

1 **Descriptive title: Parental Experiences While Waiting for Children Undergoing Surgery in**
2 **Singapore**

3 **Short title: Parental Waiting Experiences**

4

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51 **HIGHLIGHTS**

- 52 • Parents expressed anxiety because of perioperative factors like risks of surgery and lack
- 53 of timely updates from surgeons.
- 54 • Communication between healthcare team and parents affects the waiting experience.
- 55 • Parents recommended a dedicated waiting room that better suited adult needs such as adult-
- 56 sized comfortable chairs and privacy.
- 57 • Early dissemination of information helped parents prepare for their child’s surgery.
- 58 • Parents recommended the use of technology such as mobile applications and text messages
- 59 for communication.

60

61 **ABSTRACT**

62 **Purpose:** To explore the experiences and needs of parents while waiting for their children undergoing
63 surgery.

64 **Designs and Methods:** A descriptive qualitative study was conducted. A purposive sample of 11
65 parents who went through their first waiting experiences during their children’s surgeries in a
66 Singapore public hospital was recruited. Children younger than or equal to 16 years of age were
67 included. A semi-structured interview guide facilitated the individual face-to-face interviews.
68 Thematic analysis was used.

69 **Results:** Four themes were identified: “Care and care provision affecting waiting experiences”,
70 “Parental concerns and surgery affecting waiting experiences”, “Coping strategies used during
71 waiting periods” and “Recommendations to improve waiting experiences”. Pre-operative
72 instructions, the professionalism of medical teams, and a lack of timely updates affected parental
73 experiences. Parents expressed their worries. The complexities and types of surgery influenced how
74 they felt. Their concerns included potential complications, surgical outcomes, anesthesia-related side
75 effects, and post-operative care including pain. They spent their waiting times eating, resting, using
76 their smart devices, and coping with a support system. Environmental improvements, more updates,
77 and mobile applications were recommended by the participants.

78 **Conclusion:** For a parent, the wait during his/her child’s surgery can be unsettling. Our results give
79 insights into parental waiting experiences and needs during their children’s surgeries.

80 **Practice Implications:** These findings can guide the improvement of the current practise based on
81 our evidence or the implementation of newer technology to provide better waiting experiences for
82 parents during their children’s surgeries and to enhance the quality of clients’ experiences in the
83 hospital.

84 **Keywords:** Child; pediatric surgery; parents; waiting experience

85 (Word count: Abstract: 250 words; Main text: 5,378 words)

86

87 **Background**

88 Internationally, more than four million pediatric surgeries are carried out per year (Boles, 2016).
89 Surgery for a child affects the whole family, especially the child's parents (Charana et al., 2018) as
90 they play important roles in their children's surgical journeys. Parents are informed about surgical
91 details (Healy, 2013), and they prepare their children for surgery, such as pre-operative fasting
92 (Pomicino, Maccacari, & Buchini, 2018). Potential surgical risks are presented to them and they have
93 to make the decision for their children (Pomicino et al., 2018). They communicate with their
94 children's medical teams and involve themselves in their children's treatment plans and care plans
95 (Cagiran et al., 2014).

96

97 The waiting period has been highlighted as one of the demanding and critical timepoints during
98 hospitalization for parents (Wei, Roscigno, & Swanson, 2017). The study by Wray and Sensky (2004)
99 stated that a parental anxiety level reduces once the child's surgery is finished. Unfortunately, if the
100 parent's anxiety were to persist for a few months after the surgery, it can potentially develop into a
101 mental illness (Videbeck, 2014).

102

103 Furthermore, parental anxiety positively correlates to a child's anxiety level (Cagiran et al., 2014;
104 Dionigi, Sangiorgi, & Flangini, 2014; Fincher, Shaw, & Ramelet, 2012; He et al., 2015) in the
105 perioperative period. If the parent continues to feel anxious, it will heighten the child's anxiousness
106 and this may delay the child's recovery process (Koinig, 2002).

107

108 Currently, there are no support services, such as support programmes or facilities for the parents,
109 provided to parents during waiting times in the study venue (KK Women's and Children's Hospital,
110 2018). There were plenty of studies surrounding parental experiences during children's pre-operative
111 periods (Harvey, Kovalesky, Woods, & Loan, 2013; Rabbitts et al., 2017; Wei et al., 2016; Wei et

112 al., 2017). However, knowledge regarding what parents go through during the waiting times of their
113 children's surgeries is very limited. Thus, this study aimed to explore the experiences and needs of
114 parents while waiting for their children's surgeries to be completed.

115

116 **Methods**

117 This study used a descriptive qualitative study design to understand parental experiences on a deeper
118 level (Rossetto, 2014). Using semi-structured interviews helps to identify themes related to the
119 parental waiting experience. This study design allowed a comprehensive and detailed exploration of
120 parental experiences, which will be used to inform further and similar research in the future.

