



The Impact of Biological, Sociological and Hygiene Factors on Formation of Vision Impairment in Children

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Abstract The article reveals the influence of biological, social and hygienic factors on the formation of visual pathology in children.

Keywords Factor, vision, training, myopia, load

Introduction

The protection of children's eyesight is an important component of maternal and child health and includes the prevention and treatment of eye diseases and injuries, the prevention of blindness and visual impairment, and the reduction of disability. Health, education and upbringing are an integral part of a single process of spiritual formation of a full-fledged harmonious personality of a child. This process is possible only if the health of the children is satisfactory.

According to the WHO annually by visually impaired people become 4300 children. There are more than 10,000 children under 18 in the blind and visually impaired population, including almost 650 under 6 years. It should also be borne in mind that 21% of the disabled visual disorders occurred in childhood.

Uzbekistan's participation in the WHO international program "Elimination of avoidable blindness 2020", the main positions of which provide for the development and implementation of measures, both common to all countries and specific to individual States, aimed at preserving the vision of the population, with the condition that ophthalmic care should be more accessible, cheaper and of better quality, also commits to this. Blindness and low vision adversely affect the health of the younger generation. In case of visual impairment in blind and visually impaired children, motor activity is significantly reduced, which negatively affects the formation of the motor analyzer, the most defective in its development due to a visual defect. The earlier the vision decreases or is lost, the more pronounced developmental abnormalities occur in such children. It is established that children with visual impairment lag behind in physical development at all age stages. Cases of eye disease and its appendage according to the data of treatment and prevention institutions are 10 097, 7 per 100000 children, 14 656.4 per 100 000 adolescents. These figures not only do not decrease, but also tend to increase. This is associated with an increase in the frequency of congenital diseases and developmental abnormalities, retinopathy of prematurity, various inflammatory diseases, and myopia [1].

In determining the main tasks for the protection of vision, it is important to identify such eye diseases that serve as the most common cause of blindness or visual impairment and to the greatest extent limit the professional suitability of the younger generation. Thus, the main causes of visual impairment in children are ametropia and strabismus with amblyopia. They account for up to 90% of all cases of visual impairment in childhood, about 15% of children need to wear glasses [2].



The formation of vision impairment is driven by the impact of a complex biological, sociological and hygiene factors such as the age of parents, their health condition, harmful habits, pregnancy gestoses, asphyxia, birth trauma premature childbirth. The outlined factors may disrupt the maturation of the fetus and the development of a child during the newborn period by altering the refractogenesis.

A number of authors note the frequent development of vision impairment, particularly myopia in children with accelerated growth, especially during puberty. There is evidence that myopia is more common among children with lower physical development. It is established by N. Yu. Pylzina that the risk of development of nearsightedness and its progressing are concomitant impairment conditions: decrease of muscular mass, diseases of musculoskeletal system, automatic nervous system, ENT-organs, lowering the velocity of blood flow in the arteries of the eye basin. Apart from that in the occurrence of myopia an important role is played by hereditary predisposition.

Among sociological and hygiene factors such as the size of living space per person and housing conditions have a reliable impact on the derivation of vision impairment. At the age of 3-4 years, no laws were revealed, and 6-7 years this factor significantly affects the formation of myopia, that is, overcrowd of apartments leads to higher morbidity and delay in physical growth. In addition to the indirect impact, the factor has a direct impact, that is, insufficient natural light, lack of necessary conditions for activities of children.

With regard to the education of parents, there is a law of more intensive education of children in parents with higher educational level, which increases the total load on the organ of vision.

Some authors point out that the number of children with lower vision is higher in schools of new type, that is, by the end of the gymnasium in 48-50% of learners are marked by diseases of the organ of vision, while in ordinary schools constitute 30-35%.

One of the significant factors of vision impairment is undoubtedly schooling. Most authors point to an increase in the incidence of the vision impairment during school years. In accordance with data V. I. Pospelov and co-author the number of visually impaired children in school increases by more than 2 times, from 7.7% before school enrollment, to 18.6% before graduation of school. Analogous data obtained by T. N. Goleva and co-author: the number of learners with reduced vision increased during the period of schooling from 6.8% to 15.7%, and basing on data by S. N. Potapova and co-author: P. S. Sinev, the number of such children increases by almost three times, and by the age of conscription every fourth boy has a vision impairment. In this case, 50.3% of all children with reduced vision are children with myopic refraction. The frequency of myopia exceeds two times and more occurrence of violation of posture, impairment of the gastrointestinal tract, vegetovascular dystonia.

Recently, it is being noted the shift in the process of myopization towards younger age due to increased vision load, complication of school curriculum, introduction of computers and etc.

At the age of 6-7 years myopia is more common in boys, and at the age of 9-10 years, when there is a sharp increase in the prevalence of this impairment, nearsightedness is especially often found in girls.

According to some authors, the significant increase in the occurrence of impairment of the organ of vision in recent years is connected with unfavorable hygiene conditions in educational institutions, that is, unsatisfactory illumination of educational places, non-compliance of hygiene requirements and operating mode on computers, general unsatisfactory material and technical base of schools

According to the data presented by M. E. Konovalov, the leading hygiene factors that reduce visual acuity, are the increased fatigue from the increase in the training load associated with the use of computers and the irrational mode of education, unsatisfactory illumination of premises, mismatch of furniture with the usury characteristics. All these grounds, according to the author, led to an increase in the impairment of the organ of vision in the Voronezh region in pupils of 11 classes compared with those of first-grades pupils in 4.6 times [3].

M. V. Krivososov and co-author conducted a research of the impact of the visual environment of modern schoolchildren on health. It was found that the most significant factor contributing to the reduction of vision is TV, that is watched by 98.9% of schoolchildren, of which 42.9%, that is, more than 1.5 hours per day. The second place is electronic entertainment, with almost half of the school students spent regarding this activity up to 1.5 hours per day. The quality of most school textbooks has been recognized as unsatisfactory, leading to violations of the vision system. The majority of electronic entertainments were not certificated, their use caused persistent spasm of



accommodation and infringement of binocular sight. According to V. G. Yermolaev, in addition to watching television broadcasts, the negative factors of the way of life of schoolchildren are long-term doing of homework (more than 3 hours), reading lying, violation of the mode of illumination, mode of the day, lowering the level of physical activity.

Medical and geographical studies have shown that myopia is more common in the northern latitudes and associated authors with climatic conditions of the far North, the features of light mode, insufficient exposure to the body ultraviolet rays, physical inactivity. According to E. S. Avetisov, the frequency of myopia increases from the South to the North, that is, from 5-8% for schoolchildren living in the southern regions, to 21-39% for the Northerners [4].

The Influence of natural landscape on vision acuity is considered by T. S. Teleshova and co-author. It concludes that in children living in mountainous areas, vision acuity is much higher than in the children of lowland areas.

Some authors consider the connection of myopia with the character of soils, in particular with the content in soils and waters of potassium, phosphorus, calcium. According to this hypothesis, the large prevalence of nearsightedness in the studied areas is explained by the lack of these substances in food of children [5].

According to a number of authors, one of the factors impacting the development of the impairment of the organ of vision is living in the city or in the countryside. Rural children are less likely than urban ones to suffer from decreased eyesight due to less intensive vision work, good ambient lighting conditions, more stay in the open air, regular physical work and other aspects of life.

Thus, the problem of vision impairment in childhood time is very topical, entailing a serious decision in both scientific and organizational terms.

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