and ophthalmological nurses.[290] At the same time, ophthalmic nurses are expected to be highly qualified in their narrow specialization.[291] There is also the practice of relocating ophthalmic nurses to structures with a different profile. There is also a strong downward tendency in the numbers of ophthalmologists and nurses specializing in the ophthalmopediatric health.[162] These circumstances require the proactiveness of the ophthalmology team manager to retain qualified ophthalmologists and ophthalmic nurses.[289]

Each member of the team brings with them a different set of values, personal experiences, social competence, beliefs. In the scientific literature there are opinions about different perceptions of teamwork by team members. In the 1990s, Campbell-Heider et al (1987) discussed social and cultural factors that hindered interaction within the team. While physicians perceive teamwork as a hierarchical activity in which nurses are subordinate, nurses seek solidarity and equality in the team. The nurse perceives teamwork as an opportunity to expand her role and to gain autonomy. [292] [293] It is assumed that the nurse's expectations for change owing to broad competence and educational degrees do not always manage to overcome the deep-rooted hierarchical barriers.[294] According to other authors 70% of adverse events in

practice are due to deficits in communication and cooperation between team members and the person in need of care. [47]

The thesis is also supported by Saint-Pierre et al. (2018), according to whom the relationships between specialists in the medical team have a direct impact on clinical outcomes and the quality of care. The authors found that non-hierarchical interaction, good communication and collaboration directly influence the effectiveness of MDT.[48]

Atwal and Kaldwell (2005) conducted a study on the multidisciplinary teams of the National Health Service in the United Kingdom and identified problems related to the shortage of interprofessional cooperation. The authors found that most nurses did not present problems and did not express opinions even on basic issues. Lack of collaboration, organizational and hierarchical barriers hinder team communication and efficiency. [295] Nurses, opticians, optometrists and doctors are trained in different ways and they demonstrate different styles of interaction. Overcoming team barriers is a prerequisite for improving team efficiency. Each member of the MDT must be aware of his own autonomy, as well as appreciate every person's important contribution to the success of the team.

Baek et al. (2019) define the important role of the team leader in creating relationships of trust, which affects the professional satisfaction and dedication of the specialists in the team. [296]

The change in attitudes and the building of bridges of mutual trust are completely possible and adequate to the multifunctionality of the modern nurse. Some physicians attach great importance to the role of the nurse for team cohesion, thanks to the ability to support and communicate with all professionals.[124] According to other authors, the improvement of trust and communication on the specialist-parent-child axis is due to the nurse. [265] [297]

The contribution of the nurse to the improvement of the team environment due to the development of nursing science and the growing share of nurses with master's and doctoral degrees is also appreciated. [64] [298]

Optometrists and opticians, who received current training and professional qualification in the new specialties for the country, can be highly competent professionals in their field of activity. The results of our study demonstrate that ophthalmologists trust the professional expertise of MDT members. The four

specialties in the team do not have a competitive relationship and can work in symbiosis and synergy in order to fully care for children's eye health.

Our research confirms the need for a multidisciplinary approach and clear team roles. Ophthalmologists demonstrate a positive attitude towards conducting activities for the prevention of children's eye health by a multidisciplinary team of specialists. They express trust and share an opinion on the wide range of activities that nurses, medical opticians and optometrists can perform in the team.

5.Study of the attitudes and barriers to nurses' participation in multidisciplinary team for the prevention of children's eye health. Discussion.

According to the survey, the majority of nurses (78%) have not participated in a preventive eye health program. To the question "In your opinion, which medical specialists should carry out preventive activities for the protection of children's eye health?", 68% answered that this is the activity of various medical specialists united in a multidisciplinary team.

The comparative analysis of the answers of the three groups of respondents - ophthalmologists, ophthalmological nurses and students shows the same positive attitude and preference for a multidisciplinary team of specialists to perform preventive activities for children's vision (figure 17).

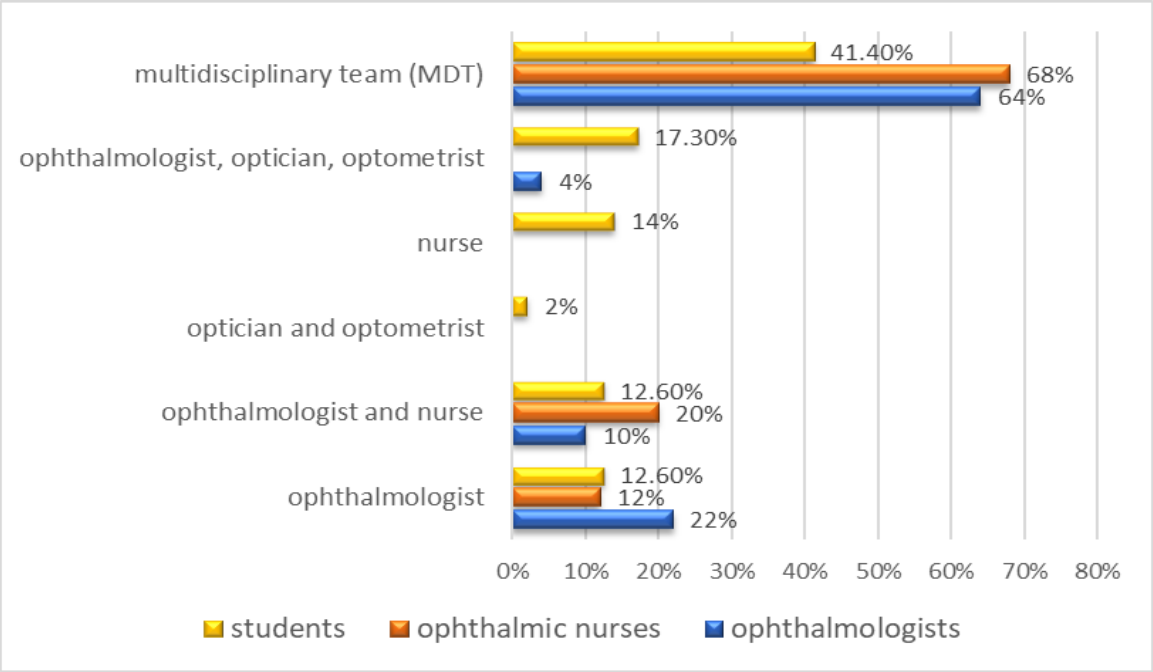

Figure 17 Opinion of ophthalmologists, nurses and students about specialists for preventive activities for children's eye health

The majority of the surveyed nurses (68%) are willing to participate in the MDT. The obtained results are encouraging and support our thesis about the need for

a multidisciplinary team. The performed statistical analysis did not establish a statistically significant correlation between the duration of the professional experience and the desire to participate in the MDT for prevention (C = 0.254; p = 0.075). Regarding the activities that nurses have to perform in MDT, more than half of the respondents (56%) answer in unison with the current trend of multifunctionality and expanding the scope of professional activities of nurses (figure 18).

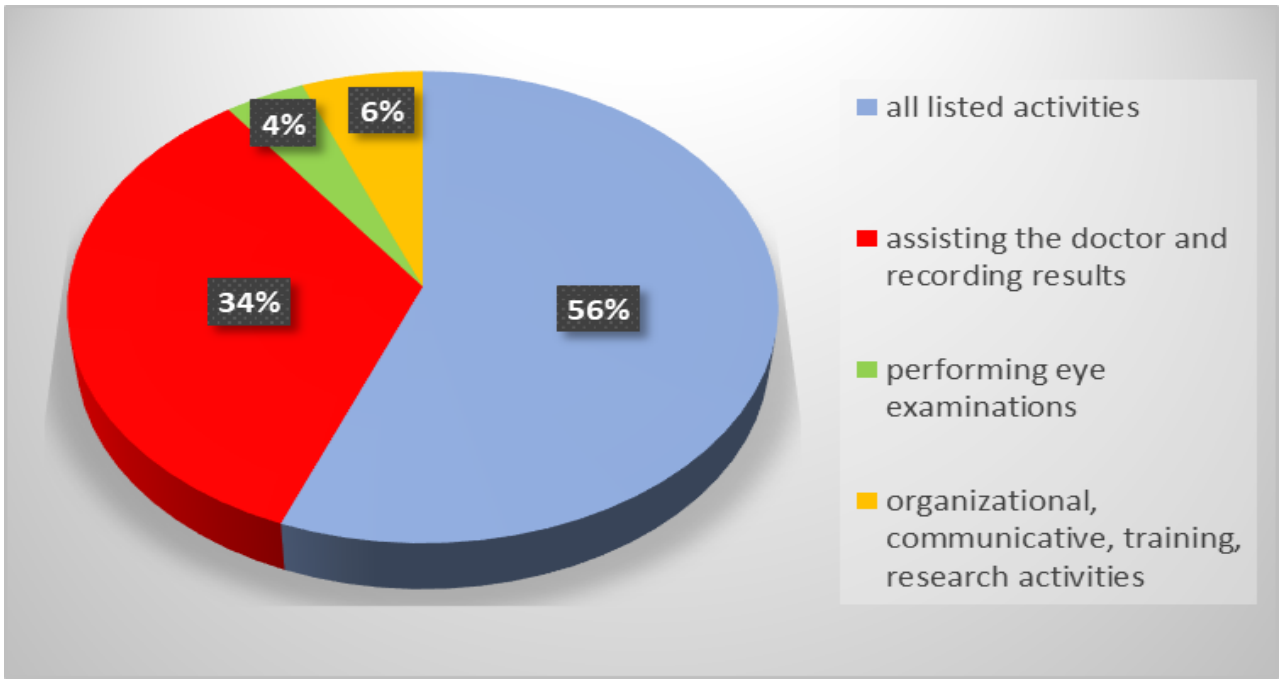

Figure 18 Nurse's self-assessment about their activities in the multidisciplinary team

The performed statistical analysis did not establish a statistically significant correlation between the duration of the professional experience and the awareness of the polyfunctionality of the nurse in the team (C=-0.065; p=0.655). It is encouraging that all three groups of respondents have a positive attitude towards the multifunctionality of the specialists in the team. More than half of the surveyed ophthalmological nurses are inclined to deal with diverse and broad-spectrum activities in the team. Ophthalmologists with a similar attitude have the same relative share, except that they expect other specialists in the team to be more actively involved in performing eye examinations. Despite small differences, the students' answers demonstrate a similar multifunctional self-assessment of the activities (figure 19).

The opinion of more than half of the surveyed nurses (54%), about the barrier to preventive activities is similar to the opinion of other groups of respondents: a set of three factors - limited preventive activities for children's eye health provided by the NHIF, lack of funding for annual prophylactic programs and insufficient number of medical specialists in children's eye health (figure 20).

