

## ORIGINAL ARTICLE

# Experiences of paediatric emergence delirium - from parents' and a child's perspective

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## Abstract

**Background:** Emergence delirium is a complex behaviour of perceptual disturbances that may occur after general anaesthesia in children. These children often exhibit delusions, confusion, restlessness and involuntary physical activity. They cry and are almost impossible to console. Research has mainly focused on comparing different medication agents in the occurrence of and dealing with emergence delirium. However, less is known about parents' experiences of emergence delirium during the recovery process, and there is hardly any research concerning the children's experiences.

**Aims:** The primary aim of this study was to describe parents' experiences and reflections during their child's emergence delirium behaviour when recovering from anaesthesia. A secondary aim was to describe children's experiences of having been in this condition.

**Method:** A qualitative research approach with thematic analysis was applied. The study was conducted at two county hospitals in southern Sweden. A total of 16 parents and one child were interviewed.

**Results:** Watching their child demonstrate emergence delirium made parents feel as if they were *encountering an incomprehensible scenario*. They experienced *fear and insecurity* and had *feelings of powerlessness and guilt*. *Information and previous experience* turned out to offer relief, and *being seen* by the healthcare staff when they, in their vulnerability, failed to reach or console their child, *gave hope and energy*. The child confirmed the unexpected and uncontrolled behaviour described by parents. She clearly remembered being 'wild' and out of control.

**Conclusion:** Emergence delirium must be extensively considered in children undergoing general anaesthesia. It is of great importance for healthcare staff to be aware of the parental difficulties it may cause and what is experienced as relieving, such as receiving information and staff members being available, responsive and supportive during the wake-up period.

## KEYWORDS

emergence delirium, experiences, paediatrics, parents, postoperative care

## INTRODUCTION

Emergence delirium (ED) is a complex behaviour of perceptual disturbances that may occur after general anaesthesia in children. Children with ED often exhibit delusions, confusion, restlessness and involuntary physical activity. They cry and are almost impossible to console [1, 2]. The prevalence of ED varies considerably between about 13% [3] and 53% [4]. Children with ED run a higher risk of injury, such as accidental removal of intravenous catheters and/or surgical dressings, and require additional nursing care [5].

Research on ED has mainly focused on comparing different medication agents in the occurrence of and dealing with ED. The most well-known underlying cause of ED is anaesthesia with sevoflurane, a short-acting inhaled anaesthetic [6]. Other factors associated with ED are the child's preoperative anxiety and temperament [7], young age, and time to awakening [8].

Family-centred care of the paediatric patient is recommended as a cornerstone of modern nursing practice, with desirable consequences including increased family comfort and confidence, increased family-provider communication, and improved family satisfaction [9]. Person-centred care aims to involve the patient as a person and as playing an active part in their care. A central aspect is the creation of a partnership whereby the patient, together with family members and the healthcare staff, from different perspectives, contributes their knowledge and experience [10]. It is hence important to understand what challenges parents experience and what they find helpful; to our knowledge, however, there are no previous publications on parents' experiences of ED during the recovery process. Only one study refers to the child's experience of ED: a three-year-old girl was asked about her ED 20–30 min after the condition had ended. She described having been 'very, very frightened' and thinking that the medical staff would hurt her [11]. Increased knowledge about both parents' and children's experiences of the condition facilitates the provision of an effective and satisfactory person- and family-centred care.

## AIM

The primary aim of this study was to describe parents' experiences and reflections during their child's emergence delirium behaviour when recovering from anaesthesia. A secondary aim was to describe children's experiences of having been in this condition.

## METHODS

### Research design

A qualitative design was found to suit the aim of this study as it offers rich and compelling insights into the real world,

experiences and perspectives [12]. Data were analysed using a thematic analysis as described by Braun and Clarke [13]. As this method does not rely on one specific methodological framework, it provides a flexible research tool suitable for identifying, analysing, and reporting patterns or themes in different kinds of data [13, 14].

