

Parental Presence versus Distraction Techniques for Reducing Preoperative Anxiety in Children

Kouser Banu Khaleel Uddin^{1*}

¹Independent Researcher

*Corresponding Author

Kouser Banu Khaleel Uddin

¹Independent Researcher

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Abstract: Preoperative anxiety in children remains a persistent perioperative problem because it can impair cooperation during anaesthesia induction, increase distress for families, and contribute to postoperative pain, emergence agitation and maladaptive behavioural change. This review compares parental presence during induction with distraction-based strategies, including video games, tablets, audiovisual preparation, virtual reality, therapeutic play, music and tailored cartoon video. A structured literature search was undertaken across major biomedical databases and reference lists for English-language studies published from 2020 to 2025. Priority was given to randomized trials, systematic reviews, network analyses and clinically relevant observational studies involving children undergoing surgery or anaesthesia. Recent evidence suggests that parental presence is valued by many families and may reduce anxiety when parents are calm, prepared and supported, yet its effects are inconsistent when used alone. Distraction techniques show a more consistent anxiolytic signal, especially when active, developmentally matched and continued from holding area to induction. The strongest clinical approach is not a rigid choice between family presence and distraction, but a stepped preventive bundle that screens child and parent anxiety, offers parental preparation, selects a child-centred distraction method, preserves safety, and audits outcomes. The review concludes that distraction should be treated as a core non-pharmacological intervention, while parental presence should be individualized rather than used as a universal policy. Future work should standardize anxiety measurement, compare combined strategies, include parental outcomes, and test feasibility across resource-variable settings.

Keywords: Paediatric Anaesthesia, Preoperative Anxiety, Parental Presence, Distraction, Virtual Reality, Video Game, Child-Centred Care.

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INTRODUCTION

Preoperative anxiety is a common and clinically important experience for children entering the operating pathway. The stressor is not only the operation itself but also separation from caregivers, unfamiliar staff, threatening equipment, loss of control and anticipated pain. Children may express anxiety through crying, withdrawal, agitation, refusal of the mask, physiological arousal or resistance to

transfer. Contemporary studies continue to show that anxiety rises as the child moves from the waiting area toward the anaesthesia room, meaning that interventions must operate during the actual transition into induction rather than only during preadmission counselling [1, 2].

Two broad non-pharmacological approaches dominate current practice. Parental presence during

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induction aims to use attachment, reassurance and family-centred care to reduce distress. Distraction aims to redirect attention through competing sensory, cognitive or play-based stimuli. Both strategies are attractive because they avoid respiratory depression and delayed recovery associated with sedative premedication. However, they work through different mechanisms and do not benefit all children equally. Recent reviews suggest that non-pharmacological interventions are generally useful, but their effects vary according to age, temperament, parental state, modality, timing and procedural context [3-6].

The practical question for perioperative teams is therefore not whether one intervention should replace the other, but when each strategy is likely to be helpful, safe and feasible. A calm prepared parent may regulate a toddler, whereas an anxious parent may amplify distress. A tablet game may engage a school-aged child, whereas an overly immersive device may be unsuitable for a frightened preschooler who needs physical proximity. This review interprets the recent evidence through that clinical lens and translates it into a preventive care bundle for paediatric surgical pathways.

Aim and Objectives

The aim of this review was to compare parental presence with distraction techniques for reducing preoperative anxiety in children and to identify how both approaches can be integrated into

safe, developmentally appropriate perioperative care. The specific objectives were: to summarise evidence published between 2020 and 2025; to explain mechanisms that make parental presence or distraction successful; to identify the children and contexts most likely to benefit from each strategy; to outline outcome measures suitable for audit; and to propose a practical implementation pathway for anaesthesia teams.

METHODOLOGY

A structured narrative review design was used because the topic includes heterogeneous interventions, clinical settings and outcome measures. Searches were conducted using combinations of terms for child, surgery, anaesthesia induction, parental presence, preoperative anxiety, video game, tablet, virtual reality, music, play, audiovisual intervention and perioperative preparation. Eligible publications were English-language articles from 2020 to 2025 that focused on children or adolescents in surgical or anaesthesia contexts. Randomized trials, systematic reviews, meta-analyses, network comparisons and relevant observational studies were prioritised. Studies limited to adult surgery, dental-only procedures without anaesthesia relevance, chronic anxiety treatment outside the perioperative pathway or purely pharmacological anxiolysis were excluded unless they informed comparison with non-pharmacological strategies.

