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**Staying safe at home: a qualitative study on parental perspectives toward child injury prevention at home in Singapore**

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## INTRODUCTION

Home is where the heart is. Ironically, the home is also where most childhood injuries happen, making child safety a global public health challenge.<sup>(1,2)</sup> In Singapore, the prevalence of childhood injury is 7.7-19.5%, with childhood injuries the leading cause of death in children between 5-14 years old.<sup>(3,4)</sup> Previous reviews suggest that home injuries constitute 45-91% of childhood injuries and that 10-37% of children's emergency department visits in Singapore are injury-related.<sup>(3,5)</sup>

A 2015 Singapore Medical Journal editorial on childhood injury emphasised that prevention is better than cure.<sup>(6)</sup> Other studies have suggested that educational programmes on home safety and equipment may reduce injury rates, especially when relationships are formed between healthcare professionals and parents.<sup>(4,7-12)</sup> Physicians themselves have highlighted the need to champion injury prevention.<sup>(13)</sup>

Effective injury prevention requires understanding factors which influence behaviour. Previous studies have cited facilitators of injury prevention, such as safety equipment, learning from experience and education, and identified barriers including lack of knowledge, parental fatigue and equipment cost.<sup>(14-16)</sup> A Singapore study revealed that caregivers had poor knowledge on home safety, suggesting a need for caregiver education.<sup>(17)</sup> While epidemiology, risk factors and prevention strategies have been studied, and indeed the importance of child safety advocacy is clear, parental perspectives and experiences are less frequently explored, particularly within an Asian context.

In response, this qualitative research study aims to understand these perspectives, so that health policy can be better designed to address knowledge gaps, with the long-term goal of reducing childhood injuries in Singapore homes.

## **METHODS**

This study used an inductive qualitative research and thematic analysis approach to evoke data about parental perspectives regarding home injury prevention. Previous studies have similarly employed semi-structured interviews with open-ended questions to build rapport and encourage honest discussion, with good results.

An interview guide (Appendix) was developed to address research objectives based on a review of current literature, with suggested questions exploring parents' experiences, knowledge and beliefs. This guide provided a framework but allowed flexibility in conversation.

Recruitment and interviews took place from October to December 2019 at the Children's Emergency Department of KK Women's and Children's Hospital (KKH), Singapore. A total of fourteen parents and/or caregivers who sought medical attention for non-injury related issues for their child were recruited. Inclusion criteria were parents/caregivers of a child aged between 0-18 years old. Written informed consent was obtained from participants.

Interviews took place in a quiet room within KKH Children's Emergency. Participants were approached only after their children had been seen by their treating physician. Interviews were conducted in English, however some participants referred to colloquial terms in Chinese and Malay. Interviews were audio-recorded, anonymised and transcribed verbatim. Demographic data was collected using questionnaires.

Each participant was labelled with a 3-digit code. Interview transcripts were then analysed by two reviewers to identify themes and interpret their meaning. This process continued until the point of data saturation i.e. when no new themes emerged. Iterative data analysis was conducted after each interview looking for new themes to explore in later interviews. Throughout, the research team held discussions to review findings and refine the interview approach.

Institutional review board approval was obtained (SingHealth IRB Reference Number 2019/2799).

## RESULTS

The characteristics of parents/caregivers who participated in the interviews are described (Table I). Thematic analysis revealed two major themes. These and their sub-themes are presented with supporting interview quotes.

**Table I. Demographic data of study participants (n = 14)**

<b>Demographic</b>	<b>n (%)</b>
<b>Relationship to child</b>	
Parent (s)	13 (92.9%)
Grandparent	1 (7.1%)
<b>Gender of caregiver</b>	
Male	3 (21.4%)
Female	11 (78.6%)
<b>Race</b>	
Chinese	4 (28.6%)
Malay	4 (28.6%)
Indian	5 (35.7%)
Others	1 (7.1%)
<b>Highest education level of caregiver</b>	
Primary school and below	1 (7.1%)
Secondary school	3 (21.4%)
Diploma holders	6 (42.9%)
Degree holders	4 (28.6%)
<b>Number of children in the household</b>	
1	7 (50.0%)
2	5 (35.7%)
3	1 (7.1%)
4 or more	1 (7.1%)

### **Theme 1: Current awareness, mindsets and practices**

The first major theme was the current awareness regarding child injury prevention at home and actions taken to keep the home safe, from which three sub-themes emerged.