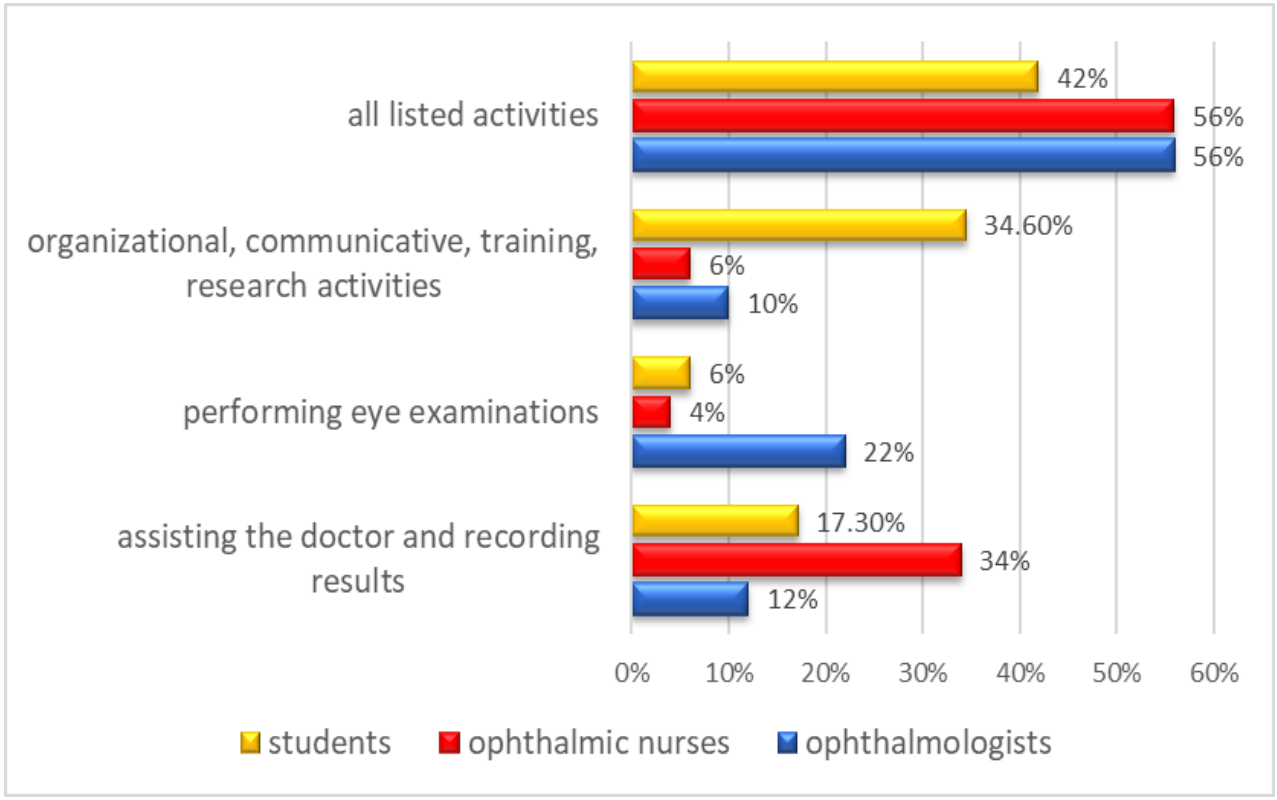

Figure 19 Comparative analysis of the opinion of ophthalmologists, nurses and students regarding the activities of the specialists in the team

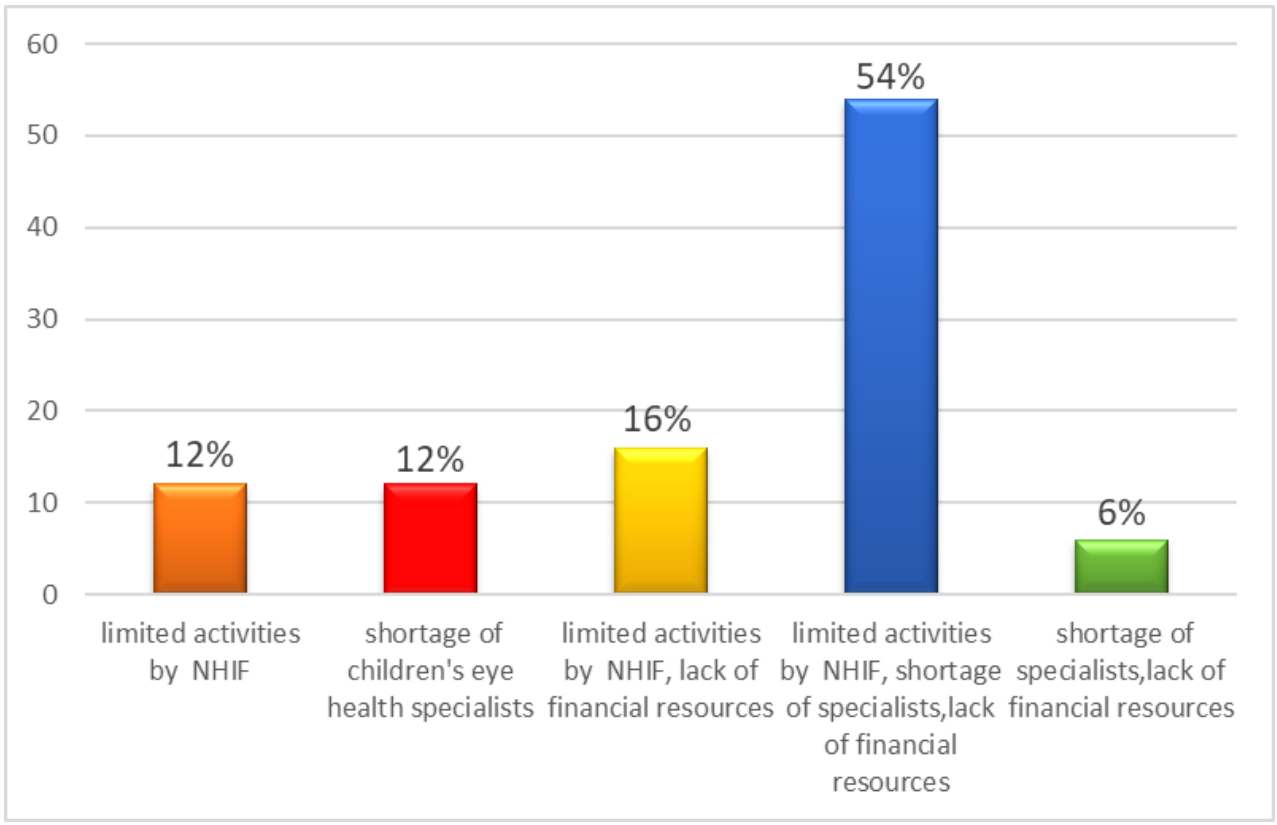

Figure 20 Nurses opinion about the barriers to preventive activities in Bulgaria

The performed statistical analysis did not establish a statistically significant correlation between the duration of professional experience and determination of barriers to prevention (C=-0.268; p=0.060). Examining the reasons why nurses do not participate in preventive programs, we found that the leading reasons are lack of free time due to professional overloading (38%) and lack of knowledge about prevention activities (32%), (figure 21).

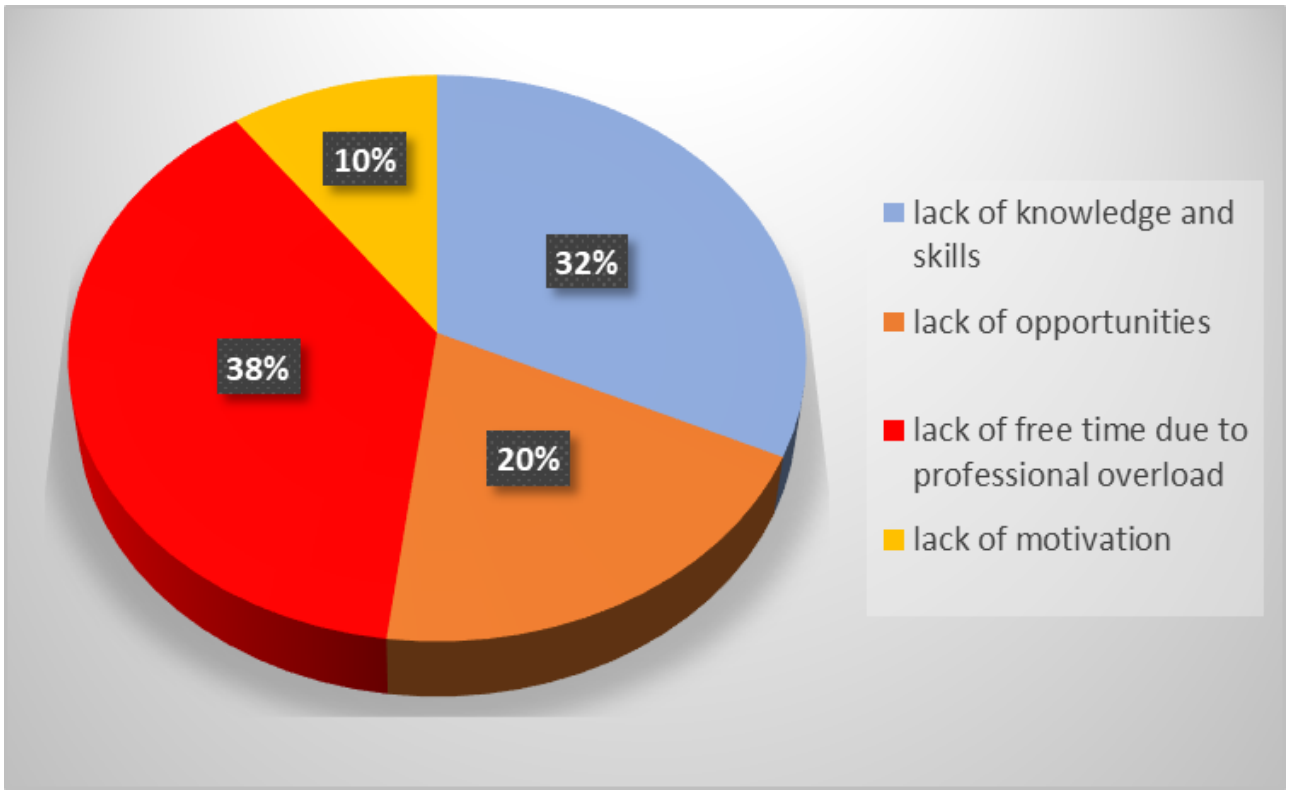

Figure 17 Reasons for nurse's non-participation in preventive programs

The data from our study confirm the trend that nurses get in employ of several establishments, which is due to their declining number in the country and underpayment. The data raise the serious question of seeking a work-life balance.

Examining the barriers to participation in prevention activities, we found that nurses do not feel trained for these activities. These data are confirmed by the answers to two other questions. To the question "Do you think the knowledge of basic education is sufficient to carry out preventive activities?" The majority of respondents give a negative answer (82%). And to the question about the periodicity of preventive examinations and the need to monitor vision in childhood, approximately half (48%) of respondents answered adequately to the modern trends in prevention (figure 22).

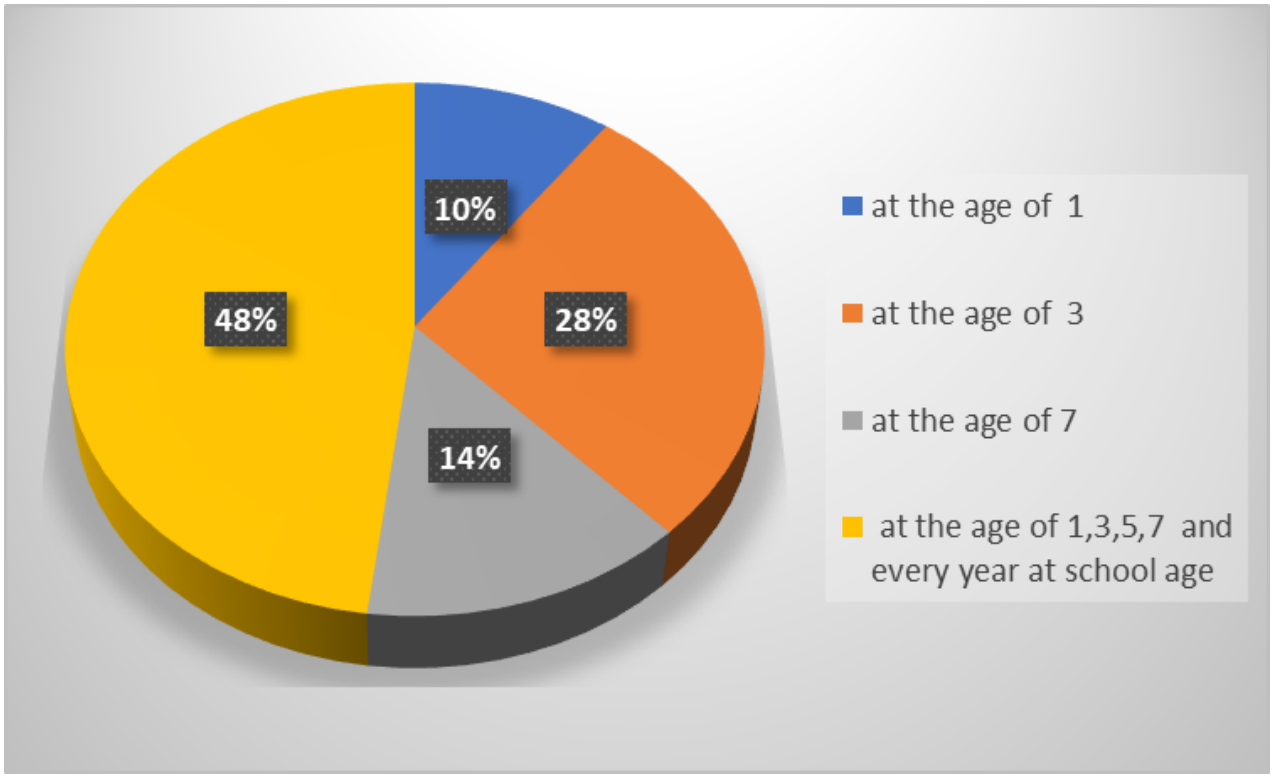

Figure 18 Awareness of nurse's about the periodicity of preventive examinations and monitoring of children's vision

It is logical to study how nurses improve their professional knowledge and skills (figure 23).

