

Screens as caregiving infrastructure: a qualitative study of maternal negotiations of under-five screen exposure and eye-health risks in Ibadan, Nigeria

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Research Article

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Abstract

Background

Early childhood screen exposure is expanding as digital devices become part of household work, education, entertainment and caregiving. Yet public-health guidance often assumes that mothers can readily replace screens with supervised play, even in contexts where childcare, safety and work demand compete.

Objectives

To explore how mothers of under-five children in Ibadan North, Nigeria understand, justify and regulate screen exposure, with attention to perceived eye-health risks and feasible health-promotion support.

Methods

A qualitative descriptive study was conducted using nine focus group discussions with 65 purposively selected mothers of children aged 0–59 months. Groups captured variation in employment, education, socioeconomic context and child age. Discussions were audio-recorded, conducted in English and Yoruba as preferred, transcribed directly into English and analysed using inductive reflexive thematic analysis.

Results

Six themes were generated: screens as caregiving infrastructure; screen use as a safety and survival calculation; general awareness without actionable eye-health certainty; rules negotiated across children, workload and caregivers; age, content and co-viewing as filters of acceptable use; and mothers' demand for practical, non-judgmental support. Mothers were not unaware of risk; rather, they managed competing harms under constrained caregiving conditions.

Conclusion

Screen-time reduction messages for Nigerian mothers should move beyond warnings. Interventions should combine eye-health literacy, realistic household routines, safe play alternatives, caregiver alignment and clear referral guidance for early child eye concerns.

Introduction

Digital childhood is no longer a future possibility; it is already an everyday household condition. Globally, an estimated 5.5 billion people were online in 2024, representing 68% of the world population, while 2.6 billion remained offline, showing that digital expansion and digital inequality are occurring together [1, 37]. Nigeria reflects this tension. DataReportal estimated 150 million cellular mobile connections and 107 million internet users in Nigeria at the start of 2025 [2]. For mothers of young children, the implication is not simply that more devices exist, but that phones, televisions and tablets are increasingly present in homes, shops, salons, markets, transport and childcare routines.

Public-health guidance has tried to slow this expansion in early childhood. The World Health Organization recommends no sedentary screen time for infants and limits screen exposure for children aged 2–4 years to no more than one hour daily, with less considered better [3]. Yet global adherence remains poor. A meta-analysis of 89,163 children found that only 24.7% of children younger than two years met the no-screen recommendation, and only 35.6% of children aged 2–5 years met the one-hour guideline [4]. This means the problem is not marginal; most young children globally are already outside recommended exposure limits.

The urgency is heightened by the convergence of developmental and eye-health concerns. Recent reviews associate early screen exposure with risks involving language, executive function, behaviour, sleep and parent-child interaction, while emphasising that context, content, timing and caregiver mediation matter [6–14]. For eye health, the evidence is also becoming harder to ignore. Reviews link prolonged digital screen use and near work with digital eye strain, myopia risk environments and reduced outdoor activity, although causality in under-five children must still be interpreted cautiously [15–23]. A 2024 systematic review projected that childhood and adolescent myopia could exceed 740 million cases globally by 2050 [22]. If preventive action is delayed, families may normalise routines that combine long near viewing, poor lighting, short viewing distance, fewer breaks, less outdoor play and delayed eye checks.

African evidence adds an important local warning. A 2025 Nigerian study found that urban preschoolers had more sedentary time and lower gross motor skill scores than rural peers, supporting concern that urban childhood environments may reduce movement opportunities [5]. For a city such as Ibadan, where mothers combine domestic work, paid work, trading, commuting, crowded living conditions and limited safe play options, screen exposure cannot be understood only as parental ignorance. The problem statement is therefore clear: evidence-based screen-time and child eye-health recommendations exist, but their implementation depends on mothers' real caregiving conditions. Without context-sensitive intervention, screen exposure may become a default childcare strategy before households, clinics and communities build safer alternatives. This study is significant because it provides Nigerian qualitative evidence on how mothers interpret these risks, why screens remain useful despite concern, and what kind of health-promotion support could realistically protect under-five children.