### Informants

This study was conducted at two county hospitals in southern Sweden. Swedish-speaking parents of children aged seven years or younger, who demonstrated ED when recovering from anaesthesia, were consecutively invited to participate in the study. The children's age group was applied because young age has been found to be associated with ED [8]. The Pediatric Anesthesia Emergence Delirium (PAED) scale was used to define ED, with a cut-off of  $\geq 10$ , which was the cut-off stated by the constructors of the PAED scale for receiving medical treatment for ED [2].

When the child's situation had stabilised, the parents were verbally invited to participate in the current study on how they and their child experienced ED. If they were interested, they received written information, including separate information for the child. The first author contacted them the next day to request their participation. None of these parents believed that their child remembered the ED, as the child had not mentioned anything about it. Some of the parents had even asked their child but had gotten no answer. Therefore, the parents asserted that there was no point in interviewing their child and this was respected without question. However, during the data collection, a nine-year-old girl was observed demonstrating ED. Her mother was contacted the day after and said that the girl had memories of the situation. Mother and daughter were asked whether they were interested in participating in an interview. After receiving verbal and written information, they both accepted participations.

Informed consent was obtained from all participants. The principles of the Declaration of Helsinki, as well as the national ethical guidelines for research, were followed. A total of 16 parents and one child were interviewed, with the child and her mother being interviewed together. Among the parents, four were fathers and 12 mothers. The mean age of the children, with the nine-year-old excluded, was 3.1 years [range 1–6]. The children had undergone four types of surgery: ear, nose and throat ( $n = 11$ ); general surgery ( $n = 3$ ); dental ( $n = 1$ ); and ophthalmic ( $n = 1$ ). Apart from the present situation, two of the parents had previous experience of ED. In all, ten parents declined to participate in this study: three did not see ED as a problem, three could not be reached, two did not have the time, and two gave no specific reason.

## Data collection

The data collection took place from 2015 to 2017. At this time, all children were observed upon awakening by the first author during data collection for a previous study [15], and the time frame was due to practical circumstances. Fifteen of the interviews were conducted between eight and 24 days after anaesthesia (the child and her mother were interviewed eight days after). One interview was conducted after 48 days at the request of the parent, due to Christmas holidays. All interviews were conducted by the first author, who works as a nurse in a recovery unit and has extensive experience of children with ED. The last author, who has experience in interviewing technique and qualitative research, participated in one pilot interview and the first interview. After 16 interviews, richness and complexity had been achieved in relation to the research question [16], and the data collection was terminated. The participants chose the place of interview: 12 were conducted over the phone, three at the hospital (including the mother and child interview) and one at the participant's home. All interviews were audio-recorded and transcribed verbatim. The interviews lasted 20–45 min, with a mean of 32 min, and were terminated when the informants conveyed that they had no more to say. The interview guide, developed by the first and last author, is shown in Figure 1. After a pilot interview, the guide was revised to be more in line with the study's aim. The pilot interview is not included in the results. After a short introduction about the aim of the study, all interviews began with an open question.

## Data analysis

The six-phase guide of the thematic analysis described by Braun & Clarke [13] was used in this study. In the first phase, the first author familiarised herself with the data by transcribing and reading through the material several times. In the second phase, initial codes were generated. Some of the surrounding text was kept so as not to lose the context. Data extracts were sometimes coded into several codes. In the third phase, all codes were studied together, different codes were combined, and initial overarching themes were formed. In Phase 4, all themes were reviewed to ensure a clear distinction between them. The validity of the individual themes was considered in relation to the entire data set. The last author read all the interviews, and themes were frequently discussed between the first and last authors to ensure that the meaning of the data was not disregarded. The themes were repeatedly checked to ensure that they were identified based on the data, which is regarded as an important quality criterion according to the method [13]. The coding tree was initially complex but was reduced during the process. In Phase 5, the description of each theme was considered according to the research

question. The analysis process did not follow a straight schema but rather involved a literary reflexive process of moving backward and forward through data familiarisation, coding, theme development, revision, naming and writing up [17]. This analysis process ultimately resulted in *five themes*, and in Phase 6, the results presented in this article were produced. In the references after each citation in the results, 'P' means 'parent' and the number following it is the interview code. NVivo 12, a data program for qualitative analysis [18], was applied in the analysis.