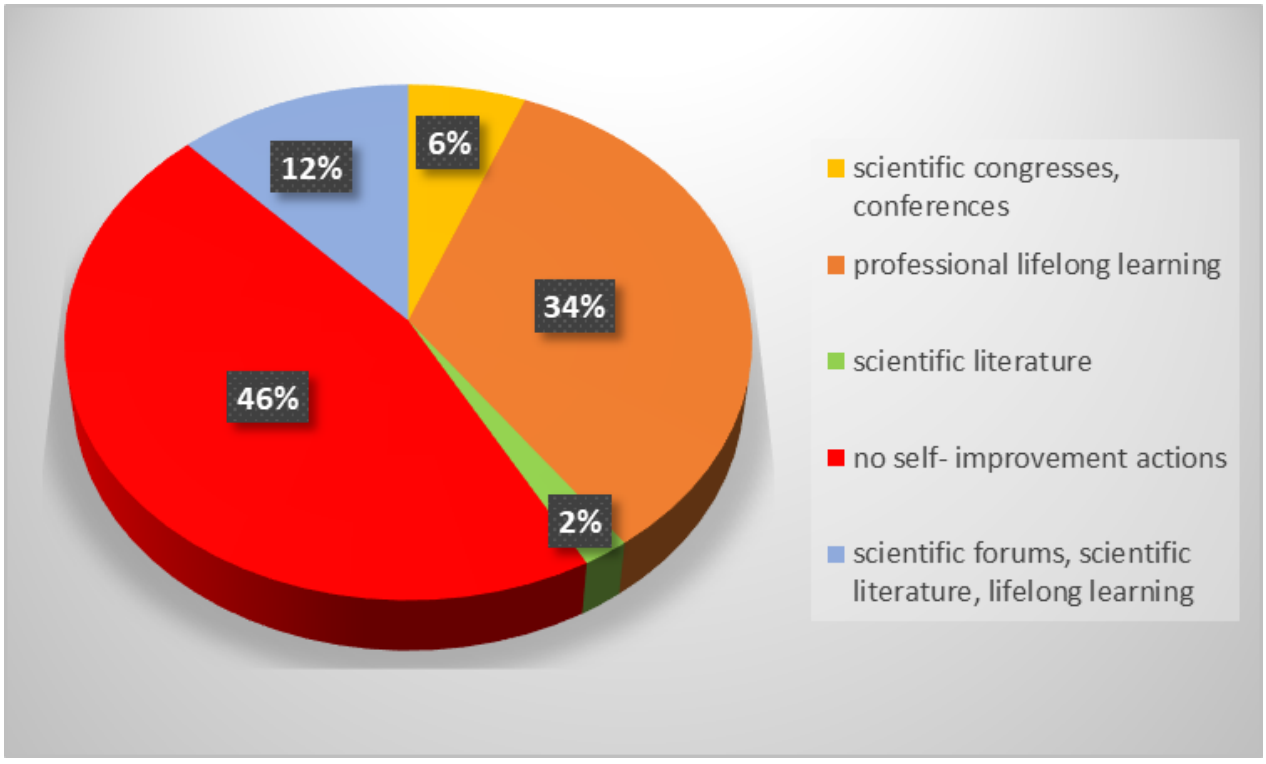

Figure 19 Nurses' self-assessment of professional improvement process

The large share (46%) of the answer "I am doing nothing for my professional improving" fully corresponds to the share of nurses (52%) with a deficit of current knowledge about the trends in the prevention of children's eye health and is a confirmation of the critical state of nursing in the country. The process of continual professional improvement of nurses is assessed differently by nurses and ophthalmologists (figure 24). The significant difference of opinion requires research and evaluation of the problem.

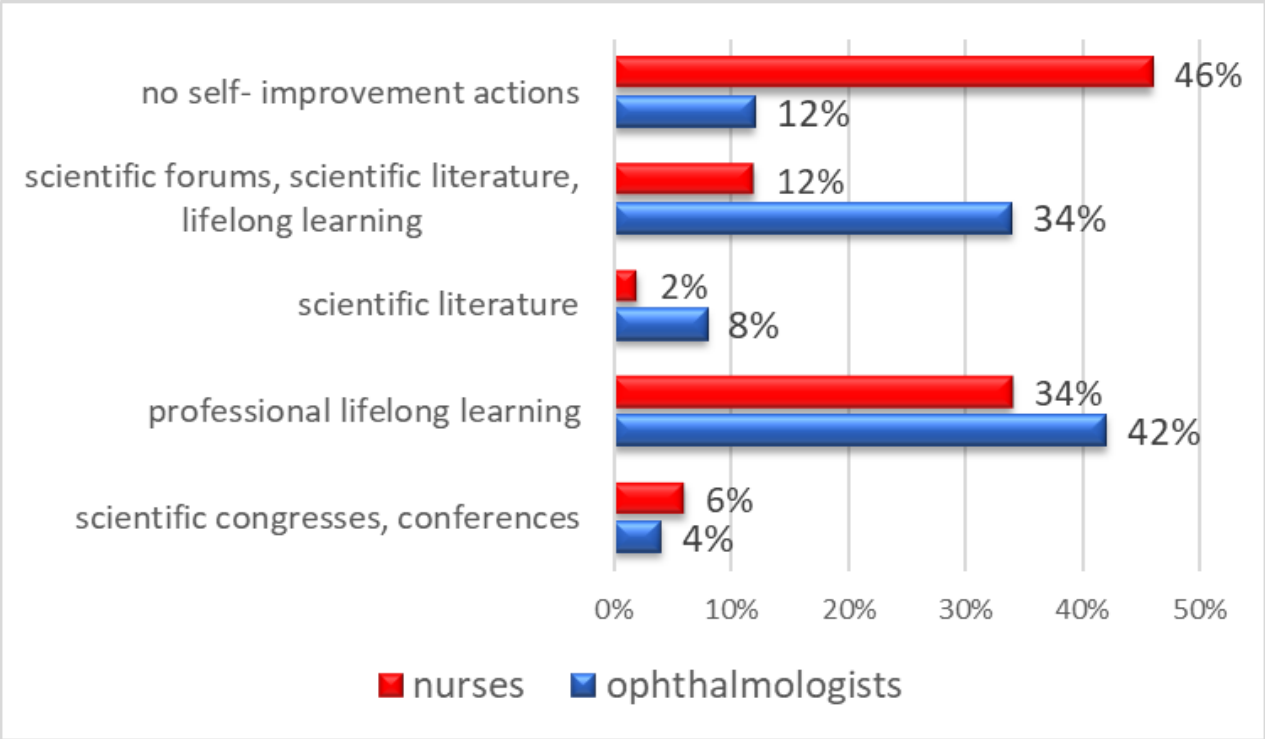

Figure 20 Comparative analysis of approaches for nurses' self-improvement as viewed by ophthalmologists and nurses

Against the background of the realities regarding professional development, two thirds of the surveyed nurses express a desire to participate in trainings for prevention of children's vision (76%). The statistical analysis did not establish a statistically significant correlation between the duration of professional experience and the desire to train the nurse in the team (C = 0.208; p = 0.147), as well as the way of improvement (C = -0.097; p = 0.505).

Discussion

"Our nurse is the glue for our team."
Olivia Cook

The specific features and challenges in the state of health of the population and the health care system in the country have an impact on the development of ophthalmological nursing. The findings in the report of the European Commission

"State of Health in the EU Bulgaria - health profile of the country 2019", relate largely to nursing and preventive activities:

- the number of nurses per 100 000 people is the second lowest in Europe (430:100000 in Bulgaria, 740:100 000 in EU);
- the average age of nurses is 55 years;
- there are no health care standards;
- there is no long-term strategy for the development of nursing;
- health promotion and prevention activities are poorly represented;
- prevention costs account for 3% of total health care costs (36 euros / person in Bulgaria, compared to 89 euros / person in the EU);
- the national strategies for the health system management are implemented slowly. [299]

The European Federation of Nursing Associations (EFN), proclaiming "Investing in healthcare saves lives", proposes concrete measures to address the challenges of nursing, some of which are:

- **Investing in health promotion** - creating opportunities for autonomous promotional activities of nurses;
- **Investing in research** to make informed policy decisions and build health care policies based on scientific evidence. [300]

In our opinion, the mentioned critical points clearly reflect the real problems in the Bulgarian ophthalmological nursing, and the proposed measures in the European context are applicable in Bulgaria as well.

The average age of ophthalmological nurses in our study (48 years) is lower than other published data, the age range being 26-72 years and nurses with professional experience over 30 years account for 36%. Spasova (2019) in her study indicates an average age of nurses in the country 51 years, age range 22-78 years, and those over 50 years of age are 53.06% of employees.[301] The trend of aging workforce in the Bulgarian nursing is also valid for the ophthalmological nurses.

Our study found significant differences in the international and Bulgarian experience regarding the participation of a nurse in teams for preventive activities for children's vision. The opinion of the respondents in the survey on a team approach to the prevention of children's eye health is fully consistent with world practice (68% have a preference for MDT, and 20% for a traditional team). The positive attitude of the nurses towards the multidisciplinary team activities and their desire to participate

in them contrasts with the Bulgarian reality (only 22% have participated in prevention programs).

Worldwide there are two approaches demonstrating the delegated role of a trained nurse in children's eye health prevention:

- **Self-conducted screening** (school nurses in the US, nurse from a health center in Sweden, Japan and South Korea) [148] [190] [191]
- **Participation in a multidisciplinary team** (Belgium, France, The Netherlands, Luxembourg, Malta, Switzerland, The Czech Republic, Slovakia, Spain) or **in a team with an ophthalmologist** (Finland, Iceland, Hungary, Norway, Denmark, Montenegro) [242]

At the time of our study, in our country there are no in-depth studies on the composition, functioning and roles of specialists in the team for prevention of children's eye health. [146] There are single data about doctors (ophthalmologists, neonatologists, pediatricians, GPs) involved in preventive activities, without referring to other medical professionals.[128] [254] [302] [303] There is also limited data on prevention teams, including nurses (Municipal Program "Children's Vision" - Varna).[147] There are no data on self-conducted prevention programs by nurses.[72] [254] In the health legislation there are general texts, which regulate the activities for health promotion, without specifying the competencies of the nurse in prophylactic programs for children's eye health. [246]

Regardless of the development of scientific knowledge related to the peculiarities of the children's visual system, the need for its prevention in childhood and the expanding academic and nursing competencies, the implementation of preventive ophthalmic health care is associated with a number of challenges and barriers.

When a new model is introduced, such as the object of our concept, it is important to clarify and precisely define the roles of specialists in the team. Not only is this process necessary in response to the changing health needs of children and families, but it can also lead to changes in the competencies of different medical specialists. [265] [285] [289] [304]

The choice of 34% of nurses to perform the limited traditional role - "assistance in reviewing and recording data" shows a lack of awareness of the multifaceted nature of health care (autonomous, dependent and interdependent, direct and indirect) and lack of commitment to autonomous nursing activities. Unlike

nurses, significantly less - 12% of ophthalmologists define the functions of the nurse, corresponding to her traditional role in the team. In our opinion, there is a need to clarify the reasons and to ensure the prevention against routine and framed professional behavior.