Methodology

Study design and rationale

This study used a qualitative descriptive design. Qualitative description was selected because the aim was to generate a rich, practice-near account of what mothers know, do, fear and negotiate in relation to under-five screen exposure and eye-health risks. It was selected because qualitative description is a coherent design for a public-health problem where the expected output is actionable understanding for clinics, families and community health educators [24–26].

Setting and participants

The study was conducted in Ibadan North Local Government Area, Oyo State, Nigeria, an urban and semi-urban setting with civil servants, traders, artisans, professionals, students, service workers and lower-income high-density communities. Eligible participants were mothers aged 18 years or older who lived in Ibadan North, had direct caregiving responsibility for at least one child aged 0–59 months, and were willing to discuss household screen practices. Mothers were excluded if they did not have an under-five child, were not a primary or regular caregiver, declined consent, or could not participate meaningfully in a group discussion.

Sampling strategy

Purposive maximum-variation sampling was used because the study sought information-rich accounts rather than statistical representation. This strategy was selected against random sampling, which is stronger for prevalence estimation but weaker for ensuring depth across contrasting maternal circumstances. It was also selected against convenience-only recruitment, which could have overrepresented easily available mothers and underrepresented traders, formal workers, artisans or mothers in more constrained households. Recruitment therefore deliberately sought variation by maternal occupation, education, income context, residential density and child age. Nine FGDs were conducted because the research team judged that the corpus provided strong information power for the focused aim and that later groups mainly refined rather than replaced the central analytic categories [31–33]. Groups were organised around comparable caregiving circumstances so that mothers could speak freely, while the full dataset still preserved contrast across work, income, education and child-age contexts.

Data collection procedures

Focus group discussions were selected as the main method because screen practices are socially negotiated. Mothers compare rules, observe other families, receive advice from health workers, schools and relatives, and sometimes feel judged by other caregivers. FGDs were therefore more suitable than individual interviews for eliciting shared norms, disagreement, practical trade-offs and collective reflection. The risk of conformity within groups was managed by using open probes, inviting alternative

views and reminding participants that different practices were expected. Each FGD used a semi-structured guide covering daily routines, types of screens, situations in which screens were allowed, perceived benefits, perceived eye and developmental risks, rules, caregiver influences, barriers to limiting screen use and desired support.

Discussions were moderated by the principal investigator with support from a trained research assistant. The moderator and assistant were not known to participants before data collection. The assistant supported consent procedures, seating, timekeeping, observation of group dynamics and field-note documentation. Discussions were audio-recorded after consent. English and Yoruba were used according to participant preference. Transcripts were prepared directly in English during transcription; where participants used Yoruba expressions, the research team prioritised meaning and contextual equivalence rather than literal word-for-word translation. Participants were identified using FGD-specific codes such as FGD3-B to preserve anonymity and analytic traceability. Facilitation emphasised concrete examples rather than abstract opinions as mothers were asked when the child used screens, who was present, what else was happening, how limits were enforced, what signs would prompt eye-care seeking and what support would make change realistic.

Data analysis and rigour

Data were analysed using inductive reflexive thematic analysis. Analysis followed familiarisation, initial coding, comparison of codes within and across FGDs, development of candidate themes, review of themes against the full dataset, refinement of theme boundaries and selection of illustrative quotations [27, 28].

Rigour was addressed using COREQ and SRQR principles [29, 30]. Credibility was supported by using verbatim quotations, preserving FGD-specific identifiers, comparing accounts across social groups and searching for distinction rather than only agreement. Dependability was supported through an analytic audit trail that documented codes, theme development and decisions about merging or separating themes. Confirmability was strengthened through reflexive memoing on how public-health assumptions about 'good parenting' could bias interpretation. Transferability was supported by detailed reporting of the setting, sampling logic, participant profile descriptors and group composition. Data adequacy was assessed through information power, sample specificity, dialogue quality and the extent to which later FGDs added distinction rather than new central domains [31–33]. Final themes were retained only when they were supported across more than one group and explained both commonalities and contrasts, helping avoid mistaking a vivid single statement for a corpus-level finding.

