

## Maternal Knowledge and Attitude about Home-related Injuries in Children under the Age of Five Years

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### Abstract:

**Background:** Children's home-related injuries are considered a community health problem. They are the leading cause of death for children under the age of five years. Thousands of children are permanently injured every year as a result of these incidents. The majority of these incidents can be avoided by raising awareness and improving home climate and product safety. **Objectives:** To assess the knowledge and attitude of mothers about home-related injuries and its predisposing factors for children less than five years old. **Methods:** This cross-sectional study was carried out from 1<sup>st</sup> of March to the end of May 2019 among 628 mothers attending outpatient pediatric clinics (OPC), Beni-Suef University Hospital, for follow-up visits of their children. A 3-part structured questionnaire was used aiming to analyze the demographic data and measure the percentage and types of home injuries as well as maternal knowledge and attitudes about causes of home accidents in children. **Results:** Home-related injuries among children under the age of 5 years were 42.4% amongst which cut wounds representing 51.1% of the cases. Regarding the maternal knowledge about first aid measures, 16.6% of the mothers were not knowledgeable. Maternal knowledge scores revealed that 78% of respondents perceived the risk and 8.6% did not. Maternal attitude scores revealed a 92.7% indifferent attitude score and 0.6% positive attitude score. Regression analysis showed that mother's attitude towards home injuries was significantly affected by her educational level, occupation (being a working mother or not), and reading books about the first aid ( $P < 0.05$ ). **Conclusions:** Mothers perceived the risk about childhood home-related injuries and their attitude scores were indifferent.

**Keywords:** Knowledge, Attitude, Children, Home Injuries, Mothers.

### Introduction:

Home unintentional injuries are considered as a leading preventable cause of death for children under the age of five years. The reduction of childhood unintentional injuries remains an important public health priority. <sup>(1)</sup> There is a causal relationship between injuries and consequential disabilities presenting 50% of non-fatal unintentional injuries or 40% of deaths for children aged < 12 years. <sup>(2)</sup>

According to the World Health Organization, 830,000 children died from

home accidents worldwide annually, with an estimated 2,000 daily deaths with multi-millions transfers to hospitals, resulting eventually in permanent disabilities. <sup>(3)</sup> Home-related injuries posing a potential risk include falls, burns, drowning, and poisoning reaches up to 48%. <sup>(4)</sup>

Securing a safe environment for children is the main concern to decrease home and outdoor related injuries with most of high risk injuries taking place under fairly predictable circumstances resulting in an impaired physical, psychological health. A

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systematic review revealed overall positive effects of risky outdoor play on a variety of health and behaviors, most commonly physical activity, but also social health and behaviors, injuries, and aggression and support the promotion of risky outdoor play for healthy child development. <sup>(5)</sup>

Childhood home injuries might respond to a simple parental home remedies. Early intervention altering deleterious effects in the primary care setting with further specialized medical care might be lifesaving. <sup>(6)</sup>

In Egypt Demographic and Health Survey (EDHS)-2014, it is reported that 4% of children under 5 years old were ever injured or involved in an accident. The most commonly reported injuries are open wounds (46%), fractures (36%), burns (20%), and 2% of the children have suffered from other types of injuries. <sup>(7)</sup>

Prevention and control strategies aiming at lowering and alleviating long term disabilities of childhood home accidents is essential for health promotion. Mother's knowledge and attitude towards the sources of risk for home accidents are very important in prevention of these injuries.

Implementation of available and appropriate first aid measures is the pivotal step in successful initial care provision and immediate emergent intervention measures which could minimize their health-related

disabilities. The earlier the management of home-related injuries, the better the predicted future course of the disability and its sequels. <sup>(8)</sup>

Maternal knowledge and practice about first aid measures added to its availability might avert adverse consequences for childhood home-related injuries. <sup>(9)</sup>

This study aimed to assess mothers' knowledge and attitude towards home-related injuries and their predisposing factors for children under the age of five years in a hospital-based environment.

#### **Methods:**

**Study design:** A cross-sectional study.

**Study setting:** The study was carried out in Beni-Suef University Hospital from 1<sup>st</sup> of March to the end of May 2019.

