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SCREEN TIME EXPOSURE IN CHILDREN UNDER FIVE YEARS IN INDIA: MAGNITUDE, CONSEQUENCES AND THE CASE FOR A NURSE-LED PREVENTIVE RESPONSE: A NARRATIVE REVIEW

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ABSTRACT

Background: The first five years of life are critical for neurodevelopment, with outcomes strongly influenced by responsive caregiver interactions. Screen exposure is increasingly common among Indian children, often beginning in infancy. **Objective:** To synthesise evidence on the prevalence, determinants and consequences of screen time among Indian children under five, examine caregiver knowledge and mediation practices, and identify nursing contributions to prevention. **Methods:** A narrative review was conducted using PubMed, Scopus and Google Scholar to identify literature published between 2015 and 2025 using terms related to screen exposure, early childhood, India and caregiver practices. World Health Organization and Indian Academy of Pediatrics guidelines were also consulted. Studies were selected based on relevance without formal systematic criteria or meta-analysis. **Findings:** Screen exposure among Indian children under five frequently exceeds recommended limits, with a reported pooled estimate of 2.22 hours daily. Guidelines recommend no screen exposure below 24 months and a maximum of one hour daily for children aged 24–59 months. Exposure is associated with parental education and occupation and is reinforced by screen use during feeding, emotional soothing and bedtime. Reported consequences include delayed expressive language, reduced attention, disturbed sleep, decreased physical activity and behavioural difficulties. However, evidence is predominantly cross-sectional. Caregiver awareness of age-specific recommendations appears limited, while randomised evidence suggests that structured parental education can reduce exposure. **Conclusion:** Excessive early screen exposure is a prevalent and modifiable concern in Indian child health. Nursing practice can address this gap through routine screening, age-appropriate anticipatory guidance and substitution-based counselling during immunisation, growth monitoring and Anganwadi visits. Integrating these strategies into existing services may strengthen caregiver awareness, promote healthier media habits and support early childhood development.

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1. INTRODUCTION

Brain development in the first five years of life proceeds at a rate not repeated at any later stage. The neural architecture underlying language, joint attention, emotional regulation and social reciprocity is assembled during this window, and the process is experience-dependent: it is built out of contingent, responsive interaction with other people. A caregiver who names an object a child is looking at, who responds to a babble with a reply, who reads a face and reacts to it, is supplying the input on which that architecture is constructed. Any activity that occupies a

large share of a young child's waking hours and does not supply that input is therefore not developmentally neutral, whatever its content.

Screen-based media occupy exactly that position. The concern in the under-five age group is not primarily that screen content is harmful in itself, but that screen time is displacing time - time that would otherwise be spent in interaction, in movement, and in sleep. This is the mechanism, described as the displacement hypothesis, that underlies most of the recommendations discussed below, and it is the reason recommendations for this age group are stricter than for older children.

The Indian context gives this a particular urgency. Smartphone ownership has expanded rapidly across income groups, and a device capable of holding a young child's attention indefinitely is now present in the great majority of households, including those where no other screen was previously available. The practices that follow are not careless. A mother who hands the phone to a child during feeding, or to settle a child who will not stop crying, is solving a real and immediate problem, usually with no information whatsoever that the solution carries a developmental cost. This distinction matters for intervention design: the target is not parental indifference but a genuine information gap combined with an absence of practical alternatives.

This review synthesises what is currently known about the magnitude of screen exposure among Indian under-fives, its determinants and associated outcomes, and the state of caregiver knowledge; and then addresses a question the existing literature has largely left open - what, specifically, nursing should do about it.

2. METHODS

This is a narrative review and does not follow PRISMA methodology. PubMed, Scopus and Google Scholar were searched for literature published between January 2015 and August 2025, using combinations of the terms screen time, screen exposure, digital media, mobile phone, under-five, preschool, early childhood, child development, caregiver knowledge, parental mediation and India. Guideline documents issued by the World Health Organization and the Indian Academy of Pediatrics were retrieved directly from the issuing bodies.

