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Descriptive title: **A qualitative study exploring Singaporean parents' perceptions on preparing their child for surgery**

Short title: **Parents' perceptions of surgery preparation**

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## **HIGHLIGHTS**

- Parents undertook several roles to ensure readiness and gave support to their children.
- Parents faced challenges while communicating with their children regarding their surgeries, experiencing negative emotions and dilemmas in making decisions for surgery.
- Factors such as previous experiences, children's positive mentality, and access to information helped to facilitate their preparation.
- Parents expressed surgery-related concerns such as anesthesia and a successful outcome of the surgery, the timing of the surgery, and postoperative care.
- Parents expressed a desire for easier to understand information through the use of visual materials, and improvements in current practices and management.

## **ABSTRACT**

**Purpose:** To explore the perceptions of parents regarding the preparation of their children for surgery.

**Design and Methods:** A qualitative descriptive study was conducted. Sixteen parents of children who were undergoing various types of elective surgery in a public tertiary hospital in Singapore were recruited. Data were collected through face-to-face interviews and analyzed using thematic analysis.

**Results:** Five themes were derived: (1) assumed roles of the parents; (2) communication, decision-making, and emotional challenges; (3) factors facilitating the preparation of children for surgery; (4) surgery-related and financial concerns; and (5) the desire for more information and better management. While preparing their children for surgery, parents undertook several roles to ensure readiness and to provide support. Parents faced challenges while communicating with their children regarding their surgeries, experiencing negative emotions and dilemmas in making decisions for surgery. Factors such as previous experiences, children's positive mentality, and access to information helped to facilitate their preparation. Parents expressed surgery-related concerns such as anesthesia and a successful outcome of the surgery, the timing of the surgery, and postoperative care. Parents expressed a desire for easier to understand information through the use of visual materials, and improvements in current practices and management.

**Conclusion:** This study provides a greater understanding of parents' perceptions of their roles, challenges, influencing factors, concerns, and needs when preparing their children for surgery.

**Practice Implications:** The study findings provide insightful aspects for improving current healthcare practices and informing future research studies in exploring better surgery

preparation programs for both parents and children.

**Keywords:** Child, parent, parental involvement, pediatric, perceptions, preparation, qualitative research, surgery

(Word count: Abstract 250; Main text 5,013)

## **BACKGROUND**

Globally, there is a significant number of children who undergo surgeries on an annual basis (Boles, 2016). Approximately 450,000 children under the age of 18 years are admitted annually for surgery as inpatients in the United States (Tzong, Han, Roh, & Ing, 2012). At Singapore's largest center for pediatric surgery, 4,000 surgeries are performed yearly (KK Women's and Children's Hospital, 2016). Experiencing an operation can be overwhelming for both children and their parents, and they commonly face significant levels of preoperative anxiety (Chahal et al., 2009; Chieng et al., 2013; Chieng, Chan, Klainin-Yobas, & He, 2014; Delgove et al., 2018; Dionigi, Sangiorgi, & Flangini, 2014; Hoetzenecker et al., 2014). Presently, hospitals in Singapore support parents through measures such as pre-admission clinic sessions in which parents undergo counseling about the various aspects of their children's surgeries (KK Women's and Children's Hospital, 2017).

While preparing their children for surgery, parental concerns may range from having their children suffer from pain secondary to their surgeries (Bull & Grogan, 2010) to assessment and management of the postoperative pain (Nascimento et al., 2019) to their children not waking from anesthesia (Sadeh Tabrizi et al., 2015). Parents may have informational needs on various aspects of the surgeries, such as estimated wait times (Healy, 2013), and how the surgeries may affect their families in psychosocial and practical aspects (Bray, Callery, & Kirk, 2012). Parents may face emotional challenges during preparation (Bull & Grogan, 2010). Factors such as a child's young age, sending a child for surgery for the first time, or not having a preoperative consultation with a healthcare professional contributed to parental anxiety (Chahal et al., 2009). Parents also wished to receive more information in addition to what was already provided to them (Healy, 2013). A

recent systematic review highlighted that children's experiences can be negatively affected by their parents' adverse experiences and that children's adverse experiences can negatively affect their medical outcomes (Gabriel et al., 2018).

A review of the literature shows that there is a lack of qualitative research studies that examined the experiences and perceptions of parents regarding the preparation of their children for surgery. The qualitative studies that explored the experiences of parents were centred mainly on parents of children with a specific condition such as congenital heart disease (Lan et al., 2007) and scoliosis (Bull & Grogan, 2010). Such parents may have particular concerns; hence, not all study results can be generalized to parents of children undergoing general surgery. For some of the studies, the participants were mostly, if not all, mothers (Bull & Grogan, 2010; Fortier et al., 2015; Kushnir et al., 2015; Lan et al., 2007; Salisbury, LaMontagne, Hepworth, & Cohen, 2007) which is a methodological limitation as the voices of fathers were not heard. Moreover, most studies on the relevant topic were conducted in the Western context, with only four studies conducted in the Asian context: Hong Kong (Li et al., 2007), Singapore (He et al., 2015), South Korea (Yang et al., 2016), and Taiwan (Lan et al., 2007). This presents a significant research gap, as the views and experiences of Western parents may differ greatly from those of Asian parents (Mousavi et al., 2016).

