

# Influencing Factors and Prevention of Myopia in College Students

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**Abstract:** Myopia has become a key public health problem in many countries due to its rapid growth. The number of college students in our country is increasing, the proportion of college students myopia is increasing. It is of great significance to analyze the influencing factors of myopia and scientifically formulate preventive strategies to effectively control the proportion of myopia. This paper analyzes the causes of myopia from the aspects of heredity, environment and behavior habit, and puts forward some preventive measures for myopia.

**Keywords:** College students; Myopia; Influencing factors; Myopia prevention

With the continuous development of education, the number of college students in China has increased significantly year by year. Students have been the high incidence of myopia crowd, in recent years, the number of college students myopia also presents a rising trend year by year, directly affecting the study and life of college students. China is a big country with myopia and more than 500 million people are myopic<sup>[1]</sup>, the high rate of poor eyesight has brought serious harm to the health of students, myopia has not only become a public health problem of concern, but also become an increasingly serious social problem. Domestic research has also carried out more studies on myopia of college students, and analyzed more factors affecting myopia. In view of various factors, the prevention of poor vision has become an important task of school health care work.

## 1. Overview of factors affecting myopia in college students

### 1.1 Genetic factors

Genetic factors are more difficult to control, but also have an important impact on the incidence of myopia in college students. Studies have found that myopia of both parents or unilateral myopia has a greater impact on the deepening of myopia in college students, which is one of the factors affecting the deepening of myopia in college students. Pathological myopia is inherited by autosomal dominant inheritance, autosomal recessive inheritance and X- sex linkage inheritance, and has high genetic heterogeneity<sup>[2]</sup>. The most common genetic mode is autosomal inheritance, and abnormalities are found in MYP1, MYP2, myP3 and other sites of simple myopia patients, suggesting that the disease is different from pathological myopia. Simple myopia is multi-gene inheritance, and gene positioning is difficult. In recent years, studies have suggested that simple myopia is related to heredity and environment<sup>[3]</sup>. Studies have<sup>[4]</sup> The results showed that there was no basic effect of gene polymorphism on eyeball size and refraction, but the extent of effect and the proportion of gene and environmental factors in the pathogenesis of myopia remained to be determined.

### 1.2 Environmental factors

Environmental factors are also an important cause of myopia in college students, such as too much close eye use and use of electronic products every day, the light intensity of the eye environment is not suitable, etc<sup>[5]</sup>.

#### 1.2.1 Behavioral habits

Myopia is the result that acts together by genetic factor and environmental factor, and adolescent myopia happens and work with eye, close distance for long acts with very big concern. Many previous studies have shown that too much time spent watching TV and computers is a risk factor for myopia in teenagers<sup>[6][7]</sup>.

The popularity of mobile Internet enables students to access the Internet anytime and anywhere. It has become a very common phenomenon for college students to use mobile phones to surf the Internet and play games in class and after class. Mobile phone screen picture color and light intensity replacement frequency is very fast, coupled with the eyes from the screen is close, long time to watch easy to make the eye regulation spasm and fatigue, this close time caused by visual fatigue can not be alleviated is one of the factors causing myopia. A study found that staying up late using mobile phones and spending a lot of time on the computer every day are risk factors for myopia in teenagers, which is consistent with many previous studies. For a long time with the eye on the one hand, the ciliary muscle can not be relaxed in a long-term tension, and the long-term tension of the ciliary muscle will not only cause its regulation lag, but also make the lens gradually convex<sup>[8]</sup>, on the other hand easy to make intraocular pressure is elevated, and high intraocular pressure action at sclera, form myopia; The main cause of myopia in teenagers is the elongation of the axis caused by optical defocus caused by near-load for a long time<sup>[9]</sup>.

In addition, when college students are learning to read, the distance between the eyes and the book is less than 33cm, which will also make the eye muscles in a state of extreme tension for a long time, which will lead to eye fatigue. For a long time, this will lead to

myopia or aggravation of myopia. The study found that keeping the chest one punch away from the desk and the appropriate distance between the eyes and the book when writing were protective factors affecting vision<sup>[10]</sup>.