121

122 *Setting and sampling*

123 This study was conducted at a public tertiary hospital in Singapore, suitable for this study as it is
124 Singapore's largest pediatric surgical center, performing an estimate of 4,000 pediatric surgeries
125 annually (KK Women's and Children's Hospital, 2018). Parents were recruited from the paediatric
126 surgical outpatient clinic and two general surgical wards. Out of all parents approached that met the
127 selection criteria, one parent declined to participate due to lack of time. All participants were
128 interviewed within three weeks after their children's surgeries when they were in their child's ward
129 either at the bedside or in the counselling room in the ward, depending on the parent's preference.

130 Purposive sampling was used. The inclusion criteria were parents: (1) who were 21 years old or above,
131 (2) who were literate in English, (3) who would accompany their children for elective surgery for the
132 first time on the surgery day, (4) whose children were under 16 year old, and (5) whose children were
133 medically assessed and scheduled for elective surgery. Parents were excluded if they were found to
134 have mental and/or cognitive impairments, including anxiety disorder or hearing or visual disabilities
135 that could not be corrected with aids, after the researcher checked with each potential participant. The
136 actual sample size was determined when data saturation was attained (Malterud, Siersma, &

137 Guassora, 2016). Data saturation was reached at the ninth participant. To verify this, two more
138 interviews were conducted and data saturation was confirmed, giving a total of 11 participants.

139

140 *Recruitment*

141 Ethics approval was obtained from the Centralized Institutional Review Board in Singapore. After
142 receiving ethical approval, recruitment commenced on 16 November 2018 at the paediatric surgery
143 outpatient clinic in the study hospital. The site Principal Investigator (PI) approached the parents and
144 children listed for pre-admission assessments and referred them to the student researcher to introduce
145 the study and to assess their eligibilities with their permissions. For interested parents, after their
146 children's operations, the site PI, who was a nurse clinician in the operating theatre, checked the
147 wards that the patients were admitted to. The parents were approached again by the researcher to
148 confirm their willingness to participate in the study and to sign a consent form after reading the
149 participant information sheet. Each participant was given time to consider his/her participation after
150 an explanation of the study. In addition, the researcher also recruited participants directly from the
151 wards who were referred to the researcher by the ward nurses and co-investigator.

152

153 *Data Collection*

154 The interview guide was developed based on the literature review (Healy, 2013; Iversen, Graue, &
155 Clare, 2009; Trimm & Sanford, 2010) and experts' opinions. One pediatric surgeon and one academic
156 professor, with experiences of qualitative studies, validated the interview guide. Interviews took place
157 either at the bedside or in the ward's counselling room post-surgery, depending on each participant's
158 preference. All interviews were conducted by the same researcher (first author). In total, nine sessions
159 of face-to-face interviews ranging from 21 minutes to 48 minutes were conducted, among which
160 seven sessions were individual interviews (including two pilot interviews), whereas two sessions were
161 group interviews with each session containing two parents. The two pilot interviews were included

162 in the final data analysis because no changes were made to the interview guide. The researcher,
163 without the accompaniment of the site PI or Co-I who were staff from the study hospital, conducted
164 the consent taking and interview process. Using the semi-structured interview guide, all interviews
165 began when the participants were ready to be interviewed and audio-recorded. Participants were
166 assured anonymity and reminded to highlight their feelings to the researcher whenever they felt
167 uncomfortable. All participants were labelled numerically according to the order of the interviews
168 conducted along with the data collected. Interview questions used were:

- 169 • Tell me what it was like to wait during your child's surgery.
- 170 • Describe to me any situation that you felt that the hospital/medical team could have done in
171 making your waiting time better.
- 172 • Tell me more about the information regarding the waiting experience that was given to you.
- 173 • Have you thought about any technology that can be incorporated into the service provided to
174 parents during the waiting time?
- 175 • Are there any other things you would like to share?

176

177 *Data Analysis*

178 Thematic analysis, developed by Braun and Clarke (2006), was used to analyze the transcribed data
179 from the audio-recordings. As each individual had their own unique opinions, a thematic analysis
180 allows ideas to be compared and new concepts to be formed (Braun & Clarke, 2006). The audio-
181 recordings of the interviews were transcribed in the same words used by the participants at the nearest
182 time available after the completion of each interview. The transcripts were named according to the
183 assigned participant numbers.

184 The three main steps used include familiarizing with the primary data, generating initial codes, and
185 the development of subthemes and themes (Braun & Clarke, 2006). All transcripts were read through
186 so that the ideas conveyed were well-studied. After that, codes were created in a standardized manner

187 as transcripts were relooked again such as coding according to emotions (Nowell, Norris, White, &
188 Moules, 2017). Similar ideas were highlighted to form a subtheme as some codes made sense when
189 put together (Nowell et al., 2017). From similar subthemes, unique themes were formed (Braun &
190 Clarke, 2006). The co-investigator, who had qualitative research experiences, reviewed the thematic
191 analysis process to ensure that the subthemes and themes formed were closely linked to the original
192 ideas from the interviews. This process ensured that the themes were inclusive and covered different
193 aspects of the research data (King, 2004).