#### **Sample size:**

A non-probability convenient sample was done over the period from 1<sup>st</sup> of March 2019 to the end of May 2019. The study population included mothers attending to the pediatric OPC of Beni-Suef University Hospital.

A time bound sample was collected by an interview questionnaire for mothers over a three months' period. Two interviewers received training to ensure interviews reliability. Interviewers attended the clinics 3 days weekly from 9:00 AM till 2:00 PM; all the attending mothers were approached and asked for their consent to participate

after describing the aim of the study and the voluntary participation. The number of mothers who accepted participation was 628; with a response rate of 84%.

Literature review was carried out to assess content validity and expert peer review was obtained to ensure face, content, and concurrent validity. Test-retest method was used to calculate the reliability of the questionnaire with no statistical differences using Chi-square test P Value (NS) and Cronbach's alpha was calculated and its value was 0.87.

#### **Tools of study:**

The questionnaire was composed of 3 parts:

**Part (1):** 22-item questions to assess demographic data, measuring the percentage and types of children home injuries occurred during the past 4 weeks.

**Part (2):** 6-item questions to assess the knowledge of mothers about causes of home accidents in children.

Each question was given a score of zero or one. Correct answer questions had a score of one and incorrect answers had a score of zero. Total score was classified as: did not perceive the risk (<50%), indifferent (50%-75%), and perceived the risk (>75%). A modified part 1 and 2 structured questionnaire from (Bayomi and Mobarak, 2013; and El-Sabely et al, 2014) <sup>(6,10)</sup> was used.

**Part (3):** 25-item questions to assess the attitude of mothers towards home-related injuries. Eight negative and 17 positive items were developed (Likert scale rate). Responses: "always -frequently" and "sometimes-rarely-never" were measured altogether.<sup>(11)</sup>

Positive answer questions were scored a one point, while negative answers were scored a zero point. The total score was classified as: negative [zero to 12 (< 50%)], indifferent [13–18 (50% -75%)], and positive [19–25 (> 75%)].

#### **Ethical considerations:**

This study was approved by the Beni-Suef University Research Ethics Committee (Approval No. FMBSUREC/30042019) and it adhered to the principles of the Declaration of Helsinki. Participants accepted voluntary participation in this study and answered the questionnaire on their own. The investigators ensured the study participants' anonymous identity and the data were secured to ensure the confidentiality and privacy of the results.

#### **Statistical analysis:**

The collected data were given a code and analyzed by the SPSS version 22. Descriptive statistics for categorical variables included frequency and percentage and those for numerical variables included mean and standard deviation (mean  $\pm$ SD).

The statistical tests of significance used included: One-way ANOVA, Chi-square test for categorical data, linear regression analysis to detect significant predictors for mother's attitudes score for the home injuries of children under the age of 5 years. P-values of  $\leq 0.05$  were of statistical significance.

### Results:

#### Demographic factors:

The mean mothers' age was 30.10 years  $\pm 4.6$  (ranged from 20-45) years old; 41.4% of them had secondary education, 16.9% had completed university education, 26.4% had postgraduate education, and only 8.9% were illiterate. Amongst participants, 92% were married, 42.4% were housewives, and 57.6% were employed with their children mean of  $2.9 \pm 1.2$  (range from 1 - 5 years) and a male:female ratio of 1.01.

Analysis of children characteristics and classification of home injuries during the previous 4 weeks-item revealed that 44.4% of injuries were reported for the first child. Cut wounds represented 51.1% of home injuries. There was a statistically significant difference for birth order ( $P = 0.001$ ) and types of home accidents ( $P = 0.001$ ) among the studied sample. (Table 1).

Maternal knowledge concerning the cause of home injuries: The majority of study participants perceived the risk and answered the questions correctly except for

one question: "Keeping medications where children can have access to swallow them cause domestic accident" where only 36.9% of mothers answered the question correctly (Table 2).

Regarding the knowledge related to first aid measures, 16.6% of study participants were not knowledgeable about "first aid measures". Out of the knowledgeable participants, 24.5% stated that television and/or radio was the source of information, 21.3% and 21.3% of them gained knowledge from either friends/relatives or doctors/nurses, respectively (Table 2).

