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Parental Differences in Knowledge, Perception, and Safety Behaviors Regarding Home Injuries in an Urban Malaysian District

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Abstract

Background: Parents play an essential role in the prevention of home-related injuries among children. Traditionally, mothers provided direct overall care, whereas evidence on fathers' roles in children's injuries is limited. This study assesses the differences between parents of children attending kindergarten regarding their knowledge and perception of home injuries and safety behaviors.

Methods: A cross-sectional study was conducted from January to April 2018 in 10 private kindergartens in the Selangor district in Malaysia. Self-administered questionnaires on sociodemographic data, knowledge of home injuries, perceptions toward home injuries, and safety behaviors at home were distributed. Descriptive and bivariate analyses were done to determine associated factors.

Results: A total of 147 fathers and 182 mothers participated. Differences in parental knowledge, perception, and safety behaviors were not statistically significant ($p > 0.05$). A poor correlation existed between both knowledge ($r = 0.099$, $p = 0.073$) and perception ($r = 0.207$, $p < 0.001$) with behavior scores. Most parents regarded injuries involving children at home as unavoidable and perceived mild injuries as the norm. However, most parents agreed that monitoring children's activities could reduce injury risk.

Conclusions: Healthcare practitioners should promote safe behavioral practices to both parents equally to improve their children's knowledge and perception of home injuries.

Keywords: children, home injury, knowledge, parents, perception

INTRODUCTION

Unintentional injury among children is a public health concern as it causes significant morbidity and mortality, particularly among young children worldwide.¹ In 2016, the Malaysian National Health and Morbidity Survey estimated that nearly two million children below five years old sustained some form of injury, with a higher prevalence among children aged 0–4 years. The majority (80.5%) of these accidents occurred within the house compound.² The most commonly reported injuries are falls, lacerations, burns, choking or suffocation, and drowning.³ In 2017, statistics on the causes of death in Malaysia listed accidental drowning and submersion as the fifth leading cause of death for those under five years old.⁴

Surprisingly, it was reported that mothers accepted home injuries as everyday phenomena during the child's development.⁵ Despite this, specific injuries resulted in

long-term complications, such as permanent disability, and some even led to death. According to WHO, 830,000 children die from such injuries annually, and many more sustain variable degrees of disability, where most injuries are unintentional.⁶ Many studies have been conducted to evaluate factors contributing to injury occurrence among children and preventive practices. In addition to commonly studied sociodemographic factors, other determinants identified in these studies include home environment, parental knowledge of home injuries, and parental perceptions or attitudes toward home injuries.^{7–10}

Knowledge of unintentional childhood injuries is an essential contributing factor to prevent home injuries. Parents with a better understanding establish better safety measures, thereby reducing such injuries among their children.⁹ Younesian and colleagues investigated the contributory factors of home injuries. They concluded that improving mothers' level of knowledge and their attitudes toward child safety were significant factors in preventing injuries.¹⁰ Parents can prevent injuries by providing a safe home environment for children by reinforcing practical home safety measures. Thus, increasing parents' awareness and educating

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young parents on safety practices, particularly at home, are essential steps to retard the impact of unintentional injury at home.³

Mothers are traditionally seen as the main person involved in providing direct care to their children relative to the father. A father's role may involve interactive play and more willingness to engage in risk-taking opportunities associated with injury.¹¹ Nonetheless, there are limited studies to determine the father's role in child injury. A survey by Damashek *et al.* reported that toddlers tend to be involved with a higher level of physical activities under their fathers' care, thus increasing their risks of unintentional injury.¹²

This leads to the question: is the paternal role in children's home injury prevention comparable to the maternal role? Strategic planning to prevent home injuries among children, understanding the knowledge, perception, and safety practices of home-related injuries among fathers is as vital as that among mothers.

METHODS

Study design

This cross-sectional study was conducted at ten private kindergartens in the Hulu Langat district, one of the largest districts in Selangor, Malaysia, from January to April 2018. The sample size was determined using StatCalc Epi Info version 7 (Epi Info™, CDC). The minimum required sample size was 333, which was calculated based on the percentage of mothers' knowledge and estimated the proportion of fathers with the correct response taken from a previous study by Nadeeya *et al.* to reach a precision of 0.05 with a 95% confidence level.¹³ An additional 10% was factored in for incomplete responses.