### **1.2.2 Diet and sleeping habits**

With the continuous improvement of people's living standard and the diversification of food types, students have more food choices. Sweet food and puffed food contain more polysaccharide, sugar intake is overmuch, bring about blood to produce a large number of acidic material, acid and the calcium photograph inside body body is united in union, caused blood calcium to reduce, affected the tenacity of eye ball wall, abetted the occurrence of myopia and development<sup>[11]</sup>. At the same time, liking to eat hard food is one of the protective factors of myopia, Mao Honghui et al<sup>[12]</sup>'s research also confirms this. Most studies have found that sleep time of at least 8h a day is also an important protective factor for myopia. Students are prone to excessive use of the eyes, and adequate sleep is conducive to the recovery of the ciliary muscle regulation function and relieve visual fatigue.

### **1.2.3 Self-awareness of protecting eyesight**

Most students pay more attention to the protection of vision, the lower the incidence of myopia. Individuals' awareness of vision protection can promote them to take vision health care behaviors and have a positive impact on the prevention of myopia. There are relevant investigations show<sup>[11]</sup>, 70.56% of college students do not pay attention to the protection of eyesight, and take the attitude of not caring about the eyesight and letting it develop naturally, which is the subjective reason for the rising trend of myopia among college students. Therefore, college students should enhance the awareness of vision protection and actively learn the knowledge and methods of eye protection.

### **1.2.4 Outdoor sports**

With the increase of time spent outdoors, the risk of myopia gradually decreases, and some studies at home and abroad in recent years have also proved this view<sup>[13]</sup>. Existing studies have shown that exposure to light during outdoor activities can stimulate the release of retinal dopamine, an important retinal neurotransmitter in the development of myopia, which can prevent the eye from lengthening.

### **1.2.5 Geographical area**

Studies have found that urban students of malvision is significantly higher than rural students, has a positive correlation between urbanization level and the proportion of poor vision, with less city students physical exercise and outdoor activities, or the lack of sinotrans, study more hard, raising the level of city life, especially the popularity of TV, computer, electronic books and other products, the students in their spare time activities are mainly composed of watching TV and the Internet. Watching TV, playing computer games and so on for a long time. Rural students have a wide field of vision, more time for outdoor activities, less homework, and less opportunities to watch TV, play computers and play games in their spare time. But some studies have found that urban and rural differences are not the main factors for myopia, and in order to find statistical differences,

## **2. Review of studies on prevention of myopia**

The prevention of myopia basically includes the occurrence that prevents myopia, the development that prevents myopia and the complication that prevents myopia, basically tell about the occurrence of how to prevent myopia here.

### **2.1 Healthy diet and sleep**

In terms of diet, pay attention to a balanced diet, sweet tooth, blood sugar is easy to be high, resulting in aqueous humor into the lens and cause myopia. Pay attention to A balanced diet, reasonable nutrition, eat more fresh vegetables and fruits, often eat eggs, milk and beans, to ensure adequate intake of vitamin A. And vitamin B2. Liu chang etc.<sup>[14]</sup> It is found that eating more animal liver, carrot, beans and green leaves is beneficial to eyesight, and often drinking sugary drinks induces the occurrence of myopia. It is suggested that students eat more beans, fish and carrots and other foods rich in vitamin B1. Getting enough sleep can also relieve eye muscle fatigue and regulate the ciliary body. Other studies have shown that children born in summer are more likely to develop myopia than those born in winter, possibly due to the intensity of sunlight exposure. Appropriate outdoor activities contact a lot of sunlight, conducive to the retinal secretion of dopamine, the prevention of myopia has a good effect.