Ethical considerations

Ethical approval was obtained from the Oyo State Ministry of Health Research Ethics Committee (NHREC/OYOSHRIEC/10/11/22). Written informed consent was obtained before participation. Mothers were informed that participation was voluntary, that they could decline questions, and that refusal or

withdrawal would carry no penalty. Identifying information was removed from transcripts, audio files and transcripts were stored securely, and quotations were reported using anonymised FGD-specific identifiers.

Results

Nine FGDs involving 65 profiled mothers were analysed. Participant profiles showed broad variation in maternal occupation, education and caregiving context. The corpus included formal workers, civil servants, teachers, nurses, bankers, traders, hairdressers, tailors, caterers, salon workers, online business owners, stay-at-home mothers, job-seeking mothers, domestic workers and mothers in high-density as well as middle-income urban residential communities. Four profiled participants had no attributable speaker turns in the transcript corpus; they are retained in the demographic table for transparency. The central analytic finding was that screen exposure was not described as simple entertainment. It operated as a negotiated caregiving technology within maternal work, safety, fatigue, child resistance, social norms and uncertainty about eye-health risk. The profile table is intentionally detailed because it shows the analytic breadth behind the themes rather than compressing mothers into one summary variable.

Table 1
Participant profile descriptors extracted from the nine FGDs

Participant ID	Profile descriptor extracted from transcript
FGD1-A	Trader, secondary education
FGD1-B	Civil servant, tertiary education
FGD1-C	Stay-at-home mother
FGD1-D	Hairdresser
FGD1-E	Teacher
FGD1-F	Entrepreneur
FGD1-G	Tailor
FGD1-H	Nurse
FGD2-A	Primary-school teacher; tertiary education; two children, youngest 3 years
FGD2-B	Civil servant; tertiary education; one child aged 18 months
FGD2-C	Bank customer-service officer; tertiary education; two children, youngest 4 years
FGD2-D	Nurse; tertiary education; one child aged 2 years
FGD2-E	Private-school administrator; tertiary education; three children, youngest 4 years
FGD2-F	Laboratory scientist; tertiary education; one child aged 10 months
FGD2-G	Insurance officer; tertiary education; two children, youngest 2 years
FGD3-A	Foodstuff trader; secondary education; child aged 4 years
FGD3-B	Provision-store owner; secondary education; child aged 2 years
FGD3-C	Clothing seller; tertiary education; child aged 3 years
FGD3-D	Cooked-food vendor; primary education; child aged 18 months
FGD3-E	Cosmetics seller; secondary education; two under-five children
FGD3-F	Online vendor; tertiary education; child aged 4 years
FGD3-G	Fruit seller; primary education; child aged 2 years
FGD4-A	Hairdresser; secondary education; child aged 3 years
FGD4-B	Tailor; secondary education; child aged 4 years
FGD4-C	Caterer; tertiary education; child aged 2 years
FGD4-D	Nail technician; secondary education; child aged 18 months
FGD4-E	Laundry operator; secondary education; child aged 3 years

Participant ID	Profile descriptor extracted from transcript
FGD4-F	Photographer; tertiary education; child aged 4 years
FGD5-A	Stay-at-home mother; secondary education; two under-five children
FGD5-B	Unemployed graduate; tertiary education; child aged 3 years
FGD5-C	Stay-at-home mother; primary education; child aged 2 years
FGD5-D	Job-seeking mother; tertiary education; child aged 4 years
FGD5-E	Stay-at-home mother; secondary education; child aged 8 months
FGD5-F	Temporarily unemployed mother; tertiary education; child aged 18 months
FGD5-G	Stay-at-home mother; secondary education; three children, youngest 3 years
FGD6-A	Child aged 4 months; tertiary education
FGD6-B	Child aged 7 months; secondary education
FGD6-C	Child aged 10 months; tertiary education
FGD6-D	Child aged 13 months; secondary education
FGD6-E	Child aged 16 months; primary education
FGD6-F	Child aged 18 months; tertiary education
FGD6-G	Child aged 21 months; secondary education
FGD6-H	Child aged 23 months; tertiary education
FGD7-A	Child aged 2 years 4 months; secondary education
FGD7-B	Child aged 2 years 10 months; tertiary education
FGD7-C	Child aged 3 years 3 months; secondary education
FGD7-D	Child aged 3 years 9 months; tertiary education
FGD7-E	Child aged 4 years 1 month; primary education
FGD7-F	Child aged 4 years 7 months; tertiary education
FGD7-G	Child aged 4 years 11 months; secondary education
FGD8-A	Petty trader; primary education; child aged 3 years
FGD8-B	Cleaner; secondary education; child aged 2 years
FGD8-C	Food vendor; no formal education; child aged 4 years
FGD8-D	Unemployed mother; primary education; child aged 18 months
FGD8-E	Laundry assistant; secondary education; child aged 3 years