194

195 *Qualitative data rigor*

196 Based on Guba and Lincoln, as cited by Connelly (2016), credibility, transferability, dependability,
197 and confirmability are aspects of ensuring rigor in a qualitative study. To ensure accurate findings,
198 the interviewer rephrased and validated the interview answers with the participants (Cooper, 2015),
199 also known as member checking (McBrien, 2008). Audio-recorded interviews ensured accurate
200 verbatim transcripts (Nowell et al., 2017) to provide credibility. Purposive sampling was used,
201 providing readers with extensive information about this study's participants to have a gauge if the
202 findings of this study can be transferred to other populations (Baillie, 2015; Cypress, 2017). The
203 researcher triangulation technique was used by involving one researcher and one supervisor in the
204 data analysis process (Given, 2008) as it increased the research's confirmability with different
205 perspectives (Carter, Bryant-Lukosius, DiCenso, Blythe, & Neville, 2014) and allowed neutrality of
206 the data analysis process (Given, 2008). The coded transcript acted as an audit trail (Given, 2008),
207 providing the study dependability and confirmability.

208

209

210 **Results**

211 Eleven participants were recruited. Eight (73%) were mothers and 3 (27%) were fathers. The majority
212 were Chinese mothers (82%). About two-thirds of the participants' children were boys (64%). The
213 details of the participants' sociodemographic data are summarized in Table 1 and 2. Details of surgery
214 that the children underwent are shown in Table 3.

Table 1, 2 and 3 here

215 Four themes and 14 subthemes were derived from the thematic analysis and are presented in Figure
216 1.

Figure 1 here

217 ***Theme 1: Care and care provision affecting waiting experiences***

218 It was revealed in our analysis that before a child entered the operating theatre, his/her parents would
219 have received pre-operative instructions that mentally prepared the family for the surgery. However,
220 the lack of pre-operative instructions for parents brought about uncertainty surrounding the surgery.
221 The impression of the medical team gave the parents confidence to entrust their children to them. A
222 lack of timely updates during waiting periods caused them to be anxious.

223

224 *Pre-operative instructions.* In the study hospital, a child and his/her parents are required to attend a
225 pre-operative consultation one week before the operation day. During the session, they are given
226 surgical information such as the nature of the operation, the procedure, the duration of the surgery,
227 and more. They can ask questions and clarify their doubts. The majority of the parents welcomed
228 detailed explanations of the operations and felt worried if they were unclear about the given
229 information.

230 "If you don't know, you rather worried... Then, you are searching for the answer."

231 Three parents also mentioned that receiving the operation time a day before the operation day was
232 too rushed and would prefer to receive it as soon as the operation was scheduled. One mentioned that
233 due to the short time notice, he/she was unable to prepare his/her child well enough for fasting.

234 “When the date was scheduled, it will be good if the hospital gives us a time that the operation
235 will be scheduled for as well. Not just the date. Like earlier. Not the night before. And not the day
236 before.”

237

238 *The professionalism of medical team.* All parents had positive perceptions of the surgical team as they
239 felt reassured with their vast surgical experiences and knowledge with their explanations. The team
240 also portrayed themselves as caring as they treated the children and parents with tenderness, which
241 put the parents at ease. These factors allowed the parents to trust their children with the medical team.

242 “Yeah, and they are quite confident... quite reliable because they explain it to you. They are very
243 patient... He doesn’t mind explaining more.”

244

245 *Lack of timely updates.* Four parents mentioned that they were worried as there were no updates
246 during the waiting periods, especially when the surgeries were extended.

247 “It’s been three hours, you all say, ‘It’s three hours’, but it’s extended to four hours... So, yes,
248 naturally, I’m worried if everything is okay? Is there a struggle? Did anything happen? You
249 know...”

250

251 Parents were not sufficiently informed about who to approach for information on their children’s
252 progress while waiting. Parents understood that the surgeons were busy during the waiting times;
253 hence, there were no updates. However, they did mention that there were nurses around the operating
254 theatre whom they believed could be approached for information.

255 “There was a staff nurse that was around nearby. So, she is easily available if we wish to ask.” .

256 One parent approached a nurse for updates. However, the information given was not accurate and
257 affected the experience negatively.

258 “And then, I get different information, not very accurate information... so that got us a bit
259 worried... Later, we were told that she was already in the recovery room for half an hour, and we
260 weren’t even told. So that was something that I thought was unpleasant.”

261

262 *Theme 2: Parental concerns and surgery affecting waiting experiences*

263 During their children’s surgeries, parents considered the possibilities of complications during surgery
264 and surgical outcomes, which made them worried. Other concerns included the children’s post-
265 operative outlooks and recoveries. For example, they were concerned over their children’s well-being
266 after waking up from general anesthesia (GA) and being in pain.

267

268 *Intrinsic parental anxiety as nature.* All parents waited near the operating theatre as they wanted to
269 see their children as soon as the operations were completed. Two parents mentioned that they made
270 a promise to their children to be near the theatre.