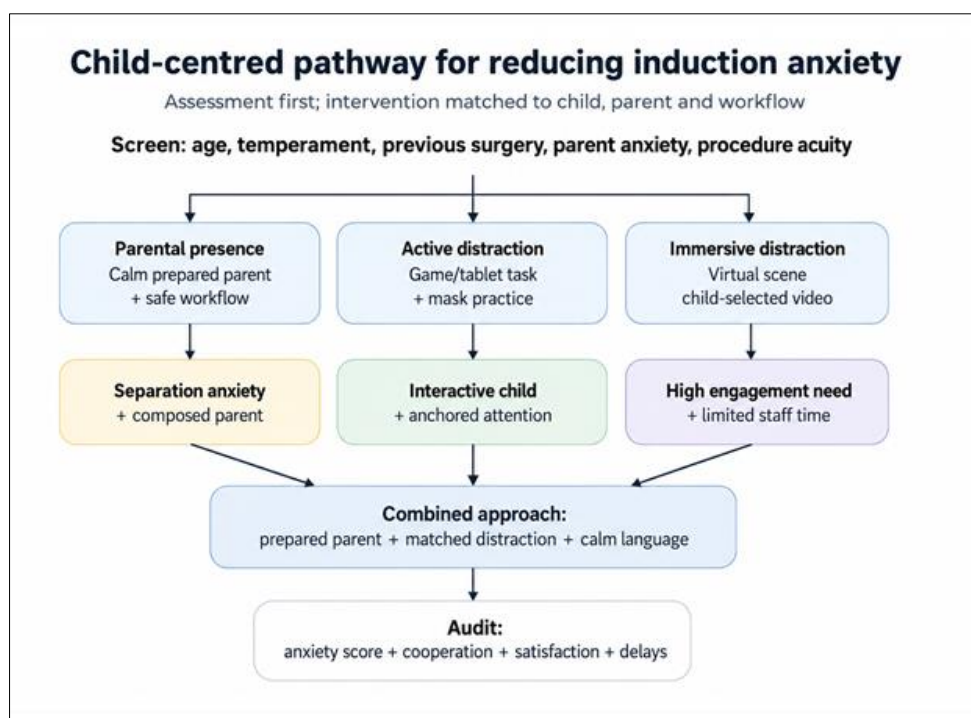


Figure 1: Child-centred pathway for selecting parental presence, distraction or a combined approach during anaesthesia induction

Data were extracted on population, age range, intervention type, comparator, timing, anxiety instrument, induction cooperation, parental outcomes, postoperative behaviour and implementation barriers. The main interpretive outcomes were direction and consistency of anxiety reduction, feasibility, acceptability, safety and suitability for a preventive bundle. Because the evidence base uses different scales and time points, findings were synthesised conceptually rather than pooled statistically. The attached reference article was used only as a structural model for an evidence-focused review; the present manuscript uses contemporary citations only.

Measurement and Clinical Meaning of Anxiety

Measurement is central to this field because children may not verbalise fear consistently. The modified Yale Preoperative Anxiety Scale and its short forms are widely used observational tools that assess activity, vocalisation, emotional expression, arousal and parent use. Other studies use the Child Emotional Manifestation Scale, visual analogue ratings, heart rate, cooperation scales, parent state anxiety scales and postoperative emergence delirium scores. A key limitation is that a reduced anxiety score in the holding area does not always translate into better mask acceptance, and improved parent satisfaction does not necessarily prove child anxiolysis. Recent reviews emphasise the need to report anxiety at several points: before intervention, on transfer, on operating room entry and at induction [2-7].

