

**KNOWLEDGE, ATTITUDE AND PRACTICES OF MOTHERS TOWARDS HOME  
ACCIDENTS AMONG CHILDREN, MAKKAH, KSA**

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**ABSTRACT**

Home injuries among children are increasingly seen as a community health problem that could be prevented through increased awareness, safe practices and improvements in home environment. Preschool children are extremely vulnerable to home accidents and ensuring information for mothers about safety measures in home accidents has an important impact on reducing incidence of injuries among children. This study aimed to assess the baseline knowledge, attitude and practices of the studied mothers towards home accidents among their children. A cross-sectional study was conducted on 368 mothers attending outpatient pediatric clinics at Maternity and Children Hospital in Makkah Region. A self-administered questionnaire was created that included socio-demographic characteristics, knowledge, attitude and practices of mothers towards home accidents. All scores were graded as good, fair or poor. Health education messages were conducted to mothers. The results of the study showed that about two third of participants (63.28%) depended on social media as a source of knowledge about home accidents. More than one third (35.9%) had poor knowledge, about 38% had positive attitude and less than one third (29%) had proper practices about home accidents. There was no significant difference between KAP scores of mothers and their ages. However, knowledge and attitude scores were significantly favorable among working mothers and those with University education. Mothers who attended first aid training and had history of child injury at home were significantly more knowledgeable and had proper practices. Participants with higher family income had significant proper practices. Protecting children from domestic injury is a multi-dimensional approach. It needs an intervention to overcome knowledge gap and improve attitude and practices of mothers in addition to joint Governmental and community efforts.

**KEYWORDS:** Knowledge, Attitude, Practices, Home accidents.

**INTRODUCTION**

Annually, thousands of children died due to accidents worldwide and millions of children are referred to hospitals due to injuries caused by accidents resulting in lifelong disabilities.<sup>[1]</sup> The accidents impair daily life of an individual by influences on physical, psychological and social health and may cause diseases, disabilities or even deaths. Accidents can take place in a wide variety of environments however; the home is the most likely location for accidents involving children.<sup>[2]</sup> It is thought that number of home accidents is greater than traffic and occupational accidents and the actual number of accidents and associated harms cannot be correctly established because records are insufficient and data from hospitals alone doesn't represent all relevant figures.<sup>[3]</sup> Injuries to children arising from home accidents are increasingly seen as a community health problem and their prevention is of great importance to

both individuals and society but, unfortunately, has largely been treated in an inappropriate manner.<sup>[4]</sup>

In Saudi Arabia, injuries are the second leading cause of death; however, little is known about frequencies and outcomes of home injuries which become a concern with increase in the emergency department visits.<sup>[5]</sup> In addition, new patterns of injury attributable to domestic accidents emerge with each new technical or cultural change that may reflect the character and lifestyle of people.<sup>[6]</sup> Most of these accidents are preventable through improvement in the home environment which plays a critical role in the occurrence and the severity of an injury, increased awareness and safe practices.<sup>[7,8]</sup>

The common causes of home accidents include burn injury which is a leading cause of unintentional injuries in children; falls as fall from bed, sofa or crib on stairs,

slippery floors, from high windows, or from tipping furniture; choking; poisoning and toxic substances that may be found under the kitchen sink, in the medicine cabinet, in the garage or garden shed, or even in a purse or other place where medications are stored; suffocation; some home accidents occur where there's water in the bathroom, kitchen, swimming pools, or hot tubs; and less commonly firearms.<sup>[9,10]</sup>

Preschool years is a critical period in a child's development and preschool children are extremely vulnerable to home accidents and injuries due to innate desire to explore their world and inability to perceive dangers of their actions that lead to death and disabilities.<sup>[11]</sup>

Parents are often knowledgeable about injury risks in the home. However, they are unaware of the scope of the child injury problem and do not routinely think about injury risk during their day-to-day interactions with their child. They are responsible to provide safer home environment, to take protective measure and to audit safety of living spaces of children coupled with close supervision.<sup>[12]</sup>

Mothers are always in direct contact with their children at home particularly from infancy and through the preschool age. Ensuring information about safety measures in home accidents, particularly for mothers, are especially important in injury care for children and in reducing incidence of injuries among children as many adverse consequences of injuries can be averted if mothers know what actions to take.<sup>[11,13]</sup> We focused on injuries known to be likely occur to young children at their homes including chemicals and detergents poisoning, electric shock, burns and finally wounds that occur from the using of sharp tools especially that located in the kitchen. This study was conducted to identify knowledge, attitude and practices regarding home accidents among mother having a child aged 2-6 year.