## RESULTS

Watching their child demonstrate emergence delirium made parents feel as if they were *encountering an incomprehensible scenario*. They *experienced fear and insecurity* and had *feelings of powerlessness and guilt*. *Information and previous experience* turned out to offer relief and *being seen gave hope and energy*. The child who was interviewed in this study shared her experience of having been in this condition.

### Encountering an incomprehensible scenario

The scenario the parents encountered at the recovery unit was sometimes completely unexpected; it was nothing they were prepared to face. They did not comprehend the situation and could feel a sense of panic. The child was so different in his or her behaviour, seemed to be in a battle, wrestling with hoses and cables, acting nearly obsessed:

No, this was something I definitely wasn't prepared for; no, in my wildest dreams I couldn't have imagined it. I felt sort of like he was blocked from almost everybody, I describe it a bit as the devil having jumped into him – he was pitch black.

(P 4)

Watching several of the healthcare staff standing around the bed and trying to handle their child was experienced as totally unexpected and incomprehensible. The parents' expectations were dashed. Some children expressed themselves differently, using nasty words they had never used before. Some parents wished they had not entered the recovery unit until the situation had normalised, while others just wanted to take their child and go home.

The child who was interviewed had memories of what it had been like to wake up with ED. In her narrative, she confirms the unexpected and uncontrolled behaviour the parents described. She remembered feeling the motor activation in her whole body:

**Parents**Starting questions:

*"Can you please tell me what happened step by step that day, starting when you and your child arrived at the hospital?"*

It might be easier to express your thoughts and feelings when following a timeline and a scenario in your head.

*"Can you please tell me how your child acted upon awakening?"*

This aimed to help them remind themselves of how they felt about the situation.

Follow up question:

*"Can you please tell me about your thoughts and feelings when you were reunited with your child in the recovery unit?"*

**Child**Starting questions:

*"Can you please tell me what happened step by step that day, starting when you and your mother arrived at the hospital?"*

See comment; parents.

*"What's the last thing you remember from before you went to sleep?"*

*"What's the first thing you remember from when you woke up?"*

This aimed to make her think about and reflect on the situation.

*"Can you please tell me what your thoughts would be if you had to have another operation?"*

This question was asked to determine how affected she was by what she had experienced.

Follow up question:

*"Can you please tell me about your memories of what it was like to wake up in the recovery unit?"*

**FIGURE 1** Interview guides; Parents and Child

The only thing I really remember is that I was sort of jumping around, being really wild.

After anaesthesia, the child's first memory was the experience of being wild and out of control. She did not remember feeling any pain, but during the interview she showed the bruises she had gotten during her motor activation and explained that there had been no way for her to control her behaviour:

I knew I was wild, but I didn't know when I would stop // well, I mean, I tried to stop but it wasn't that easy. I was thinking, like, when I've screamed for another minute or so, I'll stop, but after a minute I kept doing it.

She was not aware of her surroundings and did not remember the healthcare staff standing around her, holding her arms and legs, keeping her from hurting herself. During the motor activation, she did not notice whether there were other patients

in the recovery unit or if she was by herself, but in due time she did notice that she was at the hospital, as the mattress was harder than at home. Afterwards, she had devised a strategy for handling possible future anaesthesia:

Well, then I'd think, now I can't be jumping around as much because I'll hurt my leg or something; and he said, that doctor, that you can think of something you'd like to dream of, then perhaps you will // anyway, I'd try that.

All parents did not perceive the scenario as equally incomprehensible. Some of them saw their child's behaviour more as a normal pattern with natural causes, even though it was a bit worse than they had expected. Those parents who showed up when their child was already awake felt it was an expected reaction to their not having been there when the child woke up. Some parents also believed that infusions and monitoring disturbed the child. When the behaviour was seen as natural

according to the circumstances, the scenario did not really surprise the parents:

Well, you don't have to be medically trained to realize that there'll be some kind of reaction. I guess I would've been more surprised if he'd been completely quiet, I think.