In the scientific literature there is evidence of the unique contribution and multifunctionality of the nurse. According to Hennelly (2020), the uniqueness of the ophthalmic nurse is in building trust between team members and patients. Hillary Rono defines the ophthalmic nurse as indispensable for managing all patient activities, collaborating with all structures and for patient education and family communication. [289] Qureshi (2014) defines the main role of the ophthalmic nurse in screening activities and referral to an ophthalmologist. The author emphasizes the contribution of the nurse to high quality health care and "positive experience" to patients.[285]

Moradi (2016) proposes a three-tier system for the professional development of ophthalmic nurses, according to their qualifications. The author emphasizes the role of the trainer nurse due to direct communication with patients and understanding of their needs and desires. [305] Pertino (2014) defines the role of the nurse as a "health educator". [306] According to Nsiah (2019), a new role for the nurse is patient advocacy and support.[80]

According to Chevallier (2018), the role of the nurse in the team is indispensable in the support and partnership with parents.[272] Some authors define the nurse as unique because of her ability to work with children and educate families.[270] [307] [308] According to Hinterlong (2019), the uniqueness of the nurse lies in the prevention of school myopia and the impact on the perception of healthy behavior and practices of children and families.[260] Other authors emphasize the nurse's contribution to improving team interaction and team effectiveness.[287] [288]

It is encouraging that 56% of the surveyed ophthalmic nurses are inclined to deal with diverse and broad-spectrum activities in the team.

In our opinion, the vision of nurses about their role in the team is closely related to the reasons for non-participation in preventive activities, the level of theoretical knowledge, practical skills, competence and the process of professional development.

A large proportion of nurses (38%) declare that they do not participate in preventive programs because of lack of time due to professional workload. The

answers fully correspond to the data about insufficient number of practicing nurses and migration of mostly young specialists, thas leading to excessive workload of those who remain in the country. Another reason for being in employ of several establishments is the amount of remuneration. Excessive professional employment leads to a lack of time and motivation for continual education, fatigue, burn - out syndrome and the search for a healthy work-life balance.[111] [112] As the second most important reason for non-participation in prevention programs, nurses point out the lack of knowledge, skills and competence for preventive activities. Approximately half of the surveyed nurses (46%) say that they do not improve their knowledge and skills.

According to Spasova (2019), there is a deficit of a culture for lifelong learning in Bulgaria. For this reason, despite the created conditions, a large part of the nurses do not participate in continual professional training.[301]

According to Koleva and co-authors (2018), the nurses' motivation for learning decreases with age.[309] The authors express the opinion that professional lifelong learning has a bilateral effect - professional and career development of nurses and improving the quality of health care. [301] [309]

The acquisition of knowledge and skills through formal, non-formal, independent learning and training throughout a person's life is a key factor for improving the professional qualification and career development of medical professionals. There are various opportunities for professional lifelong learning in the country, provided by medical universities, the Bulgarian assotiation of health professionals in nursing and medical institutions accredited as training centers. In each medical institution, the head nurse plans and organizes professional lifelong learning for the nurses. There are various forms of continual education: courses, seminars, participation in congresses and conferences, etc. In recent years and during the COVID-19 pandemic, a topical form is distance learning (virtual, on-line, e-learning), which solves a number of problems of traditional forms (transport, financial, time, etc.). There is also a process of certification of nurses in the country, which is carried out through the Bulgarian assotiation of health professionals in nursing according to certain criteria and algorithms. A barrier in this process, in addition to the lack of time, is the lack of motivation. There is an underestimation of the certification by the employers and the lack of differentiated pay according to this criterion. The investment of financial resources, time and effort by nurses, without this being assessed by the employer and without adequate pay and return, leads to a lack of motivation and to low interest in certification. Continual education of nurses is an effective and promising investment. Employers can apply various incentives in

support of professional lifelong learning: additional days to the annual training leave, funding of training as a reward, differentiation of the remuneration of certified nurses, etc. [111]

Professional lifelong learning can be stimulated if the country puts in to practice the "Qualifications Framework for Professional Development of Nurses, Midwives and Associated Medical Specialists" created by the National Quality Council of BAHPN, which determines qualification levels, qualification characteristics and assumes differentiated remuneration.

International experience shows the importance of qualifications frameworks in nursing practice.[305] [310]According to the European Qualifications Framework for lifelong learning, qualifications already go beyond the traditional presentation of "duration, institution and place of learning" and follow an approach based on "learning outcomes", where abilities are defined in view of taking responsibility and independence. The results are considered in three categories - knowledge, skills and competencies. The qualification covers a wide range of learning outcomes - theoretical knowledge, practical experience, technical skills, social competence, with the leading role of the ability to work together. The EQF contains descriptors that show how expectations of knowledge, skills, independence and responsibility increase when moving from one level to another. [311] [312] (Appendix №6) Qualifications are important for the nurse as an expression of her personal achievements, as well as for the formation of attitudes, behavior and values towards the profession, towards herself and others in view of her multifaceted professional realization.[311] *("European Qualifications Framework helps people to use their talent by facilitating the path to further learning." Marianne Thyssen, Commissioner for Employment, Social Affairs, Skills and Job Mobility)*

In February 2021, with a decision of the Council of Ministers, the "Strategic Framework for the Development of Education, Training and Learning in the Republic of Bulgaria (2021-2030)" was adopted, in which priority area 8 is "lifelong learning". [313] In April 2021, a "Lifelong Learning Strategy" was published, highlighting eight areas of impact, each of which is related to the acquisition of key competencies. One of these competencies is related to the ability of specialists to support people for a healthy lifestyle.[314] In modern conditions, there is development in the meaning of the competence. In the past, competence was understood as a qualification for a specialized activity and a set of knowledge and skills. Today the current addition to this understanding is a process of assimilation of social norms, values and attitudes. Professional competence acquires the status of an integral characteristic of the personality. The professional competence of the nurse includes the ability and

readiness to solve problems and perform tasks in real situations independently, based on acquired general, key and functional competencies. The implementation of the two national strategic documents will most likely lead to the optimization of the academic training and professional lifelong learning of the nurses in the country in the direction of increasing the applied-practical knowledge and skills, as well as the criteria for assessing the level of professional development in sensory-motor and emotional-value area.

We hope that the implementation of the current European Qualifications Framework and the National Strategy for Lifelong Learning will contribute to changes in the competencies and scope of the nurse's professional activities (expanding her autonomy).

Investing in the quality of health care should not be seen as an expense, but as an income-generating activity. Our reason for this, supported by other researchers, is the direct link between nursing qualifications, the quality of health care and the satisfaction of specialists and patients. [305 315 316]

In 2020-2021, due to the COVID-19 pandemic, nursing as a professional identity became the subject of public attention more than ever.[317] There is a tendency to a change in public attitudes towards the profession to real recognition of the value of nursing and of the need for nurses to be supported, motivated and respected. [317 318] Unfortunately, the public image of the nurse is still based on stereotypes, and the identity of the nurse is seen as a "simple and clear construct".[319] We have to admit that some nurses reinforce stereotypes to fit expectations, even when they think the profession has other dimensions. The self-awareness of nurses as multifunctional, team and independent specialists would contribute to personal and professional development, to building a healthy professional environment, to team effectiveness, as well as to improving care and relationships with patients. [320 321 322 323]

In our opinion, nursing should be seen as a broad-spectrum, autonomous profession. Moral values such as compassion and philanthropy motivate nurses to practice the profession.[324] Academic approach, the development of scientific potential, narrow specialization, autonomy, and an increasingly important contribution to human safety and health are the new pillars of nursing. If this is seen as the basis of the nursing profession, it would contribute to a different image evolved from mere stereotypes to acknowledgement its complex nature.

By not accepting the idea of the immutability of nursing identity, we support the debate about the true nature of the profession and the need for it to change over

time, as well as for nurses to change themselves as individuals and professionals. [325] [326] [327] [328]

We support the ideas of Schaffer et al., (2015) that due to the wide range of activities of nurses, they "need to promote their work in order to make visible their contribution to the health of children and families".[329] These considerations are invariably valid for ophthalmic nursing in our country.

The study of the possibilities for the nurse's participation in the MDT for the prevention of children's eye health, as well as the need to define specific competencies are of essential scientific and practical importance. The acquired clinical and practical experience in the planning, organization and implementation of prevention programs, as well as the data from the conducted scientific research give us confidence to thoroughly assess the real barriers, challenges and opportunities faced by ophthalmological nurses.

The positive attitudes of the ophthalmological nurses towards team care for children's eye health and their desire to participate in MDT, make us believe that the nursing role is changing. We hope that more opportunities will be created for autonomous promotional activities and care management. We are convinced that these processes have been significantly influenced by increasing the academic nature of the profession.

MULTIDISCIPLINARY TEAM CARE – A GOOD PRACTICE IN THE PREVENTION OF CHILDREN'S EYE HEALTH

On the grounds of the analysis of the Bulgarian and international practice in the field of prevention of children's vision, our own research and our clinical experience, we have developed a **model for creating preventive environment for children's eye health by applying multidisciplinary team care** (figure 25).

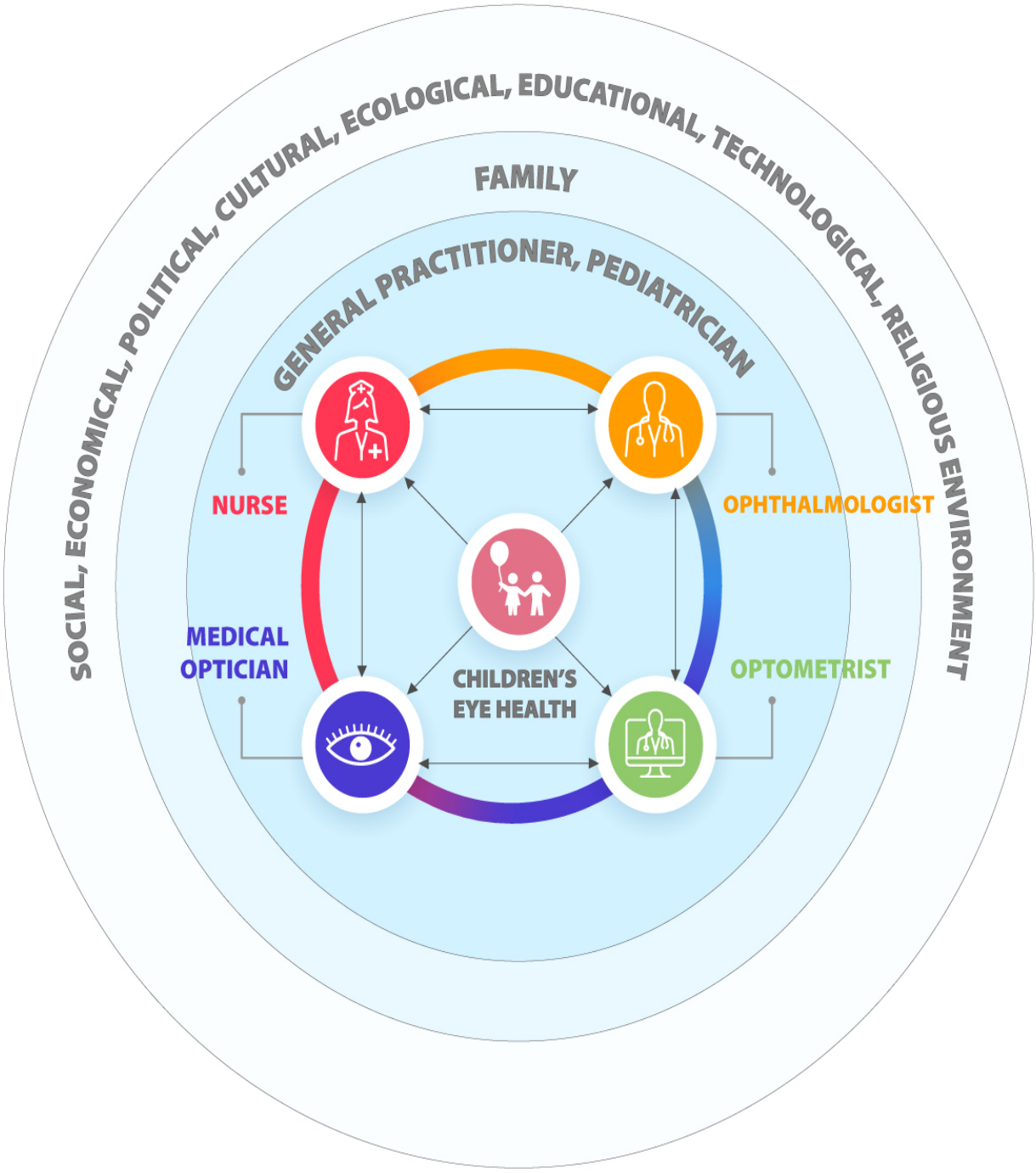

Figure 21 Autor's model of multidisciplinary team care for prevention of children's eye health

The model combines structures, human resources and information flows in order to improve children's eye health. It is characterized by close integration, ensuring optimal use of human potential - knowledge, skills, competence, focused on current and future ophthalmic health needs of the child. The model includes: clinical aspect (preventive care for children's vision) and managerial, organizational, informational, cultural aspects.