Studies were selected for relevance to the review's four themes - magnitude, determinants, consequences, and caregiver knowledge and intervention - with preference given to Indian studies and to systematic reviews where available. Priority was given to work on children under five years; studies of school-age children and adolescents were included only where they informed the discussion of trajectory. No quality appraisal instrument was applied and no quantitative synthesis was undertaken. These are acknowledged limitations, addressed in Section [8].

As a review of published literature involving no human participants and no primary data, the work did not require ethics committee approval.

3. CURRENT RECOMMENDATIONS AND THE MAGNITUDE OF THE GAP

3.1 What is recommended

The World Health Organization, in its 2019 guidelines on physical activity, sedentary behaviour and sleep for children under five years of age, recommends that children below two years should have no sedentary screen time, and that children aged two to four years should have no more than one hour of sedentary screen time per day, with less being better.1 The guidelines situate screen time within a broader twenty-four-hour framework in which adequate sleep and at least three hours of varied physical activity are equally specified [1].

The Indian Academy of Pediatrics, in guidelines on screen time and digital wellness published in Indian Pediatrics in 2022, recommends that children below two years of age should not be exposed to any type of screen; that exposure for children aged twenty-four to fifty-nine months should be limited to a maximum of one hour of supervised screen time per day; and that children aged five to ten years should have less than two hours per day. The Indian recommendations align closely with the WHO position while adding the requirement that any permitted exposure be supervised - a point of direct practical relevance to counselling, since supervised co-viewing and solitary viewing are behaviourally very different exposures [2]. The American Academy of Pediatrics has issued concordant guidance [3].

3.2 What is observed

Against these standards, reported exposure among Indian under-fives is substantially higher. A systematic review and meta-analysis of ten Indian studies published in 2025 estimated a pooled daily screen time of 2.22 hours (95% CI 1.80 to 2.63) among under-five children, more than double the maximum recommended for the two-to-four-year band4 and applied to an age group of which a substantial proportion should have no exposure at all. The authors reported very high heterogeneity between studies and used a random-effects model accordingly; the pooled figure should therefore be read as an indication of magnitude rather than a precise population parameter [4].

Individual studies are consistent with this. A study of 417 young children reported that 53.7% had screen exposure in excess of recommendations, with a mean of 1.6 hours per day, and - most notably - that 95.1% of infants under one year of age had some screen exposure, an age band for which the recommended exposure is zero [5]. A study in a rural Indian population reported a prevalence of screen viewing of 96.9%, with a mean daily exposure of approximately 107 minutes [6]. An earlier review of the international

literature placed the burden of screen exposure in middle-income countries between 21% and 98%, illustrating both the scale and the wide variability in how exposure has been defined and measured [7].
The comparison between recommendation and observation is set out in Figures 01 and 02.

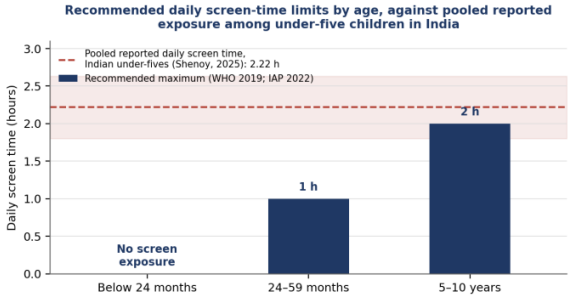


Figure 01: Recommended maximum daily screen time by age (WHO 2019; IAP 2022), shown against the pooled daily screen time reported among under-five children in India. Shaded band indicates the 95% confidence interval of the pooled estimate.

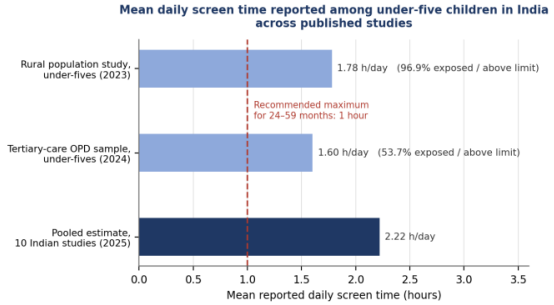


Figure 02: Mean daily screen time reported among under-five children in India across published studies, with the recommended one-hour maximum for children aged 24–59 months indicated. Prevalence figures in parentheses are as reported in each source.