(P 10)

However, parents who tried to persuade themselves that this agitation was normal behaviour, later, after talking to friends whose children had also had anaesthesia, realised that not all children wake up from anaesthesia in this chaos.

## Experiences of fear and insecurity

The way their child behaved made some parents worried and fearful, as if something must have gone wrong. Some thought the operation had possibly failed, and catastrophic thoughts could arise:

Like, what's happening; has he suffered brain damage or something?

(P 7)

The parents had been somewhat prepared for their child to be affected in some way, but not to such an extreme. One of them explained that you want to know that, whatever happens, the staff will solve it; but when there was no response from the staff, insecurity and fear arose. The child was distant and unreachable, like in a shell, and parents experienced fear when their child was like a stranger to them:

I can accept him being aggressive, but when I couldn't reach him afterwards in the recovery unit it was extremely scary. I talked to him, but he was distant; he looked at me but he didn't see me; we weren't connected at all.

(P 1)

Some parents had been told it was positive if their child continued sleeping at the recovery unit after surgery. Then, when the child woke up immediately, they became worried. Stressful staff and constant alarms from the monitor created feelings of fear and insecurity. Parents were worried about why their child was agitated when others were calm and simply continued sleeping:

Well, you think, what is this?

(P 16)

Even though parents somehow knew that this agitated behaviour must come to an end, they did not know how long it would last. One parent would have appreciated receiving a strategy or time plan from the healthcare staff, as this would have helped him to endure:

It's like when I'm running and giving it all I've got, when I've run ten kilometres, I know there's just three kilometres to go.

(P 6)

Abrupt changes in the children's behaviour – alternately calm, alternately agitated – strengthened the parents' feeling of insecurity. Some of them worried that their child would remain in this agitated condition back at home, and that they would then be forced to deal with the problem themselves. When parents felt as if the healthcare staff did not see them, the responsibility became too great and made them feel deserted and insecure. During the induction of the anaesthesia, some of the children had been sad and their parents now asked themselves why the sadness was still there. Some of them wondered why their child's bloodied cheeks had not been cleaned, but when they tried to wipe them off the child became even more agitated. Other parents believed it was obvious that their child was in pain, but when they received no response from the staff, they became frustrated and insecure.

## Feelings of powerlessness and guilt

The parents tried to console their child, but the child often continued crying and screaming. The things they normally did when their child was sad or upset, such as soothing them or singing a specific song, did not work:

It hurts to see your child like that. It affects you; you don't know what to do to help. I tried to talk to her, like lie down and calm down, you know. I guess it's that you feel more powerless than scared.

(P 2)

The powerlessness made one parent desperate for a break, feeling mentally unpleasant. He needed to go out and brace and strengthen himself, so that he could come back and be a parent again. No one – not the parents themselves or anyone else – could make a difference:

Whatever I did, it didn't help. He didn't hear me; to him I wasn't there, and I felt like, please take him away and give me my child back, you know.

(P 4)



Not being able to handle their child could be made parents feel guilty. They felt they were not good enough. An isolated room was sometimes offered, and some parents experienced this as helpful; but at the same time, moving to another room confirmed their feelings of guilt at not being able to manage this situation with their own child:

I felt like I was disturbing the other patients and that they were thinking 'can't she make her kid quiet'; it was like that in my head, that the others were thinking that I'm the one who should make him quiet // I guess it's the powerlessness that makes you feel ashamed; I didn't have the power to make him quiet or just a tiny bit satisfied or reachable.

(P 4)

Some parents thought they might have done something wrong that had caused the behaviour. They had not kept their promise to be at the recovery unit in time, and perhaps, this was the reaction. Or perhaps they had instigated the agitation by waking their child up too soon, by touching and dabbing at them. The child could be very difficult to hold because of his or her behaviour, and some parents felt guilty for being too hard-handed:

What I mean is, I don't want him to remember 'hell, Dad hit me or wasn't gentle at all', things like that.