Participant ID	Profile descriptor extracted from transcript
FGD8-F	Street-food seller; primary education; child aged 2 years
FGD8-G	Domestic worker; secondary education; child aged 4 years
FGD8-H	Hair-braider; primary education; child aged 3 years
FGD9-A	University lecturer; postgraduate education; child aged 4 years
FGD9-B	Medical doctor; postgraduate education; child aged 2 years
FGD9-C	Technology consultant; tertiary education; child aged 3 years
FGD9-D	Lawyer; tertiary education; child aged 4 years
FGD9-E	Pharmacist; tertiary education; child aged 18 months
FGD9-F	Business owner; tertiary education; child aged 3 years
FGD9-G	Accountant; postgraduate education; child aged 4 years

Thematic findings

Screens as practical caregiving infrastructure

Mothers repeatedly framed screens as tools that helped the household continue functioning. For traders and home-based workers, screens protected small windows of productivity. One trader explained,

"When I am arranging goods or attending to customers, he sits with cartoons" (FGD3-B).

A shift worker described the same logic during exhaustion: *"If I am attending to a sick family member or trying to rest before another shift, the screen becomes the available helper" (FGD2-D).*

This theme was powerful because mothers did not present screen use as an ideal; they presented it as a substitute for absent adult help, affordable childcare, uninterrupted domestic labour and time. This was most visible where work followed the mother into the home or the child followed the mother into the workplace.

Screen use as a safety and survival calculation

Screen use was also a safety strategy. Mothers in catering, markets, salons and dense living spaces described screens as a way to keep children away from hot pots, knives, roads, machines, chemicals and impatient customers. A food vendor captured the trade-off:

"A food business has fire, knives, and boiling water. A calm child sitting with a song can be safer than a child moving around" (FGD3-D).

Another mother noted that *"security concerns make free neighbourhood play different from when we were children"* (FGD7-G).

The finding complicates simplistic blame. For these mothers, screen exposure sometimes reduced immediate physical danger while potentially increasing longer-term visual or developmental risk.

General awareness without actionable eye-health certainty

Mothers knew that excessive screen exposure could be harmful, but their knowledge often lacked clinical specificity. Some had heard about eye pain, redness, sleep disturbance, attention problems and squinting, but were unsure what should trigger an eye check. The problem was sharper for infants and toddlers:

"Some say it causes eye problems but I am not sure" (FGD1-D).

"A baby cannot report pain, so I would depend on redness or unusual crying" (FGD5-E).

A few mothers described more active care-seeking, as in: *"My son squinted at distant text; we arranged an eye check rather than assume it was screen-related"* (FGD7-B).

Rules were negotiated across children, workload and caregivers

Mothers described rules, but rules were rarely stable. Timers, passwords, no-screen meals, bedtime restrictions and planned activities were used, but they weakened when mothers were tired, work was urgent, children cried or other caregivers used different standards. One mother said,

"I use a timer and announce the end before it comes" (FGD2-A), showing intentional regulation.

Yet another explained that *"Grandmother's house has different rules, which weakens ours"* (FGD3-E),

while a lower-income mother said, *"No screen while eating when I am present, though the caregiver may allow it"* (FGD8-B).

From these, screen regulation was therefore a household and caregiving-network issue, not only a maternal self-control issue.