271

272 “We waited... near outside the operation theatre... We don’t want to go because our child is
273 inside... She trusted me. I will be here. I promised her I will. I don’t want to go...”

274

275 *Complexity and type of surgery.* Parents described the factors that influence their perceptions on how
276 simple or complicated their children’s surgeries were. They perceived their children’s surgeries as
277 simple when it was routine and not life-threatening. Their anxiety was elevated when the concept of
278 surgery was unfamiliar.

279 “Because..., it’s new to us because the open surgery is very, very new to our family, and it’s her
280 age, the pain. Everything is new... so we have many questions.”

281

282 *Concerns regarding potential complications and outcomes of surgery.* Many parents described
283 surgical complications as their main worries. When surgery durations were lengthened, they got
284 anxious and assumed that complications were the reason. However, parents did not want to rush
285 healthcare professionals to ensure the safety and success of the surgeries.

286 “Hmmm, naturally, like, let’s say that it’s past the expected duration... The only thought for me
287 is: ‘Can there be any complications that needed more time?’ Yeah.”

288

289 *Concerns regarding side effects of general anaesthesia, postoperative care including pain care.* As
290 these were the first experiences that the parents had for their children’s surgeries, many worried about
291 coping post-operatively. They were concerned over how their children would react after GA.

292 “I think, largely, the side effects, the possible side effects. For the first surgery, we got no baseline.
293 We have no idea how he’s going to react, how he’s going to wake up from GA, and whether
294 something more unusual. I think that was what we were most worried about. Unforeseen side
295 effects that we...”

296 Others worried about post-operative surgical wound care and one parent shared that education on
297 wound dressing was imperative for parents with no prior knowledge.

298 “Then, we have to do dressing. Then, we have to be very careful because of, ... bacteria,
299 infection... We were worried if bacteria goes into the wound and it gets worse. The wound will
300 get worse...”

301

302 Parents described that seeing their children in pain also worried them. However, anticipating this
303 beforehand, they were prepared to handle them with their children’s favorite items.

304 “Her pain, her nerve pain. Cannot concentrate on sleep. Especially in the night time... That’s the
305 only thing that we worry about.”

306 ***Theme 3: Coping strategies used during the waiting period***

307 All participants waited at the waiting areas nearest to their children’s operating theatres. They
308 described how they spent their time and how they coped with their emotions during these stressful
309 periods.

310

311 *Consumption of food.* Some parents went to nearby food courts to satisfy their hunger. Three parents
312 mentioned that eating was a form of distraction from their anxiety. Feeling hungry possibly influenced
313 their moods.

314 “Go for breakfast [laughs]... Yeah, because I was very, very hungry [laughs]. Yeah, because
315 when you are hungry, maybe you worry [laughs].”

316

317 *Rest.* Four parents took a short nap in the waiting areas. One shared that they needed to recharge
318 themselves since they needed to have adequate energy to take care of their children after the
319 operations.

320 “Relax and rest myself because I know that because he needs to be in hospitalized for about ten
321 days or more. So, I need to, ... physically and mentally prepare myself, so I need to rest well.
322 Because the day before, ... a bit worried so I’m not well-rested... I know that after the operation,
323 he will be cranky or whatever and I need more time. If I do not rest properly, I may be easily
324 angry or may throw my temper...”

325

326 *Usage of smart handheld devices for entertainment.* With mobile phones being irreplaceable in one’s
327 life, 91% of the parents used their phones for a variety of activities during the waiting periods. Some
328 were on social media or played games for entertainment. These helped the parents to put aside their
329 worries for a while.

330 “I use Facebook naturally... Hmm, it’s a form of distraction, yes.”

331 “Handphone. Play handphone... I played some games... Yes, yes, relax.”

332

333 Some continued their daily routines as they read the news and replied to work emails or messages.

334 “Surf the web, read the news, kill time.”

335 “Check emails or work WhatsApp.”

336

337 *Having a support system.* Parents turned to religion or their partners to cope with negative feelings
338 or for support in their journeys. Many also updated their families or friends regarding their children.

339 “Yeah, the social media FB. Cause this one is more for extended family... I can’t ... reply one by
340 one. So, I just update once so everybody can see... They just ask me to relax, lah. Don’t worry...”

341

342 ***Theme 4: Recommendations for the improvement of waiting experiences***

343 Having first-hand waiting experiences provided the parents with insights on areas for improvements.

344 These included improving the waiting areas for parents and including more updates during the waiting
345 times. Parents suggested the use of a mobile application for personalized information related to their
346 children’s surgeries.

347

348 *Improve the quality of waiting areas.* As the participants spent a long time at the waiting areas in the
349 hospital, they shared improved environments to suit the parental needs might influence waiting
350 experiences positively. Most parents expressed that the chairs were not comfortable.

351 “The chairs are really not comfortable. You sit long, ... you come out, wow... Cannot come out
352 [laughs].”

353

354 It was also mentioned that although it was a children’s hospital, the waiting room settings were not
355 catered for the target audience, which were adults.

