

DIGITAL HYGIENE: HOW SMARTPHONES AND SCREENS AFFECT HUMAN HEALTH

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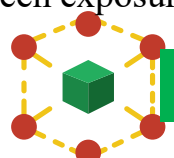
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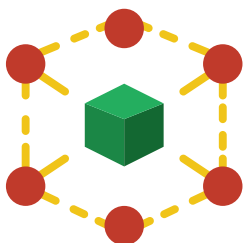


Figure 1. Everyday smartphone use can encourage prolonged near work and a forward-head posture. (Illustrative image.)

Abstract

Smartphones, tablets, computers and televisions support communication, education, work and entertainment, but their use can also influence health when it becomes prolonged, poorly timed or physically uncomfortable. Digital hygiene refers to practical habits and environments that help people use technology while protecting sleep, vision, movement, posture and psychological well-being. This narrative review summarises evidence on digital eye strain, sleep and circadian timing, musculoskeletal discomfort, sedentary behaviour, mental well-being and children's screen exposure.





Screen use is not a single, uniform exposure: purpose, content, timing, duration, viewing distance, posture and the user's age all matter. Evidence is strongest for short-term visual discomfort and the relationship between evening use and sleep disruption in children and adolescents; many other associations are influenced by individual and social factors and should not be interpreted as proof of causation. Blue light from ordinary screens has not been shown to cause retinal damage under normal use, and blue-light-filtering glasses are not established as a necessary preventive measure. Practical measures include regular distance-viewing breaks, comfortable ergonomics, limiting stimulating screen use before bedtime, replacing some sedentary time with movement, and setting age-appropriate family routines. The aim is not to eliminate digital technology, but to make its use intentional, balanced and compatible with health.

Keywords: digital hygiene; screen time; smartphone; digital eye strain; sleep; posture; sedentary behaviour; children; mental health

1. Introduction

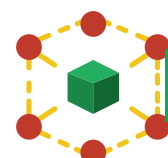
Digital screens have become part of ordinary life. A phone may be an alarm clock, classroom, workplace, map, bank, social space and source of entertainment—all within the same device. For many people, avoiding screens altogether is neither realistic nor desirable. Online learning, telemedicine, work and contact with family can provide clear benefits. The public-health question is therefore not simply whether screens are “good” or “bad,” but how they are used and what they replace.

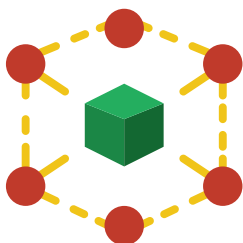
The term digital hygiene describes everyday practices that reduce avoidable strain and help technology fit around healthy routines. It includes how long a person looks at a screen without a break, whether a device is used in bed, the posture adopted while scrolling, the kind of content consumed, and whether screen time displaces sleep, outdoor activity or face-to-face interaction. Total duration remains useful, but it does not tell the whole story. A video call with relatives, an hour of coursework and an hour of distressing social-media content are not equivalent experiences.

This narrative review brings together guidance from public-health organisations, ophthalmology sources and reviews of the literature. It is not a systematic review and does not claim to have exhaustively searched every database. The evidence is discussed cautiously because many studies are observational, use different definitions of screen exposure and cannot always separate screen effects from underlying lifestyle or social factors.

2. Literature overview and approach

Public-health recommendations and research reviews broadly identify several domains relevant to digital hygiene: vision and ocular comfort, sleep, musculoskeletal symptoms, physical activity,





psychological well-being and child development. The American Academy of Ophthalmology describes digital eye strain as usually temporary discomfort associated with prolonged near work and reduced blinking, rather than proof of permanent eye damage [1,2]. A systematic review of reviews found associations between screen exposure and some sleep outcomes in children and adolescents, while evidence for several physical and other outcomes was weaker or inconsistent [3].

Guidance for young children places particular emphasis on limiting sedentary screen time and protecting active play and sleep. The World Health Organization recommends no sedentary screen time for one-year-olds and no more than one hour daily for children aged two years and for those aged three to four years, with less being better [4]. A 2025 systematic review of recommendations similarly found that many guidance documents advised avoiding routine screen exposure in children under two and limiting it in preschool-aged children, although recommendations differ across organisations and contexts [5]. The WHO and International Telecommunication Union have also highlighted the role of device design in supporting safer viewing habits [6].

For this article, literature was selected for relevance to common health concerns and practical prevention. The sources include professional clinical guidance, public-health recommendations and peer-reviewed reviews or consensus statements. Because this is a narrative synthesis, findings should be interpreted as a useful overview rather than a formal evidence grading exercise.