***Injuries at home do happen and can be major or minor, but most are minor***

What do parents know? From our interviews, it was clear that parents were aware that injury at home does happen. Injuries cited included falls from furniture, slipping on wet surfaces, scalds, injuries from table corners, door hinges or sharp objects, or accidental medication ingestion.

Without prompting, parents categorised injuries into major and minor. Minor injuries, such as "cuts", "bruises", "knocks" and "falls", were frequent but did not cause much anxiety. Major injuries, such as falls that caused "concussion", "vomiting" or injuries that resulted in "going to the hospital", occurred less frequently and were considered serious if they required medical treatment.

*"Not serious ones, but I think he's fallen down from his baby cot twice." (005)*

*"More serious injuries [with] vomiting, must bring to hospital." (008)*

*"Like knock on head, concussion – I always picture that kind of very serious thing, so I try my best to prevent it." (003)*

***Injury at home is preventable***

A clear theme that emerged was that most injury at home is preventable. Nevertheless, a sense of resignation prevailed that some injuries were inevitable despite prevention strategies.

*"Injury can be prevented at home. Just be alert. But sometimes difficult, with 7 of them at home." (012)*

*"You can keep them 90% safe. Those accidents, no choice. You can't really control." (011)*

In recounting incidents, parents felt that injuries happen unexpectedly and hence were not prepared. However, an overarching theme was that the responsibility of preventing injury lies with adult caregivers.

*"It could have been prevented honestly – it's just that until it happens, I didn't really think that it would happen to me. I was overconfident." (001)*

*“Injury can be prevented at home. It’s up to the mummy.” (010)*

*“I think it is all the adults in the family. They have a responsibility to keep an eye on the kids.” (003)*

### ***Parents actively take measures to keep the home safe***

What are parents doing? Given that most parents know that injury at home does happen and is preventable, a logical sub-theme that emerged was that parents do take safety measures, falling into three main categories.

The first major category encompassed structural changes and child-proof features, such as padding for table corners, anti-slip mats and safety gates. To prevent falls from the bed, one parent had her children sleep on a mattress on the floor instead. Another parent explained that by reducing furniture altogether, injury risk was minimised. One strategy cited by parents was to keep dangerous items, including sharp objects, hot food and medication, out of reach. The need to be careful regarding toys with small parts was also raised, highlighting the concern for accidental choking. An unusual item mentioned was matches for prayer candles. In this situation, the parent mentioned that as praying was necessary, it was important to ensure the matches were kept away.

*“We grill our windows, keep it locked. Even our toilet, I installed a lock because I was scared she will go in and play with water.” (001)*

*“The table corners we put sponge, wherever we find [that] might potentially cause damage to kids.” (002)*

*“I bought the plastic gate for the kitchen. If they want to go in, they can only do so when I open the gate.” (003)*

*“He will want to open the drawers. But we buy plastic lock.” (008)*

*“Then the toilet, when we do the tiles, try to have anti-slip.” (011)*

*(Child) "That's why I can't reach the scissors at home."*

*(Parent) "Sharp items like knife or scissors should be kept and not easily reached by the kids." (002)*

*"I won't let them come close to the table when I have food on it, I don't want hot soup to spill on them." (003)*

*"We take precautions at home...put medicine up high." (008)*

*"Even though the toys when you buy say [for] '1-3 years old', but when he plays with it, the tyre missing already. They tend to bite and play. [Worried about] choking." (014)*

To obtain information, parents turned to family and friends for advice, learning from past experiences. Other sources included online resources such as Google, Facebook and Instagram, or news reports.

The second category of safety measures taken by parents fell under the umbrella of education. 'Show-and-tell' was a method used to teach children about dangerous things around the house. It was more common for parents to use a nurturing approach, compared to the traditional punitive approach.