Age, content and co-viewing shaped what mothers considered acceptable

Mothers did not treat all screen exposure as equal. They distinguished infants from preschoolers, background television from intentional viewing, video calls from cartoons, educational songs from random entertainment and co-viewing from unsupervised use. For infants, displacement mattered:

"The concern is also what the screen replaces: movement, babbling, and interaction" (FGD6-F).

For older children, some mothers saw supervised content as less harmful, explaining that

"co-viewing and discussion make it more meaningful" (FGD7-F). Yet mothers still wanted clearer guidance on what counts as screen time, including video calls and background television (FGD6-A).

Mothers wanted practical, non-judgmental support

The most intervention-relevant theme was mothers' rejection of warning-only advice. They wanted guidance that recognised work, poverty, shared housing and fatigue. One participant stated,

"Mothers already know too much is bad; we need realistic ways to reduce it in busy homes" (FGD2-B).

Others requested "information in Yoruba and English about warning signs and age-appropriate limits" (FGD3-C), "advice in simple Yoruba and pictures" (FGD8-A), and "community play spaces and support that addresses poverty, not only rules" (FGD8-G).

These findings place health promotion beyond individual instruction: mothers need routines, language-appropriate materials, caregiver alignment and safer environments. The repeated request for Yoruba, pictures and whole-household plans showed that mothers were asking for usable tools, not simply more knowledge.

Cross-group comparison deepened the analysis. Formal workers emphasised early departures, commuting, shift work and fatigue. Traders and artisans emphasised customer pressure and workplace hazards. Stay-at-home and unemployed mothers described the absence of a clear end to domestic labour and, for some, loneliness. Mothers of infants foregrounded background television, video calls and displacement of interaction, while mothers of older preschoolers focused on tantrums, school norms and negotiation. Lower-income groups highlighted shared rooms, shared television and unaffordable childcare; higher-income groups described passwords, app controls and structured routines, but still acknowledged convenience. The mind map below summarises the analytic structure. Across all groups, the deepest pattern was a knowledge-practice-control gap: mothers could often name risks, but control depended on time, space, money, safety and cooperation from other caregivers. This explains why the findings point more strongly toward health-promotion design than toward simple awareness campaigns. In practical terms, the mothers were asking for an intervention that fits the moment when screen use actually happens e.g cooking time, market time, commuting time, feeding time, bedtime, customer pressure and child distress.

Discussion

The first major finding is that mothers used screens as caregiving infrastructure, not simply as entertainment. This matters because intervention language that assumes mothers are careless or unaware will miss the real mechanism. Nigerian evidence from Lagos shows that urban preschoolers may experience more sedentary time and poorer gross motor outcomes than rural peers, suggesting that urban childhood environments can restrict movement even before individual parental choices are

considered [5]. Similar concerns appear in African and low- and middle-income movement-behaviour work, where built environment, safety, transport, school and household factors shape children's activity opportunities [34–36]. The Ibadan mothers' accounts explain how this happens at household level: screens become a practical response to labour, crowding and supervision gaps.

The second finding is that screen use sometimes functioned as a safety calculation. This adds distinction to recent global reviews showing that screen exposure is linked to child outcomes but is strongly shaped by context [6–9]. In this study, mothers were not always choosing screen exposure over outdoor play; often they were choosing screen exposure over fire, roads, boiling water, tools or unsupervised movement. This agrees with qualitative syntheses showing that parents use screens to manage practical pressures, calm children and sustain household functioning [13, 14]. It differs from some high-income settings where the discussion often centres on parental mediation within homes with more structured leisure options. Here, the absence of safe, affordable alternatives made screens feel like harm reduction. The same observed behaviour may therefore have different meanings across settings: a mother using a phone while cooking in a crowded room is not making the same decision as a parent choosing between tablet time and a supervised garden. The exposure may look similar, but the constraint is different.

The third finding concerns eye-health knowledge. Mothers recognised possible eye strain, headaches, squinting and redness, but often lacked confidence about early signs and when to seek care. This aligns with a 2024 scoping review showing persistent gaps in parental child eye-health knowledge and practice [15], and with Nigerian evidence that parents may recognise some eye diseases while still delaying formal care [17]. It also matters because recent reviews link screen exposure, near work and digital eye strain with visual discomfort and myopia-risk environments, while paediatric eye-evaluation guidance cautions against waiting only for symptoms in young children [18–23]. This explains why mothers asked for warning signs rather than only prevalence statistics. Their practical question was not whether screens are risky in general, but how to know when a silent or pre-verbal child needs attention.