## MATERIALS AND METHODS

### Study design

An institutional based cross-sectional study was conducted on 368 mothers attending outpatient pediatric clinics at Maternity and Children Hospital in Makkah Region during the period from October 2016 to June 2017.

### Inclusion criteria

The target study population included Saudi mothers with children aged 2 to 6 years present at the time of visits in the outpatient pediatric clinics.

### Exclusion criteria

Mothers with non-Saudi nationality, illiterate, who refused to participate in the study, had children who were acutely ill, had chronic debilitating illnesses, presented

for pre-operative clearance or had children outside the age range of the study.

### Sampling and sample size

The sample size was calculated by Raosoft sample size calculator.<sup>[14]</sup> Based on an estimated population of around 7000 (according to hospital statistical office of average number of visitors to the pediatric outpatient clinics per month) and anticipated response 50%, the required sample size was 365 with a confidence level of 95% and a 5% margin of error. Convenience sampling was used in finding the respondents; all available mothers at the time of the visits and fulfilling the inclusion criteria were selected.

### Study instrument

A self-administered questionnaire was created in Arabic after a thorough search in the literature about home accidents based on the most recent available information from the World Health Organization, Centers for Disease Control and prevention, similar related papers and Saudi' Ministry of Health websites. The initial draft was sent to a group of experts chosen according to their experience and expertise in the related fields to evaluate the questions in terms of relativity, simplicity and importance. A pilot study was conducted on 20 mothers to test validity of the questionnaire or any needed modifications and the questionnaire was finalized after a series of group discussion. The data of pilot study was not included in this study.

The questionnaire was divided into 4 parts:

- The 1<sup>st</sup> part focused on socio-demographic characteristics of the mothers.
- The 2<sup>nd</sup> part identified mothers' source of knowledge and measured their level of knowledge about home accidents. It included 6 items with multiple choice questions. For each item, the complete right answer was given (2 points), incomplete answer was given (1 point) and wrong answer/don't know was given (0 point) with overall score of 12 that graded to good knowledge (score 9 – 12), fair (score 6 – 8) or poor (score 0 – 5).
- The 3<sup>rd</sup> part determined their attitude towards home accidents (n= 9 items) that measured by 3-point Likert scale of agreement (agree, uncertain or disagree). A score of 2 was given for 'Agree' to a positive attitude question or 'Disagree' to a negative attitude question, a score of 1 was given for 'Uncertain', and a zero score was given for 'Disagree' to a positive attitude question or 'Agree' to a negative attitude question. Consequently, overall score was 18 that graded to good attitude (score 14 – 18), fair (score 9 – 13) or poor (score 0 – 8).
- The 4<sup>th</sup> part assessed their self-reported practices about home accidents (n= 7 items) using (yes, no or sometimes) options with overall score of 14 (2, 1 or 0 for correct, sometimes or incorrect responses respectively) that graded to good practice (score 11 – 14), fair (score 7 – 10) or poor (score 0 – 6). All scores were graded as good (based on > 75% of the summed scores), fair (50-74%) or poor (if < 50%).

A total of 500 questionnaires were prepared and distributed among the mothers during the visits. Each questionnaire was evaluated for missing data at the time of submission and a trial to be corrected in the presence of the respondent was done to ensure that each question would be answered. A total of 368 completed questionnaires were collected representing a response rate of about (73.6%) of the distributed questionnaires.

To provide knowledge and reinforce attitudes by feedback, we developed 5 large banners and distributed posters, brochures and pamphlets in Arabic on different prevention and control measures of home accidents. The scientific content of the health education materials was prepared from the WHO, Centers for Disease Control and Prevention, Saudi Civil Defense and Saudi Ministry of Health media websites. Before leaving the clinic, each mother was given, free of charge, a packet of two electric outlet covers and briefly encouraged for passive measures as stairgates, window locks, smoke & carbon monoxide detectors. With the help of the hospital training centre and the support and supervision of local health authorities, short health education messages were sent regularly as reminders to the mobile telephones of the parents (recorded in the hospital system) using WhatsApp for the next 2 months. In addition, the banners, posters and brochures were continuously presented on television screens distributed in the outpatient clinics for the next 2 months.