With parents playing crucial roles in their children's surgical journeys, understanding parental perceptions can inform the directions of promoting current practices in preparing children for surgery. This study aimed to explore parents' perceptions of the preparation of their children for

surgery. The participants' experiences of the surgical processes, challenges faced, and further needs and suggestions were also explored.

## **METHODS**

### **Study design**

This study adopted a descriptive qualitative design, which allows the researchers to develop an understanding of human experience by learning how people behave, feel and experience (Holloway & Galvin, 2016). A qualitative study design explores the cultural, social and uniquely personal perspectives of people, which fitted this study's aim, given Singapore's multi-cultural society.

### **Setting and sampling**

Participants were recruited from the children's surgery center at a public tertiary hospital in Singapore from 9 September 2016 to 25 January 2017. This center is the location where parents accompany their children to pre-admission clinic sessions which occur about 2 weeks before the children's surgical procedure. These sessions included a pre-anesthesia consult by an anesthesia nurse.

Purposive sampling for varied ethnicities and genders/roles of the participants (mother or father) was used as a means to ensure adequate diversification within the sample (Holloway & Galvin, 2016). The inclusion criteria included parents who: (1) had children aged three to 12 years old undergoing elective surgeries with the use of general anesthesia, considering that parents of this



age group of children might take more efforts to prepare their children for surgery; (2) were the primary caregivers of the children, (3) were able to speak and read English, (4) were between 21 and 65 years of age, and (5) had local contact numbers. The exclusion criteria were parents who had: (1) cognitive impairments, (2) hearing and/or visual impairments, (3) mental disorders, and/or (4) experienced bereavement in the past three months.

The literature suggests a sample size of approximately 15 to 30 participants should be recruited for a qualitative study (Morse, 2000). Ultimately, the sample size was achieved once data saturation was reached, whereby no new information was obtained (Polit & Beck, 2018). As data collection and analysis were ongoing concurrently, data saturation was reached at the 15th interview. One more participant was additionally interviewed to confirm data saturation.

### **Recruitment and data collection procedure**

The main researcher (first author) visited the study venue for recruitment. Prior to the day of the recruitment, a member of the research team, also serving as the anesthesia nurse conducting the pre-surgical sessions, identified potential participants from the patient list of those who were scheduled to attend the pre-anesthesia clinic. Participants identified as eligible were informed on the nature of the study during the pre-anesthesia counseling sessions by the anesthesia nurse. The parents were then introduced to the main researcher. While the potential participants were in the counseling room or in the waiting area waiting to make their payments, the main researcher approached them to explain more details about the study. At this point, the eligibility of the potential participants was double-checked by both study members. Consents were then obtained from those parents willing to participate.

The interview guide was developed based on the literature (Kurup, He, Wang, Wang, & Shorey, 2017) and the objectives of the study. The interview guide (detailed in the Appendix A Supplementary material) was designed to cover four key areas: general experiences, support/concerns/difficulties, surgery decisions, and healthcare support and needs. Example questions were: (1) How did your perception or impression of surgery affect the way you prepared your child for surgery? (2) What were the factors that have helped you to prepare your child for surgery? (3) What made you decide to send your child to this surgery? (4) What support have you received from the healthcare professionals (nurses, doctors, etc) regarding your child's surgery?

Before commencing data collection, the interview guide was reviewed by two experts and revisions were made based on their recommendations. A pilot interview was conducted to test the interview process and ascertain parental understanding of the interview questions. Minor revisions were made to the interview guide for greater clarification. Throughout the data collection process, new findings prompted the main researcher to make minor revisions to the interview guide to better explore these new findings. During the interviews, prompts and probes were used to obtain more in-depth information from the participants. Among the 20 parents who were approached by the main researcher, three were unwilling to participate and one was excluded due to a recent bereavement. The interviews were either conducted on the day of the child's operation face-to-face at locations that were quiet and convenient to the participants in the study venue. or over the telephone after the child's operation, depending on the parent's availability. Thus, a total of 16 interviews were conducted, including the pilot interview, each lasting between 20 to 90 minutes. Fifteen were face-to-face interviews, and one was via telephone.

## **Ethical considerations**

Ethical approval was obtained from the SingHealth Centralized Institutional Review Board (CIRB Ref: 2016/2711) on 12 August 2016. Written consent was obtained from all participants for their participation in the study. Data were protected confidentially with only authorized access.

## **Data analysis**

To analyze the data, a thematic analysis was performed (Vaismoradi, Turunen, & Bondas, 2013). First, the interviews were audio-recorded and transcribed verbatim by the main researcher shortly after each interview. Audio clips were then replayed to ensure the accuracy of the transcriptions. After, the researcher reviewed the transcripts repeatedly to gain familiarity with the data (Bazeley, 2013). The main researcher then reread the transcripts to identify, analyze, and report prominent patterns or themes found within the transcripts (Braun & Clarke, 2006; Polit & Beck, 2018). Smaller units with any sentences or phrases that discussed the same ideas were color-coded using highlighters. The subthemes were generated and revised until they could be grouped to form themes. This process of forming subthemes and themes was conducted through discussion with two other researchers on the team (the last and second last authors). Any differing opinions were discussed, and a mutual agreement was reached before finalizing the subthemes and themes.