(P 8)

### Information and previous experience offer relief

Parents who had been told earlier that their child might wake up screaming and agitated felt in some way prepared for the situation. Even though this information added another factor to worry about, they believed it would have been worse not to know. They understood that the condition would not last forever, and afterwards, their child would be the same as before. This was experienced as relieving in the actual situation:

They did say that all, or many, children are anxious when they're waking up, so there's nothing unusual or strange about it.

(P 15)

Those parents who had received information felt safer with the healthcare staff and trusted that they would be told if there was a problem. They did not have to be forced into the chaos:

I liked being prepared for it, you know. I can imagine what it would feel like if you didn't have a clue.

(P 9)

Some parents had been told by their own parents that, as a child, they had woken up after anaesthesia in the same way; one of them was the mother of the interviewed child. This narrative experience was relieving, as it also was when parents had previous experience. A sibling might previously have been agitated, violent, and anxious after anaesthesia. In some way, they believed that their child was aware of their presence:

I think I'm basically kind of a relaxed person; I've been here; it's my fourth time.

(P 5)

### Being seen gives hope and energy

The sense of being seen by the healthcare staff made it easier to manage the situation. In their vulnerability, parents felt safer and thus had more energy to support their child. Someone was observing them and was there to help:

I felt that the whole time, that I was very safe with the healthcare staff; they kept on supporting, there was always someone there, trying to calm both me and my child.

(P 4)

When the healthcare staff offered suggestions to help, like advising a parent to lie down next to their child, or when they helped by, for instance, simply holding the child for a while, the parent felt seen by the staff. They did not feel alone, they felt cared for, and did not feel like a burden. They could rely on the healthcare staff and just focus on being a parent:

At most there were three people by her bed, and then there was one and then two for a while, and during a calm episode it was just me and her, but I saw that they were watching her the whole time; even when talking to other patients, they kept an eye in our direction the whole time.

(P 2)

## DISCUSSION

This study identified five themes concerning parents' experiences and reflections during their child's ED behaviour when recovering from anaesthesia, as well as a child's experience of having been in this condition. The parents *encountered an*

*incomprehensible scenario*. They were not always prepared, and everything became very different. Their child's behaviour was not expected, and they could feel a sense of panic. This unexpected and uncontrolled behaviour was confirmed by the child herself in her narrative. The incomprehensible scenario made parents *experience fear and insecurity*, and they had *feelings of powerlessness and guilt*. Similarities to the parents' experiences in this study were found in a study involving parents' experiences managing their child's complicated postoperative recovery at home after tonsillectomy. Parents experienced it as an emotional and challenging process, and sometimes felt responsible for the complicated recovery [19].

Health care has long been focused mainly on biological measurements, at the expense of the person's experiences; however, in person-centred care, the patient is seen as a person who plays an active part in their care [10]. Family-centred care strives towards increased family comfort and confidence, increased family-provider communication, and improved family satisfaction [9]. The results from the present study did not always reflect that these strivings were successful. Parents did not always play an active part in their child's care, sometimes feeling as if the healthcare staff did not see them, which made them feel deserted and insecure. It could also be the opposite, though, with the sense of *being seen giving hope and energy*. Parents then felt safe, that they were not alone, and that there was help available. Their vulnerability, caused by not being able to reach their child with ED, was not ignored. Suggestions from the healthcare staff, like the advice to lie down next to the child, might be aspects of a parent playing an active part in their child's care, with improved family satisfaction. Hopefully, this reduced parents' sense of guilt as well as their experiences of fear and insecurity. Supporting families seems to be of great importance, which was highlighted in a recent study by Rantala et al. [20] describing parental experiences of paediatric day surgery. Parents asked for guidance and support during their child's total day surgery pathway. Also, Coyne [21] found that families require support and clear guidance from nurses. They are willing to help in their child's care, but unclear roles and hidden expectations make them stressed. However, there might be barriers to implementing family-centred care in paediatric settings. In a study from Turkey, nurses working in a children's hospital stated that families' cultural characteristics were an obstacle. They sometimes felt afraid and unable to manage parents' reactions in negative situations. Appropriate education and support from their managers are therefore important [22]. Also, nurses in an Irish study needed skills training and managerial support to appropriately meet families' needs, in order to deliver optimal family-centred care [21].