At the heart of the model is the idea of broad - spectrum integration (unity):

- **professional integration** - unites medical specialists, institutions and organizations; encourages inter-professional partnerships, shared roles, responsibilities and activities to ensure the child's good eye health and quality of life;
- **clinical integration** - child eye care is integrated into a single process through common guidelines and provides a continuum of care;
- **cultural integration** - helps to adopt and reconcile values, methods and approaches;
- **social integration** - helps to improve social relations and public attitudes.

The high specialization of the health system observed today, oriented mainly to diseases and their treatment, results in fragmentation of care and deficit of preventive care. The lack of coordination and collaboration between health professionals leads to an underestimation of preventive care and to an increase in the demand for medical care (duplication of care). The lack of national recommendations and a national preventive program for children's eye health also contributes to these processes.

Broad-spectrum integration places child and child eye health at the heart of the model (patient-centered approach). The activities of the team are aimed at meeting the current and future ophthalmological health needs of the child. The approach optimizes the opportunities for access to ophthalmic health care and preventive care for children and families. Assists in improving cross-sectoral cooperation and ensures coherence between all participants in prevention activities.

The model includes a multidisciplinary team for prevention of children's eye health, consisting of four different medical professionals:

- ophthalmologist;
- nurse;
- medical optician;
- optometrist.

The multidisciplinary team provides team potential, diverse and complementary expertise. The variety of professions guarantees comprehensiveness, integrity and safety of care. Team members emphasize their skills, competence and experience. MDT provides an environment with clear roles, shared responsibility and the opportunity for professional autonomy. The team is in close contact with the specialists from the primary health care - general practitioners and pediatricians, to

whom has been delegated the role of providing preventive care in our country. Emphasis is also placed on the collaboration of specialists with the family in the context of influencing the competence on the axis "specialist - child - parent".

The model reflects our concept of expanding the professional spectrum and optimizing the autonomous role of the nurse.

The model provides an opportunity for the realization of medical specialists in the field of prevention of children's eye health and for the increase of their professional satisfaction.

The challenge for the successful introduction and development of the model is the influence of the socio-economic, political, educational, cultural, technological, ecological, religious environment (legislation, funding, etc.).

The model is an expression of our understanding that we do not need a passive long wait for the beginning of healthcare reform, we need proactivity and initiating change, whose leader can be a nurse.

To support the **practical application of the model**, we have developed:

- generalized model for the effectiveness of the MDT;
- main areas of ophthalmic health care;
- essence of ophthalmological health care;
- skills and competence of the modern nurse, participating in a multidisciplinary team for prevention of children's eye health;
- functions of the nurse in MDT;
- proposals for terms of follow-ups and the content of prophylactic ophthalmological examination in healthy non-in-risk children in the early childhood;
- indications for referral to an ophthalmologist;
- curriculum for "Promotion of children's eye health";
- “Record book of children's eye health”.

Based on the team models studied in the scientific literature, we propose a generalized model for the effectiveness of the multidisciplinary team (figure 26).

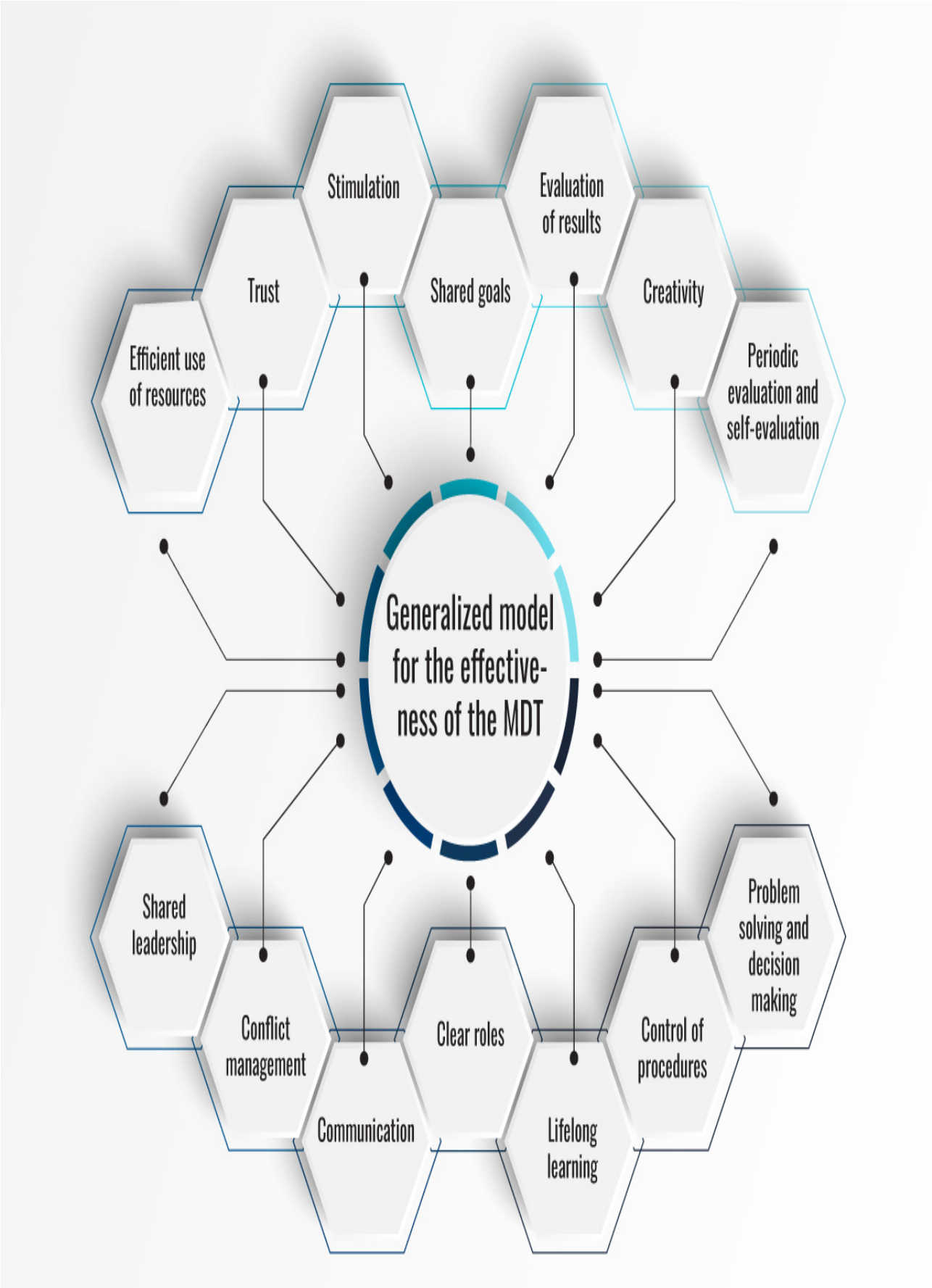

Figure 26 Generalized model for the effectiveness of the multidisciplinary team (autor's design)

The model provides an understanding of the points of reference, values and functioning of the team, taking into account the contribution of each specialist to team effectiveness. In the context of the current trend of evaluation and improvement of the quality of health services, we also focused on the periodic evaluation and self-evaluation of the professional activities of specialists, continuous control of procedures and evaluation of team performance. The leader and the leadership style contribute to the good functioning of the team, which should create opportunities for development and improvement of the team and the specialists. The development of the team is associated with the organization of activities, applied methods and approaches and is related to the expected results. The development of specialists presupposes the improvement of the professional qualification, expansion of the sphere of activities, autonomy, career growth. The development of nursing is a prerequisite for multifaceted, dynamic, high quality and cost-effective ophthalmic health care, provided within a multidisciplinary team. In our opinion, the ophthalmological nurse has a key role in every aspect of eye health.

To facilitate the understanding of modern ophthalmic health care provided in the social, economical, legislative, professional, educational, ecological environment, we have developed its main areas of application. A special place is occupied by the areas "Eye Health Care" and "Ophthalmopediatric eye care".

The area **"Eye Health Care"** reflects the modern concept of eye health promotion, containing preventive care, counseling, training, health education. The main goal of care is to improve children's eye health through early detection of visual impairments. Nursing intervention is aimed at changing families' attitudes towards eye health, through the adoption of healthy behaviors and practices, that remain sustainable over time.

The area of **"Ophthalmopediatric eye care"** is differentiated due to the peculiarities of the children's visual system and the specifics of care. The starting point for us is the fact, that the child's eye is not a scaled-down version of the eye of the elderly. Due to the limited time for exposure and the need to create normal conditions for the intensive development of vision, adequate nursing care is important in childhood. Highly specialized ophthalmopediatric health care requires from the nurse solid knowledge of age visual norms and deviations, criteria for referral, as well as pedagogical skills for working with children and families (figure 27).

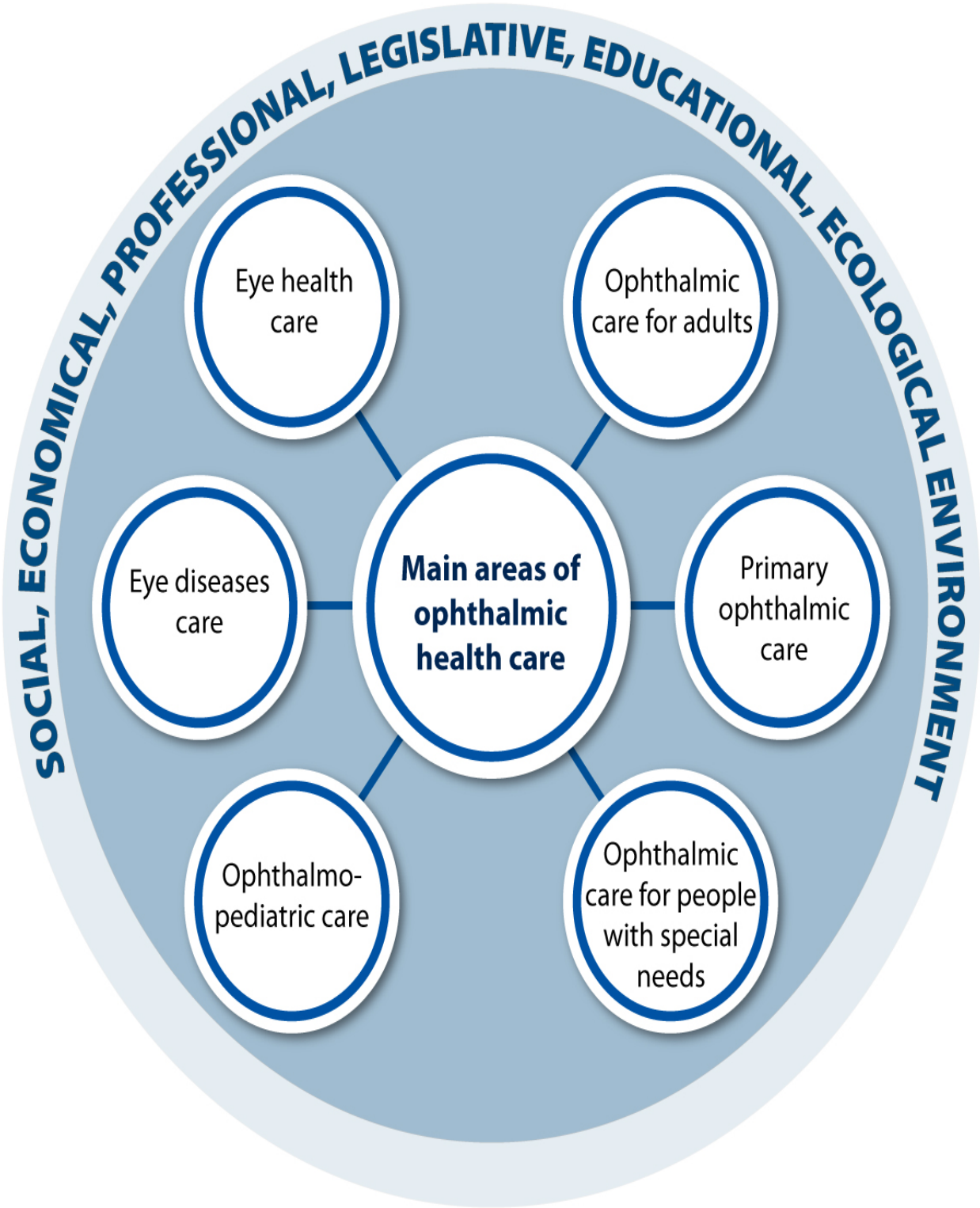

Figure 27 Main areas of ophthalmic health care

(*Adapted from Cooper J, P Stanford, M Bairstow, L Lewis, J Marsden, R Robertson, M Show, The Nature, Scope and Value of Ophthalmic Nursing, Royal College of Nursing, Fourth Edition, London, UK, 2016)* [11]

A modern aspect in ophthalmopediatric health care is the participation of the nurse in screening activities as a clinical specialist, organizer, coordinator, administrator.