The fourth finding is that rules were negotiated across children, workload and caregivers. Recent evidence shows that parental strategies matter, especially consistent limits and routines, but screens are also used for calming and emotional regulation [11, 12, 37]. The Ibadan data add that maternal rules collapse when other caregivers, creches, fathers or grandparents apply different norms. This suggests that health promotion should not target mothers alone. The unit of intervention should be the caregiving network which includes mothers, fathers, grandparents, paid caregivers, schools, clinics and religious or community settings.

Finally, mothers' emphasis on age, content and co-viewing shows that they were already making distinct judgments. Recent reviews similarly argue that screen exposure should not be treated as a single exposure; content, timing, co-use, background television and displacement of sleep, movement and interaction all matter [7–10]. The strongest disagreement with generic advice is therefore not that mothers reject risk, but that warnings alone do not tell them what to do at 6 pm when food is on the fire,

customers are waiting and a toddler is crying. The implication is a shift from blame to design, practical routines, bilingual materials, eye-warning signs, safe play options and whole-household media plans. Future interventions should therefore be evaluated on feasibility, not only knowledge gain. A mother may learn a guideline in a clinic and still fail to implement it if food preparation, work demands, unsafe outdoor spaces and inconsistent caregivers remain unchanged. This is the central contribution of the study: it translates screen exposure from an individual compliance issue into an implementation problem.

Conclusion, implications, strengths and limitations

This qualitative study shows that under-five screen exposure among mothers in Ibadan North is best understood as negotiated caregiving under constraint. Mothers knew that excessive screen use could affect children's eyes, sleep, behaviour and interaction, but they also described screens as temporary childcare, safety tools, work supports and emotional relief. The central conclusion is therefore not that mothers need more fear-based messages. They need feasible routes from knowledge to practice.

The public-health implication is clear. Primary health-care clinics, immunisation sessions, early-childhood centres and community health educators should provide short, practical, non-judgmental messages. These should include age-specific limits, what counts as screen time, how to manage background television, how to phase out screen-based feeding, how to use timers with transition activities, why outdoor play matters, and when to seek an eye check for squinting, persistent redness, headaches, sitting close, rubbing eyes, bumping into objects or parental concern. Materials should be available in English and Yoruba, with pictorial versions for lower-literacy settings.

A second implication is that screen-time interventions should target households and communities, not mothers alone. Fathers, grandparents, creches, schools, neighbours and paid caregivers can either reinforce or weaken screen rules. Community-level action should therefore include safe play spaces, affordable childcare support, caregiver media plans and school-clinic collaboration. Without these supports, advice to 'reduce screen time' may remain morally correct but practically weak. For policy, the findings support integrating screen-time and child eye-health counselling into existing maternal and child-health touchpoints rather than creating a separate programme that families may not attend. Brief counselling scripts, pictorial leaflets, school take-home messages and community demonstrations could all translate the findings into practice.

Study Limitation

The study was conducted in one LGA and is not statistically generalisable. FGDs may encourage socially acceptable accounts or silence dissenting views. Future research should test household-level interventions, include fathers and other caregivers, document children's actual screen exposure and, where feasible, link reported screen practices with child vision screening or eye-care referral outcomes. Such work would move the field from describing concern to testing solutions that mothers can actually use.

Declarations

Conflict of interest disclosure

The authors declare that they have no competing interests.

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Authors' contributions:

Conceptualization: JSO, KSA, FJO, OJA; Methodology: JSO, KSA, FJO, OJA; Ethics application and regulatory processes: JSO, KSA, FJO; Investigation/Data collection: JSO, KSA, FJO, OJA; Project administration: JSO; Data curation: JSO, KSA, FJO, OJA; Formal analysis: AOA, UDJ; Literature review: GAA, AOA, UDJ; Interpretation of findings and discussion: JSO, GAA, AOA, UDJ; Writing (original draft): JSO; Writing (review and editing): JSO, KSA, FJO, OJA, GAA, AOA, UDJ. All authors read and approved the final manuscript.