## **Rigor**

Lincoln & Guba's Framework of Quality Criteria (Lincoln & Guba, 1985; Polit & Beck, 2018) was utilized to ensure that the rigor of this study was achieved, i.e. credibility, dependability,

confirmability, transferability, and authenticity (Holloway & Galvin, 2016). For example, having the same interviewer using the same interview guide and the interviews conducted in similar settings ensured consistency while carrying out verbatim transcription and achieving data saturation helped to achieve credibility. Meanwhile, an audit trail, member checking, and investigator triangulation were used to ensure dependability. Confirmability was ensured through the audit trail, investigator triangulation, and the provision of relevant quotations to support each subtheme. Lastly, authenticity was promoted through audio-recording, verbatim transcriptions of the interviews, the provision of thick descriptions of the study context, and the background data of the participants.

## **RESULTS**

### **Sample**

The participants' sociodemographic details and the children's genders, ages, and surgery types are shown in Table 1. For the study participants, 69% (n=11) were female, and more than half were between 36 and 45 years old. The participants were from a variety of ethnic groups, including five Chinese, three Malay, one Indian, and seven from other groups (India, Arab, Caucasian, Filipino, Gurkha, and Indonesian). The majority (n=15) were married and had one to three children. More than half of them (56%) received education from the university. About two-thirds of them (62.5%) had monthly incomes greater than \$3,000 each. The children underwent different surgeries such as hypospadias repair and laparoscopic-assisted second stage Stephen Fowler right orchiopexy.

Table 1 here
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Table 2 shows the five themes and 16 subthemes that emerged from the thematic analysis.

**Theme 1: Assumed roles of parents**

***Subtheme 1.1: Bearing responsibility.*** Parents played essential roles in the decision-making of opting for the timing and types of surgery for their children. The participants stated the responsibilities they had regarding their children's health conditions and their recovery.

***Subtheme 1.2: Ensuring children's readiness for surgery.*** There was a range of one day to several months prior in which all participants informed their children on the expectation of their surgeries, and gave detailed explanations of the surgeries from the parents to their children also varied. The majority of the parents indicated the importance of their children's attitudes as 'not fearful' and 'confident'. They would keep their children fit or healthy and well-prepared (i.e. limiting their children's outdoor activities, adjusting their diets to healthier options, and taking short leaves from school) in anticipation of their surgeries.

***Subtheme 1.3: Supporting children using various methods.*** These methods included reassuring their children of their presence throughout the surgery processes, encouraging their children to be cooperative with doctors, distracting their children by easing their fears and anxieties, providing tangible rewards such as toys, renting a movie, and allowing their children to discuss their surgeries whenever they preferred to.

**Theme 2: Communication, decision-making, and emotional challenges**

***Subtheme 2.1: Difficulties and uncertainties during communication.*** The participants shared difficulties when explaining to their children about the surgeries, such as procedures and

consequences, due to levels of understanding, who were at young ages and with limited knowledge. Some were unsure of how to prepare their children as they did not have previous surgery experiences or had difficulties in holding their children's attention.

***Subtheme 2.2: Fear, anxiety, nervousness, and emotional pain.*** Factors such as the unfamiliar environment of an operating theatre, pain related to surgery, and fear of the unknown created fearful and anxious experiences for the parents and their children. Particularly, the possibility of having complications after the operations added more fear and nervousness to the parents. Some parents reported emotional pain by opting for surgery for their children when the nurse explained the surgical procedure and the possible complications.

***Subtheme 2.3: The dilemma in decision-making.*** The majority of the participants struggled in making final decisions to send their children for surgery. They expressed worries about the possibilities of complications, and having their children suffer from pain and discomfort, particularly at such young ages. Strategies such as getting second opinions, gaining insights online through media, as well as from healthcare professionals, were adopted by the participants, allowing them to seek affirmation for the necessity of their children's surgeries.

### **Theme 3: Factors facilitating the preparation of their children for surgery**

***Subtheme 3.1: Previous experience and positive mentality.*** The participants shared that having had prior surgery, either for themselves or their children, were beneficial during their preparation. Previous experiences could facilitate the participants' sense of control for subsequent events. Children were able to relate to and recall aspects of previous surgeries (e.g. the insertion of

the intravenous cannula). The participants mentioned that children who had previous surgical experiences since birth or young ages showed high levels of acceptability to their surgeries as well as familiarity with the hospital environment. Some participants shared that their children's positive traits such as being courageous, accepting their upcoming surgeries, and anticipating to correct their conditions facilitated their preparation journeys.

***Subtheme 3.2: Information support from healthcare professionals and the internet.*** The participants were also supported by online information and healthcare professionals regarding the details of their surgeries, the prevalence of their diseases, as well as the side effects/negative consequences of their surgeries. Pre-anesthesia counseling sessions were also informative and reassuring.