#### Ethical consideration

Ethical approval was obtained from the local ethical committees at Faculty of Public health and Health Informatics, Umm Al-Qura University (project # 438460601). A letter of cooperation was asked to be

directed from the Directorate of Health Affairs at Makkah to Maternity and Child Hospital to facilitate the work of the study. Furthermore, an oral consent was obtained from the mothers prior to participation in the study with brief explanation on the objectives and benefits of the study with emphasis that personal data would be confidential and would be used for the scientific work only.

#### Statistical analysis

Data were analyzed using the SPSS version 21.0 (SPSS Inc., Chicago, IL, USA). For descriptive statistics, mean  $\pm$  SD was used for quantitative variables while number and percentage were used for qualitative variables. For analytic statistics, independent samples t-test and One-Way ANOVA test were used to assess differences in means of quantitative variables. statistical methods were verified, assuming a significant level of  $p < 0.05$ .

## RESULTS

### General characteristics

The study included 368 mothers attending outpatient pediatric clinics at Maternity and Children Hospital in Makkah Region with about 35.16% had age ranged from 20 – 30 years, 42.97% from 31 – 40 years and the remaining (21.88%) were more than 40 years. More than half of them were not working (58.59%), had University education (57.81%) and having more than 2 children aged 2 – 6 years (54.69%). The majority (79.69%) were living in Makkah and in a flat (86.72%). Slightly less than half of them (45.31%) had a family income 5000 – 10000 Riyal per month, about 60% had history of child injury at home and one fourth had previous training on first aid. (Table 1).

**Table (1): General characteristics of the studied sample.**

Variables		Studied sample (No. = 368)	
		No.	%
Age (years)	20 - 30	129	35.16
	31 - 40	158	42.97
	> 40	81	21.88
Occupation	Working	152	41.41
	Not working	216	58.59
Education	Primary/Intermediate	35	9.51
	Secondary	121	32.88
	University	212	57.61
Residence	Inside Makkah	293	79.69
	Outside Makkah	75	20.31
Housing	Flat	319	86.72
	Villa	35	9.38
	Popular house	14	3.91
Family income/month (Riyal)	< 5000	100	27.17
	5000 – 10000	167	45.38
	> 10000	101	27.45
No. of children (2 – 6 years)	One	104	28.13
	Two	63	17.19
	More than two	201	54.69
Previous first aid training	Yes	92	25.00
	No	276	75.00
History of child injury at home	Yes	223	60.60
	No	145	39.40

### Source of knowledge

Nearly two third of participants depend on social media as a source of knowledge about home accidents followed by doctor/nurse and the least sources were books and newspapers (17.97%). Table (2).

**Table (2) Source of knowledge of the studied sample about home accidents.**

	Studied sample(No. = 368)	
	No	%
Social media	233	63.28
Doctor / Nurse	164	44.53
TV and radio	132	35.94
Neighbors and friends	95	25.78
Books and newspapers	66	17.97

### Knowledge

The knowledge of mothers about different aspects of home accidents are generally lacking. Regarding the

suitable place to save detergents, 71.88% of mothers correctly know that they should be kept in a high cabinet; however, only 7.81% of them correctly know that they should use cold water fomentation and anti-burn ointment if their child has a burn. Similarly, only 4.69% correctly know what to do in the event of a short circuit and they should shut down the electricity source, ask for help and inspect the airway of their injured child; 10.94% of mothers correctly know the precautions needed for prevention of domestic injuries that include warning children of potential hazards, keeping the emergency number, having first aid kit and fire extinguisher; and only 3.13% of mothers correctly know that they should turn off the gas supply, call your gas supplier and open doors and windows in case of a gas leak. About 71% of mothers doesn't correctly know what to do in cases of chemical poisoning and that they should avoid gastric washing, forced vomiting or giving acids like lemon juice. Table (3).