Two features of this picture deserve emphasis. First, exposure begins far earlier than the age at which any exposure is sanctioned - the finding that almost all infants under one year have some screen exposure is arguably more significant than the mean duration figures, because it locates the point at which preventive counselling would have to begin. Second, the wide dispersion between studies reflects genuine methodological inconsistency: definitions of screen time vary in whether background television, passive exposure and video calls are counted, and almost all rely on caregiver recall. Comparisons across studies should be made with that caution.

4. DETERMINANTS OF EARLY SCREEN EXPOSURE

The determinants reported in the Indian literature fall into three groups.

4.1 Socio-demographic factors

Maternal and paternal education, maternal occupation and the child's age have been reported as predictors of excess exposure [5]. The direction of the education effect is not uniform across studies, which is itself informative: higher parental education may increase device availability and the belief that screen content is educational, while also increasing receptiveness to guidance. Family structure appears relevant, with joint families potentially providing informal supervision that limits solitary device use, although this has been examined more in school-age than in under-five samples.

4.2 Parental screen behaviour

The caregiver's own screen use is consistently associated with the child's. This operates through two mechanisms - modelling, since young children imitate salient adult behaviour, and displacement of parent-child interaction, since a caregiver attending to a device is not available for the contingent responsiveness on which early development depends. Recent work examining parental screen habits, child exposure and the quality of parent-child interaction together has pointed to interaction quality as the mediating variable rather than exposure duration alone [8]. This finding has direct implications for counselling content: advice addressed only to the child's screen time, and silent on the caregiver's, addresses half the mechanism.

4.3 Functional use of the device by the caregiver

Three specific practices recur throughout the literature and account for a substantial share of early exposure: the device given during feeding, to keep the child still and to prolong intake; the device used to terminate crying or a tantrum; and the device used at or near bedtime. These are functional behaviours - each solves an immediate caregiving problem. Their significance for intervention is that they are the most tractable point of entry, because each can be addressed by offering a specific alternative rather than by a general exhortation to reduce screen time. They are also the practices in which the harm is most direct: the feeding-time device is associated with disrupted satiety recognition, the soothing device forestalls the development of self-regulation, and the bedtime device disturbs sleep onset.

5. REPORTED CONSEQUENCES

The evidence base on outcomes is substantial but predominantly cross-sectional, and the direction of causation cannot be settled from most of the available studies. This qualification applies to everything in this section and should not be softened in translating it into practice: it remains plausible in individual cases that a child with an emerging developmental difficulty is given more screen time rather than the reverse.

5.1 Language development

Delayed expressive and receptive language is the most consistently reported association. Reviews of the international literature report that a majority, though not all, of studies in children under two years find a significant relationship between excessive screen exposure and language delay.9 Work examining parental screen habits alongside child exposure has

found that children in language-delay groups had higher mean daily screen exposure than comparison groups, and has emphasised the mediating role of reduced parent-child interaction quality [8]. The mechanism is coherent with what is known about early language acquisition, which depends on contingent, responsive, face-to-face exchange that screen media do not supply.

5.2 Sleep

Associations between screen exposure and shorter sleep duration and delayed sleep onset are reported consistently, with exposure in the pre-bedtime period particularly implicated [7]. Sleep is itself a determinant of cognitive and behavioural outcomes, which makes it a plausible pathway by which screen exposure exerts indirect developmental effects rather than only a parallel outcome.

5.3 Behaviour and attention

Reported associations include shortened attention span, increased irritability and temper difficulty, withdrawal, somatic complaints, rule-breaking and aggression. Studies using structured behavioural screening instruments in under-five samples have reported increased risk of behavioural difficulty in relation to average daily screen time [10]. Distress on withdrawal of the device is frequently described by caregivers; it is worth noting that this observation, although clinically useful as a marker of habituation, does not constitute evidence of an addictive disorder, and no diagnostic category for such a disorder exists for this age group.