Study population

The kindergartens were randomly selected by a multi-stage cluster sampling using an online numbering system. There are six sub-districts in the Hulu Langat district, with 60 registered kindergartens. Two kindergartens were randomly selected for each sub-district. The owners of the selected kindergartens were asked to participate in this study. If the owner refused to participate, another kindergarten from the same sub-district was randomly selected. The biological parents of the children were invited to participate in the study. The caregivers or guardians of the children other than parents, i.e., grandparents and babysitters, were excluded.

The questionnaire used a designated color for each parent (blue for fathers & pink for mothers). Only one parent from each child was given the questionnaire to minimize the possibility of data contamination between parents. The receiver of the questionnaire was reminded of the study's intention and not to discuss the answers with their spouse/partner. If parents had more than one

child in the kindergarten, they would only receive one questionnaire. Every other child will receive a questionnaire for either the mother or father using their attendance sheet.

Study questionnaire

A bilingual questionnaire was used to collect the data. Each respondent was given one week to complete the questionnaire. Four sections were to be answered in each questionnaire. The first section consisted of sociodemographic data, including date of birth, gender, ethnicity, religion, marital status, level of education, occupation, total household income, and relation to the child.

The second and third sections were on knowledge and perception of home injuries, respectively. These sections were adapted from the previous study by Nadeeya *et al.*¹³ The original questionnaire was in the Malay language. The back-to-back translation was done by four independent certified translators. Thereafter, face validity was performed among 10 parents. The second section on knowledge of home injuries consisted of 16 items. There were three options for each item in both sections: "Yes," "No," or "Unsure." A "Yes" response was given a score of 1 and a score of 0 for a "No" or "Unsure" response. A total score for the section was obtained by adding up the scores for each item. The total knowledge score ranged from 0 to 16. Higher scores reflected better knowledge of the respondent.

The third section was on the perceptions of home injury consisting of 11 items to be answered on a Likert scale. The options were "Strongly disagree," "Disagree," "Neutral," "Agree," and "Strongly Agree." The negative item was reversely coded. The total perception score ranged from 1 to 55. Higher scores reflected a better perception of the respondent.

The fourth section was on safety behavior at home. Items in the safety behavior sections were developed and adapted from previous studies by Halperin SF *et al.*, Lee LK *et al.*, and Mulvaney C *et al.*¹⁴⁻¹⁶ It underwent content validity through discussion with one senior family medicine specialist and one public health specialist. There were six items in that section. Respondents selected each item as "Almost always," "Often," "Sometimes," "Seldom," or "Almost never."

Similarly, they were answered on a Likert scale. The total safety behavior score ranged from 5 to 25. For safety behavior practices, the lower scores reflected better safety behavior.

Subsequently, a pilot test was done among 40 parents from one kindergarten for the reliability of the questionnaire. The Cronbach alpha for the internal consistency was 0.65, 0.60, and 0.56 for the knowledge,

perception, and behavior domains, respectively. Samples in the pilot study were excluded from the actual sample size.

Statistical analysis

Data were analyzed using the Statistical Package for Social Sciences software, version 23.0. The respondents' sociodemographic characteristics, knowledge, and perception scores were reported as descriptive statistics. Mann-Whitney U and Kruskal-Wallis tests were used to establish the association between knowledge and perception scores with the sociodemographic variable. The Spearman correlation was used to establish the relationship between knowledge and perception with safety behavior. A *p* of less than 0.05 was statistically significant.

This study received ethical approval from the Medical Research Ethics Committee of the National University of Malaysia. Permission to collect data from the kindergarten was sought from the owners. Consent to use the questionnaire was also obtained from the original author. All participants had signed a written consent before their participation.

RESULTS

A total of 18 kindergartens were asked, with eight of them refusing to participate. Altogether, a total of 329 respondents completed the questionnaire. One hundred forty-seven were fathers, and 182 were mothers. The age of respondents ranged from 22 to 61 years old, with a median age of 36 (IQR = 7.0) years. The majority of

respondents were Malay (93.9%), married (97.9%), received tertiary education (62.9%), and were employed (80.5%). Only 196 participants disclosed their income, with a median income of RM 5000 (IQR 4600). All background characteristics were comparable between the groups, except fathers were higher in employment numbers than mothers (Table 1).

The respective minimum and maximum scores for the respondents' knowledge, perception, and behavior domains are presented in Table 2. The knowledge, perception, and behavior scores were almost similar between fathers and mothers. Mothers scored a slightly higher minimum score for reporting safety behaviors at home compared with fathers, with a score of 14 and 11, respectively. All three scores were not significantly different between the two groups (*p* > 0.05).