The nurse can successfully help and support families for:

- adaptation of the child to the new situation at the initial prescription of glasses;
- proper wearing and care of glasses in everyday life;
- good visual hygiene:
  - ✓ alternation of the "visual load - rest" (rule 20/20/20 or 30/10);
  - ✓ reading in appropriate lighting and body position;
  - ✓ proper use of monitors.
- using of ophthalmic medication as prescribed;
- finding approaches to occlusion in the home;
- monitoring the child to detect signs of visual disturbances;
- stimulating the child for outdoor activities;
- providing a safe atraumatic environment for raising the child, etc.

To improve the perception of current trends in health care and ophthalmology, we have developed "the essence of ophthalmic health care" (figure 28).

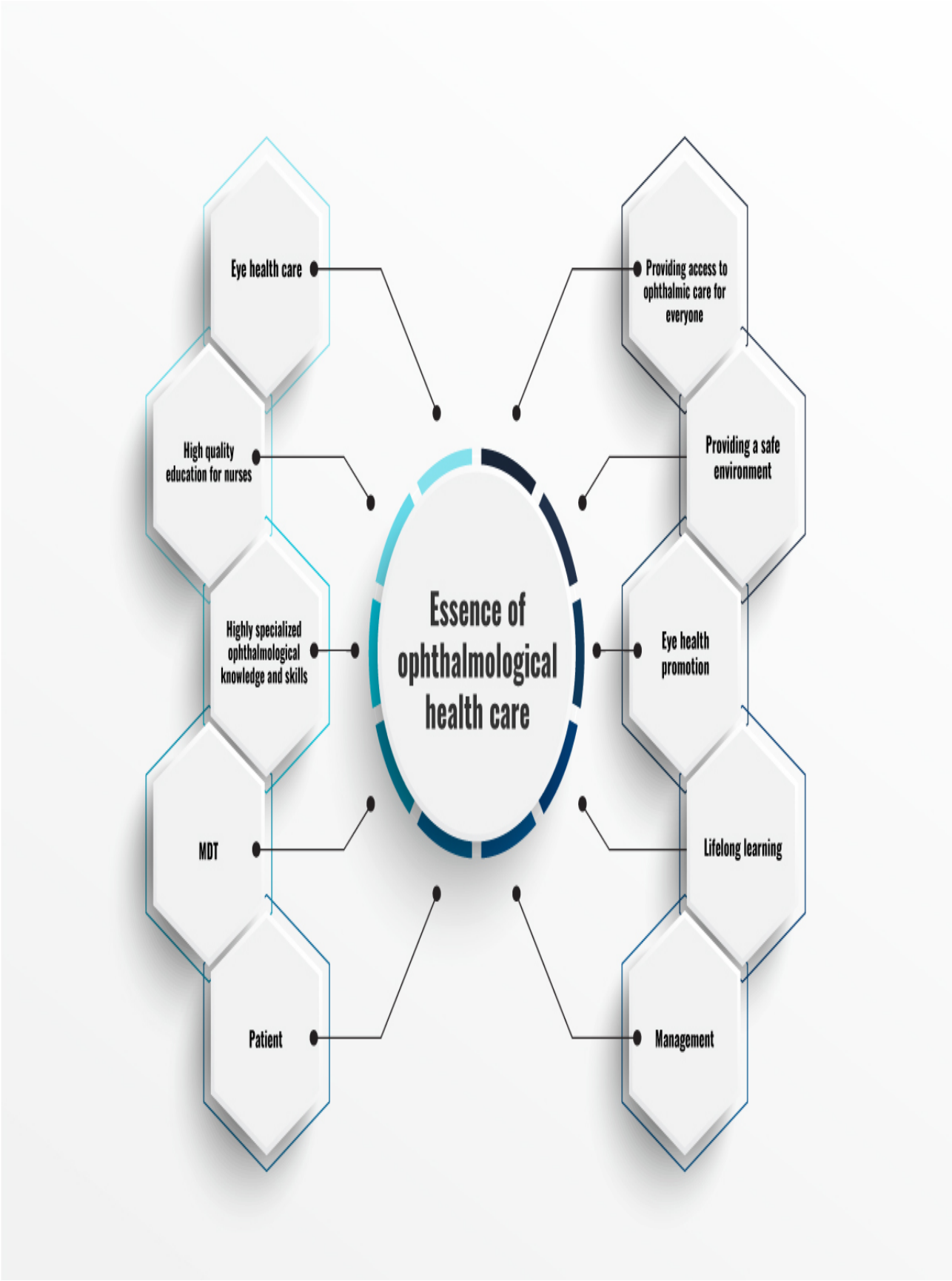

Figure 28 Essence of ophthalmic health care

(Adapted from Cooper J, P Stanford, M Bairstow, L Lewis, J Marsden, R Robertson, M Show, The Nature, Scope and Value of Ophthalmic Nursing, Royal College of Nursing, Fourth Edition, London, UK, 2016) [11]

Healthcare is a set of activities, aimed at ensuring the highest possible level of health and well-being for the child, family and community, in health and in disease, in a dynamically changing environment. Healthcare includes a wide range of nursing competencies that contribute to a unique professional role. A nurse can, independently or dependently (in a team with a doctor), provide comprehensive care for all aspects of human health. It can successfully address existing and potential health problems through promotional and educational care, providing a safe living environment, conducting research, participating in health system management and health policy-making.

The main goal of health care is to protect and improve health, to prevent diseases and adverse health consequences, to provide support and support to self-management. To achieve this goal it is necessary to provide highly educated and qualified nurses. The nursing profession is a regulated profession of public importance. The training of nurses is conducted in Medical Universities in accordance with the Unified State Requirements and ends with the acquisition of higher education (bachelor's degree) in the professional field of "Health Care".

Modern ophthalmic health care is presented in its breadth and diversity. In addition to traditional aspects of care, current aspects have been added, such as lifelong learning, management of care and teams, ensuring a safe environment and improving the population's access to ophthalmic health care.

The exercise of the professional activity by the nurse is regulated by laws for professional qualification, by legal capacity and by membership in a professional organization recognized by the state. The nurse provides quality and comprehensive care by applying scientifically sound methods and approaches in all structures of the health system. The scope of the professional activities is determined by Ordinance №1 of the Ministry of Health of 08.02.2011. One of the main activities is health promotion, diseases prevention, training and research in the field of health care. The requirements for nurses in the exercise of their professional activity are constantly updated. Nowadays, the following requirements are added to the classic requirements:

- comprehensiveness and breadth of knowledge about health;
- application of modern knowledge and scientific evidence;
- clinical thinking and critical analysis of activities and results of their implementation for human health;
- care management;
- taking responsibility for professional actions and risk management;

- intervention for active communication;
- effective team interaction, aware of one's own and respecting the roles of others in the team;
- striving for autonomy within the competencies;
- striving for personal and professional development;
- creative and innovative management of resources and teams.

Based on the conducted research and the analysis of the scientific literature, we made the conclusion that the nurse has a multifaceted, multifunctional role of the nurse, combining traditional values and modern aspects. We specified and adapted the main functions of the nurse, defined by the WHO, to the ophthalmological practice and the need for promotional care for children's eye health.

The study of multidisciplinary team care in the prevention of children's eye health is an opportunity to redefine the role of the modern nurse.

The participation of the nurse in the screening activities as an equal partner with the other members of the team could contribute to:

- applying highly specialized care in a team with a global view of the child and children's eye health;
- planning, organizing, monitoring, managing screening activities;
- building and improving team microculture;
- collaboration, independence and proactivity in activities;
- activating the role of interaction with the community;
- conducting research;
- investing in the development of the profession.

As a result of the conducted scientific research (theoretical and empirical), ***the functions of the modern nurse*** in the multidisciplinary team for prevention of children's eye health are summarized (figure 29).

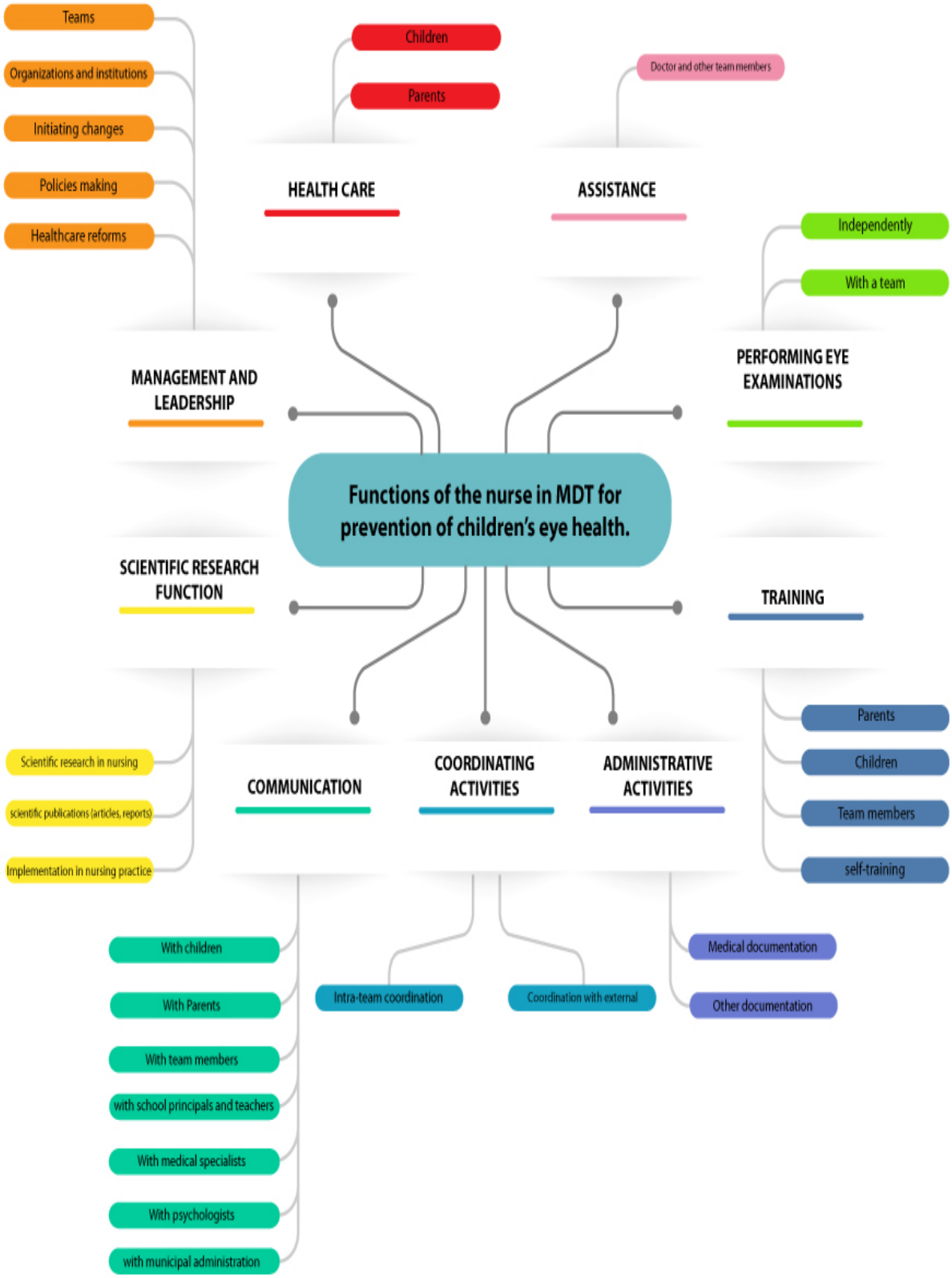

Figure 22 Functions of the modern nurse in MDT for prevention of children's eye health (autor's design)

Our scientific search is provoked by the need for clear roles of specialists in the team in order to function effectively, and by the need for ophthalmic nursing to develop, enrich, modernize and respond adequately to the needs of children and societal expectations. The results of the research confirm the thesis, that in order to redefine and modernize the role, the nurse must purposefully change as a specialist and as a person. The inevitable change goes through the process of realizing the dynamics and updating professional functions. There is also a need for continuous updating of professional qualifications based on knowledge, skills, ability for autonomy and personal responsibility. Competence as an integral characteristic of the personality gives a new meaning and forms a new attitude to the profession.