356 “I know that this is a hospital for children. So, the OT (Operating Theatre) is meant for children.
357 The décor is for children. But I think they failed to understand that people waiting there are not
358 children. So, it doesn’t, to me, the décor doesn’t make sense at all for parents.”

359

360 They also expressed that refreshments could be provided in the area so that they could stay in the
361 waiting rooms. Clearer direction signs should also be in place for parents to leave whenever they
362 wanted.

363 “I think the waiting area is such that once you exit, there isn’t a clear way to come back in without
364 contact or trying to reach for somebody who is inside...”

365

366 *More frequent and timely updates.* Parents mentioned that there should be more updates regarding
367 their children’s surgeries. This would alleviate their emotional burden during waiting times.

368 “Because I believe the family is waiting for the end result... Is it finished or not finished... So,
369 this one is maybe to lessen the burden so they can update and can see, ‘Oh, actually everything is
370 quite okay.’ What is the progress, and then is it ending? I think this is what the people are feeling
371 and looking forward to.”

372

373 One parent shared that she received pre-operative and post-operative updates and had a pleasant
374 experience with that.

375 “We were constantly updated before he went in and after the surgery. The surgeon came out
376 immediately. And then we were updated that he was sleeping, I think, twice... So yeah, I think
377 the constant updates were good.”

378

379 *Employment of mobile applications for the dissemination of pre-operation information.* As majority
380 of the participants used their mobile phones during the waiting time, it is not surprising if it can be
381 used to improve parental waiting experiences in providing information. Four parents suggested that
382 a mobile application would be useful for obtaining information, especially if it provided pictorial
383 guides. Three parents expressed that receiving personalized information about their children will
384 make the application useful.

385 “You can send us short videos or whatever. And we can see it from home so that we don’t have
386 to search at the sites where information may or may not be correct or 100% accurate, you know.”

387

388 **Discussion**

389 This is the first qualitative study that explored the waiting experiences and needs of parents with
390 children undergoing elective surgery. Our participants’ ethnicity distribution was similar to
391 Singapore’s population: 74% Chinese, 13% Malay, 9% Indians, and 3% of other ethnicities
392 (Singapore Department of Statistics, 2018). Despite both parents were present during the waiting
393 period of their child’s surgery except for 1 participant, majority of the participants were mothers.
394 About two-thirds of the participants attained degrees and above. Only 36% of the participants in this
395 study had a monthly household income of more than \$9,000. In 2017, Singapore’s median monthly
396 household income was \$9,023 (Singapore, 2017).

397

398 Our findings revealed that care and care provision affected parents’ waiting experiences. Firstly,
399 parents described that pre-operative instructions were important as they mentally prepared themselves
400 for what was about to happen. Otherwise, their anxiety would be extreme as parents who received no
401 prior information. This was evidenced by Healy (2013) as parents would understand the procedures
402 that their children would go through. However, participants struggled to accommodate to pre-
403 operative fasting instructions when informations are given a day before. It is noteworthy to understand
404 that such information is critical to parents (Pomicino et al., 2018) since they will need time to inform

405 their children and put it into action. Parents in this study also expressed that they became more anxious
406 due to poor communication between the hospital and family. When parents are satisfied with the
407 communication and quality of information, this will contribute to the healthcare quality perceived by
408 them (Bartik & Toruner, 2018; Cagiran et al., 2014; Chahal et al., 2009; Pomicino et al., 2018).
409 Secondly, all participants trusted the medical teams with their children as they perceived the teams
410 as experienced and working in a reputable hospital, knowing the doctors have succeeded in the
411 operations provided parents hope. In addition, the participants felt reassured when doctors were there
412 for the parents. This is congruent to previous studies, which reported that parents appreciated the
413 empathy that the healthcare team expressed to families (Wei et al., 2016; Wei et al., 2017). Lastly,
414 some surgeries exceeded the expected durations and kept parents waiting without any updates. This
415 is also another example in communication lapses between healthcare teams and parents that can be
416 improved. The study by Kwan et al. (2016) showed a reduction in parental waiting anxiety as they
417 understood the events that were occurring during the surgeries. In addition, some parents were not
418 informed about who they should approach for information during their children's surgeries. Instead,
419 parents face potential inaccuracy in information as they sought help from nurses whom may not know
420 about the patients' cases. In a study conducted by Henize et al. (2018), a delegated staff present at the
421 waiting area provided assistance, which effectively allayed parents' concerns. A similar yet more
422 cost-effective intervention can be developed and put in place so that information can be more
423 transparent with families to eliminate any uncertainties they may have during this periods.

424

425 Our findings showed that parents' waiting experiences were affected by their concerns and surgery-
426 related factors. Parents perceived feeling anxious as a natural response as their children were
427 undergoing procedures carrying some risks. This is clearly evident by the well-established research
428 papers that documented pre-operative anxiety and how critical waiting periods were to parents (Bartik
429 & Toruner, 2018; Corsano et al., 2015; Harvey et al., 2013; Rabbitts et al., 2017; Wei et al., 2016).