A correlation test was done to study the relationship between knowledge and perception with behavior scores. We found a poor correlation between knowledge and perception with behavior scores, with an *r* of 0.099 (*p* = 0.073) and 0.207 (*p* < 0.001) for knowledge and perception, respectively.

The scores for knowledge and perception were compared with demographic characteristics (Table 3). There was no correlation between the parents' age with knowledge and perception scores with *r* = 0.051 and *r* = 0.041, respectively. Also, the Malay ethnic group and parents who received a tertiary education had a significantly

TABLE 1. Background characteristic of parents (N = 329)

Characteristics	Fathers (n = 147)	Mothers (n = 182)	Overall Respondents (n = 329)
Median Age (IQR)	37 (8.0)	36 (7.0)	36 (7.0)
Ethnic			
Malay	141 (95.9)	168 (92.3)	309 (93.9)
Non-Malay	6 (4.1)	14 (7.7)	20 (6.1)
Marital Status			
Married	144 (98.0)	178 (97.8)	322 (97.9)
Single Parents	3 (2.0)	4 (2.2)	7 (2.1)
Level of Education			
Primary	2 (1.4)	3 (1.6)	5 (1.5)
Secondary	53 (36.1)	64 (35.2)	117 (35.6)
Tertiary	92 (62.6)	115 (63.2)	207 (62.9)
Employment			
Employed	144 (98.0)	121 (66.5)	265 (80.5)
Unemployed	3 (2.0)	61 (33.5)	64 (19.5)
Socio-economic status (RM) (n = 196)			
Median Income (IQR)	5,150 (4761)	5,000 (4500)	5,000 (4600)
Low (< 4,930)	15 (10.2)	17 (12.0)	32 (12.1)
Moderate (4,930-10,509)	61 (41.5)	72 (50.7)	133 (50.4)
High (> 10,510)	46 (31.3)	53 (37.3)	99 (37.5)

higher median score for knowledge and perception ($p < 0.010$). In addition, family income showed a significant association with perception score, where a higher income had a higher perception score ($p = 0.027$).

TABLE 2. Knowledge, perception, and behavior score of respondents (N = 329)

	Fathers (n = 147)	Mothers (n = 182)	<i>p</i>
Knowledge			
Min	5	6	
Max	16	16	0.293 ^a
Median (IQR)	11 (3.0)	11 (2.0)	
Perception			
Min	30	30	
Max	49	49	0.614 ^a
Median (IQR)	38 (6.0)	38 (5.0)	
Behaviour			
Min	11	14	
Max	25	25	0.990 ^a
Median (IQR)	21 (4.0)	21 (4.0)	

^a Mann-Whitney U test

TABLE 3. Association between knowledge and perception score with sociodemographic characteristics

Characteristics	Knowledge Score		Perception Score	
	Median (IQR)	<i>p</i>	Median (IQR)	<i>p</i>
Median Age	11 (3)	$r=0.051^a$ 0.361	38 (6)	$r=0.04^a$ 0.455
Ethnic				
Malay	11 (3)	< 0.01 ^b	38 (6)	<0.01 ^b
Non-Malay	10 (3)		36 (5)	
Marital Status				
Married	11 (2)	0.618 ^b	38 (5)	0.456 ^b
Single Parents	12 (3)		38 (5)	
Education Level				
Primary	9 (2)	<0.01 ^c	31 (8)	<0.01 ^c
Secondary	11 (3)		37 (5)	
Tertiary	12 (3)		38 (6)	
Employment Status				
Employed	11 (3)	0.572 ^b	38 (6)	0.894 ^b
Unemployed	11 (4)		38 (5)	
Income				
Low	11 (2)	0.125 ^c	37 (7)	0.027 ^c
Moderate	11 (3)		37 (5)	
High	11 (2)		39 (7)	

^aSpearman correlation

^bMann-Whitney U test

^cKruskal-Wallis test

Overall, parents' knowledge was considerably good since only four items in the knowledge domain had less than half of respondents answering correctly. Five items had over 90% of fathers and mothers giving the correct response (Figure 1). The items with poor correct responses for both groups were how to perform cardiopulmonary resuscitation (CPR) in children (24%), vitamins as a common source of poisoning in children less than six years old (33.1%), knowledge regarding the appropriate age for a child to bathe alone (38.9%), and knowledge about the suitability of using a baby walker at home (45.3%).