5.4 Physical health

Higher body mass index has been reported in association with greater screen time in Indian children [11], mediated by sedentary time displacing physical activity and, in the case of screen use during meals, by impaired satiety recognition. Ocular symptoms including dry eyes and asthenopia are reported, although these are better characterised in older children than in the under-five group.

6. CAREGIVER KNOWLEDGE AND THE EVIDENCE FOR INTERVENTION

A striking feature of this literature is the asymmetry between the volume of prevalence and outcome research and the small number of studies examining what caregivers actually know. Where caregiver awareness has been assessed, general awareness that excessive screen use is undesirable appears reasonably common, while knowledge of the specific age-based recommendations - no exposure below two years, no more than one supervised hour from two to five years - appears limited. This distinction matters. A caregiver who knows only that screens are broadly bad has no threshold against which to judge her own practice and no basis for deciding what is acceptable; a caregiver who knows the specific limit has an actionable standard.

A second and larger asymmetry is between knowledge and practice. Knowing that the phone should not be given at feeding time does not by itself supply the caregiver with a way of getting the child to eat. Interventions that target knowledge alone are therefore likely to underperform, and studies that measure knowledge alone will overstate what is achievable through information.

The most important evidence for the feasibility of intervention comes from a randomised controlled trial published in Indian Pediatrics in 2024, which found that parental education beginning in infancy is a promising means of reducing screen exposure in young children, with possible benefit to developmental and behavioural outcomes [12]. This is significant for three reasons. It establishes that the behaviour is modifiable and not merely describable; it identifies infancy - rather than the point at which a problem has become apparent - as the effective moment of intervention; and it does so in the Indian setting, which removes the usual objection that findings from high-income contexts may not transfer.

The practical implication is that a preventive response should begin at the earliest routine health contacts of infancy, should be structured rather than incidental, and should address caregiver practice rather than caregiver knowledge alone.

7. IMPLICATIONS FOR NURSING PRACTICE

The evidence reviewed above describes a risk that is prevalent, developmentally consequential, modifiable at no material cost, and almost entirely absent from routine practice. Growth is monitored, immunisation is tracked, feeding is counselled; screen exposure is not asked about. This section sets out what a nursing response would consist of.

The argument for locating that response in nursing is structural rather than aspirational. The contact points at which anticipatory guidance would have to be delivered - immunisation visits across the first two years, growth monitoring, Anganwadi contacts under the Integrated Child Development Services scheme, postnatal and well-baby visits - are already established, already attended, and already staffed by nurses, auxiliary nurse midwives and Anganwadi workers [13]. No new service is required. What is missing is content, a screening prompt, and a place in the existing schedule.

7.1 Routine screening

Two questions, asked at every routine under-five contact, would identify most children with problematic exposure: how much time the child spends with any screen on a typical day, and whether a screen is used during feeding, to settle the child, or at bedtime. The second question is the more informative of the two, since the functional practices are both more accurately recalled than total duration and more directly actionable.

7.2 Anticipatory guidance at defined contacts

Guidance should be scheduled rather than left to arise, and its content should differ by age. A suggested

schedule aligned to existing contact points is given in Table 01.

Table 01: Age-Appropriate Screen Exposure Guidance at Key Child Health Contact Points

Contact point	Age band	Core message
Postnatal / first immunisation visits	0–6 months	No screen exposure at this age; the caregiver's own device use during feeding and holding reduces the interaction the infant needs.
Immunisation and growth monitoring	6–24 months	Still no screen exposure other than brief video calls with family; introduce alternatives for settling and feeding before the habit forms.
Anganwadi contacts, growth monitoring	24–59 months	Maximum one supervised hour daily; co-view and talk about content; no screen during meals or in the hour before sleep; screen-free bedroom.
Any contact where a concern is raised	Any	Assess sleep, language milestones and behaviour; reduce exposure gradually with substitution; refer if a developmental concern is present.

7.3 Substitution-based counselling

Because the high-yield practices are functional, counselling should replace rather than prohibit. Advice to stop giving the phone at feeding time, offered without an alternative, asks the caregiver to accept a worse outcome on a problem she has already solved. Table 02 sets out the substitution logic for the three practices that account for most early exposure.