Maternal knowledge scores about causes of home injuries among children revealed that 78% of mothers perceived the risk score, while 8.6% did not perceive the risk score (Figure 1).

Maternal attitude scores towards home injuries revealed that the majority of mothers (92.7%) had indifferent attitude score and only 0.6% had positive attitude score (Figure 2).

The factors affecting scores of mother's attitude towards home accidents revealed that maternal educational level, occupation, father's educational level, and number of children significantly affected the scores of mothers ( $P < 0.05$ ) (Table 3).

Regression analysis for the factors affecting score of mother's attitude about

home injuries showed that mother's illiteracy, education (secondary and university levels), being a worker, and reading books about first aid were significant predictors of mother's attitude about prevention of home injuries for the children under the age of 5 years ( $P < 0.05$ ) (Table 4).

### Discussion:

In this study, the prevalence of home-related injuries among children younger than 5 years old was 42.4% which is higher than the percentage of prevalence reported in a similar Egyptian study conducted in Qalubeya governorate among 1450 rural mothers (38.3%)<sup>(9)</sup> as well as the percentage reported in a study conducted in 4 government pre-schools in İzmir, Turkey among 447 students (36.5%).<sup>(12)</sup>

However, our percentage is lower than that reported in Ain Shams University Hospital, Cairo governorate, Egypt study during the period from February to November 2017 for a sample size of 200 mothers (61.3%).<sup>(13)</sup> This might reflect an improvement in maternal childhood awareness and care and owing to the longer duration (one year history) in the Cairo University study.

In the current study, there was no significant difference between male or female children frequency of home injuries. These findings are consistent with a similar

study conducted in İzmir, Turkey<sup>(12)</sup> and contrary to other national conducted studies among 150 mothers from Kafr Mohsen village, Sharkia Governorate<sup>(10)</sup> as well as an international study conducted in the villages of Thirukannur Primary Health Centre (PHC) in rural Pondicherry, a union territory of India, by the collected information about 1799 children,<sup>(14)</sup> reporting a difference in the frequency of home injuries amongst male and female children.

Differences in habitat regions and characteristics of the sample may differ, affecting the statistical analysis and reflecting the impact of gender in home-related injuries.

Common forms of home-related injuries for the children younger than 5 years old were cut wounds, burns, falls, head injuries, and poisoning or foreign body aspiration (Table 1). Similarly, cut wounds were the second most common (14%) home-related injury, while falling down was the most prevalent injury (34%) in an Egyptian study carried out in Ain Shams University Hospital, Cairo.<sup>(13)</sup>

This difference might reflect better awareness of urban mothers. Though *first aid* measures is a very important topic for parents, only 16.6% of study participants were not knowledgeable of the term and amongst knowledgeable ones, TV and radio

as a source of knowledge was reported by 24.5% of the participants. Moreover, 21% of them reported that friends and relatives were the main source of information.

Similar percentages were reported among rural Egyptian mothers in Qalubeya governorate where 26.6% were not knowledgeable about first aid measures and 56.1% of the knowledgeable mothers reported that media (TV & radio) was their knowledge source.<sup>(9)</sup>

Another study conducted in Ain Shams University Hospital, Cairo, reported that 63.6% of illiterate mothers had their knowledge from the relatives or friends and 50% of primary/preparatory educated mothers had knowledge from TV, while higher educated mothers gained their knowledge from more than one source.<sup>(13)</sup> This discrepancy in results may be due to the different demographic and educational status of participants.

In this study, maternal knowledge towards home accidents among children younger than 5 years old was 78%; this percentage is lower than the percentage reported among 756 mothers of pre-school children in Ibadan Southwest Local Government Area, Nigeria (90%),<sup>(15)</sup> and higher than the percentage reported in another study including 368 mothers attending outpatient pediatric clinics at Maternity and Children Hospital in Makkah

Region, KSA (35.9%)<sup>(16)</sup> as well as the percentage reported (pre-health education intervention) in Sharkia Governorate, Egypt (35.9%) for a sample of 244 mothers in Zagazig rural area which reached 75% knowledge post-intervention.