***Subtheme 3.3: Reassurance and assistance from family and friends.*** Receiving encouragement and moral support (e.g. prayers and positive words) from family and friends boosted the morale of the participants and their children. The participants also stated great support from their spouses in sharing worries. The participants acknowledged support from family members in alleviating caregiver burden and multiple roles in family affairs.

***Subtheme 3.4: Maintaining the emotional stability and spiritual well-being of parents.*** The participants tried to maintain stable emotional reactions by keeping calm and staying positive and healthy. Various coping strategies were adopted, including distraction by working, power-seeking from their religious and spiritual beliefs, and praying to their Gods.

## **Theme 4: Surgery-related and financial concerns**

***Subtheme 4.1: Appropriate timing of the surgery.*** The participants had differing opinions and gave different reasons on the appropriate age for their children to undergo surgeries, either when they were young (i.e. less awareness of the surgery and perceived lower degrees of pain compared to those of older ages) or of mature ages. The specific period (e.g. during school holidays or specific timepoints before primary school or puberty) for going through their surgeries was also a parental concern.

***Subtheme 4.2: General anesthesia and success of the surgery.*** The participants expressed concerns regarding the negative consequences of general anesthesia (e.g. allergic reaction, memory loss, and not waking up after an operation) or the adverse effects of the surgeries (e.g. post-operative infections). Some participants were also worried that the surgery would become complicated or that the surgeries would not correct their children's conditions.

***Subtheme 4.3: Postoperative care and recovery.*** The participants' concerns on postoperative care centered on postoperative pain and the length of their children's recoveries. They were concerned about how their children would react to any pain experienced after the operations and if they were able to tolerate it. Additionally, the participants wondered about how long it would take for their children to recover after their surgeries.

***Subtheme 4.4: Financial concerns.*** A few participants had financial concerns about hefty medical bills and additional fees generated from the surgeries. An adjustment by downgrading the class of the ward was a solution by a parent due to financial constraints.



## **Theme 5: The desire for more information and better management**

*Subtheme 5.1: More understandable preparatory information via visual materials.* Half of the participants expressed informational needs on their children's surgeries and hospitalizations (i.e. duration of stay and the flow of events that follows a child's surgery). The participants preferred different communication methods, including visual materials (e.g. videos, apps, and games) and face-to-face meetings. Some participants recommended that proper language (less use of medical jargon or words causing fear to a child such as 'cut') should be used when explaining the procedure to them and their children.

*Subtheme 5.2: Improvements to current practices and management.* The participants expressed needs for 1) earlier facilitation of pre-anesthesia counseling and longer durations of such sessions to allow their children to warm up to the nurse and the environment, 2) healthcare professionals who can communicate with their children at their level of understanding to explain the surgery if the parents did not know how to, 3) caring for parents by sending pre-anesthesia counseling reminders, providing online documents, speaking in the parents' native languages, and checking the parents' coping abilities, and 4) better management of wait times for outpatient appointments and surgeries.

## **DISCUSSION**

This study provides a deep understanding of parents' perceptions of preparing their children for surgery. Our findings showed that the parents assumed various roles and responsibilities in decision-making, preparing, and supporting their children for surgery. The parents played significant roles in making decisions for their children to undergo surgery. Thus, they need to

have all surgery-related information, including procedures, potential complications, as well as postoperative care such as postoperative pain management. The participants tried to ensure their children's physical and emotional readiness for surgery. The realization of parents' roles and responsibilities of parents can facilitate children's abilities to cope well with their situations (Jaaniste, Hayes, & Von Baeyer, 2007). Ensuring that children are ready for their surgeries can prevent adverse effects, avoid any delays to the surgery due to adverse effects (von Ungern-Sternberg et al., 2010), and reduce the development of chronic post-traumatic stress in children (Ben Ari, Margalit, Roth, Udassin, & Benarroch, 2019). Parents are recommended to inform older children about five to seven days in advance, while younger children require a shorter timeframe (Jaaniste et al., 2007; KKH, 2017). As children tend to look to their parents for information (Buckley & Savage, 2010), it needs to be conveyed based on their child's abilities to understand and to cope, yet have a limited amount of distressing information (Bray et al., 2012). Our participants supported their children using various methods such as presence, encouragement, distraction, and tangible rewarding to reduce their children's surgery-related anxieties. These methods have also been used by parents to reduce school-aged children's postoperative pain (Zhu et al., 2018). Reducing preoperative anxiety can help to reduce children's postoperative pain (Chieng et al., 2014).