Table 02: Screen-Use Substitution Strategies for Feeding, Emotional Regulation, and Sleep

Practice	Function it serves	Substitution to offer
Screen during feeding	Keeps the child still; prolongs intake	Responsive feeding: seat the child with the family, offer finger foods, accept a shorter meal; separate feeding from distraction so satiety cues are perceived
Screen to settle distress	Terminates crying quickly	Naming the emotion, holding, distraction with a physical object, brief withdrawal from the trigger; the aim is that the child develops regulation rather than that crying is stopped fastest
Screen at or before bedtime	Settles the child for sleep	A fixed pre-sleep routine - washing, a story, dimmed light - begun at the same time nightly; screens out of the sleeping room

7.4 Addressing the caregiver's own use

Given the reported association between caregiver and child screen behaviour, and the mediating role of interaction quality, guidance that addresses only the child's exposure is incomplete. Practical framing - device away during feeding, during play, and during the bedtime routine - is more likely to be adopted than a general instruction to reduce use.

7.5 Nursing education and curriculum

For this to become routine practice it must first enter training. Screen exposure warrants a defined place in child health nursing and community health nursing curricula alongside other elements of anticipatory guidance, covering the age-based recommendations, the screening questions, and the substitution counselling above. At present it appears in neither Indian nursing curricula nor routine practice protocols in any structured form.

7.6 Research priorities

Table 03: sets out the gaps this review identified as most consequential.

Gap	What is needed
Caregiver knowledge of specific recommendations is largely unmeasured in India	Descriptive studies using validated instruments assessing both knowledge and practice, in defined community settings
Measurement of exposure is inconsistent across studies	Agreement on whether background exposure, passive viewing and video calls are counted; validated caregiver-report instruments for the Indian setting
Evidence is predominantly cross-sectional	Longitudinal cohorts following exposure and developmental outcomes through the under-five period
Interventions are few and rarely nurse-delivered	Trials of nurse-delivered anticipatory guidance integrated into existing immunisation and ICDS contacts, with behavioural rather than knowledge endpoints
Self-report bias in practice measurement is unquantified	Validation of caregiver-reported practice against observation or device-based measurement

8. LIMITATIONS

This is a narrative and not a systematic review. Study selection was based on relevance rather than predefined criteria, no formal quality appraisal was undertaken, and the possibility of selection bias in the literature included cannot be excluded. No quantitative synthesis was performed; where pooled figures are cited they are drawn from a published meta-analysis rather than generated here.

The underlying literature carries its own constraints. Most studies are cross-sectional, so causal inference is not available. Exposure is almost universally measured by caregiver report and is likely to be under-reported. Definitions of screen time differ between studies in ways that materially affect comparability. Indian data on caregiver knowledge specifically are sparse, and several statements in Section 6 rest on a thinner evidence base than those in Sections 3 to 5.

9. CONCLUSION

Screen exposure among Indian children under five years exceeds recommended limits by a wide margin, begins in infancy, and is associated with delayed language, disturbed sleep, reduced physical activity and behavioural difficulty. It is sustained by a small number of specific caregiving practices that serve real functions, and it persists in a context where caregivers appear largely unaware of the age-based recommendations that exist. What distinguishes this risk from most others in early child health is that it requires no equipment, no medication and no referral to address - only that the caregiver knows what to do differently and has a workable alternative. Randomised evidence from India indicates that structured parental education begun in infancy can reduce exposure. The contact points at which such education could be delivered already exist and are nurse-staffed. The case made here is therefore narrow and practical: that screen exposure should be added to routine anticipatory guidance in under-five care, with two screening questions, an age-specific message at defined contacts, and counselling built on substitution rather than prohibition; and that nursing, which already occupies those contact points, is the discipline positioned to deliver it.

10. CONFLICTS OF INTEREST

None declared.

11. FUNDING

None.

12. ETHICAL APPROVAL

Not required; this review involved no human participants and no primary data.

13. AUTHOR CONTRIBUTIONS

Data availability: Not applicable.

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