

Spectacle wear and refractive errors in Dutch children

Vasanthi Iyer

V Iyer¹, CA Enthoven^{2,3,4}, P van Dommelen¹, A van Samkar⁵, JH Groenewoud⁶, SA Reijneveld⁷, VVV Jaddoe^{3,4}, CCW Klaver^{2,8,9}

¹Child Health/Education, TNO, Leiden, Netherlands

²Department of Ophthalmology, Erasmus Medical Center, Rotterdam, Netherlands

³Department of Epidemiology, Erasmus Medical Center, Rotterdam, Netherlands

⁴The Generation R Study Group, Erasmus Medical Center, Rotterdam, Netherlands

⁵Resident Geriatric Medicine, Omring, Lutjebroek, Netherlands

⁶University of Applied Sciences, Rotterdam, Netherlands

⁷Department of Health Sciences, University Medical Center, Groningen, Netherlands

⁸Department of Ophthalmology, Radboud Medical Center, Nijmegen, Netherlands

⁹Institute of Molecular and Clinical Ophthalmology, Basel, Switzerland

Contact: vasanthi.iyer@tno.nl

Background:

Myopia is a refractive error that is increasing dramatically all over the world. Early onset is associated with a significant visual burden later in life, but little is known about refractive errors in preschool children. The aim of this study was to assess prevalence of spectacle wear, visual acuity and refractive errors in young Dutch children and to make global comparisons.

Methods:

We analyzed data of three prospective population-based studies: 99,660 3- to 5-year-olds undergoing vision screening at preventive child healthcare organizations, 6,934 6-year-olds from the Generation R study, and 2,974 7-year-olds from the RAMSES study. Visual acuity was measured with Landolt-C or LEA charts, spectacle wear was assessed, and refractive errors at age 6 and 7 were measured with cycloplegic refraction. Spectacle wear was compared with international studies.

Results:

The prevalence of spectacle wear was 1.5%, 2.3%, 6.6%, 8.2% and 11.8% at 36, 45, 60, 72 and 84 months, respectively, with no major sex differences. Among children with spectacle wear at 72 months (N = 583) and 84 months (N = 351) 29.8% and 34.6% had myopia respectively, of which 21.1% and 21.6% combined with astigmatism, 19.6% and 6.8% had hyperopia, 37.2% and 11.1% hyperopia and astigmatism, and 12.5% and 33.3% astigmatism only. The prevalence of spectacle wear globally varied between 1.5% to 21%.

Conclusions:

Spectacle wear in these European children started early in preschool and increased to substantial figures at school age. Among children with spectacle wear, >30% were already myopic, illustrating the urgency to implement myopia prevention strategies in child health centers.

Key messages:

- Early onset myopia is a public health issue. Of the 6- to 7-year-olds with spectacles 30-34% were already myopic.
- Monitoring of refractive errors and preventive lifestyle interventions are warranted.