430 In our study, all parents waited at the waiting areas even though they were informed that the hospital
431 would call them upon the completion of their children's surgeries which showed their concern for
432 their children. This study's sample consisted of only first-time experiences for parents. With no prior
433 knowledge of how the process would be like, parents were more worried, which supports the literature
434 (Chahal et al., 2009). Only one child underwent open surgery, and the participant appeared more
435 visibly distressed than the other participants. This supports the study from Hoetzenecker et al. (2014),
436 highlighting that with larger surgical wounds, parents got more anxious. The concept of surgery was
437 new to some families, hence bringing about the importance of awareness regarding the procedures to
438 relieve parents' worries. Cagiran et al. (2014) stated that the dissemination of information helped to
439 relieve parents' anxieties and provided support to them. Although parents were informed about
440 surgical risks, unforeseen events still caused them to feel anxious, which supports the study by
441 Pomicino et al. (2018). Our participants also expressed that they stayed alert to listen for surgical
442 outcomes. Knowing the results from their children's surgeries allowed parents to relax since they
443 could be with their children again, and this was consistent with the findings from previous studies
444 (Harvey et al., 2013; Wei et al., 2016). Our participants expressed their worries regarding the side
445 effects of their children going under GA for the first time. They were the most anxious when they
446 saw their children losing consciousness (Berghmans et al., 2012). Parents were aware that it was
447 inevitable for their children to be in pain post-operatively and they felt distressed about it (Rabbitts
448 et al., 2017). However, since they had prior knowledge, they were well-prepared to tackle these
449 problems, showing the importance of addressing these concerns so that anxiety could be reduced.

450

451 Parents shared a few activities that they did to spend their time in the waiting areas as coping
452 strategies. They knew that they had to spend a lot of energy taking care of their children after surgery,
453 being already tired due to pre-operative preparation and worrying for their children. Parents
454 mentioned that these activities merely helped them to pass time quickly and did these things without

455 meaning. This coincides with the study conducted by Corsano et al. (2015) in which parents described
456 waiting in the hospital as feeling anxious and mundane. This can be an area of improvement whereby
457 waiting areas can serve with more purpose, which is similar to what was described in the study by
458 Henize et al. (2018) in which parents can enrich themselves with knowledge on community services
459 to help themselves and their children. In addition, art therapy can be introduced as it reduced parental
460 anxiety in a study by Robinson et al. (2018).

461

462 In this study, parents made some recommendations for the improvement of their waiting experienes.
463 Parents in this study described that the environments were not conducive to stay in for long hours.
464 Firstly, the seats were not the appropriate size for adults. They suggested that although it was a
465 children's hospital, adults should be the considered targeted audience when designing waiting areas.
466 A previous study suggested that parents wanted privacy and clearer directions (Henize et al., 2018),
467 which was lacking in this study hospital as described by our participants. Parents shared that updates
468 should be given more frequently during the operations so that they would feel less anxious. This
469 supports the study findings reported by Kwan et al. (2016), in which parental anxiety levels were
470 reduced with increased knowledge of what was happening during the operations. In addition, as
471 mobile phones have become an integral part of our lives, parents inevitably used their phones for
472 entertainment while waiting for their children's surgeries to be completed. Parents were in favor of
473 adopting mobile applications to receive surgery-related information. While some parents agreed that
474 it was useful to read in advance about their children's conditions, which is similar to the study by
475 Fortier et al. (2015), other parents desired for personalized information such as waiting times and
476 operation updates from such applications. Kwan et al. (2016) provided text messages updates, which
477 effectively reduced parental anxiety. Therefore, keeping parents informed about procedure details
478 and their children's conditions was important to them.

479

480 *Limitations of the study*

481 In this study, only English-speaking participants were recruited as the researcher was unable to
482 accommodate other languages due to her language abilities. Although Singapore is a multi-language
483 country, English is still the preferred and common language used in medical services. Non-English
484 participants may face different problems from English-speaking parents since they may face language
485 barriers, hence not having their needs met. In addition, the research only took place in one study site
486 and, hence, cannot reflect the phenomena of parents of children receiving surgery in other institutions
487 in Singapore. There might also be insufficient reflections of fathers' and ethnic groups' viewpoints
488 in Singapore since they were not adequately represented in this study. More parents of boys were also
489 surveyed compared to parents of girls. There was a short time frame to recruit participants, which
490 may have caused these limitations to occur.

491

492 *Practice Implications*

493 Our findings provide recommendations for practice changes to parental needs during the waiting
494 times of their children's surgeries, evaluating the design and layout of current waiting areas and
495 adopting more strategies to help relieve anxiety to provide better experiences while waiting for their
496 child's surgery to be completed.

497 A waiting area or room can be dedicated to parents whose children are in surgery. Rather than
498 spending time without purpose, activities such as art therapy can be placed in the room. The
499 environment should be presented as comfortable, with adequately cushioned chairs or sofas catered
500 to adults. In addition, there can be educational materials that raise awareness to the common services
501 that parents usually use during hospitalization journeys, such as financial counselling. A receptionist
502 in the waiting area may be helpful so that parents can have easy access to information regarding their
503 children. Updating parents via text messages on operation progress can be used to keep them
504 informed.