*"We will teach him, show him how to use it in a safe way." (011)*

*"When the water is boiling, I will teach them – 'See the smoke? Hot! Don't touch! Remember last time you felt it?'" (010)*

*"I also scold him, take [the] rotan (Malay for 'rattan cane'). Sometimes I beat him on the hand. Punish him a bit, if not... [it will] repeat again." (007)*

The last category of measures included adjustment of schedules to suit their children, reiterating the belief that responsibility for injury prevention at home lies with parents. Parents

capitalized on times when children were asleep to tend to their personal needs. Furthermore, working parents had to coordinate work schedules to ensure the child was always looked after.

*“Early morning I shower. When they sleep I shower.” (007)*

*“You get up early to get your things done, before the whole house starts to go crazy. When they sleep, that’s when we have our own time.” (010)*

*“My husband and I, both are working. So, morning I will take care of her, evening he will take care. When I come home, both will do.” (013)*

## **Theme 2: Barriers to injury prevention at home**

Where does it all go wrong? As alluded to earlier, ensuring the child’s safety was believed to be the responsibility of adult caregivers, and always keeping an eye on the child was a challenge faced by many parents. Thus, the second major theme that emerged was the barriers to injury prevention. We identified three main challenges that made it difficult for parents to keep an eye on their children.

### ***Child’s personality, behaviour and activity level***

One contributing factor was that children are active. This innate nature of children was compounded by having more than one child in the family. Conversely, it was occasionally pointed out that there was benefit in older children looking after the younger children, when the age gap was wider.

*“These guys are very active. You put a sticker [to cover the electric socket] and you think it’s safe. But you come back and see that they have pulled it out.” (002)*

*“I think the more kids you have, the more difficult. Before when we had only one, we can focus on him. But with both of them running around, it’s very difficult.” (009)*

*“The first one will help take care of the younger ones.” (012)*



### ***Changing developmental milestones***

Another barrier was evolving developmental milestones, requiring parents to pre-empt what their children will be capable of doing next and preventing it before it happens.

*“He doesn’t know how to open it (the kitchen door). I know as he gets older, he will know. As he grows taller, there are certain areas that he’s able to reach for. By then we will need to change some arrangement.” (005)*

*“I remember for the wall socket – I had a tape to cover it. Until my children were 2-3 years old, they started to know how to take it off. Then it didn’t work.” (003)*

*“For now, [safety locks are] not something they can open. In a few years, they will be able to open. Then we need to change the location again.” (009)*

### ***Cost of protective measures***

From our interviews, parents knew the importance of putting safety measures in place. While most items were considered accessible and affordable, cost was occasionally raised as a concern. Nevertheless, most parents were willing to invest in expensive items, suggesting priority in keeping their child safe.

*“I got sponge mats – with ABCs and numbers. That’s considered quite expensive. But I think it is worth it to invest.” (003)*

*“The stuff nowadays is quite branded and pricey. I think many parents are willing to invest. For the safety material.” (004)*

*“It’s easy [to find]. Those kids stores selling toys – all have.” (011)*

## **DISCUSSION**

In this thematic analysis of interviews exploring the perspectives of parents regarding injury prevention at home, we showed that in Singapore, parents are aware that injuries at home do

happen and believe they are preventable, in line with previous studies.<sup>(17)</sup> While all parents interviewed were able to cite injury prevention measures taken, incidents remained inevitable, partly due to the difficulty parents had keeping an eye on their children. Barriers included children's innate active nature, changing developmental milestones and the cost of safety measures. Interestingly, while most parents knew of common and minor risks at home, fewer expressed awareness of the risks of sarongs or baby walkers, or the more serious fatal possibilities of suffocating or choking. This highlights possible knowledge gaps and the need for education in these areas.

Worldwide, studies have examined facilitators of and barriers to child injury prevention. Facilitators include use of safety equipment, learning from other parents' experiences and educating children about injury.<sup>(15)</sup> Home visits with provision of safety equipment and involving the community, which normalises safety practices, have also previously been shown to be effective.<sup>(18)</sup>

A systematic review by Smithson et al found barriers to child injury prevention at organisational, environmental and individual levels.<sup>(14)</sup> At the organisational level, effective provision of safety equipment was a barrier due to the need for regular maintenance. This was not apparent in Singapore, given the ease with which parents obtained and installed child-proof features. At the environmental level, a barrier of living in rented accommodation was limited home modification. Again, this was not a common theme in our interviews, as interventions in Singapore tended to be temporary, such as sponge pads or anti-slip mats, compared to permanent fixtures such as smoke alarms.