**Table (3) Knowledge of the studied sample about home accidents.**

Knowledge	Right answer No. (%)	Incomplete answer No. (%)	Wrong answer No. (%)
The suitable place to save detergents.	265 (71.88)	43 (11.72)	60 (16.41)
What to use if the child has a burn?	29 (7.81)	267 (72.66)	72 (19.53)
What to do in the event of a short circuit?	17 (4.69)	293 (79.69)	58 (15.63)
Precautions for prevention of domestic injuries.	40 (10.94)	311 (84.38)	17 (4.69)
What to do in the event of a gas leak?	12 (3.13)	339 (92.19)	17 (4.69)
What to do in cases of chemical poisoning?	60 (16.41)	46 (12.50)	262 (71.09)

### Attitude

Regarding the attitude of mothers towards home accidents, all participants agreed on the importance of existence of first aid kit in every home, the vast majority (99.22%) agreed on the importance of taking necessary precautions to prevent home accidents, and the majority (89%–93%) considered the psychological effect of domestic accidents on the child, the importance of attending courses to deal with domestic injuries and of

transferring their experience in dealing with domestic injuries to those they know. However, around 30% were uncertain regarding the use of electric stove rather than gas stove, the rapid response when calling the ambulance/emergency services and the lack of awareness about dealing with domestic injuries. About 18% of mothers were afraid that they couldn't act properly in emergencies. Table (4).

**Table (4) Attitude of the studied sample towards home accidents.**

Attitude	Agree	Uncertain	Disagree
	No. (%)	No. (%)	No. (%)
Taking all precautions to prevent home accidents.	365 (99.22)	3 (0.78)	0 (0.0)
Use electric stove rather than gas stove.	152 (41.41)	112 (30.47)	104 (28.13)
Rapid response when calling the ambulance /emergency services.	221 (60.16)	115 (31.25)	32 (8.59)
There is a lack of awareness about dealing with domestic injuries.	242 (65.63)	109 (29.69)	17 (4.69)
I trust my ability to act properly in emergencies.	152 (41.41)	150 (40.63)	66 (17.97)
Domestic accidents affect child psychologically.	339 (92.19)	20 (5.47)	9 (2.34)
It is important to attend courses to deal with domestic injuries.	328 (89.06)	29 (7.81)	12 (3.13)
It is important to transfer my experience in dealing with domestic injuries to those I know.	342 (92.97)	20 (5.47)	6 (1.56)
First aid kit is necessary in every home.	368 (100.0)	0 (0.0)	0 (0.0)

### Practices

The self-reported practices of mothers regarding home accident reveal that about 91% of them keep their children away when detergent is used and 85% ensure that there is no gas leakage when changing the cylinder.

About 58.5% of mothers go to hospital when their children have a domestic injury. Nearly one fourth of mothers (23.44%) wrongly connect multiple devices with one socket and 35.16% don't ensure the validity of the fire extinguisher. About two third of mothers (63%–

66%) don't leave their children alone at home and teach their families and friends how to deal with domestic injuries. Table (5).

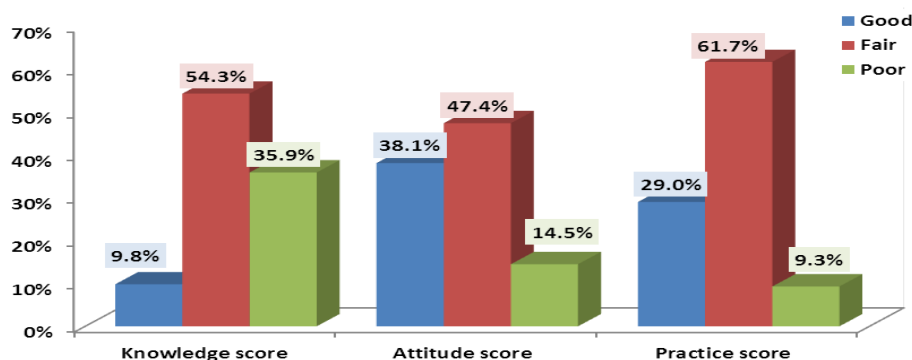
**Table (5) Practices of the studied sample regarding home accidents.**