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Data availability

De-identified excerpts supporting the findings are included in this manuscript. Full transcripts are not publicly available because they contain sensitive qualitative data, but may be considered by the corresponding author subject to ethical and institutional requirements.

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Figures

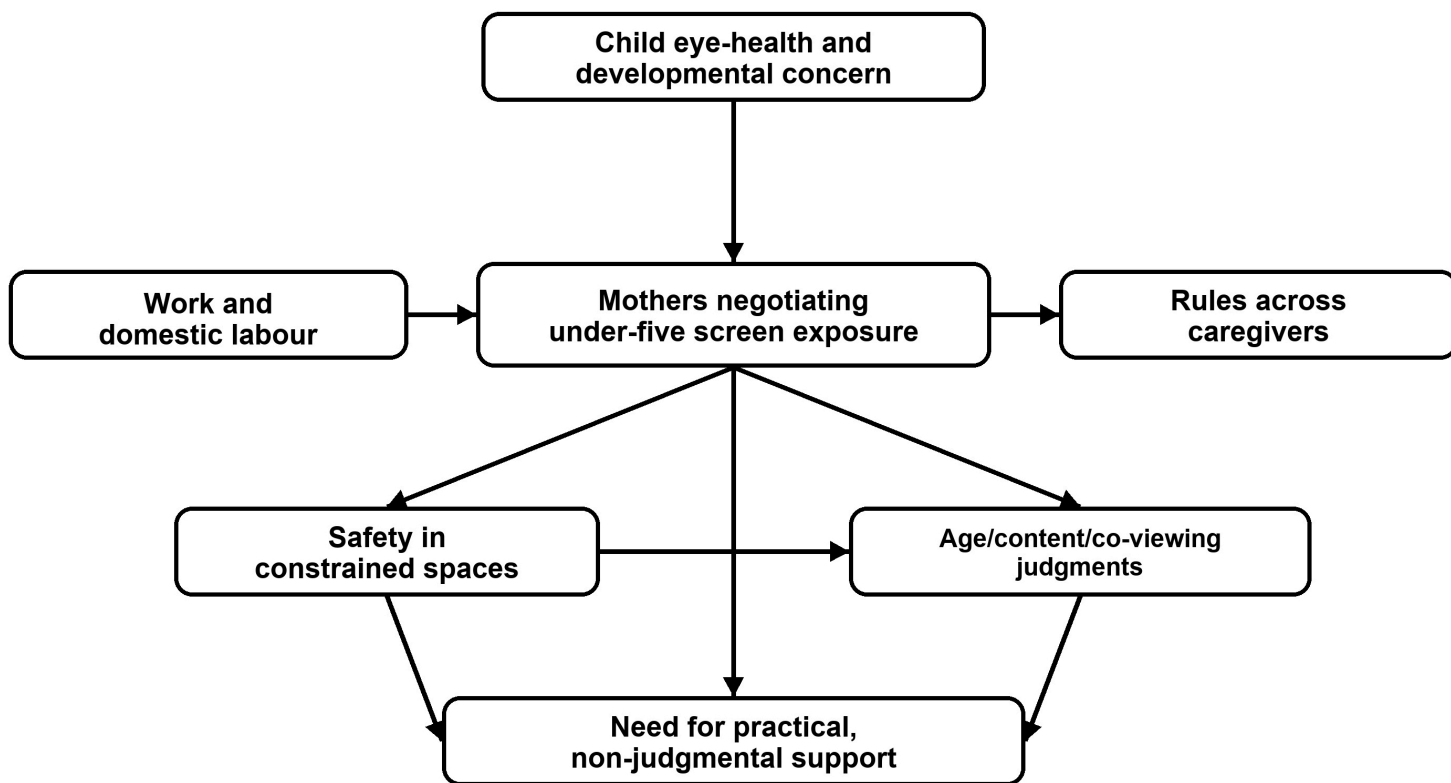


Figure 1

Analytic mind map of the six themes

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