Our participants expressed communication, decision-making, and emotional challenges in their children's preoperative preparation stages. Firstly, the parents shared their difficulties with explaining the surgeries to their young children. Children of two to seven years old can understand things symbolically and slowly matured in their linguistic abilities as their thinking is based on intuition rather than logic. Children are unable to comprehend complicated concepts like

cause and effect (Salkind, 2008). Moreover, parents being unsure about how to prepare their children was deemed as a challenge, which is common (Vakili, Ajilian Abbasi, Ghazizadeh Hashemi, Khademi, & Saeidi, 2015) if they had no prior experience. Although several parents in this study found the pre-anesthesia counselling sessions to be helpful, more efforts may be needed to develop a program to guide parents to prepare their two- to seven-year-old children in an age-appropriate manner and to ensure that all parents are well-supported and understand what to do while preparing their children for surgery. Secondly, our participants experienced various negative emotions such as fear, anxiety, nervousness, and emotional pain in putting their children through surgery. Our participants also shared that their children felt fearful and anxious regarding their surgeries. Previous studies have shown that parental anxieties and children's anxieties are correlated (Chieng et al., 2013; Chieng et al., 2013; He et al., 2015). Based on the study by Vakili et al. (2015), young children can experience fear of the unknown and the possibility of pain related to their surgeries, and school-aged children's fears are more related to needles, knives, and harm to their bodies. Possible factors that led to fear, anxiety, and nervousness in parents could be sending their children for the first time (Chahal et al., 2009). Previous studies have reported that children's preoperative anxieties led to increased postoperative pain and postoperative sleeping problems (Chieng et al., 2014). Thirdly, many parents in this study faced dilemmas in decision-making due to the elective nature of the surgeries, which led to them second-guessing their decision. Parents' negative emotions related to their children's surgeries and how they might not wish to see their children suffer (Lan et al., 2007) could have also affected their decision-making. These findings indicated room for improvement in terms of psychological preparation in both parents and children (Li, Lopez, & Lee, 2007). A recent study showed that

psychological preparation by a psychologist for both children and parents can reduce anxiety levels at the time of surgery (Meletti, Meletti, Camargo, Silva, & Módolo, 2019).

Our findings identified several factors that can facilitate parents' preparation of their children for surgery. While having prior surgical experiences allowed parents and their children to be more familiar with the hospital environment and understand the processes better, unexperienced parents would be disadvantaged in such situations. Caring for children psychosocially is an important aspect in the preparation of their surgeries (Shields, 2010). Based on our participants, having a positive mentality by being aware and accepting of what was to come was found to promote the cooperation of their children throughout their surgeries. This is particularly crucial during anesthesia induction (Gao, Liu, Tian, Zhang, & Wu, 2014) to allow for a smooth induction and to reduce any distress associated with the process. Moreover, our study found that information support from healthcare professionals and the internet had been helpful to parents during their preparation journeys, which is consistent with previous findings (Bray et al., 2012; Bull & Grogan, 2010; Delgove et al., 2018; Lan et al., 2007). Recent experimental (Simeone et al. 2017) and quasi-experimental (Bartik & Toruner, 2018) studies reported that parents who were adequately informed about planned therapeutic procedures, hospital processes, and maintenance care issues had reduced levels of parental anxiety and stress. Delgove et al.'s (2018) study also reported that information concerning the practical aspects of hospital stays, such as clothing, eating, and visiting hours, can improve parents' experiences. Information support from the internet can provide valuable information to assist parents' decision-making and coping with their stress in relation to uncertainties regarding the surgeries (LaMontagne, Hepworth, Salisbury, & Riley, 2003). Similar to previous studies (Delgove et al., 2018; Klemetti et al., 2012; Kumar, Das,

Chauhan, Kiran, & Satapathy, 2019; Sadegh Tabrizi et al., 2015), our participants found the face-to-face pre-anesthesia counseling sessions to be helpful. The participants' demands for information suggest the importance of healthcare professionals in providing reliable information during their preparation journeys. As the interviews were conducted in the largest children's hospital with 800 beds and with the high quality of Singapore's healthcare system, the participants generally showed trust and high levels of confidence in treatments and surgeries (Ministry of Health, 2016).

Furthermore, our study found that support from family and friends in forms of reassurance and tangible assistance was considered a crucial factor in facilitating the preparation of their children's surgeries (Respler-Herman, Mowder, Yasik, & Shamah, 2012). Due to the collective culture in Asia, social support from family members and friends are especially valued (Yi, 2013). Besides, the parents' emotional stability and spiritual well-being were helpful while preparing their children for surgery. These parental characteristics can influence their children's perceptions and confidence in their surgeries (Slifer, 2013). Positive emotions can also evoke parents' active behaviors and engagement in taking care of their children while going through all the procedures and improving their surgery experiences (Borelli, Rasmussen, John, West, & Piacentini, 2015).

Our finding revealed a variety of concerns that the parents had during preparation. Firstly, the parents had to make rational decisions regarding sending their children for surgery at an earlier age or after waiting for more time, which some of them were unsure about. In the literature, younger children were found to have better outcomes and wound healing after undergoing hypospadias repair surgery (Ko, 2016). However, children under the age of four years were more prone to adverse reactions during hospitalization, such as emotional disturbances, than older

children (Yap, 1988). Thus, healthcare professionals can assist parents in making decisions regarding the most proper time for such operations if they are unsure. Secondly, our participants had concerns about anesthesia, the success of their children's surgeries, and postoperative care and recovery aspects, including postoperative pain and management, as well as the duration of recovery, which were similar with previous findings (Lim et al., 2012; Sadegh Tabrizi et al., 2015). Local researchers had developed an educational intervention for parents of school-aged children who were undergoing elective surgery on the use of pain medication and non-pharmacological methods, which can be introduced for clinical use (Zhu et al., 2018). Lastly, our study revealed the financial concerns of some parents. Sending a child for surgery can lead to hefty medical bills due to doctor consultations and hospitalizations. Health professionals can seek support from the government or provide needed information to parents who have financial difficulties and concerns regarding their children's surgeries.