The clinical significance of preoperative anxiety extends beyond momentary distress. High anxiety can prolong induction, increase anaesthetic difficulty, worsen postoperative pain, increase analgesic requirements and contribute to maladaptive behaviours after discharge. Risk factors include younger age, shy or inhibited temperament, previous negative medical experience, parental anxiety, poor information, painful anticipation and absence of preparation [2-8]. These factors support a preventive rather than reactive approach. Waiting until a child is crying at the theatre door reduces the effect of both parental reassurance and distraction.

Parental Presence during Induction

Parental presence during induction is grounded in attachment theory and family-centred care. It can provide a familiar voice, touch, emotional continuity and reassurance during separation. A recent systematic review and meta-analysis found that parental presence may reduce anxiety at induction for children and caregivers, and that most parents who are present would choose to do so again [1]. This finding contrasts with older uncertainty and reflects improved preparation, better family

engagement and broader acceptance of shared care. Nevertheless, the benefit is not uniform. Studies and surveys continue to show that clinician views vary, partly because parental presence requires staff time, preparation, space, safety planning and clear communication [9].

Parental presence is most plausible when the parent is calm, understands the induction sequence and can focus attention on the child rather than on monitors or anaesthetic procedures. It is less suitable when parents are highly anxious, fainting-prone, distressed by masks or needles, unable to follow staff instructions, or when the case is urgent or technically complex. Presence without preparation may place the parent in the room physically but not therapeutically. The parent needs a role: stand where instructed, speak slowly, avoid alarming language, model breathing, hold the child's hand if permitted and leave promptly when asked.

The evidence suggests that parental presence alone should not be framed as a universal anxiolytic. Its value lies in relational continuity, shared decision-making and selected anxiety reduction. It may be ethically important even when anxiety scores do not change dramatically, because families value involvement. However, the child's welfare remains primary. A policy that allows parental presence only after screening and briefing is more defensible than either routine exclusion or unstructured access for all parents.

Distraction Techniques

Distraction techniques reduce anxiety by capturing attention, creating predictability and giving the child an active task. Active distraction requires participation, such as video games, breathing games, mask practice, tablet interaction or virtual tasks. Passive distraction includes cartoons, music, videos and storytelling. Active approaches may be stronger because they combine attention diversion with agency, but passive approaches are easier to implement for younger or less cooperative children. A randomized trial of video game distraction combined with mask practice showed lower anxiety across preoperative time points and better induction compliance than standard care [10]. Group game intervention also reduced child and parent anxiety, demonstrating that simple play can be clinically meaningful when delivered before transfer [11].

Digital and audiovisual interventions have expanded rapidly. Tablet computers reduced preoperative anxiety in a randomized study [12], while video glasses reduced anxiety more effectively than a portable multimedia player [13]. An animation video prepared at home showed that preparation can begin before arrival, although home-based

interventions require attention to family access, comprehension and adherence [14]. Child-selected cartoon video, continued from waiting through induction and recovery, reduced perioperative anxiety and emergence delirium in young children undergoing otolaryngological surgery [15]. These studies support the principle that continuity of distraction across transitions matters.

Virtual reality offers immersive audiovisual engagement and may be particularly useful when the child can tolerate a headset and follow a scenario. A randomized trial during induction showed lower anxiety scores in the virtual reality group than controls, without clear improvement in parental anxiety or satisfaction [16]. Other studies and reviews support a generally positive effect, although results vary by device, content, age, timing, supervision and comparator [17-20]. The strongest programmes are brief, age-appropriate, hygienic, safe during transfer and easily paused when anaesthesia begins.

Non-digital play also remains important. Interactive games may outperform passive painting for some children [21], puppet shows can reduce anxiety and pain in minor surgical contexts [22], and

child-friendly nursing with situational adaptation can reduce anxiety for tonsillectomy or adenoidectomy [23]. Music therapy has shown benefit in selected groups, including children with congenital heart disease, but music alone may be less reliable during the most intense induction moments [24, 25]. Thus, the important distinction is not digital versus non-digital; it is whether the intervention is engaging, timely, developmentally matched and embedded in the workflow.