Four items in the knowledge of home injury section showed significant differences between fathers and mothers ($p < 0.05$). The items were safe to play with coins, the safest sleeping position for the baby, using a baby walker, and knowledge about performing CPR in children. More mothers (51.1%) had responded correctly regarding using a baby walker, compared with fathers (38.1%). In contrast, 61.2% of fathers knew the safest sleeping position for babies compared with 47.8% of mothers.

Figure 2 shows the parents' responses to the perception of home injuries. The majority of the respondents agreed that mild injuries are regular occurrences among children. Almost half of the mothers (47.3%) agreed that injuries could not be avoided, whereas 40.1% of fathers disagreed. Despite this, both parents did not agree that falls and wounds are less dangerous than poisoning and drowning. More than half of the parents (51.4%) thought their children had a low potential for injuries at home. The majority of parents (91.2%) opined that monitoring children's activities would be helpful to reduce injury risk. Also, 62.3% of parents viewed that using safety equipment could help reduce home injuries among children. More than two-thirds of parents disagreed that it is safe for older siblings who are less than 12 years to supervise younger children. Most parents (68.1%) would agree to practice injury prevention.

Both parents generally had acceptable self-reported safety behaviors regarding safety behaviors, as more than 70% of respondents responded appropriately for all items (Figure 3). The term *appropriate* response mentioned above reflects the appropriate correct answer given by the respondents to the given statement, whereas an answer of "very often" and "always" for the *true/positive* statements, or "rarely" and "never" for the *negative/false* statements. Mothers reported more appropriate safety responses than fathers, except for two items holding the child when handling hot water and storing sharp objects in a locked cabinet.

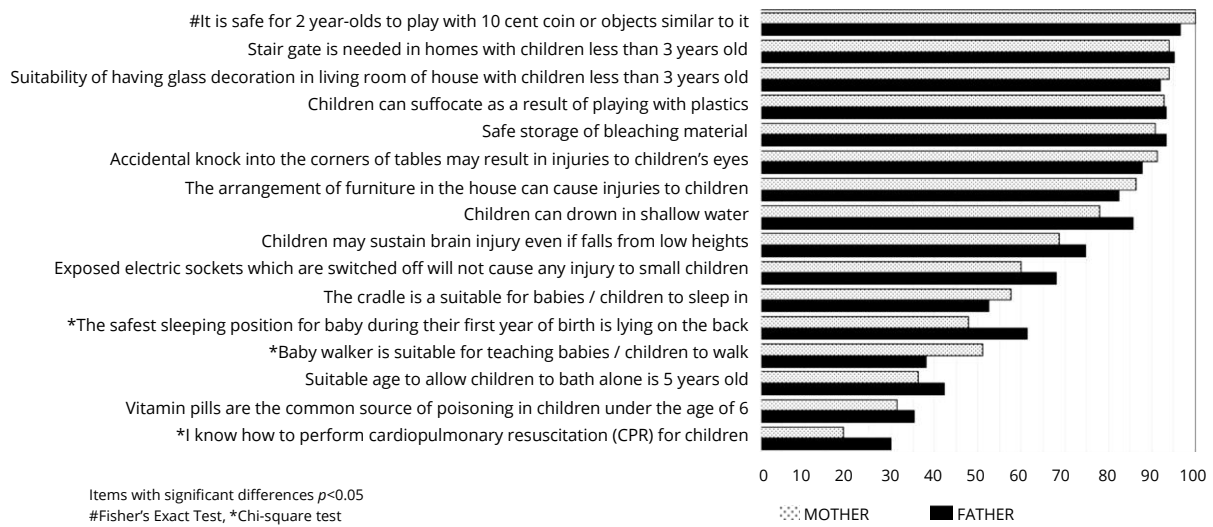


FIGURE 1. Percentage of correct responses on knowledge of home injuries in children