This highlights the importance of educating mothers in rural areas.<sup>(17)</sup> This study finding can be attributed to the fact that 84.7% of study participants were well educated contrary to those in similar studies where the majority of mothers were illiterate/just had primary education.

In the present study, indifferent maternal attitude towards home-related injuries among the children younger than 5 years old was 92.7%. This finding is higher than those reported by other studies. In Makkah, KSA<sup>(16)</sup> a study was conducted where wrong mothers' attitudes was a common cause for children's home accidents.

This difference can be attributed to the fact that the attitude of study participants towards engaging in home safety practices was better than their counterparts in other studies. The analysis of possible factors affecting mothers' attitude scores and association with socio-demographic variables showed that mothers with higher education had significantly positive attitude towards prevention of home injuries (Table 3). Similar results were reported among rural Egyptian mothers in Qalubeya

governorate <sup>(9)</sup> as well as another study conducted among 500 families with children aged between 0 and 5 who visited the Ankara Research and Training Hospital, Turkey between April and June in 2009.<sup>(11)</sup>

These findings reveal great emphasis on the role of educational status in improving mothers' attitudes, behaviors, and performance in relation to the adoption of preventive measures against home injuries.

Contrary to this study results, a regional study in Tehran, Iran for 230 mothers of preschool children who had been referred to the emergency department of Imam Hussein Hospital and Shohada-e-Haftome Tir Hospital with home injuries reported that higher education and employment were factors predicting non-perception for knowledge and negative attitudes towards domestic injury prevention. In addition, the study revealed that mothers' knowledge of injury prevention was inversely related to their years of education.<sup>(18)</sup>

This may be attributed to the fact that educated mothers are usually employed and absent from home during the day, putting their children at risk for home injuries.

In this study, non-employment of mothers (42.4%) showed a significant relationship with children's home accidents. Similarly, a previous study conducted among 340 mothers of children aging 0-5

years who were admitted to the pediatrics ward of Malatya State Hospital, Turkey between March, 2012 and May, 2012 reported that home accidents were significantly higher in children whom their mothers were housewives ( $P = 0.01$ ).<sup>(19)</sup>

In the present study, the number of children in the family significantly influenced mothers' attitude towards prevention of home injuries where the higher number of children a mother has, the less preventive care is often given.

This finding is similar to another study conducted in Malatya State Hospital, Turkey.<sup>(19)</sup> This decrease in the adoption of preventive measures is attributed to the insufficient duration of time allocated by mothers to their children's care. The regression analysis revealed that knowledge about first aid, mother's education level, mother's occupation, and knowledge source were significant predictors of attitudes' score among study participants ( $P < 0.05$ ) (Table 4).

Similar findings were reported by an Egyptian study conducted in Qalubeya governorate showing that mothers' age, level of education, source about first aid knowledge, occupation, and attendance of training courses concerning first aid were significant predictors of knowledge and attitude scores among participants.<sup>(9)</sup>

Similar findings were reported regionally in Qassim, Saudi Arabia where mothers' knowledge was significantly ( $P = 0.013$ ) associated with their level of education where the highest mean score observed among university and post-graduate mothers.<sup>(20)</sup>

An explanation is attributed to the provision of first aid training as auxiliary activity among university students in Saudi Arabia. A similar international Spanish study reported that parents with higher education demonstrates more correct knowledge and practices concerning first-aid measures where among 405 valid questionnaires, 66.9% of participants were females.<sup>(21)</sup>

#### **Conclusion:**

Participating mothers were knowledgeable about causes of childhood home-related injuries. The majority of them showed indifferent attitude scores towards home injuries. Mothers' age, educational level, occupation, father's educational level, and number of children significantly affected mothers' scores of attitude towards home injuries among children aging 0-5 years.

