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Editorial

Digital Devices and Myopia in Children

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Prioritized health challenge

Childhood myopia (short-sightedness) is an increasingly important public-health challenge. The concern is not simply that more children require spectacles. Earlier onset gives the eye more years in which to elongate, increasing the likelihood of high myopia and lifelong risks of myopic macular degeneration, retinal detachment, cataract and open-angle glaucoma. A major meta-analysis demonstrated a clear dose-response relationship between the degree of myopia and these complications, including markedly higher risks of myopic macular degeneration and retinal detachment at higher refractive errors [1]. Prevention of onset, slowing progression and ensuring appropriate correction therefore support SDG 3 (Good Health and Well-Being). Equitable access to school screening and specialist follow-up also supports SDG 10 (Reduced Inequalities).

The phrase "digital device-driven myopia" should be used cautiously. Digital screens are part of a wider exposure pattern that includes prolonged near work, short viewing distances, few breaks and displacement of outdoor activity. The evidence does not prove that screen light itself directly causes myopia. However, a 2025 dose-response meta-analysis found that each additional hour of daily digital screen time was associated with 21% higher odds of myopia, with the risk increasing most steeply between one and four hours per day [2]. Earlier systematic reviews reached more cautious or heterogeneous conclusions [3,4], reinforcing the need to target the full behavioural pathway rather than devices alone.

Why this matters in the UAE

The UAE combines high digital connectivity, intensive educational near work and climatic barriers to outdoor activity. During prolonged periods of extreme heat, children may spend more time indoors, making outdoor-time recommendations harder to implement unless schools and families provide safe, shaded and seasonally adapted opportunities. Direct UAE population data on childhood myopia prevalence and axial-length progression remain limited; this evidence gap is itself a policy concern because it prevents precise estimation of burden and inequity.

Local evidence also shows a substantial burden of digital eye symptoms. A 2026 UAE university study reported headaches, eye strain and dry-eye symptoms among frequent device users, with symptom scores significantly higher in those using screens for 10 hours or more daily [5]. Digital eye strain is clinically important but should not be treated as synonymous with myopia: eye strain is usually symptomatic and potentially reversible, whereas myopia reflects refractive and often axial structural change. A national programme should measure and address both, while keeping their outcomes distinct.

International experience illustrates how rapidly environmental disruption can affect younger children. In Hong Kong, myopia prevalence among six-year-olds approximately doubled during the COVID-19 period, and altered patterns of outdoor time, near work and screen use did not fully return to baseline after restrictions eased. Younger children and those from lower-income households were at greater risk [6]. These findings are highly relevant to equity: families differ in access to outdoor space, ability to supervise device use, health literacy and capacity to pay for repeated eye examinations or myopia-control treatment.

Evidence-informed determinants

Determinant	Evidence and significance	Policy implication
Reduced outdoor time	The most consistent modifiable protective factor for myopia onset. School trials adding outdoor time have reduced incident myopia [7,8].	Build protected outdoor periods into the school day, adapted for heat and UV safety.
Near-work pattern	Risk is related not only to total duration but also to very close working distance and long uninterrupted sessions [9].	Promote viewing distance, regular breaks, ergonomic setup and mixed learning activities.
Digital screen time	Recent pooled evidence supports a dose-response association, but residual confounding by near work and outdoor time remains possible [2-4].	Avoid claiming that blue light is the cause; focus on duration, distance, breaks and displaced outdoor activity.
Age and family history	Younger onset and parental myopia increase the likelihood of progression and high myopia [9].	Use risk-stratified referral and closer follow-up for younger or high-risk children.
Socioeconomic access	Screening without affordable confirmation and treatment may widen disparities.	Track referral completion and provide pathways independent of ability to pay.

Table 1

Political and health-system context

The policy environment is favourable. The UAE Ministry of Health and Prevention (MoHAP) launched the National School Health Screening Guideline in 2024 to standardize school examinations and support a reliable national screening database; visual-acuity testing is explicitly included [10]. This provides a practical platform on which a more specific childhood myopia pathway could be built. The principal challenge is operational coordination across federal and emirate-level authorities, education regulators, public and private schools, school-health providers, optometrists and ophthalmologists.

A screening programme must also avoid a common public-health failure: identifying children without ensuring diagnostic confirmation, correction and longitudinal care. Visual-acuity screening alone does not diagnose myopia or quantify progression. Children who fail screening require a defined pathway for cycloplegic refraction when appropriate, ocular health assessment, spectacle provision and, for progressing myopia, evidence-based management with monitoring of refraction and ideally axial length. Tele-ophthalmology can support triage, data review and specialist access, but it should complement rather than replace essential clinical examination.