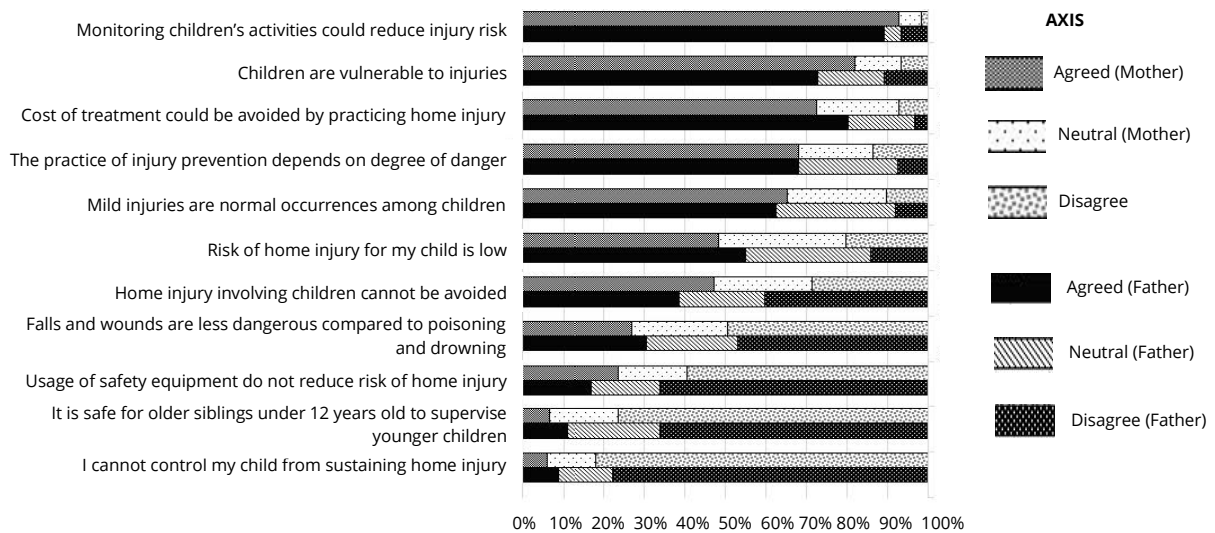


FIGURE 2. Percentage of responses on the perception of home injuries

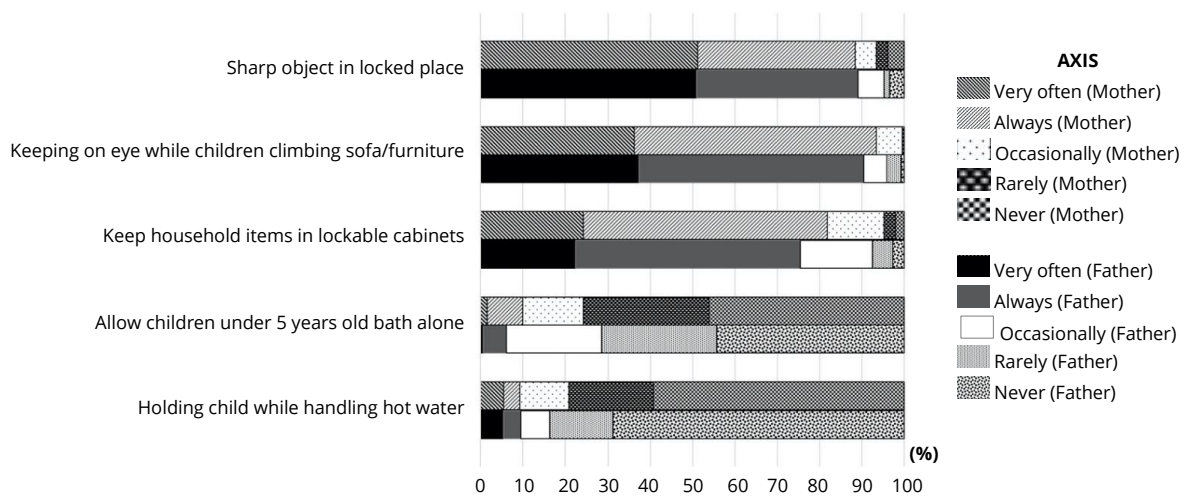


FIGURE 3. Percentage of Likert scale responses on safety behaviors in the household

DISCUSSION

In this study, fathers and mothers were compared to identify the possible factors that could be improved in planning for injury prevention strategies. The total number of respondents in our study was 329.

Our study found that Malay ethnicity had higher knowledge and perception scores on home injury among children. This was probably due to the homogeneity of the respondents. We also found that parents with a higher level of education had better knowledge of home injuries and higher perception scores. However, a study in Iran contradicts our results, whereby they found that higher educated mothers as a predictor of poor knowledge.¹⁷ This difference was because higher educated mothers worked and had less involvement in caring for their children. For the perception of home injury, higher income was associated with better scores. Perception is the process of attaining awareness or understanding of sensory information.¹⁸ It may be postulated that higher income parents have better and more conducive home environments that can stimulate thinking. However, further research needs to be conducted to support this hypothesis.