Our study revealed parental desires for more understandable preparatory information. The typical information that parents might need is the safety of general anesthesia, the success of the surgery process, appropriate postoperative care, and ways to reduce complication rates (Craig & Kitson, 2010). Detailed information such as the possible duration of surgery, hospital stay, and the flow of the perioperative process was also important. With sufficient information provided, parents can feel a sense of control and confidence in facing challenges and positively influence the entire surgical process. As this process can be fearful for both parents and children due to uncertainty and unfamiliar environments such as sights and sounds (Slifer, 2013), innovative distraction (e.g. games and virtual reality-based e-programs) can be used to prepare children and their parents (Kumar, Das, Chauhan, Kiran, & Satapathy, 2019). The use of videos was most commonly

suggested by our participants to supplement preoperative preparation consultation sessions. In the literature, visual materials are beneficial as part of a preparatory program in terms of increasing knowledge and easing the anxieties of parents (Berghmans et al., 2012). A recent study used social media, i.e. WeChat, to provide perioperative care instructions to the parents of pediatric patients who were undergoing day surgery and showed effects in enhancing parents' knowledge and promoting the preparation of their children for day surgery, which resulted in a lower rate of cancellation (Liu et al., 2018). Another recent study recommended involving peer support from parents whose children had recently undergone surgery since they had strong perceptions about what information to convey to families considering surgery (Garrity et al., 2019). Besides, our participants expressed needs to improve the pre-anesthesia counselling, such as sending reminders, having longer durations, using more simplified language, and that best understood by the parents. Our participants also suggested shorter waiting times for outpatient appointments and surgeries, which calls for a better appointment management system.

### **Limitations of the study**

More than half of our participants had bachelor's degrees and above (higher than the national statistics), and two-thirds of the parents had monthly incomes of above \$3,000 each (higher than the average of \$2,864) (Singapore Department of Statistics, 2016). These showed that our participants were mainly from a higher socio-economic background and may not be transferable to people from different socio-economic backgrounds. Due to the limited linguistic capability of the researcher, only parents able to communicate in English were recruited. In addition, parents were recruited from one hospital, therefore, the findings of this study may not be transferable to other hospitals in Singapore. Similar to other previous studies (Bull & Grogan, 2010; Fortier et

al., 2015; Kushnir et al., 2015; Lan et al., 2007), in our study, the viewpoints of fathers may not be adequately captured, as they formed less than one-third of the study sample.

### **Conclusions and nursing implications for clinical practice and future research**

This study provides an insightful understanding of parents' experiences and perceptions of preparing their children for surgery. Our findings offer great insights to inform current healthcare practices in empowering parents to prepare their children for surgery, which can promote better surgical experiences for children and their parents in the future. In the United States of America, patients' experiences are quality indicators that influence the healthcare organization's economic wellbeing such as reimbursement rates (Wei, Roscigno, & Swanson, 2017). A comprehensive preparatory program is suggested to cover a wide range of information with an innovative delivery method, using simple, as opposed to, non-threatening language. Psychosocial support is an important area to be addressed, and nurses can contribute substantially to parents' emotional coping with such processes. Comprehensive informational support (from surgery preparation to postoperative care) from credible, online sources or trustworthy healthcare professionals, such as nurses, from high-quality health systems, is crucial. Future similar studies are recommended to recruit only fathers and non-English speaking parents. Future interventional studies can develop and examine the effects of a comprehensive preparatory program for parents using innovative platforms.



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## **CONFLICT OF INTERESTS**

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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## **AVAILABILITY OF DATA AND MATERIAL**

The datasets generated and analyzed are not publicly available due to ethical and legal restrictions related to the confidentiality of study participants prohibit publicly available datasets.

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Table 1. Sociodemographic characteristics of the participants and their children (n = 16)