Practices	Yes	Sometimes	No
	No. (%)	No. (%)	No. (%)
I go to hospital when my child has a domestic injury.	216 (58.59)	147 (39.84)	6 (1.56)
I keep children away when detergent is used.	336 (91.41)	29 (7.81)	3 (0.78)
I ensure that there is no gas leakage when changing the cylinder.	313 (85.16)	35 (9.38)	20 (5.47)
I connect multiple devices with one socket.	86 (23.44)	175 (47.66)	106 (28.91)
I ensure that the fire extinguisher is always valid.	150 (40.63)	89 (24.22)	129 (35.16)
I leave my children alone at home.	29 (7.81)	106 (28.91)	233 (63.28)
I teach family and friends how to deal with domestic injuries.	244 (66.41)	89 (24.22)	35 (9.38)

### Overall KAP score

The overall KAP score of mothers about home accidents shows that more than one third (35.9%) of them have

poor knowledge, about 38% have good (positive) attitude and less than one third (29%) have good (proper) practices. Figure (1).



**Figure (1): KAP scores of the studied sample about home accidents.**

### Other relations

There is no significant difference between KAP scores of mothers and their ages. However, knowledge and attitude scores were significantly favorable among working mothers and those with University education. Mothers

who attended first aid training and had history of child injury at home were significantly more knowledgeable and had proper practices. Participants with higher family income had significant proper practices. Table (6).

**Table (6) Relation between characteristics of the studied sample and different scores.**

Variable	Knowledge score (Max.=12)	Attitude score (Max.=18)	Practice score (Max.=14)	
Age (years) <sup>2</sup>	20 - 30	5.60 (1.39)	13.64 (1.92)	10.51 (2.36)
	31 - 40	5.85 (1.59)	14.05 (1.89)	9.31 (2.18)
	> 40	6.14 (1.48)	14.18 (1.76)	9.89 (2.30)
	P-value	0.321	0.414	0.543
Occupation <sup>1</sup>	Working	6.46 (1.61)	13.62 (1.86)	9.74 (2.45)
	Not working	5.17 (1.40)	11.37 (1.76)	9.35 (2.12)
	P-value	< 0.001*	< 0.001*	0.104
Education <sup>2</sup>	Primary/Intermediate	5.10 (1.57)	12.25 (1.86)	8.67 (2.48)
	Secondary	5.69 (1.51)	12.45 (2.06)	9.26 (2.14)
	University	6.96 (1.94)	13.16 (1.73)	9.54 (2.30)
	P-value	< 0.001*	0.001	0.091
Family income/month <sup>2</sup> (Riyal)	< 5000	5.83 (1.29)	12.08 (1.64)	8.86 (2.51)
	5000 - 10000	5.78 (1.61)	12.21 (1.84)	9.21 (2.11)
	> 10000	5.91 (1.54)	12.54 (1.37)	9.64 (2.05)
	P-value	0.792	0.127	0.044*
Previous first aid training <sup>1</sup>	Yes	6.31 (1.80)	13.23 (1.61)	11.13 (2.09)
	No	5.67 (1.36)	12.84 (1.86)	10.30 (2.29)
	P-value	0.004*	0.073	0.002*
History of child injury at home <sup>1</sup>	Yes	6.65 (2.18)	12.23 (2.14)	10.36 (2.11)
	No	5.18 (2.06)	11.84 (2.59)	9.80 (1.72)
	P-value	0.001	0.117	0.008*

Values presented as mean  $\pm$  SD.

<sup>1</sup>: Independent Samples t test.

<sup>2</sup>: One-Way ANOVA test.

\* Significant

## DISCUSSION

In the present study, we aimed to identify the base line KAP of mothers with a child aged 2-6 year towards home accidents in Makkah Region.