To successfully implement the functions in the multidisciplinary team, we synthesized some more important skills and competencies of the nurse (table 6).

Table 6 Skills and competencies of the modern nurse, participating in the MDT for prevention of chidren's eye health (author's design)

Skills of the modern nurse, participating in the MDT	***Competencies of the nurse in the process of prevention of children's eye health***
✓ *clinical thinking;* ✓ *critical thinking;* ✓ *organizational skills;* ✓ *coordination skills;* ✓ *communication skills;* ✓ *social sensitivity;* ✓ *information skills;* ✓ *skills for working with high-tech equipment;* ✓ *skills for providing competent, safe, empathetic care;* ✓ *skills of trainer and mentor;* ✓ *continuous striving for updating the professional competence;* ✓ *skills and approaches for working with children and families;* ✓ *creativity and striving for innovation;* ✓ *skills for forming attitudes, behavior and values towards the profession, oneself and the community;* ✓ *management skills.*	✓ *to provide patient - centered and holistic care to the child;* ✓ *to plan the care of the child;* ✓ *to work independently and with other members of the MDT;* ✓ *to know the differences and peculiarities in the development of the children's visual system;* ✓ *to know and be able to work with ophthalmological equipment for screening activities;* ✓ *to conduct training of the child and the family, leading to a change in health behavior, resilience to change and better eye health;* ✓ *to assist the family in making decisions about the child's eye health;* ✓ *to be a trainer by sharing experience and knowledge in the team;* ✓ *to participate in research individually and in a team;* ✓ *to make a self-assessment of its contribution to the effectiveness of the activities in the MDE;* ✓ *to contribute to the improvement of children's eye health;* ✓ *to contribute to the development of nursing as a science and practice.*

Due to the variety of medical institutions for inpatient and outpatient care, children's and educational institutions and the different qualifications of specialists who care for children's health, including eye health, we have developed "Periodicity for monitoring visual function and content of preventive examination in healthy at-risk children in early childhood ". The deadlines for follow-up, the ophthalmological tests suitable for each age and the specialists who can perform them are presented.

To facilitate the process of referring children to a specialist from a wide range of medical professionals, "Indications for referral of a child to an ophthalmologist" have been developed (figure 30). Factors in the process of referral are summarized in four sections: family history, risk factors, some common diseases and deviations of visual function.

Based on our clinical experience and knowledge of the pediatric visual system, we have specified the following important visual deviations, for which it is necessary to consult an ophthalmologist:

- lack of blinking reflex (improper closing of the ligaments);
- lack of reaction to light;
- improper fixation;
- lack of tracking movements;
- asymmetric light reflex on the corneas;
- improper movement or asymmetry of the eyeballs;
- nystagmus;
- persistent tearing or discharge from the eyes;
- persistent redness of the eyes;
- persistent tightening of the eyelids or sensitivity to light;
- tilting the head;
- failure of examination of visual acuity of children aged 3 - 3.5 years;
- visual acuity lower than normal for the respective children's age;
- problems in training;
- subjective complaints of headache, diplopia, burning, tearing.

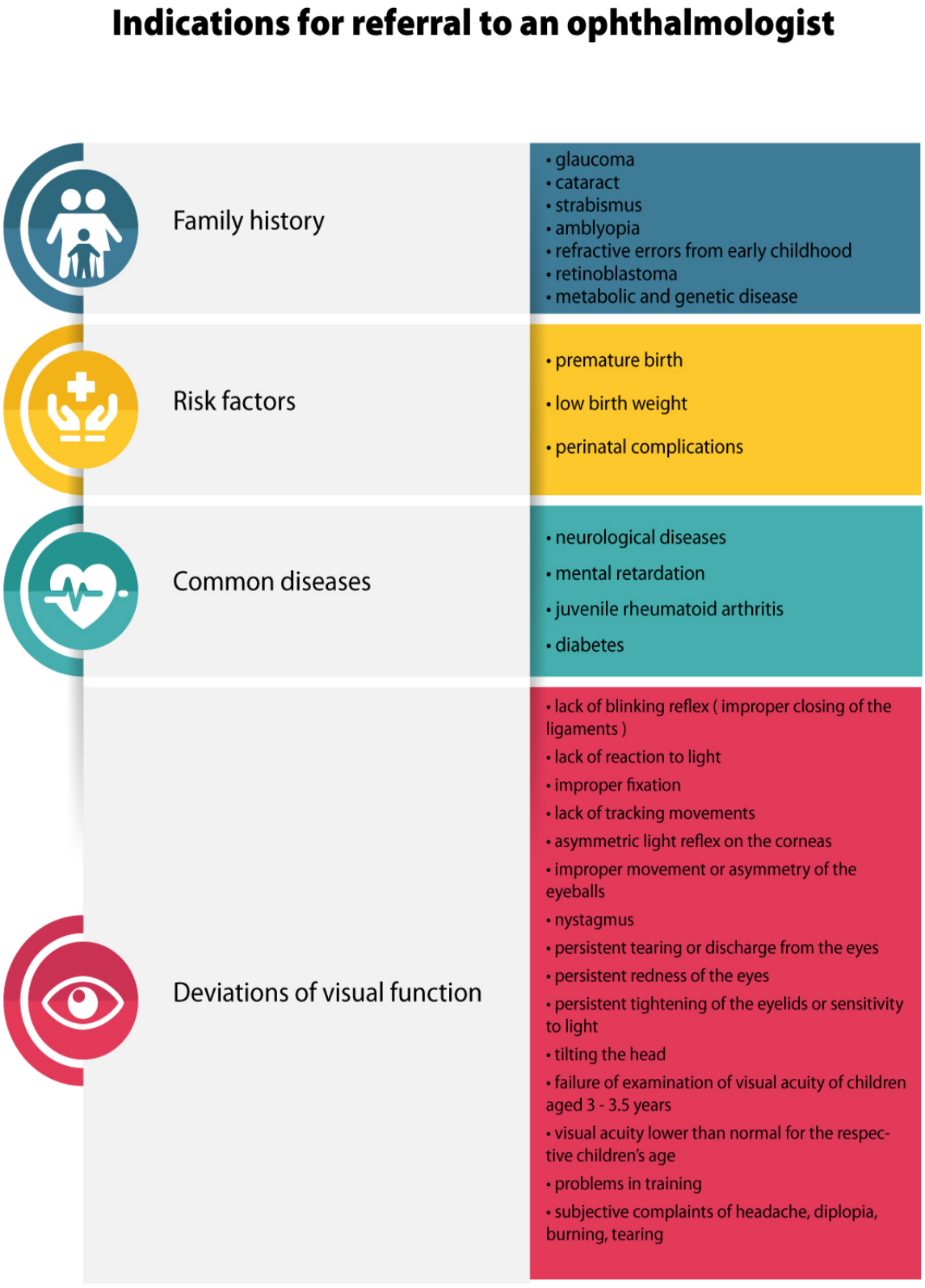

Figure 30 Indications for referral of a child to an ophthalmologist (autor's design)

In order to improve parental awareness and care for children's vision, we have developed a "**Record book of children's eye health**" (figure 31,32).

Figure 31 Record book of children's eye health - vizualisation (autor's design)

The Record book contains clinical and health information.

The ***clinical information*** from each ophthalmological examination contains data on: visual acuity for near and far distance for each eye separately, motility, parallelism of the ocular axes in the first position, color perception, stereo vision, transparency of the eye, anterior and posterior segment. A special place is set aside for the recommendation to the child regarding the deadline for the next examination, the appointed optical correction, orthoptic treatment, medical treatment.

The collection and storage of data on the children's visual system would assist the follow-up process by medical specialists. The e-health would optimize access to information. The data of each child, except in the information system, can be stored on an individual smart card. Combining digital technology with clinical practice through data transmission would make it possible to monitoring children's eye health remotely and to providing consultation with a specialist if necessary (telemedicine). Digitalisation would provide a link between portable eye screening devices and the information system, which would improve childrens' and families' access to preventive care, even in areas away from major cities and university centers. The digitalisation of healthcare would support the work of ophthalmologists in favor of children's eye health. Due to the lack of e-health, we offer storing the children's eye health information in a Record book, the data from which can be used in digitalization.

Providing ***health information*** to parents has an educational purpose. At each meeting with the families, the nurse in the role of health educator, trains parents and children in good visual hygiene and proper care for children's eye health. In our opinion, it is appropriate for parents to have information in their child's eye health record book.

The Record book contains a description of:

- the development of the immature children's visual system;
- the age norms and the gradual increase of the visual acuity of the child, which reaches that of the adults at the age of 7;
- the contribution of prevention to the good quality of chilrden’s life;
- the periodicity of preventive examinations;
- alarming signs that require a visit to an ophthalmologist.

In the record book for children's eye health, in an understandable language to the parents, it was explained that:

- the young age of the child and the lack of verbalization are not a reason to postpone the preventive examination, due to the existence of objective methods of examination in ophthalmology;
- the most common causes of visual disturbances in children are refractive errors (hyperopia, myopia, astigmatism, anisometropia);
- amblyopia is a specific eye problem that can be treated only in childhood, so it is important to detect it early (if the problem is not detected in childhood, the eye remains low vision throughout life);
- the children's eye clinic has specific equipment and arrangements;
- the eye examination for childrens takes place in the form of a game, using familiar pictures and devices that attract attention with light and sound signals;
- the assistance of the family and the preliminary preparation of the child at home is important for the calm course of the examination (the game “Which eye will recognize more pictures?” is appropriate).

Detailed information on the nature of visual training at home and in the children's eye clinic is also provided.