Comparative Interpretation

The recent literature points toward a layered interpretation. Parental presence is relational; distraction is attentional. Parental presence may be strongest when anxiety arises from separation and when the parent is a stabilising figure. Distraction may be strongest when anxiety arises from sensory threat, uncertainty and anticipatory focus on the mask or needle. Combining the two can be reasonable: a prepared parent supports safety and attachment while the child engages with a game, video, story or virtual scenario. Network evidence suggests that combinations involving parental presence and distraction can rank highly among non-pharmacological strategies [5, 6].

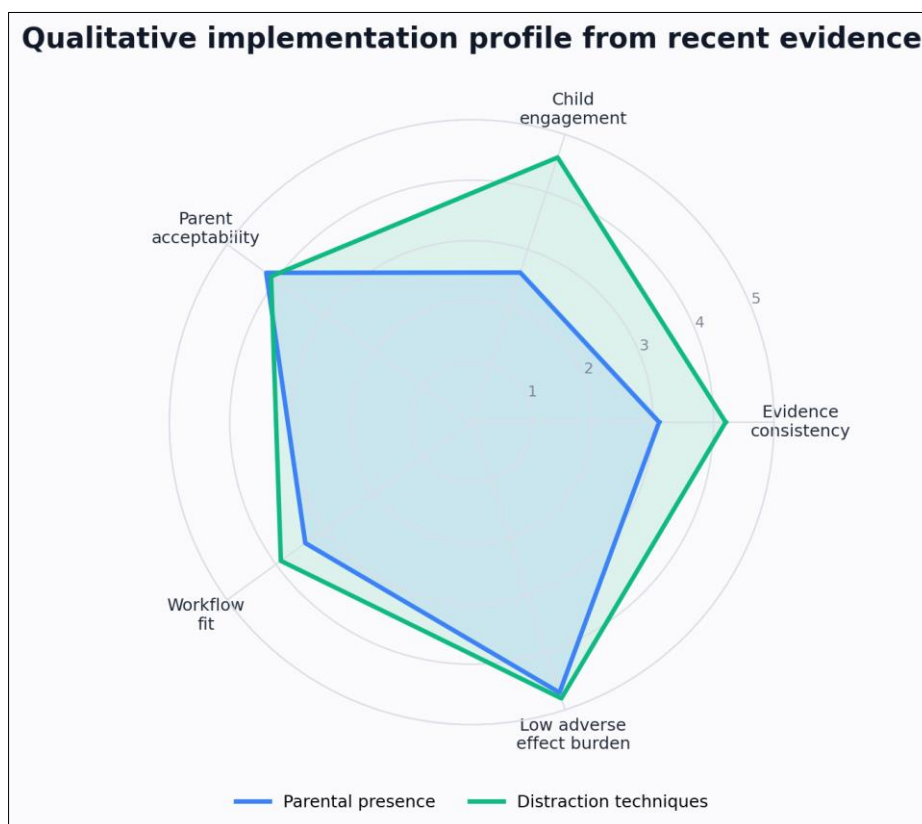


Figure 2: Qualitative implementation profile comparing parental presence and distraction techniques across five practice domains

Scores: Are interpretive synthesis ratings, not pooled effect estimates

The comparison should also consider opportunity cost. Parental presence may slow flow if the unit lacks a defined parent pathway, while digital distraction may fail if devices are unavailable, unclean, poorly charged or incompatible with monitoring. A parent costs little but requires coaching; a device costs more but can be standardised. Both can be unsafe when used without a protocol. For example, an immersive headset should not delay airway management, and a parent should not interfere with induction if the child becomes unstable. Evidence-based care therefore requires selection, not enthusiasm alone.

Implementation Bundle

A practical preventive bundle should begin before the day of surgery. Families receive concise information about what the child will see, hear and feel. On arrival, staff assess baseline anxiety, parental state and prior medical experiences. The intervention is then matched to age and risk. Children aged two to four often need parent-supported sensory play, mask familiarisation and brief videos. Children aged five to eight often respond well to active games, storytelling and choice. Older children may prefer privacy, self-directed video, breathing applications or virtual scenarios. The team should record the selected strategy, induction cooperation and any delay.

