Medical Xpress

Sunlight could stop short-sightedness

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A spreading pandemic of myopia among the world's urban children may be avoided if children spend at least two to three hours each day outdoors.

Australian scientists from The Vision Centre say there is persuasive evidence that increased exposure to daylight can prevent the permanent short-sightedness and eye damage which now afflicts up to 80-90 per cent of children in cities in East Asia such as Singapore and Hong Kong.

The finding demolishes long-held beliefs that short sight is due mainly to reading, and overuse of TVs and computers by youngsters, or is primarily linked to genetic factors. Myopia affects over 1.6 billion people worldwide, is spreading rapidly among city populations and, in its most severe form, can cause blindness by middle-age.

"The prevalence of myopia in the Australian population is dramatically lower than in other urban societies round the world - yet we do just as much reading and computer work," says Professor Ian Morgan of the ARC Centre of Excellence in Vision Science (The Vision Centre) and Australian National University.

The team's conclusions are borne out by new research in Singapore and the United States, which has reached similar conclusions.

"Looking at children of Chinese origin, we found only 3 per cent of those in Sydney suffered from myopia, compared with 30 per cent in Singapore, where there is an epidemic. Yet, if anything, the children of

Chinese origin in Sydney read more than those in Singapore. This clearly suggests that myopia was triggered by something in the environment, rather than the genes. The critical factor seemed to be the fact that the children in Singapore spent much less time outdoors."

Comparing myopia levels among people of Indian origin, the team noted 5 per cent short-sightedness among rural Indians, 10 per cent among city Indians - and 65 per cent among Indians living in Singapore.

"We're seeing large increases in myopia among children in urban societies all around the world - and the outstanding common factor may be less and less time spent outdoors.

"Humans are naturally slightly long-sighted. We see that in rural populations all round the world. But when you start intensive schooling, and spend little or no time outdoors, you get this dramatic rise in myopia. In some East Asian cities 80-90 per cent of children are affected - and governments and the World Health Organisation are very worried about it."

"The idea that 'reading makes you short-sighted' has been popular for a couple of hundred years. But recent data shows that the time spent indoors is a more important factor. Children who read a lot, but still go outdoors, have far less myopia."

Professor Morgan explained that myopia is essentially an eye that has grown too long, and once it is too long, you can't shorten it again: "So you have to stop it happening in the first place.

"Our hypothesis is that the light intensity experienced outdoors - which can be hundreds of times brighter than indoor light - causes a release of dopamine, which is known to block the growth of the eyeball. This prevents it taking on the distorted shape found in myopic people. We are

now testing this idea."

Professor Morgan explained that one of the potential problems with using increased time outdoors to prevent myopia is the potential for increasing skin cancers and for causing eye damage later in life.

"Our hypothesis is that the protective effect is based on visible light, acting through the eye. We will be testing this over the next few months and the next stage will be a randomised clinical trial."

If proven correct, then the prevention of myopia through increased time outdoors will be compatible with "Sun Smart" practices.

The research is being carried out through the ARC Centre of Excellence in Vision Science, the Australian National University and Sydney University, with support from the Australian Research Council, and the National Health and Medical Research Council.

Provided by ARC Centre of Excellence in Vision Science

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