505 Hospitals can reevaluate and consider giving preoperative instructions earlier and also giving
506 preoperative instructions by mobile applications. As parents are currently notified through phone calls
507 on the day before the actual operations, they can implement providing information through written
508 forms, such as pamphlets, for easier reference. Instructions should include fasting instructions and
509 reporting times for surgeries. Early information dissemination will be useful so that parents are better
510 prepared for their children's surgeries.

511

512 *Implications for future research*

513 Various recommendations for future studies can be initiated based on the study findings. Since this
514 research was based in only one hospital, the same topic can be further studied at other sites to provide
515 more insights into the current research's results. This study can provide baseline data to compare
516 between different parental experiences at different hospitals. Future studies can recruit more fathers,
517 different ethnicities, and non-English speaking parents to have more comprehensive samples and
518 data. Future qualitative studies can focus on fathers' needs during waiting periods as they have to
519 manage their wives' and their worries despite being anxious for their children in surgery.

520

521 The findings found that parents have different needs that can help to improve their waiting
522 experiences. Hence, future studies can explore the effectiveness of interventions targeting on these
523 needs using a randomised controlled trial.

524

525 **Conclusion**

526 This research backs up current literature that presented parents' waiting experiences as only one of
527 the aspects in earlier papers. This study brought about new insights about parental waiting
528 experiences. Different factors influenced their waiting experiences. Parents desired improvements in
529 the quality of waiting areas, more frequent and timely updates, and the employment of mobile

530 applications for the dissemination of pre-operative information. These findings have implications for
531 future practice and research in the recommendations of a purposive waiting room, text message
532 updates, and mobile applications on surgical information.

533

534 **Acknowledgements**

535 The authors would like to thank all participants who shared their experiences with the research team.

536 The authors would like to thank the great support from the study hospital. We thank the National
537 University Health System Medical Publications Support Unit for assistance in the language editing
538 of this manuscript.

539

540 **Conflict of interests**

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

543

544 **Source of Funding**

545 This research was supported by the Business Finland [Grant number: 409/31/2018].

546

547 **Authors' contributions**

548 HHG, MP, WW and HWJ were responsible for the study design. HWJ, SN and SA collected the data.

549 HWJ and HHG performed the data analysis. HHG, MP, HWJ, SN, SA, TP and WW participated in
550 the interpretation of the results and critically reviewed the manuscript. All authors read and approved
551 the final manuscript.

552

553 **Availability of data and material**

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

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Table 1. Sociodemographic data of the parents that participated in the study (n = 11)

Parent's sociodemographic	n (%)
Gender	
Female	8 (73%)
Male	3 (27%)
Age (years)	
31 - 40	4 (36%)
41 - 50	4 (36%)
51 - 60	3 (27%)
Ethnicity	
Chinese	9 (82%)
Malay	1 (9%)
Indian	1 (9%)
Marital status	
Married	11 (100%)
Number of children	
1	2 (18%)
2	5 (45%)
> 2	4 (36%)
Highest education level	
Post-secondary and below	1 (9%)
Polytechnic	3 (27%)
University	7 (64%)
Occupation	
Employed	6 (55%)
Homemaker	5 (45%)
Monthly Income	
< S\$1,000	1 (9%)
S\$1,000 - S\$4,999	2 (18%)
S\$5,000 - S\$8,999	4 (36%)
S\$9,000 - S\$12,999	2 (18%)
S\$13,000 - S\$19,999	2 (18%)

Table 2. Details of the Sociodemographic Data of Each Participant (n = 11)

No	Relation to child (age in years)	Ethnicity (Nationality)	Marital status	Monthly Household Income (SGD)	Education level	Employment status (occupation)	Gender of child (age of child in years)	Duration of interview (hh:mm)
1	Mother (36)	Malay (Singaporean)	Married	<S\$1,000	Polytechnic	Homemaker	Male (8)	41:26
2	Father (43)	Chinese (Singaporean)	Married	S\$13,000-S\$19,999	University	IT Architect	Male (10)	34:34
3	Mother (40)	Chinese (Singapore Permanent Resident)	Married	S\$5,000-S\$8,999	Polytechnic	Homemaker	Male (5)	39:40
4	Mother (43)	Chinese (Singaporean)	Married	S\$5,000-S\$8,999	University	Teacher	Male (5)	25:22
5	Mother (55)	Chinese (Singaporean)	Married	S\$1,000-S\$4,999	Post-secondary	Homemaker	Female (16)	36:46
6	Mother (51)	Chinese (Singaporean)	Married	S\$5,000-S\$8,999	University	Doctor	Female (15)	48:35
7	Father (56)	Chinese (Singaporean)	Married	S\$13,000-S\$19,999	University	Education Officer	Female (15)	48:35
8	Mother (34)	Indian (Others)	Married	S\$9,000-S\$12,999	University	Homemaker	Female (5)	21:50
9	Mother (36)	Chinese (Singaporean)	Married	S\$1,000-S\$4,999	Polytechnic	Human Resource supervisor	Male (1)	24:30
10	Mother (41)	Chinese (Singaporean)	Married	S\$5,000-S\$8,999	University	Homemaker	Male (10)	35:53
11	Father (41)	Chinese (Singaporean)	Married	S\$9,000-S\$12,999	University	Teacher	Male (10)	35:53