Proposed multilevel intervention

Standardized school-based detection and referral

- Embed age-appropriate monocular visual-acuity screening within the existing national school-health platform, using standardized equipment, training, quality assurance and pass/fail criteria.
- Record prior spectacle wear, symptoms, parental myopia and age at first correction to support risk stratification.
- Use a closed-loop electronic referral pathway that records attendance, diagnosis, correction and follow-up, rather than counting screening completion alone.

- Prioritize affordability: children who screen positive should have access to confirmatory examination and spectacles regardless of school type or family income.

Prevention through outdoor time and healthier near work

- Set a practical goal of approximately two hours of outdoor exposure per day where feasible, with schools contributing protected outdoor periods. Evidence is strongest for preventing onset; benefit for slowing established myopia is less certain [7-9].
- Use shaded play areas, early-morning sessions, seasonal timetables and indoor spaces with high ambient illumination when heat makes conventional outdoor activity unsafe.
- Teach regular visual breaks, a sensible working distance (at least about 30 cm for reading and handheld devices), larger displays where possible and avoidance of prolonged uninterrupted near work. The 20-20-20 rule is a memorable eye-strain message, but it should not be presented as a proven standalone method of preventing myopia.
- Do not promote blue-light-filtering spectacles as a myopia-prevention strategy; evidence does not show that they prevent myopia, and a Cochrane review found uncertain or minimal benefit for digital eye strain [11].

Clinical myopia-control pathway

Children with confirmed or progressing myopia should enter a standardized clinical pathway led by appropriately trained eye-care professionals. Management may include myopia-control spectacle lenses, selected contact-lens approaches or low-dose atropine, chosen through shared decision-making and monitored for efficacy, adherence and adverse effects. International Myopia Institute guidance emphasizes individualized risk assessment, baseline refraction and ocular examination, education on visual environment, and regular review [9,12]. School screening should detect and refer; it should not prescribe pharmacological or contact-lens treatment.

Family, school and industry engagement

- Co-design bilingual parent information with paediatric ophthalmology, optometry, school nurses, teachers and parent associations.
- Ask schools to report homework-related digital load and ensure that device-based learning includes breaks and non-screen alternatives.
- Encourage age-appropriate default reminders on school-issued devices, while recognizing that software controls cannot substitute for outdoor opportunity and adult supervision.
- Frame messages positively around healthy visual habits rather than blaming parents, teachers or technology.

Implementation and governance

A phased pilot in one emirate would test feasibility before national scale-up. Governance should include MoHAP, the relevant emirate health authority, the Ministry of Education and local education regulator, public and private school representatives, school-health providers, paediatric ophthalmologists, optometrists, data-governance specialists and parent representatives. A single programme board should approve the screening protocol, referral thresholds, minimum dataset, consent process, quality standards and equity safeguards.

The first implementation priority is a data-sharing and closed-loop referral agreement. Data collection should be proportionate and privacy-preserving, with role-based access, clear retention rules and reporting at aggregate level. The pilot should train screeners, validate equipment, audit inter-observer reliability and map referral capacity before invitations are sent. Capacity planning is essential: an effective screening campaign can overwhelm clinics if expected referral volume, cycloplegic refraction capacity and spectacle supply are not modelled in advance.

Monitoring and evaluation framework

Domain	Core indicator	Why it matters
Reach	% of eligible children screened, stratified by emirate, school type, age, sex and socioeconomic proxy	Detects unequal programme coverage.
Screening quality	Unscreenable rate, repeat-test rate and positive predictive value in an audited sample	Prevents high-volume but low-quality screening.
Referral	% of positive screens completing confirmatory examination within 4-6 weeks	Measures whether screening leads to care.
Clinical outcome	Prevalence of confirmed myopia; mean annual change in spherical equivalent and axial length in monitored children	Quantifies burden and progression.
Treatment access	% receiving indicated correction or myopia-control counselling/treatment	Tests equity beyond diagnosis.
Behaviour	Average outdoor time, uninterrupted near-work duration and recreational screen time	Measures whether prevention activities change exposure.
Experience and safety	Parent/student satisfaction, adverse events and inappropriate referrals	Supports acceptability and safe scale-up.

Table 2

Conclusion

Childhood myopia in the UAE should be addressed as a long-term eye-health and equity challenge rather than as a simple consequence of screen exposure. The strongest response combines standardized school screening, closed-loop referral, increased outdoor opportunity, healthier near-work habits, access to evidence-based myopia control and a unified dataset. The UAE already has a national school-health screening framework; the next step is to add a coordinated myopia pathway and evaluate it through a carefully governed pilot. Success should be defined not by the number of children screened, but by earlier diagnosis, completed care, slower progression and reduced inequality.

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