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Climate Change and Eye Health: Emerging Challenges

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Abstract:

Climate change has become one of the most significant global health challenges of the 21st century, with substantial implications for ocular health. Rising temperatures, increased ultraviolet (UV) radiation exposure, worsening air pollution, prolonged pollen seasons, desertification, and extreme weather events contribute to a growing burden of eye diseases. Climate-related environmental changes have been associated with dry eye disease, allergic conjunctivitis, infectious keratitis, cataracts, pterygium, and retinal disorders. Vulnerable populations, including children, older adults, outdoor workers, and individuals in low-resource settings, are particularly at risk. Public health interventions focusing on environmental protection, eye health awareness, protective eyewear, and early screening are essential to reduce climate-related ocular morbidity. This short communication highlights the relationship between climate change and eye health and discusses current challenges and preventive strategies.

Key words: Climate change, Eye health, Dry eye disease.

INTRODUCTION

Climate change has become a major global health concern. Changes in temperature, air quality, and weather patterns affect not only the environment but also human health. The eyes are constantly exposed to the environment and are therefore highly vulnerable to these changes. Increasing evidence suggests that climate change contributes to several eye disorders and may increase the burden of visual impairment worldwide.

CLIMATE CHANGE AND EYE HEALTH

Higher temperatures and reduced humidity can cause tears to evaporate more quickly, leading to dry eye disease. People may experience burning, irritation, redness, and blurred vision.

Air pollution from vehicles, industries, and wildfires exposes the eyes to harmful particles and gases. These pollutants can cause eye irritation, allergic conjunctivitis, and worsen existing eye conditions.

Increased exposure to ultraviolet (UV) radiation is another important concern. Long-term UV exposure increases the risk of cataracts, pterygium, and damage to the surface of the eye. People who spend long hours outdoors are at greater risk.

Climate change also affects the spread of allergens such as pollen. Longer pollen seasons may increase the number of people suffering from allergic eye diseases, causing itching, watering, and redness.

Extreme weather events such as floods and storms can increase the risk of eye infections because of contaminated water, poor sanitation, and limited access to healthcare services.

PREVENTIVE STRATEGIES

Several simple measures can reduce the risk of climate-related eye diseases:

- Wear sunglasses that block 99–100% of UV rays when outdoors.
- Use protective eyewear in dusty or polluted environments.
- Stay hydrated and use artificial tears if dry eye symptoms occur.
- Reduce exposure to smoke and air pollution whenever possible.
- Maintain proper eye hygiene and avoid rubbing the eyes.
- Undergo regular eye examinations, especially for children, older adults, and outdoor workers.
- Increase public awareness about the effects of climate change on eye health.

CONCLUSION

Climate change is an emerging threat to eye health. Environmental changes such as increasing temperatures, air pollution, UV radiation, and extreme weather can contribute to several eye diseases. Most of these conditions can be prevented or managed through simple protective measures, early detection, and public awareness. Promoting eye health should be considered an important part of climate change adaptation and public health programs.

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