In this study, *information* was a relieving factor. The thought of anaesthesia, the recovery process and one's own perceived inadequacies in taking care of one's child might

be an anxiety-provoking experience for parents and receiving relevant preoperative information could be helpful. Those who had received information seemed to have experienced fewer difficulties. They knew that the ED behaviour would not last forever, and that it had occurred due to the anaesthesia rather than something they themselves had or had not done. Concerning preoperative information specifically about ED, only one study was found [23]. In this study, ED was mentioned in about one-fifth of the communication to parents/guardians and children during the paediatric informed consent process. However, the general risk discussion was overall highly variable, and in nearly one-third of cases, no risk was mentioned at all. Parents of children undergoing surgery have been found to welcome comprehensive preoperative information. In a recent study by Aranha & Dsouza [24], 94 out of 100 parents desired preoperative information on postoperative care. Bogusaite et al. [25] investigated the information needs of children and their parents before anaesthesia for elective surgery, and information concerning the postoperative regimen was among the most requested (96.3%). In a systematic review, it was found that higher satisfaction in parents was correlated with the preoperative information given [26]. In the study by Purcell et al. [19] concerning parents' experiences managing their child's complicated postoperative recovery at home after tonsillectomy, adequate information did not always prevent emotional difficulties, but communication with the healthcare staff was considered very important.

Even though ED has been a researched topic since the 1960s [27], few parents in this study received information about ED. This may be due to inadequate knowledge. Jildenstål et al. [28] found that there is a need to improve the knowledge around risk factors, prevention, and management of postoperative cognitive side effects among anaesthesiologists and nurse anaesthetists. When anaesthesiologists and nurse anaesthetists were asked about postoperative cognitive side effects such as ED, they answered that they were concerned about it, but that they were more concerned about issues such as cardiovascular/pulmonary risks, pain, and postoperative nausea and vomiting [28]. The lack of information may also be caused by organisational issues whereby information was given by personnel who do not treat ED. It could also be due to a fear that this information would disturb parents and increase their anxiety. But, as one parent herself expressed, it is better to know, even though it means having another factor to worry about.

It is worth mention in this discussion that parents with *previous experiences* and those who almost saw the reaction as something normal were somewhat helped in this situation. These parents may not have had as much need of support from the healthcare staff as others, but as experiences and needs are highly individual, healthcare staff always need to be responsive to reactions and behaviours in patients as well as family members.

The child who was interviewed confirmed the unexpected and uncontrolled behaviour the parents described. In the only study found about children's experience of ED, the child experienced the situation as very frightening [11]. The girl interviewed in the present study did not mention feeling any fear, but she did somehow analyse the scenario in her head and had a strategy for future anaesthesia. Her mother had been told by her own mother that she herself had acted agitated after receiving anaesthesia as a child. The ED was thus likely not as surprising to her as to the other parents, and this might have affected her daughter. The question is whether giving children information about ED would be supportive or seem strange to them. The girl in this study was never asked this question.

While there still is very limited knowledge about childhood experiences and reactions concerning ED, it is known that 50%–60% of children undergoing anaesthesia might develop negative postoperative behaviour changes at home after discharge, such as nightmares or separation anxiety. This may have a connection to unpleasant and frightening experiences during ED, but this has not been clarified [7, 29].