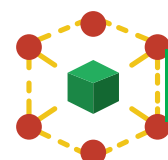
3. Effects of screens on health

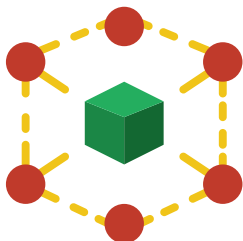
3.1 Eyes and visual comfort

After a long session of reading or scrolling, some users notice dry or burning eyes, blurred vision, headache or difficulty refocusing. These symptoms are commonly described as digital eye strain. Concentrating on a screen can reduce blinking, allowing the tear film to evaporate more quickly. Glare, small text, poor contrast, uncorrected vision problems and a screen held too close can add to discomfort [1,2]. Symptoms often improve with rest and adjustments to the viewing environment.

It is important to distinguish discomfort from permanent injury. Current ophthalmology guidance does not find convincing evidence that ordinary screen blue light causes retinal damage or age-related macular degeneration. Blue-light-filtering glasses have not consistently been shown to relieve digital eye strain and are not considered essential for routine computer use [1,2]. Evening light can, however, influence circadian timing, so the question of sleep is different from the claim that screens directly damage the retina.

A simple habit is the 20-20-20 rule: about every 20 minutes, look at something roughly 20 feet (6 metres) away for at least 20 seconds. This is an easy reminder rather than a guarantee against symptoms. Blinking deliberately, adjusting text size and brightness, reducing reflections, and





positioning a monitor about an arm's length away can also improve comfort. Persistent pain, redness, light sensitivity or ongoing blurred vision warrants professional assessment.

3.2 Sleep and the body clock

Sleep may be affected by more than the light emitted by a display. Scrolling can delay bedtime, notifications can interrupt rest, and emotionally intense or interactive content may keep the mind alert. Evening light can also suppress or delay the normal rise in melatonin and shift the body's circadian rhythm. Research findings vary by age and by the type and timing of screen activity, but expert consensus supports reducing potentially disruptive pre-sleep use, particularly for children and adolescents [7].

Practical measures include choosing a regular bedtime, silencing non-essential notifications overnight, charging the phone away from the pillow and creating a screen-free wind-down period. A warm-colour or night-mode setting may make a screen more comfortable, but it does not cancel the effects of late-night engagement or lost sleep opportunity. If a phone is used as an alarm, placing it across the room can reduce habitual checking in bed.

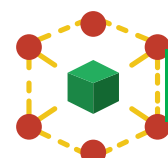
3.3 Neck, shoulder, back and hand discomfort

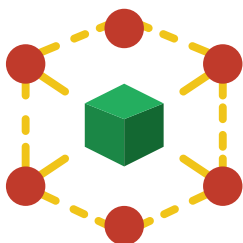
Phones invite people to look downward and hold a relatively fixed posture. Long periods with the head bent forward, shoulders raised or wrists held awkwardly can contribute to neck, shoulder, back or hand discomfort. The risk is not caused by one "perfect" or "bad" posture alone; duration, repetition, workstation fit, existing conditions and the opportunity to move all matter. A laptop used on a low table can be especially uncomfortable because the screen and keyboard cannot be positioned independently.

Keep the device near eye level when practical, support the forearms, relax the shoulders and avoid gripping a phone tightly for long sessions. For computer work, use a stable chair, keep feet supported and place the screen around arm's length away with the top near or slightly below eye level. Change position regularly rather than trying to hold a rigid posture all day. Short movement breaks are more realistic than waiting until pain begins.

3.4 Physical activity and metabolic health

Screen use often occurs while sitting, and prolonged sedentary time can crowd out walking, sport, household activity and outdoor play. The health concern is therefore partly about what screen use replaces. A person can use technology and remain active, but long uninterrupted periods of sitting deserve attention. Standing up briefly, walking during audio calls, taking stairs and planning outdoor activity can add movement without requiring expensive equipment.





Families can make activity the default after school or work rather than treating exercise as an optional extra once all screen use is finished. For younger children, active play, sleep and shared interaction should not be displaced by passive viewing. The WHO's guidance for preschool children emphasises a balance of movement, limited sedentary screen time and adequate sleep [4].

3.5 Attention, mood and social well-being

Digital media can educate, entertain and connect people, but certain patterns of use may become stressful. Repeated notifications and task-switching can interrupt concentration. Social comparison, cyberbullying, distressing news and pressure to respond immediately may affect mood. Late-night gaming or scrolling can also reduce time available for sleep and relationships. These links are complex: people may turn to screens because they are already lonely, anxious or bored, so an association does not automatically show that screen use caused the difficulty.