An overarching concept we found was that the responsibility for child safety lies with caregivers. While some feel that this entails "common sense", many turn to other resources to obtain information. Similar to previous findings,<sup>(17)</sup> the main source was friends and relatives, followed by online resources and educational programmes. Doctors and healthcare professionals

were the least consulted resource, but interestingly, were deemed to be the most trustworthy. Despite the availability of information, our interviews revealed that misconceptions of prevention do exist, such as covering electrical sockets with stickers or padding cot sides. This highlights the need to raise awareness, with healthcare-led online articles or seminars as potential avenues.

In the long term, more needs to be done on a larger scale, drawing from worldwide examples. An Australian study found an inverse relationship between socioeconomic status and child injury, with children of lower socio-economic status experiencing higher rates of injury.<sup>(19)</sup> This reinforced the importance of implementing policy changes to address socioeconomic gaps. Another study in the United States found that paramedics were effective in identifying common paediatric injury risks at home and providing safety education,<sup>(20)</sup> while a Chinese study concluded that interventions for pre-school children were effective.<sup>(21)</sup> Perhaps this highlights the emerging role of other professionals – within healthcare and beyond – in promoting child safety.

Our study provides a window into the perspectives of parents in Singapore and serves as a springboard for future health policy and initiatives in this important field. Our eventual goal is for health policy and prevention strategies to be better designed to address the challenges parents face, thus reducing the morbidity and mortality from childhood injuries in the home.

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**APPENDIX****Interview guide**

Personal experience/ starter questions	<ul style="list-style-type: none"> <li>▪ Has your child experienced an injury at home?</li> <li>▪ Could you describe the events that led to the injury at home?</li> <li>▪ What was the cause for the injury?</li> <li>▪ How did you feel about the injury happening?</li> <li>▪ Explore different categories of causes - legal, environmental, financial (safety equipment), individual (maternal fatigue, supervision, development), socio-economic.</li> <li>▪ How do you think the injury could have been prevented?</li> </ul>
Parental knowledge/ beliefs	<ul style="list-style-type: none"> <li>▪ What are your views regarding injury prevention at home? What do you think of home safety for children?</li> <li>▪ Whose role is it to prevent injury at home?</li> <li>▪ What kind of injuries can happen at home?</li> <li>▪ How often do you think injuries at home occur?</li> <li>▪ Who taught you how to prevent injury at home?</li> <li>▪ How much control do you have over prevention of injury at home?</li> </ul>
Facilitators	<ul style="list-style-type: none"> <li>▪ How have you tried to anticipate injury risks at home?</li> <li>▪ What are some measures you and your family have taken to protect your child at home?</li> <li>▪ How did you learn to carry out these measures?</li> <li>▪ How have you changed your house – your furniture, structure, practices?</li> <li>▪ Do you know of friends who have taken measures at home to prevent injury?</li> <li>▪ If they are still stuck or need probing – interviewer can provide examples (such as child gates at staircases, anti-slip mats, bed railings, window grilles, sharp corners, electricity points, where they store medication/ detergents/paint thinners) and explore their opinions or experiences pertaining to these examples.</li> </ul>
Barriers	<ul style="list-style-type: none"> <li>▪ What were some challenges you faced in trying to prevent the injury?</li> <li>▪ How did you overcome these challenges?</li> <li>▪ If you could turn back time, what would you have done differently to prevent the injury?</li> <li>▪ Possible avenues to explore – knowledge deficits, child behaviour, cultural norms, inconvenience, cost, parental anticipation, multi-tasking, distractions, other children.</li> </ul>
Suggestions/ strategies	<ul style="list-style-type: none"> <li>▪ What can be changed at home to prevent the injury from happening again?</li> <li>▪ What programme/ strategy/ intervention by the hospital (or school, or government) would be helpful in aiding you in injury prevention at home?</li> <li>▪ Possible avenues to explore – home adaptations, healthcare personnel, education, lawmakers.</li> <li>▪ Have you tried to teach your child about injury risk?</li> <li>▪ How can we increase public awareness?</li> </ul>