Although distinguishable themes were found in this study, there were several limitations. Firstly, only one child was interviewed. Other children may have different experiences of ED. The primary intent was to get input from both parents and children, to get a more comprehensive result. Unfortunately, however, the parents did not believe that their child remembered anything about the ED behaviour. This is why we only managed to interview one child, who due to her age was not a primary part of the study. However, her behaviour was observed during the data collection, and as she had memories of her ED, interviewing her would be the most fruitful. Children are not always able to explain their perceptions, perhaps due to their young age. In order to increase the possibility to investigate these children's experiences and memories, it might be better to conduct interviews immediately after their ED behaviour, when they may have a fresher recall of their experience. Another limitation was that only four of the parents were male. This could be related to the fact that mothers more often than fathers accompany their child when they undergo surgery. However, there were no noticeable differences between fathers' and mothers' experiences and reflections. It might also be a limitation that most of the interviews were conducted over the phone. During the analysis, however, no significant differences in level of detail or vividness of recollection were noted between phone and in-person interviews. This was also a request from the parents themselves, and the interview may not have been possible if it had not been conducted over the phone. A last thing to consider is that one interview was conducted 48 days after the surgery date. This was at the request of the parent herself due to the Christmas holidays. However,

this mother had earlier experiences of ED; the 48 days did not seem to affect her memory.

In conclusion, ED must be extensively considered in children undergoing general anaesthesia. It is of great importance for healthcare staff to be aware of the parental difficulties it may cause and what is experienced as relieving, such as receiving information and staff members being available, responsive and supportive during the wake-up period. As this is the first study within this area, more research on parent and child experiences involving ED is needed. There is a need to improve the care involving ED, and education and managerial support are important issues in this area. These are essential steps to be able to deliver a successful implementation of person- and family-centred care.

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#### CONFLICT OF INTEREST

The authors report no conflict of interest.

#### AUTHOR CONTRIBUTION

All authors have agreed on the final version and meet at least one of the following criteria:

- Substantial contribution to conception and design, acquisition of data, or analysis and interpretation of data.
- Drafting the article or revising it critically for important intellectual content.

#### ETHICAL APPROVAL

The study was approved by the Regional Ethical Review Board in Linköping, Sweden (Dnr 2015/195/31).

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#### REFERENCES

1. Wilson TA, Graves SA. Pediatric considerations in a general post-anaesthesia care unit. *J Post Anesthesia Nurs.* 1990;5(1):16–24.
2. Sikich N, Lerman J. Development and psychometric evaluation of the pediatric anesthesia emergence delirium scale. *Anesthesiology.* 2004;100(5):1138–45.
3. Beringer RM, Segar P, Pearson A, Greampet M, Kilpatrick N. Observational study of perioperative behavior changes in children having teeth extracted under general anesthesia. *Paediatr Anaesth.* 2014;24(5):499–504.
4. Shi M, Miao S, Gu T, Wang D, Zhang H, Liu J. Dexmedetomidine for the prevention of emergence delirium and postoperative behavioral changes in pediatric patients with sevoflurane