No.	Parent, age (years)	Ethnicity	Education level	Prior experience with surgery (who involved, year(s))	Monthly income level	Children's gender and age (years)	Nature of children's surgery
1	Father, 42	Chinese	Diploma/certificate	Yes (child, 2015 and 2016)	\$3,001-\$4,000	Boy, 7	Cystoscopy and removal of double J stent
2	Mother, 33	Chinese	Bachelor's degree	No	\$4,001-\$5,000	Boy, 5	Hypospadias repair
3	Father, 40	Chinese	Master's degree	No	>\$10,000	Boy, 6	Hypospadias repair
4	Mother, 45	Chinese	Bachelor's degree	No	\$5,001-\$10,000	Boy, 5	Urethroplasty
5	Mother, 36	Malay	Bachelor's degree	Yes (child, 2009 and 2014)	\$3,001-\$4,000	Boy, 8	Port-a-Cath removal
6	Mother, 35	Filipino	'A' level	No	≤\$2,000	Boy, 3	Bilateral reimplantation (open) and circumcision
7	Mother, 42	Malay	Secondary	Yes (own, 2006 and child, 2011)	≤\$2,000	Girl, 8	Cystoscopy and retrograde pyelogram
8	Mother, 54	Gurkha	'O' level	Yes (own, 2010 and 2 more, unable to recall)	≤\$2,000	Boy, 4	Meatoplasty
9	Mother, 40	Arab	Certificate	No	\$2,001-\$3,000	Boy, 8	Examination under anesthesia, unilateral wing flap, urethroplasty
10	Father, 40	Chinese	Others	Yes (own, 2000 and child, 2009)	\$5,001-\$10,000	Boy, 8	Meatoplasty
11	Father, 39	Indonesian	Master's degree	No	\$2,001-\$3,000	Boy, 4	Incision biopsy of the suprapubic cyst
12	Mother, 39	Filipino	Bachelor's degree	Yes (own, 2015 and child, 2016)	\$5,001-\$10,000	Boy, 6	Laparoscopic-assisted 2 <sup>nd</sup> stage Stephen Fowler right orchidopexy

13	Mother, 35	Indonesian	Bachelor's degree	Yes (own, 2008 and 2011)	≤\$2,000	Girl, 5	Cystoscopy and bilateral Deflux injection of ureteric orifice
14	Father, 46	Indian	Master's degree	Yes (own, 2000 and child, 2010 and 2016)	\$5,001-\$10,000	Boy, 9	Sistrunk procedure
15	Mother, 39	Malay	Diploma/certificate	Yes (own, 2016)	\$4,001-\$5,000	Girl, 7	Laparoscopic assisted resection of cholecystic hepatic cystectomy intraoperative cholangiogram
16	Mother, 44	Caucasian	Master's degree	Yes (Own, 2001 and 2014)	>\$10,000	Boy, 10	Tubularized incised plate meatoplasty and urethroplasty



Figure 1. Theme 1 and 2 and their subthemes and sample quotations (n=16)

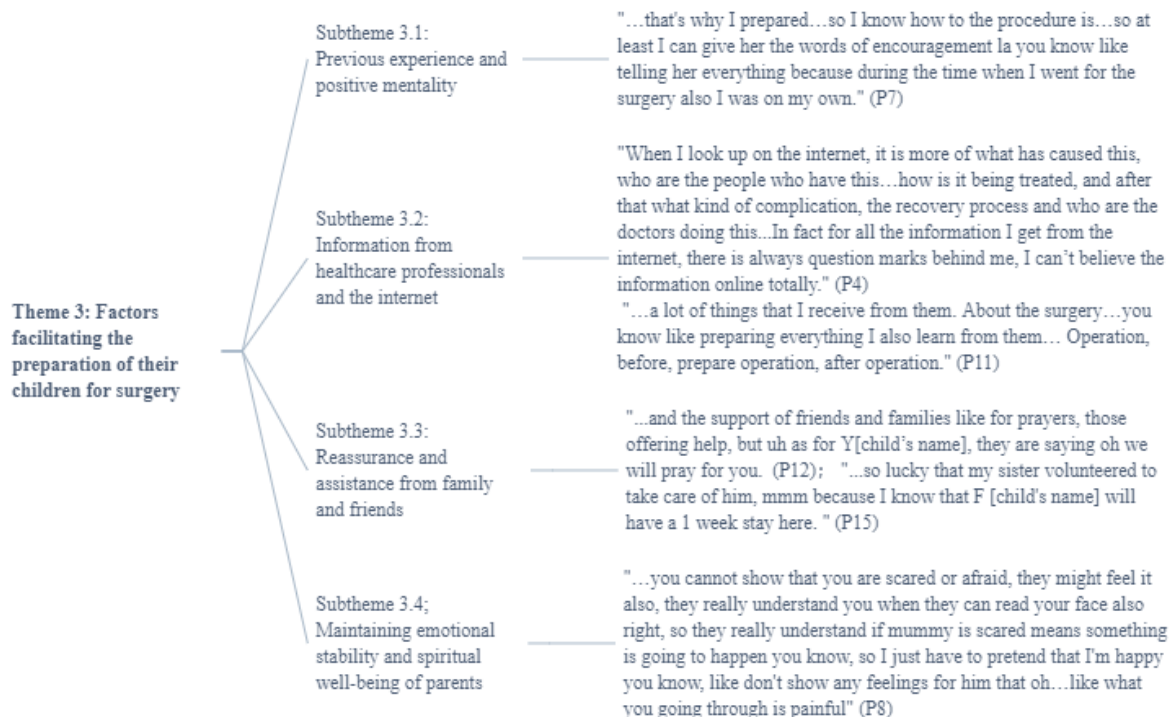


Figure 2. Theme 3 and its subthemes and sample quotations (n=16)

