

論文内容要旨

The prevalence of myopia and the factors associated with it among university students in Nanjing: A cross-sectional study

(南京市にある大学の学生における近視の有病率とその関連要因：横断研究)

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Introduction

Myopia, one of the most common eye diseases, has become a global public health issue worldwide. In the last 50 years, the prevalence of myopia in Asian countries, especially among the Chinese populations, has dramatically increased. Although the mechanisms of development and progression of myopia remain uncertain, both genetic and environmental factors have been demonstrated to contribute to myopia. Environmental factors, such as a higher level of education, more near-work, and lesser outdoor activities, could be associated with myopia as reported in previous studies. At the same time, some protective measures, such as Chinese eye excises and more outdoor activity, have been shown to have protective effects against myopia. Since the university students comprise the young elite population of the future society, more attention should be paid to their visual health. Hence, we performed this study to investigate the prevalence of myopia and to analyze the behavioral factors that may be associated with the development of myopia among the university students.

Methods

Based on the prevalence of myopia in previous studies, the sample size formula was used in the study. The stratified random sampling method was used to select the participants. Considering the validated response rate, 1,200 university students were invited to participate in the study in June 2017 in Nanjing. The questionnaire included items to obtain data on the demographic information, history of parental myopia, and the behavioral factors of the participants. The behavioral factors asked for included maintaining bad postures while reading or writing, having the habit of performing eye exercises, and taking breaks after 30 minutes of continuous reading. Additionally, the average durations of daily computer or smartphone use (including games, videos, and chatting), sleep, near-work (including studying, reading, and writing), and outdoor activity were obtained through the questionnaire.

Results

The overall prevalence of myopia was 86.8% (95% CI = 84.6% to 88.9%): 86.1% among males, and 88.0% among females ($P=.411$). Chi-squared tests showed that parental myopia, performing eye exercises, taking breaks after 30 minutes of continuous reading, and engaging in outdoor activity were significantly associated with myopia ($P<.001$, $P=.034$, $P<.001$, and $P=.002$, respectively). Having at least one parent with myopia was a risk factor for myopia (OR=3.58, 95% CI=1.96 to 6.54); whereas, taking breaks after 30 minutes of continuous reading and performing at least two hours of outdoor activity per day were protective against myopia in multivariate analysis (OR=0.61, 95% CI=0.41 to 0.93; and OR=0.45, 95% CI=0.2 to 0.99; respectively).

Discussion & Conclusion

In our study, we observed a high prevalence of myopia and confirmed the association between myopia and the following factors among undergraduate students in Nanjing: parental myopia, performing eye exercises, taking breaks after 30 minutes of continuous reading, and performing more than two hours of outdoor activity per day. Parental myopia was a risk factor for myopia. Taking breaks after 30 minutes of continuous reading and performing at least two hours of outdoor activity were associated with less myopia. Performing eye exercises was associated with less myopia in univariate analysis, but not on multivariate analysis that adjusted for age and gender. There were no significant associations between myopia and having bad postures while reading or writing, using the computer, using smartphones, sleep, and near-work. As myopia contributes to a serious public health problem among children and adolescents in China, there is an urgent need for measures that promote visual health and reduce myopia in the society. By identifying the factors associated with myopia, the findings of our study may be crucially significant with regard to visual health. In societies that emphasize the need for a degree or diploma, visual health should be promoted among students by ensuring the inclusion of proper behavioral patterns, such as taking breaks after continuous reading, spending more time spend on outdoor activities, and performing eye exercises, in to their daily lives. The success of any measure, including the acceptance of recommended behaviors for visual health, needs the individuals to be aware of the condition and the benefits of the recommended behaviors. Thus, the findings of our study can increase the awareness of visual health among the students, and thereby, contribute to the development of policies for healthy vision in the future.