### **2.2 Appropriate physical exercise and outdoor activities**

Children born in summer are more likely to develop myopia than those born in winter, a study suggests, which may be linked to the intensity of sunlight exposure. Most studies have found that a moderate amount of exposure to sunlight in outdoor activities is conducive to the secretion of dopamine in the retina, which has a good effect on the prevention of myopia. Accordingly, do a good job of the myopic prevention of college students, undertake outdoor exercise more is indispensable, have scholar It is believed that the muscles that control the eye movement are fully active during exercise, and the ciliary muscle contraction and relaxation are continuously promoted, and the ciliary muscle fatigue caused by close work is improved, so that the tired eye muscle can be recovered faster. An extra 1 hour of outdoor activity per day will reduce the incidence of myopia by 2%. Therefore, it is very necessary for students to have more outdoor activities

### **2.3 Good eye habits**

Good habits with eyes is the basis of vision protection, at present college students generally on vision protection awareness is not high, but to develop good habits with eyes, we need to pay attention to the following points: one for continuous use of the eyes for 30~40 minutes should rest overlooking for 10 minutes; Second, upright sitting posture and pen holding posture, maintain a reasonable distance with the eyes, to achieve "one foot one fist one inch"; Third, adhere to the implementation of eye exercises to help alleviate visual fatigue in time; Fourth, scientific and rational use of electronic products, to develop good learning and eye health habits in the information environment. Develop good reading habits, reading and writing to keep the correct posture and posture to get rid of bad habits with eyes; In the study and daily life, adhere to do eye exercises every day, pay attention to the combination of work and rest, visual 1h or so appropriate rest, between classes to the classroom overlooking the blue sky and white clouds or watching the campus

scenery and the green leaves of trees, these activities can play a good role in regulation; Some research results show that the reading distance is less than 30cm for a long time, so that the ciliary muscle is maintained in a tense state, and the lens becomes convex leading to the increase of diopter; By participating in sports such as running and badminton, the ciliary muscle can be relaxed, the length of the axis of the eye can be shortened, and the diopter can be reduced, thus achieving the purpose of preventing myopia.

## 2.4 Popularize myopia health care knowledge

On October 8, 2019, the World Health Organization (WHO) released the World Sight Report in Geneva. According to the report, 70 percent of Chinese teenagers are myopic, while only 10 percent of American elementary and middle school students are myopic. A survey found that college students on myopia health care knowledge of the grasp of only up to 55.0%, especially in the continuous time, with the eye surgery treatment for myopia indications and world sight day time lack knowledge, such as the cause of this result mainly include the lack of correct cognition for myopia care, did not improve their health awareness, at the same time the school on myopia health education work is not positive, no physical and mental health of students, development of attention. So schools should to do a good job of health education on myopia care, health education handbook, and regularly carry out related training course, for the purpose of protecting eyesight, factors and harms of the myopic eye health, daily cleaning, alleviate eye fatigue way to explain such as content, thus improve students for the master degree of myopia care knowledge, and improve health consciousness, make it in daily life to do a good job of protecting eyesight. Secondly in terms of the attitude of the college students' myopia care, through health education to improve their emphasis on myopia care, from the psychological change its error recognition of myopia, and guide students to learn scientific knowledge, with its eyes open exhibition myopia care project report, add related to vision health education courses, to help students develop and set up health knowledge and health consciousness; In order to correct the attitude of college students to myopia health care work, so that they always maintain a positive learning attitude on vision protection.

## 3. Conclusion

At present, myopia is a common eye disease among college students. With the development of electronic products, the number of myopia in China has increased year by year in recent years. With the further deterioration of myopia, it can develop into blind-causing eye diseases, including macular degeneration, glaucoma, retinal detachment, etc., which seriously affect students' study and life. Schools, parents and students themselves should pay attention to vision problems. In view of the higher myopia rate of college students, the phenomenon of insufficient attention to the health care of vision. Vision of complex factors at the same time, individuals and schools need to take active measures, to strengthen the publicity and education of college students' knowledge with the eye, enhance the consciousness of health care and health with the eye vision, establish college students' good behavior habits with the eye, and then to improve the students' vision, improve the level of college students eyesight health.

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