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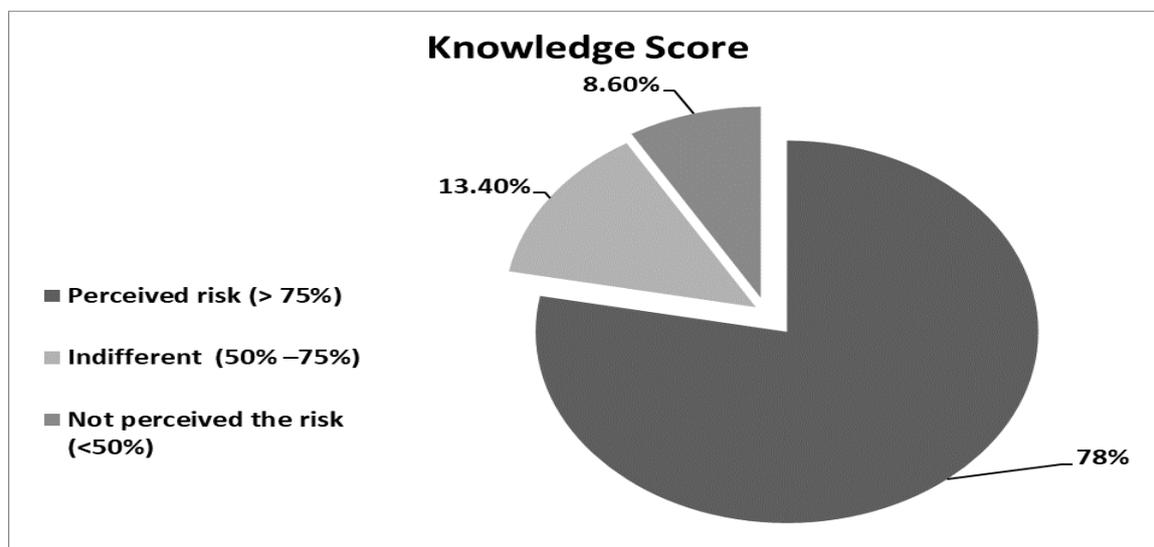
**Conflicts of interest:** No conflict of interest to be declared.

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**Figure (1): Maternal knowledge scores about children home injuries**

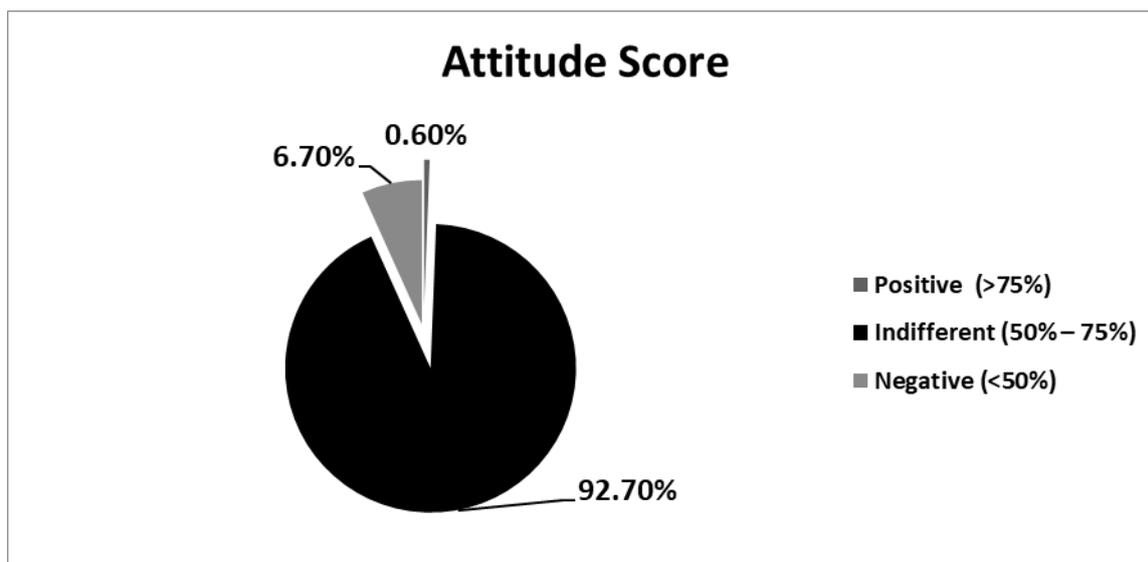


Figure (2): Maternal attitude scores concerning children home injuries

Table (1): Characters of children and classification of home injuries (No.= 266)