Digital hygiene should therefore focus on experience and function, not only a daily number. Useful questions include: Does the person feel in control of use? Is screen activity interfering with sleep, study, work or relationships? Does particular content leave them distressed? Muting non-essential alerts, curating feeds, taking planned breaks and keeping meals or conversations device-free can restore a sense of control. If low mood, anxiety, bullying or compulsive use is persistent or seriously affects daily life, support from a trusted adult or health professional may be appropriate.

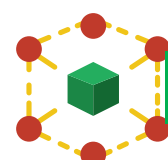
3.6 Children and adolescents

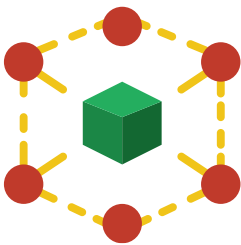
Children need guidance that reflects developmental stage, not just smaller versions of adult rules. Infants and toddlers learn through responsive interaction, movement, play and sleep. For preschool children, WHO guidance recommends no more than one hour of sedentary screen time per day at ages two to four, with less preferred [4]. For older children and teenagers, schoolwork and social life can make a single universal time limit impractical; families should also consider content, sleep, exercise, school responsibilities and whether use is supervised and age-appropriate.

Caregivers can model the habits they want children to adopt. Shared viewing, talking about what is being watched, keeping devices out of bedrooms at night and protecting meals and outdoor play are often more sustainable than relying on punishment. Rules work best when adults explain their purpose and apply them consistently. Schools and health services can reinforce practical guidance without implying that every use of technology is harmful.

4. Practical digital hygiene: a daily checklist

Area	Practical habit	Why it may help
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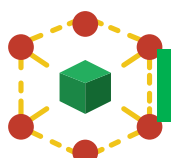
Eyes	Use the 20-20-20 reminder; blink; reduce glare; enlarge text.	May ease dryness and near-work discomfort.
Sleep	Create a screen-free wind-down period; silence alerts overnight.	Protects sleep opportunity and reduces interruptions.
Posture	Raise the phone; support arms; change position and move regularly.	Reduces prolonged awkward positioning.
Activity	Break up sitting; plan walking, play and outdoor time.	Prevents screens from displacing movement.
Attention	Turn off non-essential notifications; use focused work periods.	Reduces avoidable interruptions.
Family use	Set age-appropriate limits; keep meals and bedtime routines consistent.	Protects shared interaction, sleep and play.
Well-being	Review how content makes you feel; mute or unfollow distressing feeds.	Supports more intentional and manageable use.

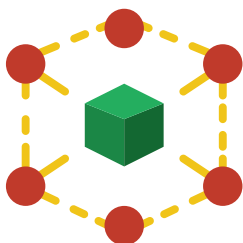
Table 1. Everyday strategies for healthier screen use. These are general preventive measures, not a substitute for individual medical advice.

5. Discussion

The literature does not support a simple claim that all screen exposure is harmful. Digital devices can improve access to education, health information, work and social support. At the same time, frequent use can become unhealthy when it is prolonged without breaks, occurs at the expense of sleep and activity, or involves uncomfortable posture or distressing content. This makes context central to prevention.

One limitation of the evidence is that “screen time” is often measured as a single total, even though the same number of hours may include very different activities. Studies also vary in age groups, device types and outcome measures. Many findings are observational, and factors such as family environment, stress, socioeconomic circumstances and pre-existing health can influence both screen





habits and outcomes. Future research would benefit from more precise measures of timing, content, purpose, interruptions and physical behaviour, alongside longitudinal and intervention studies.

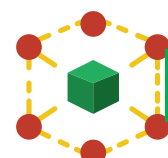
Public-health action can extend beyond individual willpower. Device and app designers can make notification controls, break reminders, parental settings and usage summaries easier to find. Employers and educational institutions can build movement breaks into long sessions and provide ergonomic workspaces. Families can agree on realistic routines and adults can model them. The WHO–ITU safe-viewing initiative highlights the potential role of manufacturers and software developers in supporting healthier use [6].

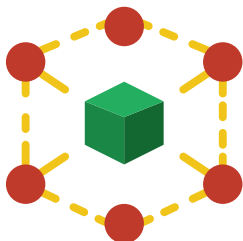
6. Conclusion

Digital hygiene is not a demand to abandon smartphones or return to a screen-free world. It is a practical approach to using technology without allowing it to routinely undermine sleep, visual comfort, movement, posture or relationships. The most useful starting points are modest: take regular visual breaks, position devices comfortably, protect bedtime, move throughout the day, manage notifications and create age-appropriate family routines. Persistent symptoms should be assessed rather than automatically blamed on screens. A balanced approach recognises both the benefits of digital access and the value of rest, movement and real-world connection.

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