### Source of knowledge

Nearly 63% of mothers depended on social media as a source of knowledge about home accidents and about one third (35.94%) depended on TV and radio. Some relatively higher results were reported among 56.1% of rural mothers in Egypt who depended on TV/radio as the sources of knowledge about home accidents<sup>[11]</sup> and in another Indian study TV/radio accounted for 45.8%.<sup>[15]</sup> In both studies, all the studied mothers were willing to undergo training on first aid. Nowadays, social media is an easy and a widely accepted method by many people for knowledge transfer however, information quality, long term impact and synergies between social media and evidence-based practice remain unanswered.<sup>[16]</sup>

### Knowledge

Mothers' overall knowledge of home accidents in the present study was generally lacking with only 9.8% of them had good knowledge. This low level may reflect how closely they supervise their children as they still experienced domestic accidents. This might be explained by inability of mothers to control the situation leading to accidents due to circumstances beyond their control and the pressure of modern day society that dramatically cuts down time spent with children in an average household.<sup>[17]</sup>

Our results agreed with Lafta *et al.* who reported poor mothers' knowledge about how to protect their children against domestic accidents in Iraq.<sup>[18]</sup> Similar results were reported in a Chinese study which concluded that parental knowledge of injury prevention and safety promotion was unsatisfactory.<sup>[19]</sup> However, these findings disagreed with an Iranian study conducted on 230 mothers with preschool children regarding their adoption of preventive measures for home injuries in which 75% were found to have good knowledge.<sup>[20]</sup> In the same context, the findings reported by Carlsson *et al.* did not match our results as they found high median scores concerning mothers' sufficient knowledge and the taking of sufficient precautions of child accident prevention at home.<sup>[21]</sup>

Our results revealed that, mothers' knowledge of suitable place to keep chemical materials and detergents out of children reach was accepted (71.88%). Similarly, earlier Saudi study performed in Jeddah found that most of families kept detergents and medications in a high or locked cabinet.<sup>[22]</sup> and another Brazilian study found that home storage of toxic agents below 150 cm was associated with 17 times an increased risk of poisoning for children compared to a control group.<sup>[23]</sup> In contrary to our results, mothers' knowledge of safety precautions necessary to keep chemical materials and detergents out

of children reach was found to be very poor which can lead to poisoning or other serious accidents.<sup>[18]</sup>

A poor knowledge was noticed when our participants were asked about what to use/do if the child has a burn, in the event of a short circuit and in the event of a gas leak as only 7.81%, 4.69% and 3.13% had correct answers respectively. In fact, young children are the most at risk of incidental home burns involving hot water and food, while direct flame burns are more common with increasing age.<sup>[24]</sup> Similarly, only 11.6% of mothers in Baghdad City scored good knowledge regarding protecting children from contact with fire.<sup>[18]</sup>

The spectrum of electrical injuries affecting children in household setting is broad, ranging from minimal injury to severe multi-organ involvement, to death<sup>[25]</sup> with over 70% of accidents are in the age group of 0 to 5 years.<sup>[26]</sup> Better results (63%) were reported among Canadian mothers who protect their child from injury by electrical appliances.<sup>[27]</sup>

In almost all Saudi homes, the kitchen is considered the most dangerous place for children where gas supplies, either cylinder or pipes, are located. Sirohi *et al.* studied the occurrence of a domestic accident and awareness on its prevention in an Indian urban community and found that 74% of households were aware about the first aid measure in case of gas leaking and 68% were always present while cooking on the gas.<sup>[28]</sup> Similarly, the mean knowledge score regarding precautions to be taken in case of gas leakage among households in a rural community in Iran was 4.1 out of a maximum score of 8.<sup>[29]</sup>

### Attitude

The results showed that, nearly 62% of mothers had fair/poor attitude towards home accidents. In his study, Aktürk reported that wrong attitudes and behaviors were more common among mothers of children experienced home accident ( $p < 0.05$ )<sup>[30]</sup> and in another Turkish study, mothers who have a child aged 0-6 year were found to be incompetent to take safety measures against home accidents.<sup>[31]</sup>

Mothers' attitude towards not engaging in home safety practices may be influenced by their feel that their child's vulnerability for injury was very low, they could ensure their child's safety by close supervision and their feel that their child knew basic safety rules and would therefore behave in ways to ensure his or her own safety.<sup>[32]</sup>

In fact, motivating parents to change their attitude and engage in more safety practices is relatively difficult to achieve and the relation of attitudes to decisions about health behaviors may derive from risk perceptions, evaluation of costs and benefits and the role of social norms in shaping an individual's attitudes and behaviors. However, some researchers suggest that passive measures as well conceived construction, product

safety regulations, stairgates, window locks and smoke and carbon monoxide detectors are more effective in injury control than attempts at changing parents' attitude and behaviors.<sup>[32,34]</sup>

