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Increasing myopia post-COVID: evidence from child vision screening age 3.5 to 5.5 years in Scotland

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References (if any):

Aims / Purpose:

Scotland's child vision screening by orthoptists at 3.5-5.5 years is taken up by ~85% (40,000-50,000 annually). Screening failures are referred for eye examinations, including cycloplegic refraction. Aim 1: report refractive error data from these examinations (5,000-7,000 annually) for 3 years pre- and 2 years post-COVID. Aims 2 and 3: investigate correlations between myopia and socio-economic deprivation and urban/rural dwellings.

Methods:

Right eye spherical equivalent refraction (SER) data from 10 Health Boards (HB) were compared. Population proportions within each deprivation index quintile (DIQ) and living in different dwelling types are known for each HB. Associations were investigated between these variables and proportions of children in each HB who failed screening and were found to have myopia.

Results:

Frequency distributions revealed a myopic shift in SER post-COVID. Median SER (IQR) was in 2013-14 +1.25D (+0.50 to +2.63); 2014-15 +1.38D (+0.38 to +2.50); 2015-16 +1.38D (+0.50 to +2.63); 2020-21 +1.13D (+0.25 to +2.25); 2021-22 +1.25D (+0.37 to +2.25). Statistically significant findings: overall difference between years (Kruskal-Wallis, $p<0.0005$); pairwise comparisons ($p<0.0005$) between each of the first 3 years and each of the last 2 years; but not ($p>0.66$) in pairwise comparisons of 2013-16 or of 2020-22. The proportion of children with myopia (≤-0.50D): <8% annually 2013-16, 12% in 2020-21, 11% in 2021-22. There was a linear trend for an increasing proportion with myopia ($r^2=0.94$,

p=0.006). Correlations between the proportions of children in each HB with myopia and who fell within each DIQ were low (r^2<0.33). There was a high positive correlation (r^2 = 0.83, p=0.002) between the proportion with myopia and proportion of dwellings that were flats/apartments.

Conclusions:

The proportion with myopia has increased post-COVID. A strong association exists between living in flats/apartments and myopia, but no strong correlation with a deprivation index.