	No. of children suffering injuries	% No.= 266	P-value
<b>Sex</b>			
▪ Boys	130	48.9	0.294
▪ Girls	136	51.1	
<b>Birth order</b>			
▪ 1	118	44.4	<b>0.001*</b>
▪ 2	96	36.1	
▪ 3	40	15.0	
▪ 4	6	2.3	
▪ 5 and higher	6	2.3	
<b>Enrolled with nursery/school</b>			
▪ Yes	128	48.1	0.079
▪ No	138	51.9	
<b>Type of injury</b>			
▪ Wounds	136	51.1	<b>0.001*</b>
▪ Burn	44	16.5	
▪ Falls	40	15.0	
▪ Head injury (exclude skull)	24	9.0	
▪ Poisoning or Foreign body swallowed	22	8.3	
<b>Percentage of home related injuries</b>	<b>266/628=42.4%</b>		

\* P-value ≤ 0.05 is considered significant

**Table (2): Maternal knowledge concerning first aid measures and causes of home injuries in children**

<b>Causes of home injuries</b>	<b>Frequency of correct answer</b>	<b>%</b>
▪ Leaving unsafe equipment such as faulty electrical appliance without proper attention cause domestic accident	554	88.2
▪ Keeping medications where children can give access to swallow them cause domestic accident	232	36.9
▪ Allowing children to play unsupervised can make them prone to domestic accident	552	87.9
▪ Poor maintenance of facilities in the home such as staircase without railing can cause domestic accident	560	89.2
<b>knowledge of the first aid</b>	<b>No.</b>	<b>%</b>
<b>Heard about first aid</b>		
▪ Yes	524	83.4
▪ No	104	16.6
<b>Source of knowledge</b>		
▪ Textbooks	74	11.8
▪ Doctors/nurses	134	21.3
▪ Part of an educational curriculum	106	16.9
▪ Television/radio	154	24.5
▪ Friends and relatives	132	21.0
▪ Attended training course	28	4.5

\* P-value  $\leq 0.05$  is considered significant

**Table (3): Factors affecting mother's attitude scores toward home injuries.**

	Attitude of home injuries No. (%)			Total	P-value
	Positive No.= 4	Indifferent No.= 582	Negative No.= 42		
<b>Educational level of mother</b>					
▪ Postgraduate	4 (100)	158 (27.1)	4 (9.5)	166 (26.4)	0.001*
▪ University	0	94 (16.2)	12 (28.6)	106 (16.9)	
▪ Secondary education	0	256 (44.0)	4 (9.5)	260 (41.4)	
▪ Basic education	0	14 (2.4)	0	14 (2.2)	
▪ Read and write	0	14 (2.4)	12 (28.6)	26 (4.1)	
▪ Illiterate	0	46 (7.9)	10 (23.8)	56 (8.9)	
<b>Mother occupation</b>					
▪ Employed	2 (50.0)	332 (57)	28 (66.7)	362 (57.6)	
▪ Housewife	2 (50.0)	250 (43.0)	14 (33.3)	266 (42.4)	
<b>Educational level of father</b>					
▪ Postgraduate	0	88 (15.1)	2 (4.8)	90 (14.3)	0.001*
▪ University	0	112 (19.2)	14 (33.3)	126 (20.1)	
▪ Secondary education	4 (100.0)	322 (55.3)	6 (14.3)	332 (52.9)	
▪ Basic education	0	10 (1.7)	0	10 (1.6)	
▪ Read and write	0	32 (5.5)	4 (9.5)	36 (5.7)	
▪ Illiterate	0	18 (3.1)	16 (38.1)	34 (5.4)	
<b>Father Occupation</b>					
▪ Employed	4 (100.0)	552 (94.8)	42 (100)	598 (95.2)	
▪ Not working	0	30 (5.2)	0	30 (4.8)	
<b>Marital status</b>					
▪ Married	4 (100.0)	534 (91.8)	40 (95.2)	578 (92.0)	0.607
▪ Divorced/ Widow	0	48 (8.2)	2 (4.8)	50 (8.0)	
▪ Maternal Age (Mean ±SD)	32.50 ±1.7	30.01 ±4.4	31.05 ±6.6	-	0.218
▪ Number of Children (Mean ±SD)	1.50 ±0.5	1.62 ±0.8	1.93 ±0.9	-	0.05*
▪ Age of Child (Mean ±SD)	4.00 ±1.2	2.97 ±1.2	2.76 ±0.9	-	0.110