### Practices

Although the overall good knowledge score among our participants was poor (9.8%), about 29% of them reported proper practices that might be explained by social desirability bias. In fact, improving parents' safety practices need promoting their implementation of home environment modifications and evoking more active safety-promotion behaviors. Arulogun *et al.* discussed certain factors that influence the decision of mothers with pre-school children to adopt preventive practices at home including self-motivation (58.1%), perceived danger (37%), to avoid being scolded by their husbands (32.7%), lesson from other peoples' experiences (29.9%) and self-experience (21.8%).<sup>[35]</sup> Morrongiello and Kiriakou discussed mothers' safety practices for preventing different types of childhood injuries. For burns, cuts and fall injuries; child and parent characteristics that put the child at risk of injury were the key determinants of engaging mothers in precautionary measures. For drowning, poisoning, suffocation and choking; health beliefs about potential injury severity and extent of effort required to implement preventive measures also contributed to predict mothers' practices and they concluded that factors motivating mothers to engage in precautionary measures at home varied depending on the type of injury.<sup>[32]</sup>

### General characteristics and KAP scores

Analysis of possible factors affecting mothers' KAP scores and the association with some socio-demographic variables showed that working mothers and those with higher education had significantly favorable knowledge and attitude, mothers who attended first aid training and had history of child injury at home had significant good knowledge and proper practices and mothers with higher family income showed significant association with proper practices.

These associations were investigated by many researchers from different regions with some similarities and differences. Studies performed in Egypt<sup>[36]</sup>, Singapore<sup>[37]</sup> and Turkey<sup>[38]</sup> showed that increased level of mothers' education statistically improved knowledge in preventing home accidents among children. Other studies found that those who had university education, were health care personnel or had taken a first aid course had better knowledge<sup>[39]</sup> and housewives with higher education, higher economic status and those not experienced an accident at home had significant preventative attitude and behavior scores.<sup>[38]</sup>

Eldosoky found that Egyptian mothers of younger age, university and postgraduate educated, in health-related occupations, of higher socioeconomic status and those who had attended training course(s) on first aid had the

highest KAP scores. He suggested that mothers with university education may have more health awareness and more motivation to read texts about child care or join first aid training courses.<sup>[11]</sup> Megahed *et al.* reported a significant positive correlation between mothers' practice and either their education or their socioeconomic level and there was a significant correlation between socioeconomic level and either knowledge or attitude of mothers toward home injuries.<sup>[40]</sup>

Contrary to our results, Hatamabadi *et al.* found mothers with higher education, employment and absence from home for at least eight hours a day were factors predicting poor knowledge and attitudes towards domestic injury prevention.<sup>[20]</sup> Also, Lafta *et al.* found mothers' knowledge of injury prevention was inversely related to their years of education and they suggested that highly educated mothers are usually employed and absent from home for a considerable amount of time during the day that makes children more prone to accidents and mothers may become less enthusiastic or too busy to learn about prevention methods.<sup>[18]</sup> Sample characteristics and regional variation may affect the statistical significance of the impact of socio-demographic characteristics in level of KAP of mothers. In addition, customs and traditional norms in Saudi Arabia might affect the level of mothers' KAP as Saudi women have less interaction and socialization than males with less opportunities to outdoor self-learning.<sup>[41]</sup>

### The study limitations

This study had some limitations. First, as a cross-sectional study, it does not determine the causal-effect relationship. Second, the results are based on self-reported data that may be affected by recall bias and mothers may have over-reported their injury prevention measures due to social desirability bias. Third, the study did not include mothers attending other healthcare settings as primary healthcare centres and the private sector. Finally, the questionnaire did not include question to assess knowledge of participants about other types of injuries as by sharp instrument.

### CONCLUSION

Protecting children from domestic injury is a multi-dimensional approach. It needs an intervention to overcome knowledge gap and improve attitude and practices of mothers in addition to joint Governmental and community efforts. These measures will aid in reducing the burden of childhood domestic injuries.

### ACKNOWLEDGEMENT

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### CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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