Table 1: Comparative evidence map for parental presence and distraction-based interventions published between 2020 and 2025

Intervention group	Recent evidence signal	Best-fit use	Main limitation
Parental presence	Meta-analytic evidence suggests selected reductions in child and caregiver anxiety, with high family satisfaction [1].	Separation anxiety, calm prepared parent, elective cases.	Effect inconsistent when parent is unprepared or highly anxious.
Video game or tablet	Trials and reviews show lower anxiety and better cooperation when the child actively engages [10-12,18].	School-aged children, mask practice, waiting-to-induction continuity.	Requires charged, clean devices and staff oversight.
Audiovisual or cartoon video	Animation, video glasses and child-selected cartoons reduce anxiety in several trials [13-15].	Children preferring passive viewing or familiar characters.	Content must be age-appropriate and not obstruct clinical access.
Virtual reality	Randomized and review evidence supports anxiety reduction, especially with immersive preparation [16-20].	Cooperative children able to tolerate a headset.	Hygiene, motion intolerance and interruption at induction.
Play, puppet or child-friendly nursing	Low-cost play approaches reduce anxiety in selected surgical settings [21-23].	Younger children, resource-variable units, culturally adaptable settings.	Requires training and consistent delivery.
Music	May improve anxiety and cooperation in selected groups, but results are mixed near induction [24,25].	Adjunct for calm atmosphere and children who like music.	Less engaging than active distraction for some children.

Table 2: Proposed preventive bundle for paediatric induction anxiety

Bundle step	Operational action	Audit measure	Quality rationale
Screen	Record age, previous surgery, temperament, baseline anxiety and parent state.	mYPAS-SF or CEMS score at holding area.	Identifies children needing early support.
Prepare parent	Explain where to stand, what to say, when to leave and how to model calm behaviour.	Parent confidence rating before transfer.	Turns presence into an intervention.
Select distraction	Offer game, tablet, video, music, play or virtual scene based on age and preference.	Chosen method documented.	Improves child agency and engagement.
Maintain continuity	Continue the chosen method from waiting area through entry and early induction when safe.	Anxiety score at theatre entry and mask.	Targets the anxiety peak.

Bundle step	Operational action	Audit measure	Quality rationale
Escalate safely	Use medication or specialist support if severe distress persists.	Failed induction attempts, rescue medication.	Prevents prolonged traumatic struggle.
Review outcomes	Discuss with family and record staff concerns.	Parent satisfaction, induction delay, adverse events.	Supports service learning.

The bundle should include a rescue plan. If a child remains highly distressed despite non-pharmacological intervention, pharmacological premedication may be appropriate according to local policy and medical risk. The presence of a parent or device should never prevent escalation. Conversely, premedication should not eliminate preparation, because sedatives may not fully address fear and can alter recovery. Recent trials comparing technology with midazolam suggest that digital distraction can be competitive in selected settings, but results should be interpreted according to age, route of induction, baseline anxiety and institutional expertise [26, 27].

Equity, Safety and Service Quality

Equity is often overlooked. A high-technology pathway may widen disparities if families differ in language, digital access or familiarity with devices. A parental presence pathway may disadvantage children whose parents cannot attend, are highly anxious, or have work and transport constraints. Services should therefore maintain a menu of options: low-cost play, parent coaching, videos, tablets, music, child life preparation and pharmacological backup. Training nurses and anaesthesia assistants to deliver brief anxiety interventions can make the programme less dependent on specialist staff. Surveys indicate that practice variation remains substantial, reinforcing the need for local protocols and audit [9].

Safety includes infection control, equipment cleaning, visual access, preservation of monitoring and rapid removal of devices during induction. It also includes psychological safety: staff should avoid threatening phrases, rushed separation, repeated failed mask attempts and dismissive communication. Parents should be given realistic expectations. They are not responsible for preventing all distress; their role is to support the child within a team-led plan. This framing prevents guilt if anxiety persists.

Research Gaps

The field needs trials that compare prepared parental presence, active distraction, passive distraction and combined strategies using identical outcome times. Many studies remain small, single-centre and limited to elective surgery. Future trials should report age subgroup effects, temperament, parental anxiety, parent training, staff time, induction duration, recovery outcomes, cost and acceptability. More work is needed in emergency surgery, children

with developmental differences, children with previous trauma, and hospitals with limited resources. Consistent use of validated anxiety tools would improve comparability and allow stronger conclusions [4-28].