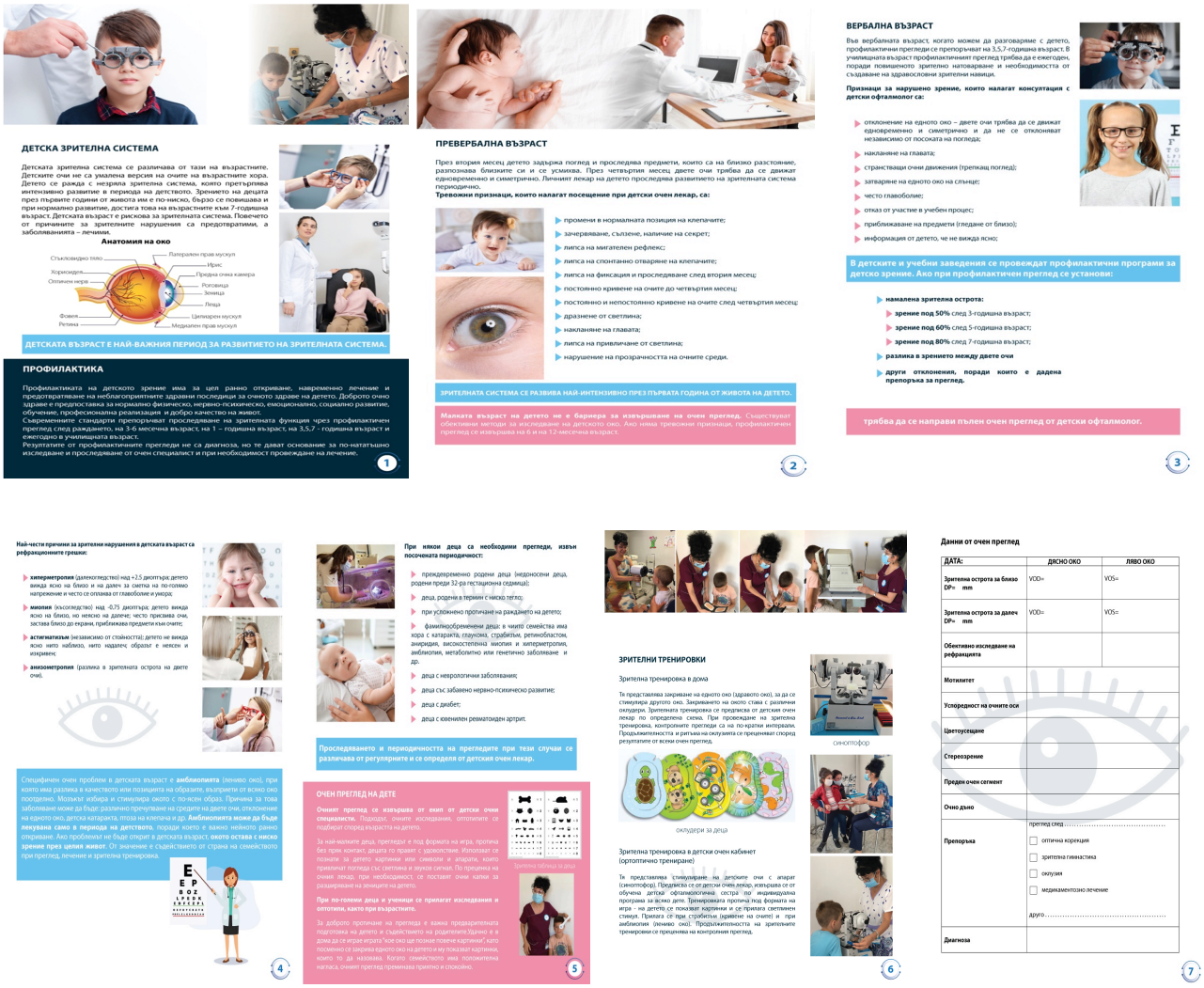

Figure 32 Record book of children's eye health - detailisation (autor's design)

CONCLUSIONS

The results of the conducted scientific research give grounds to draw the following conclusions:

1. In different countries around the world there are different approaches and practices for the prevention of children's eye health, which involve different medical professionals. There is a delegated role of a trained nurse in prevention activities.
2. In our country the legislative regulated activities for prevention of children's eye health are limited and are imposed only on ophthalmologists, while there are also other eye health professionals from three medical specialties - nurse, medical optician and optometrist. There is no national program and national recommendations for the prevention of children's eye health.
3. The level of awareness of parents on children's eye health is relatively high. Their health behavior shows a certain underestimation of preventive activities.
4. 78,7% of parents have hight confidence in the nurse in the team. They appreciate the usefulness of preventive activities and declare that they will follow the recommendations, which is a basic prerequisite for the implementation of the promotional function of the nurse.
5. Although the majority of nurses have not participated in screenings (78%), they have a positive attitude towards preventive activities (68%) and are aware of their multifunctionality (56%) in MDT.
6. Leading factors (barriers) hindering the participation of nurses in MDT for the prevention of children's eye health are lack of time due to professional workload (38%) and lack of knowledge and skills (32%).
7. The majority of ophthalmologists (64%) have a positive attitude towards MDT, state high confidence (78%) and assess the professional multifunctionality (56%) of the nurse, which is an important condition for expanding nursing functions and for effective teamwork.
8. The positive attitude of the students (92.7%) towards a multidisciplinary team approach and the striving for improvement is a prerequisite for full professional realization.
9. In practice, the application of the model for multidisciplinary team care in the prevention of children's vision will expand the professional spectrum and optimize the promotional role of the nurse.
10. The practical application of the multidisciplinary model will contribute to improving the access of the population to ophthalmological health care and will provide comprehensive care for children's eye health, based on modern

standards, approaches and competencies of all medical professionals involved in MDT: ophthalmologist, nurse , optometrist and medical optician.

RECOMMENDATIONS

Based on the results of the analysis of the legal framework of preventive activities in the country, it is proposed to develop the current legislation related to the participation of a wider range of medical professionals(nurses, medical opticians, optometrists) and to specify the promotive activities of the nurse.

Proposals have been made to: create a "National program for prevention of children's eye health", to develop "National recommendations for prevention of children's eye health", to increase the share of prevention costs in the total health care costs, to conduct preventive programs for children's vision in all regions of the country using the good practice of the Municipality of Varna, to stimulate and support the professional development and improvement of nurses by the professional organization.

CONTRIBUTIONS

I. Original for the country / Theoretically substantiated

1. The first complex and in-depth study of the Bulgarian and international experience in the prevention of children's eye health from the perspective of the nurse's participation in the prevention of children's eye health.

2. A study and analysis of the current legislation in the Republic of Bulgaria on the prevention of children's eye health and its application in the practice of medical professionals have been done.

3. The essence of modern ophthalmological health care has been developed. 4. The functions of the ophthalmological nurse in MDT for prevention of children's eye health have been developed.

5. The opinion of ophthalmological nurses, ophthalmologists, students and parents regarding the multidisciplinary team care and its importance for the prevention of children's eye health has been studied.

6. The barriers for prevention of children's vision in the country have been studied and defined.

II. With practical application

1. A model for providing a preventive environment for children's eye health through the application of multidisciplinary team care has been developed and proposed in practice.

2. In order to facilitate the practical application of the model, proposals for monitoring the child's eye health and criteria for referral to an ophthalmologist have been developed.

3. Proposals and recommendations to institutions and organizations for improving preventive care have been formulated.

4. A training program on "Promotion of children's eye health" for a wide range of students has been developed.

5. The created model is a basis for future studies, monitoring the practical application and the studied processes.

SUMMARY

The study of foreign experience shows that programs for the prevention of children's eye health are based on the same principles, but differ in applied research methods, the age of the first prophylactic examination, terms for follow-ups, specialists engaged in prophylaxis, referral to a specialist, financing. In some countries there is a national program and national recommendations for the protection of children's eye health. There is a delegated role of a trained nurse in prevention activities.

A national program for prevention of children's eye health has not been introduced in Bulgaria. Occasional regional prevention programs are conducted. The cited publications for conducted screenings in our country do not describe the specialists in the teams, the principles of formation and functioning of the teams, the roles of the specialists in the team. There are isolated data on the participation of a nurse in a traditional preventive team. The legislatively regulated activities for prevention of children's eye health are limited and imposed only on doctors. The ability of the nurse to perform promotional activities is generally defined in an ordinance, but the activities are not specified in detail.

In our country there are eye health specialists from three other professions - nurse, medical optician and optometrist, who show a positive attitude to participating in a multidisciplinary team for preventive and educational activities. Ophthalmologists have a positive attitude towards the multidisciplinary approach and the wide range of activities of other specialists in the team. Most parents have a relatively high level of awareness, but their health behavior shows an underestimation of the importance of prevention activities. Parents demonstrate confidence in the professional competence of the nurse and identify her as a preferred source of health information.

Early childhood is associated with bigger risks for maldevelopment, as the visual system is morphologically and functionally immature. During this short period, normal conditions for the development of the child's visual system must be provided. These features are the basis for preventive activities for early identification of an eye problem.

The study of the possibilities for the participation of the nurse in MDT for prevention of children's eye health, as well as the need to define specific competencies has a scientific and practical importance. The positive attitude of ophthalmic nurses towards multidisciplinary team care and their awareness of the

wide range of professional activities in the team is an important prerequisite for changing nurse's role and expanding the field of competence towards autonomous promotional activities and care management. Expanding the range of interdependent and independent professional activities of the nurse in the dynamically changing environment and complex needs of children and families will lead to the construction of an effective system for providing health care, including preventive care.

ABSTRACT

The aim of this scientific research is to study and analyze the activities for prevention of children's eye health, to identify peculiarities of multidisciplinary team care and to define the functions of the nurse in the team.

Matherials and methods: Bulgarian and international scientific literature, reflecting the world and national experience in the prevention of children's eye health, the role of the multidisciplinary team and the role of the modern nurse in preventive activities has been used. National legislative documents, related to the preventive activities in the country and to the professional activities of the nurse have been studied. Documents from the WHO, Bulgarian and international nursing organizations, strategies and agreements of the Ministry of Health have been used as information sources. Documentary, historical, sociological and statistical methods have been applied. An empirical sociological study was conducted for the period October 2020 - March 2021. The study was aimed at 400 people: ophthalmic nurses from the country; parents of children up to 16 years of age from the city of Varna; ophthalmologists from the city of Varna; students from the Medical University of Varna – nurses, opticians and optometrists. Four different questionnaires have been developed for the purpose of the study.

Results: The international experience shows a delegated role of the trained nurse in preventive activities, regardless of different approaches and practices around the world. There is no data about self-conducted screening by a nurse in our country. There is singe data about her participation in a preventive program in a team with an ophthalmologist. Although the majority of nurses have not participated in screenings (78%), they have a positive attitude towards preventive activities (68%) and are aware of their multifunctionality (56%) in MDT. Leading factors (barriers), hindering the participation of nurses in MDT for the prevention of children's eye health are lack of time due to professional workload and lack of knowledge and skills. The majority of ophthalmologists (64%) have a positive attitude towards MDT for the prevention of children's eye health and state high confidence (78%) in the competence of other team members. Students have a positive attitude towards preventive activities and express a desire to participate in MDT. Parents trust the nurse in the team, they appreciate the usefulness of the preventive activities and declare that will follow the given recommendations, which is a basic prerequisite for the realization of the promotional function of the nurse.

Conclusion: Preventive activities by multidisciplinary teams will bring benefits to all: better access to ophthalmic care for children and families, better children's eye

health, better patient’s and specialist’s satisfaction and less economic burden on society. The study of the possibilities for the nurse's participation in the MDT for prevention of children's eye health, as well as the defining of specific nurse’s competencies have significant scientific and practical importance. The positive attitude of ophthalmic nurses towards multidisciplinary team care and their awareness of the wide range of professional activities in the team are important prerequisite for changing the nurse’s role and expanding the field of competence towards autonomous promotional activities and care management.

LIST OF PUBLICATIONS AND SCIENTIFIC COMMUNICATIONS (ORAL PRESENTATIONS)

1. **Dimitrova, K.,** Prevention of children's eye health, actual state and opportunities for further development – Bulgarian perspective, Bulletin of the Union of Scientists - Varna. Medicine and Ecology Series, 2020, vol.25, №1: 53-58

2. **Dimitrova, Kr.,** Multidisciplinary approach in prevention of children's eye health in nursing practice, report, Scientific-practical conference with international participation "Nurses and midwives - a key resource in modern healthcare ", (on line), Thracian University - Stara Zagora, October 29-30, 2020;

3. **Dimitrova, Kr.,** "Care for children's eye health. Prevention and barriers.", lecture in the course "Eye health care during and after COVID 19 pandemic", (on line), BAHPN, 03.04.2021;

4. **Dimitrova, K.,** E. Hristova, Children's eye health care - partnership between parents and nurses, report, 30th International Scientific Conference "Knowledge without borders", (on line), Vrnjacka Bajia, Serbia, 09-11.04.2021;

5**. Dimitrova, Kr.,** Bulgarian and international experience in the prevention of children's eye health through the eyes of a nurse, report, Third International Conference "Health Care - a contribution to quality of life", (on line), Medical University of Varna, University of Health Sciences, Istanbul, Turkey, June 7-08, 2021

AKNOWLEDGEMENTS

I would like to thank my family – Victor, Kaloyan and Bella, for the love and the harmony in my days.

I would like to thank my mother - my roots and my wings.

I would like to express my sincere gratitude to my supervisor and mentor Professor Christina Grupcheva for the inspiration and for my development as a teacher and scientist.

I would like to thank Professor Silvya Borisova for giving me the opportunity and support during this past year.

I would like to thank Assoc. Professor Eugenia Kontrova - my teacher in ophthalmopediatrics, who influenced my formation as a clinical specialist in children's eye health.

I would like to thank Dr. Elitsa Hristova and Dr. Mladena Radeva for their empathy, competent assistance, and continuous support.