\* P-value ≤ 0.05 is considered significant

**Table (4): Regression analysis of factors affecting score of mother's attitude about home injuries**

Variables	Beta	P-value	95% CI for B
<b>(Constant)</b>	69.224		
▪ Mother age (years)	-0.045	0.663	-.245 to 0.156
▪ Child's Age (years)	0.325	0.421	-.468 to 1.119
▪ Heard about first aid (yes or no)	3.896	0.006*	-6.696 to -1.096-
<b>Mothers Education</b>			
▪ University	6.565	0.001*	-9.765 to -3.365-
▪ Secondary education	2.471	0.032*	-4.722 to -.220-
▪ Basic education	-4.689	0.153	-11.119 to 1.741
▪ Read and write	-4.488	0.100	-9.834 to 0.858
▪ Illiterate	-6.823	0.001*	-10.789 to -2.858-
<b>Mother's Occupation</b>			
▪ Employed	5.926	0.001*	-8.598 to -3.254
▪ Housewives	0.122	0.913	-2.062 to 2.306
<b>Marital Status</b>			
▪ Divorced / Widow	-.374	0.829	-3.776 to 3.028
<b>Source of knowledge about first aid</b>			
▪ Textbooks	7.542	0.001*	4.293 to 10.790
▪ Physician/Nurses	1.705	0.224	-1.044 to 4.454
▪ Part of an educational curriculum	2.740	0.075	-0.280 to 5.759
▪ Friends and relatives	1.571	0.258	-1.153 to 4.296
▪ Attended training course	2.681	0.243	-1.822 to 7.183

\* P-value  $\leq 0.05$  is considered significant

## الملخص العربي

معارف واتجاهات الامهات تجاه الإصابات المنزلية للأطفال دون سن الخامسة

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**الخلفية:** تعتبر إصابات الأطفال المنزلية مشكلة صحية مجتمعية. هي السبب الرئيسي لوفاة الأطفال دون سن الخامسة. يصاب الآلاف من الاطفال كل عام نتيجة لذلك. يمكن تجنب معظم هذه الحوادث من خلال زيادة الوعي وتحسين المناخ المنزلي وتحسين أمان المنتج. **الهدف من الدراسة:** هدفت الدراسة الحالية إلى تقييم معرفة وسلوك الأمهات تجاه الإصابات المنزلية والعوامل المساعدة لها للأطفال دون سن الخامسة. طرق البحث: دراسة مستعرضة من بداية مارس إلى نهاية مايو 2019 في العيادات الخارجية للأطفال بمستشفى بنى سويف الجامعي تضمنت 628 من الأمهات وذلك عند التردد على العيادات لمتابعة أطفالهن. تم جمع البيانات باستخدام استبيان مكون من ثلاثة أجزاء يتضمن البيانات الديموغرافية، وقياس نسبة وأنواع الإصابات المنزلية للأطفال، وقياس معرفة وسلوك الأمهات تجاه الإصابات المنزلية للأطفال. **النتائج:** أظهرت النتائج أن الإصابات المنزلية بين الأطفال دون سن الخامسة بلغت 42.4%. نسبة إصابات الجروح 51.1%. 16.6% من الامهات لم يكونوا على معرفة بتدابير الإسعافات الأولية. 78% من الأمهات لديهم معرفة و 8.6% ليس لديهم معرفة تجاه الإصابات المنزلية. 92.7% من الامهات لديهم سلوك غير مبالاه و 0.6% سلوك ايجابي تجاه الإصابات المنزلية. أظهرت النتائج أن هناك دلالة احصائية بين سلوك الامهات تجاه الإصابات المنزلية وكلاً من: أمية الامهات، المستوى التعليمي، وكون الام عاملة، وقراءة كتب عن الإسعافات الأولية. **الاستنتاجات:** وجد أن الأمهات لديهم معرفة بالمخاطر المتعلقة بالإصابات المنزلية في مرحلة الطفولة، بينما معظم الامهات لديهم سلوك غير مبالاه.