In this study, fathers had an overall total knowledge and perception score for home injuries comparable to that of mothers. However, on further analysis of individual knowledge items, four were associated with the parental role (fathers and mothers). The items were safe to play with coins, the safest sleeping position for the baby, the usage of baby walker, and knowledge to perform CPR in children. Despite the previously limited research on the paternal role, the findings of this study indicated that fathers in this century participated more in caring for their children. This increases their awareness of the knowledge and perceptions related to home injuries.

Knowing about safety does not always translate into good practices.¹⁹ Our study found no correlation between knowledge and perception score of home injuries toward self-reported safety behaviors. Knowledge and perception are among predictors that are mainly studied for preventive measures for all injuries. Our findings differ from Ramdzan *et al.*, who studied the association of knowledge with their corresponding safety practices.¹⁹ They found that, generally, mothers had better safety practices in conjunction with better knowledge. Nevertheless, both parents may not have felt that these injuries were preventable rather than an inevitable part of growing up.²⁰ Despite the above findings, the importance of injury prevention education should not be undermined.

Limited data compare parents concerning injury preventive measures regarding specific types of injuries. Thus, little is known about the potential factors contributing to the findings of why more fathers had

better knowledge of a baby's sleeping position and the better knowledge of mothers concerning the use of baby walkers. Since mothers are the more predominant caregivers, they may have their own experiences or have heard about the adverse effects of using baby walkers, preventing their use.

Almost two-thirds of fathers and half of mothers agreed that using infant walkers is suitable for teaching children to walk. The findings were consistent with a previous study in Kuwait, which found that one of the main reasons parents used baby walkers was to promote walking.²¹ However, it is essential to note that using baby walkers caused home injuries. It was reported that from 1990 to 2014, approximately 230,676 children who were less than 15 months old were treated for infant walker-related injuries in the United States emergency departments, primarily for head or neck injuries.²² Besides, nearly half of United Arab Emirates families using baby walkers had at least one child who sustained an injury, averaging two injuries per family. In the same study, the most frequent external cause of a potentially harmful baby walker incident was hitting a hard object, followed by flipping over, accessing dangerous items, and falling down stairs.^{19,23} Given these occurrences, it is crucial to create awareness among parents regarding baby walker-related injuries.

One in four of the respondents knew how to perform CPR. More fathers reported knowing how to perform CPR than mothers. In fact, in a study conducted among urban mothers, only one in five respondents knew CPR.²¹ A study done by Farizan *et al.* revealed that most parents of primary school children of a district in Selangor, Malaysia, were not certified and not confident in performing CPR.²⁴ Being skillful in CPR is essential to prevent severe consequences of home injuries among children. Programs should be offered to help parents to acquire this skill.

In this study, 61.1% of parents could not identify the appropriate age for children to bathe alone, as recommended by the American Academy of Pediatrics 2003.²⁵ This finding was concurrent with a previous study, which stated that parents had different views in allowing their children to take baths alone. Two earlier studies reported that the mean age that parents allowed children to bathe alone was 6.6 and 7.5 years old.^{26, 27} Also, bath drowning was more prevalent in young children, particularly those younger than five.²⁸ This might be an important reason why more parents opted to disagree with the statement in this study. They probably allowed children to shower alone at an older age to prevent bath drowning.

Most parents perceive that children are vulnerable to injury and mild injuries are regular occurrences in children. This finding is reminiscent of the previous study

by Arulogun *et al.*⁵ One qualitative study indicated that parents regard injuries as not preventable and part of development.²⁰ Likewise, most parents in this study considered home injuries among children as unavoidable. Despite that, only half of the parents thought their child had a low risk of home injuries. This could be because most respondents felt that they could control their child from sustaining an injury. Regarding injury prevention, almost all parents agreed that supervision could reduce the risk of injuries. This was consistent with the finding in a study that mothers had perceptions that inadequate supervision of their child could be an injury risk to their child.²⁹

Our study sampled parents from a small urban district on the west coast of Peninsular Malaysia and should not be generalized to represent the entire population.

CONCLUSIONS

In summary, the knowledge, perception, and behavior scores of parents of kindergarten-aged children in an urban district are approximate. Fathers are equally involved as mothers in caring for the safety of their children. Knowledge and perception were not correlated with the safety behavior of parents. Education on the prevention of home injuries should emphasize knowledge about CPR, vitamins as a cause for poisoning, and the dangers of using baby walkers.

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CONFLICT OF INTEREST

The authors declare no conflict of interest in this study.

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