PREVALENCE OF MYOPIA IN THE PAEDIATRIC POPULATION OF EUROPE: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction

Myopia: A Global Health Crisis

- Myopia is a growing global health issue, with risks extending to severe ocular diseases and potential irreversible visual impairment.[1-4]

Study Goal

- This meta-analysis aims to quantify the prevalence of myopia among children in Europe to understand the problem's scope better.

Exploring Variations

- The study examines myopia rates based on:
  - Age: To identify how myopia varies among age groups.
  - Sex: To assess differences between boys and girls.
  - Location: To uncover regional differences across Europe.
  - Urbanisation: To explore the link between urban living and myopia rates.

Methods

Studies were sourced through a systemic search of research databases (PubMed and Cochrane) using refractive error terminology and European nations with distinctions made between countries for data analysis purposes. Suitable studies were identified by employing the inclusion criteria and data collated. Exclusion criteria included lack of cycloplegic use, studies published before the year 2000 and studies without reported definitions and sample sizes. The pooled prevalence of myopia were provided with 95% confidence intervals.

Results

A total of 17 studies were included in this meta-analysis with a cumulative sample size of 22,163. The prevalence of myopia is 10.90% (CI 8.82; 13.18) and is displayed in figure 1. Myopia levels are highest in Western Europe as demonstrated by figure 2. Figure 3 illustrates myopia levels according to age. The prevalence of myopia in females is 11.11% (6.32; 16.99) compared to 9.79% (5.28; 15.45) in males.

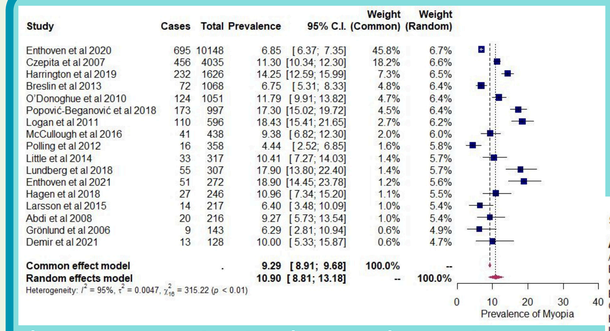


Figure 1 - Forest plot showing myopia prevalence according to European studies undertaken on paediatric populations including all ages ordered by precision

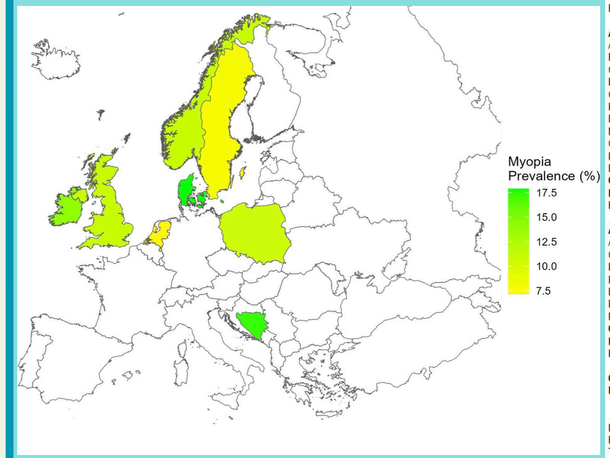
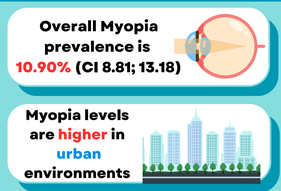
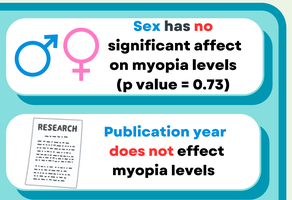


Figure 2 - Geographical representation of myopia prevalence across Europe demonstrating the highest levels of myopia in Western Europe





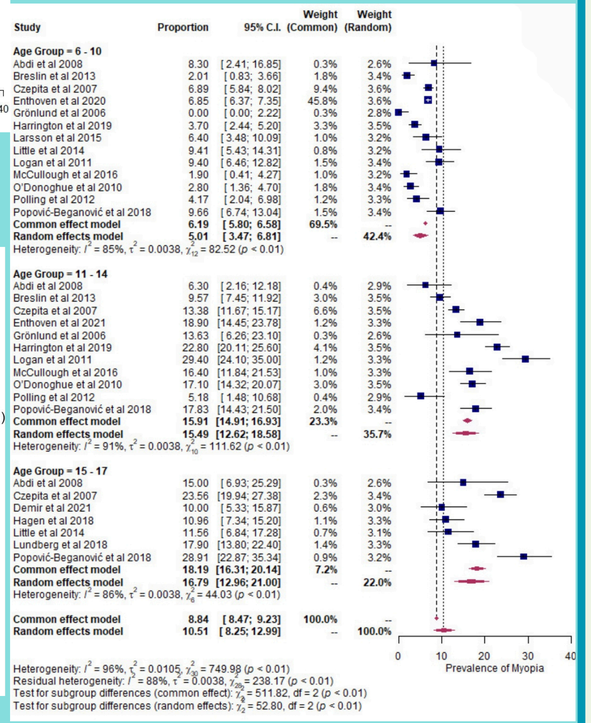


Figure 3 - Myopia prevalence according to age group illustrating that myopia increases as a factor of age

Myopia levels are 6.81% (0.92; 17.12) in rural areas and 12.55% (8.01; 17.92) in urban regions. The prevalence of myopia in North and South Europe is 10.84% (8.28; 13.69) and 10.90% (8.84; 13.15) respectively. Myopia levels in Eastern and Western Europe is 7.73% (3.18; 14.03) and 11.72% (5.95; 19.09) respectively.

Discussion

Literature review: Myopia levels in the paediatric population of Europe are higher than those reported in Africa of 4% but lower than those reported in all other continents.[5] Asian countries had the highest myopia prevalence particularly in East Asia with levels 10 times that reported for children of a similar age in this study.[6-8] Myopia levels in Australia and America are comparable but slightly higher than the levels reported for age matched groups in the current study.[7-11] Risk factors for myopia identified in this study such as urbanisation and increasing age are corroborated by existing research.[3,4]

Limitations: The lack of available refractive error prevalence data from many European countries was a significant limitation in this study. Additional limitations including inconsistent cycloplegic use and non-standardised definitions.

Conclusion

This is the first meta-analysis to explore the overall prevalence of paediatric myopia in European regions. The findings indicate that myopia is moderately prevalent among children in Europe and increases as a factor of age and urbanisation. However, there is a significant lack of data therefore further research is required in this field to offer a more comprehensive overview of paediatric European myopia prevalence.

Contact

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References