Table 3. Details of each Participant’s child’s surgery

No	Surgery Type	Perceived complexity of surgery by parent
1	Circumcision	Complicated
2	Circumcision	Simple
3	Chordee Repair	Simple
4	Tonsillectomy	Simple
5	Osteotomy	Complicated
6	Corrective Knee Surgery	Complicated
7	Corrective Knee Surgery	Complicated
8	Bilateral ureteral repair	Complicated
9	Lateral Internal Sphincterotomy	Simple
10	Tonsillectomy	Simple
11	Tonsillectomy	Simple

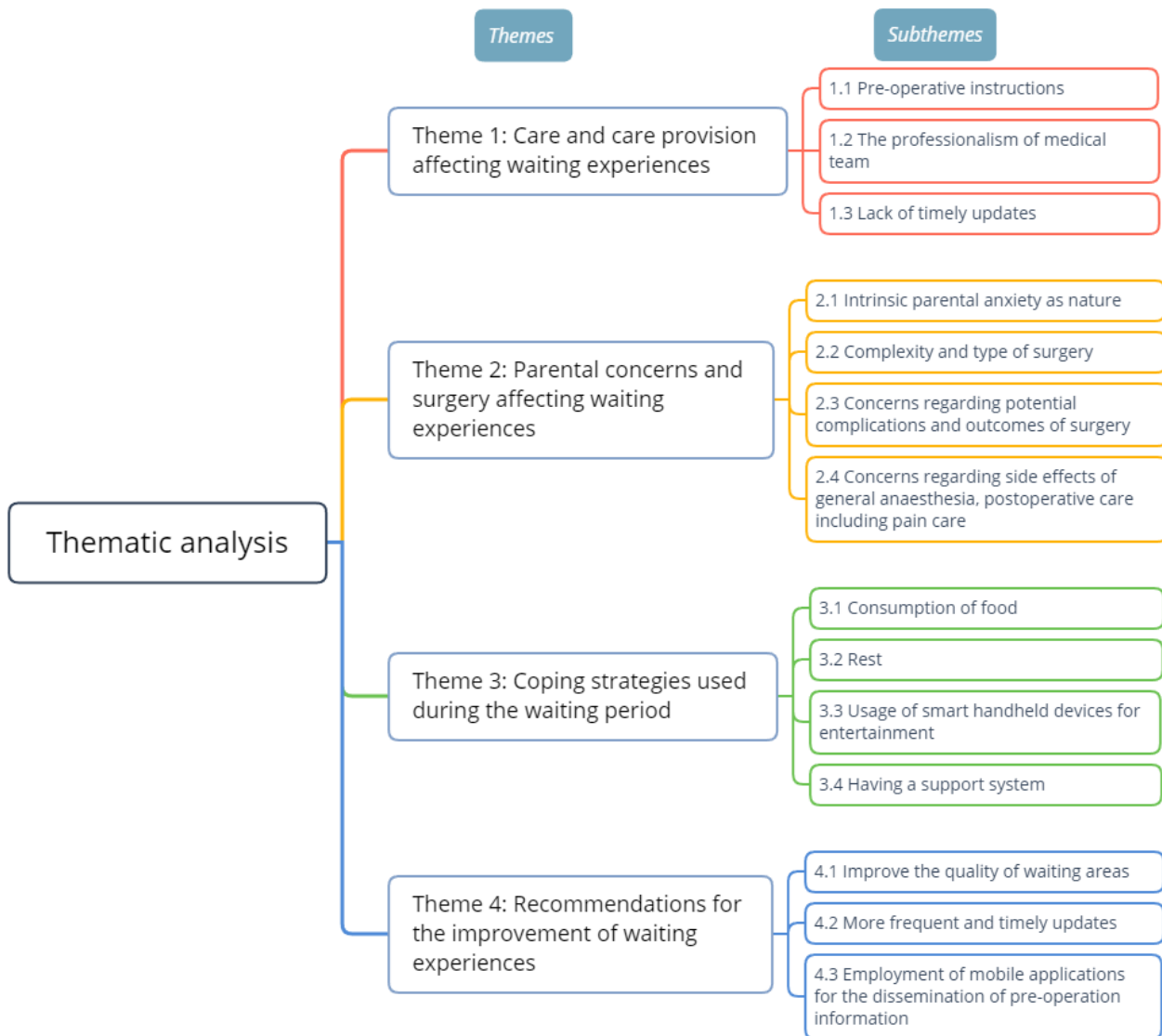


Figure 1. Themes and subthemes of the study (n = 11)