- anesthesia: a double-blind, randomized trial. *Drug Des Devel Ther.* 2019;13:897–905.
5. Vljakovic GP, Sindjelic RP. Emergence delirium in children: many questions, few answers. *Anesth Anal.* 2007;104(1):84–91.
  6. Kanaya A, Kuratani N, Satoh D, Kurosawa S. Lower incidence of emergence agitation in children after propofol anesthesia compared with sevoflurane: a meta-analysis of randomized controlled trials. *J Anesth.* 2014;28(1):4–11.
  7. Kain ZN, Caldwell-Andrews AA, Maranets I, McClain B, Gaal D, Mayes LC, et al. Preoperative anxiety and emergence delirium and postoperative maladaptive behaviors. *Anesth Anal.* 2004;99(6):1648–54. table of contents.
  8. Voepel-Lewis T, Malviya S, Tait AR. A prospective cohort study of emergence agitation in the pediatric postanesthesia care unit. *Anesth Anal.* 2003;96(6):1625–30. table of contents.
  9. Smith W. Concept analysis of family-centered care of hospitalized pediatric patients. *J Pediatric Nurs.* 2018;42:57–64.
  10. University of Gothenburg. Centre for Person-centred Care - GPCC 2021, January 13 [Available from: <https://www.gu.se/en/gpcc>].
  11. Wells LT, Rasch DK. Emergence "delirium" after sevoflurane anesthesia: a paranoid delusion? *Anesth Anal.* 1999;88(6):1308–10.
  12. Braun V, Clarke V. What can "thematic analysis" offer health and wellbeing researchers? *Int J Qual Stud Health Well-being.* 2014;9:26152.
  13. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol.* 2006;3(2):77–101.
  14. *Applied Thematic Analysis.* Thousand Oaks, California 2012. Available from: <https://methods.sagepub.com/book/applied-thematic-analysis>.
  15. Ringblom J, Wählin I, Proczkowska M. A psychometric evaluation of the Pediatric Anesthesia Emergence Delirium scale. *Paediatr anaesth.* 2018;28(4):332–7.
  16. Braun V, Clarke V. To saturate or not to saturate? Questioning data saturation as a useful concept for thematic analysis and sample-size rationales. *Qual Res Sport Exerc Health.* 2021;13(2):201–16.
  17. Braun V, Clarke V, Weate P. Using thematic analysis in sport and exercise research. In: Smith B, Sparkes AC, editors. *Routledge handbook of qualitative research in sport and exercise.* 2nd ed. London: Routledge; 2016. p. 191-205.
  18. Edhlund BM, McDougall AG. *NVivo 12 essentials: your guide to the world's most powerful data analysis software.* Stallarholmen: Form & Kunskap AB; 2019.
  19. Purcell M, Longard J, Chorney J, Hong P. Parents' experiences managing their child's complicated postoperative recovery. *Int J Pediatr Otorhinolaryngol.* 2018;106:50–4.
  20. Rantala A, Jansson MM, Helve O, Lahdenne P, Pikkarainen M, Pölkki T. Parental experiences of the pediatric day surgery pathway and the needs for a digital gaming solution: qualitative study. *JMIR Med Inform.* 2020;8(11):e23626.
  21. Coyne I. Families and health-care professionals' perspectives and expectations of family-centred care: hidden expectations and unclear roles. *Health Expect.* 2015;18(5):796–808.
  22. Boztepe H, Kerimoğlu Yıldız G. Nurses perceptions of barriers to implementing family-centered care in a pediatric setting: A qualitative study. *J Specialists Pediatr Nurs.* 2017;22(2):e12175.
  23. Lagana Z, Foster A, Bibbo A, Dowling K, Cyna AM. Consent for pediatric anesthesia: an observational study. *Paediatric Anaesth.* 2012;22(8):787–92.
  24. Aranha PR, Dsouza SN. Preoperative information needs of parents: a descriptive survey. *J Res Nurs.* 2019;24(5):305–14.
  25. Bogusaite L, Razlevice I, Lukosiene L, Macas A. Evaluation of preoperative information needs in pediatric anesthesiology. *Med Sci Monitor.* 2018;24:8773–80.
  26. Espinel AG, Shah RK, McCormick ME, Krakovitz PR, Boss EF. Patient satisfaction in pediatric surgical care: a systematic review. *Otolaryngol Head Neck Surg.* 2014;150(5):739–49.
  27. Eckenhoff JE, Kneale DH, Dripps RD. The incidence and etiology of postanesthetic excitement. A clinical survey. *Anesthesiology.* 1961;22:667–73.
  28. Jildenstal PK, Rawal N, Hallen JL, Berggren L, Jakobsson JG. Perioperative management in order to minimise postoperative delirium and postoperative cognitive dysfunction: Results from a Swedish web-based survey. *Ann Med Surg.* 2014;3(3):100–7.
  29. Luo R, Zuo Y, Liu HB, Pan Y. Postoperative behavioral changes in Chinese children undergoing hypospadias repair surgery: A prospective cohort study. *Paediatr Anaesth.* 2019;29(2):144–52.

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