CONCLUSION

Parental presence and distraction techniques should not be treated as opposing philosophies. They are complementary tools with different mechanisms, strengths and limitations. Current evidence favours distraction as a consistently useful non-pharmacological strategy, particularly when it is active, child-selected or immersive and maintained across preoperative transitions. Parental presence remains valuable when parents are prepared, calm and suitable, but it should be individualized rather than assumed to reduce anxiety for every child. The most publishable and clinically useful model is a preventive bundle: screen risk, prepare the parent, offer developmentally matched distraction, combine strategies when appropriate, protect safety, and audit outcomes. This approach respects family-centred care while prioritising measurable child comfort, cooperation and perioperative quality.

Final Synthesis

Translation into practice requires a protocol that is short enough for busy lists but detailed enough to prevent inconsistent decisions. Each surgical unit should nominate a small perioperative anxiety lead group, normally including an anaesthetist, nurse, recovery representative and child life or play specialist where available. The group can agree three default pathways: prepared parental presence, active distraction, and combined support. These pathways should be printed as a one-page checklist and embedded in electronic records so the selected option follows the child from admission to induction. Such documentation matters because anxiety support often fails at handover, not at the moment of intervention.

Training should emphasise language, timing and role clarity. Staff need agreed phrases that reduce threat, such as explaining that the mask smells different rather than warning that it may be frightening. Parents need compact coaching: keep your voice low, focus on one instruction, avoid bargaining, and let the team lead. Children need controlled choice, for example choosing a game,

video, story, music or breathing task from a small menu. Too many options can overwhelm, while no choice can increase helplessness. The intervention should begin while the child is still regulated, not after crying has escalated.

Implementation should also be realistic about resources. A hospital without virtual technology can still deliver high-quality distraction through bubbles, picture cards, toy masks, puppet play, music, storytelling and ride-on transport. A hospital with tablets or headsets should still maintain non-digital alternatives for infection control, sensory intolerance, visual impairment, language difference or device failure. The pathway should specify cleaning, charging, storage and responsibility, because an unavailable device is not an intervention. Practical reliability is a major part of clinical effectiveness.

Audit should be modest but continuous. A quarterly sample can record baseline anxiety, intervention chosen, anxiety at theatre entry, mask cooperation, parent satisfaction, induction delay and adverse events. Data should be displayed for staff in simple run charts and discussed without blame. Cases with severe distress should trigger a brief review asking whether anxiety was identified early, whether parents were prepared, whether the chosen distraction matched the child, and whether pharmacological rescue was delayed. This creates a learning system rather than a collection of preferences.

The proposed standard is therefore flexible precision: flexible because families, children and operating lists differ; precise because every child should receive a deliberate anxiety plan. When parental presence and distraction are selected through screening, communicated clearly and evaluated with consistent outcomes, they become elements of perioperative quality rather than optional kindness. This also improves equity because every child receives preparation, even when the preferred strategy is unavailable. The final safeguard is humility: the team should change course quickly when the first plan is not working, because paediatric comfort depends on observation, adaptation and kindness. A written pathway also protects staff from inconsistent expectations and helps families understand choices before the operating day. Measured practice is more defensible than tradition, particularly when distress is visible and time is limited. Small refinements accumulate into safer, calmer induction experiences for children, parents and clinical teams.

A further implication concerns consent and communication. Families should be told that parental

presence is available only when the clinical situation, staffing and parent readiness make it safe, while distraction is offered as routine preparation rather than a reward for cooperation. This wording prevents disappointment and supports trust. Children with neurodevelopmental differences may need earlier familiarisation, reduced noise, visual schedules, sensory objects or a preferred caregiver. For these children, the best intervention may be a predictable sequence rather than a device. Services should therefore keep a small preoperative profile for repeat patients, noting triggers, helpful phrases and successful objects. The record should travel with the child across future admissions. Finally, leaders should treat anxiety reduction as a quality indicator, not a soft outcome. Distress during induction is brief, but its memory can shape later health-care avoidance. This makes prevention necessary and ethically compelling.

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