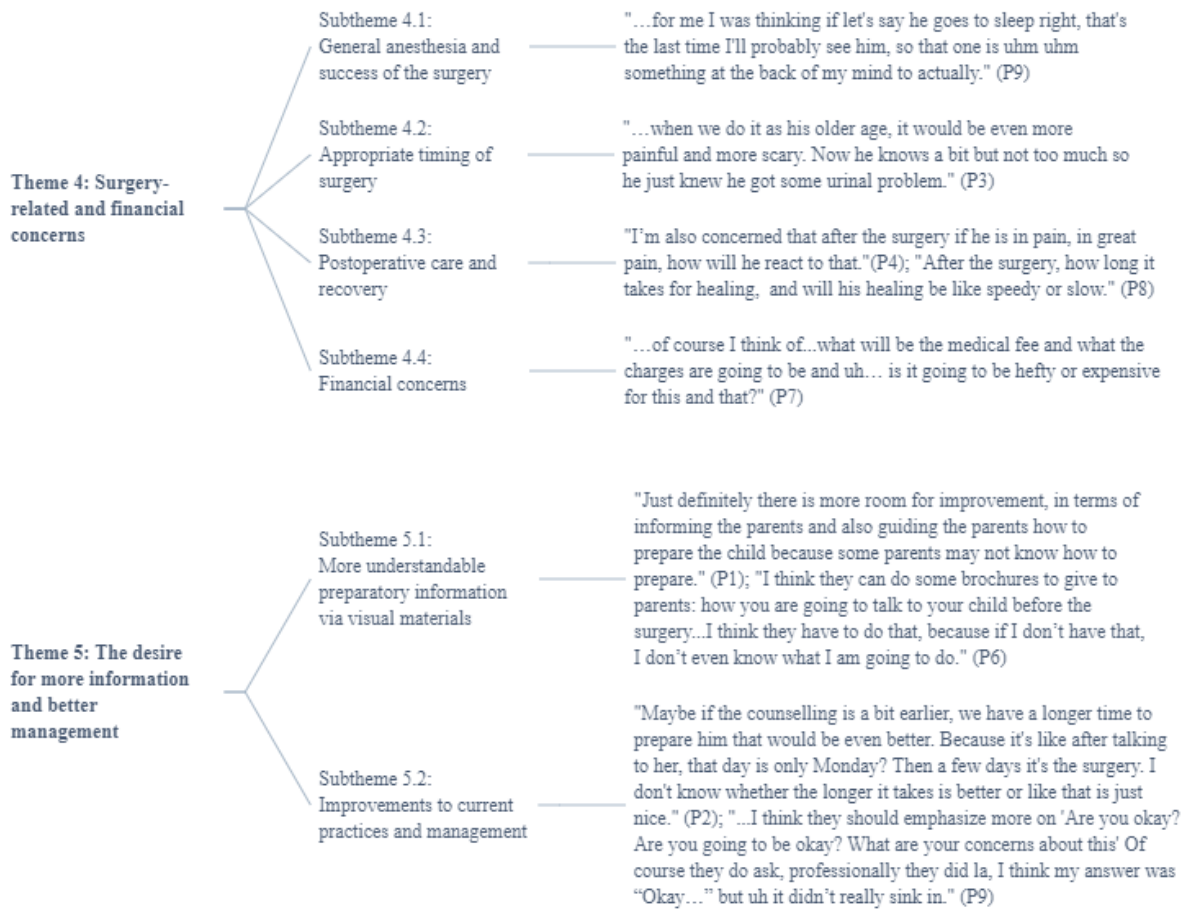


Figure 3. Theme 4 and 5 and their subthemes and sample quotations (n=16)



## **SUPPLEMENTARY MATERIAL**

### **Interview guide**

1. How do you perceive surgery?
2. How did your perception or impression of surgery affect the way you prepared your child for surgery?
3. Did you have any personal experiences with surgery?
4. How did your child perceive surgery?
5. Please tell me more about your experience in preparing your child for surgery.
6. What were your thoughts and feelings before and after the pre-anaesthesia counselling session regarding your child's surgery and its preparation?
7. What were the factors that have helped you to prepare your child for surgery?
8. What concerns or difficulties have you faced regarding the preparation of your child for surgery?
9. What made you decide to send your child for this surgery, and if this surgery was not compulsory, would you still opt for your child to undergo this surgery?
10. Did you make any changes to your child's scheduled surgery and if so, what are the factors affecting this decision?
11. How do you perceive your role as a parent in preparing your child for surgery in comparison to the healthcare professionals?
12. What other needs do you have as a parent regarding preparing your child for surgery?
13. What support have you received from the healthcare professionals (nurses, doctors, etc) regarding your child's surgery?
14. What else do you think healthcare professionals could do to improve your experience with preparing your child for surgery?
15. What are the other sources of information do you refer to for your child's surgery? (For example, the internet or television)
16. On a scale of 0-10, 0 being very negative and 10 being very positive, how would you rate your experience of preparing your child for surgery?
17. Do you feel that you have done sufficient to prepare your child for surgery or is there anything you felt that you could have done better for your child?
18. What else would you like to share?