

## Effect of Educational Interventions Regarding Home Accidents Among Children Under Age of Six on Mothers in Rural Areas

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### Abstract

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**Background:** annually, home accidents are the major reason for causing millions of children's permanent disabling. The study **aim** to evaluate the effect of educational interventions regarding home accidents among children under age of six on mothers in rural areas. **Research Design:** A quasi-experimental design was used. **Setting:** The present study was conducted at Shaybah, Zagazig City, Sharkia Governorate. **Subjects:** 119 mothers were recruited from the previous location. The present study included three tools: **Tool I.** A questionnaire sheet of two parts, personal characteristics of the mothers and mother's information about home accidents between children. **Tool II.** An observational checklist used to determine self-reported mothers practices regarding first aid of home accidents. **Tool III.** It is intended to assess the mothers' attitudes regarding preventing child injuries in the home. **Results:** The total satisfactory knowledge was increased from 16% in pre-intervention to 99.2% immediately post-intervention. The whole adequate practice increased from 16.8% in pre-intervention to 89.1% at post-intervention. Additionally, highly statistically significant differences between mothers to their total attitude toward home accident prevention throughout intervention phases ( $p<0.001$ ). **Conclusion:** Current research results provided evidence that after applying the educational intervention among mothers with children less than six years in rural areas, improved their knowledge, and practice about home accidents for all changes ( $p<0.001$ ). **Recommendations:** Mothers should receive supportive techniques and strategies if their children are under the age of six.

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**Key Words:** Mothers, Home Accidents, Rural, Children, Knowledge, Practice, Attitude.

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### Introduction:

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Home accidents are a worldwide public health issue, with morbidity and mortality as a result (Royal Society for the prevention of home accidents, 2016, World Health Organization, 2016). Accidents can occur in various places; nevertheless, 40% of mortalities and half of the accidents occur in and around the

house, primarily among boys aged one to five years old. (Kendrick et al., 2013, National Safe Kids Campaign, 2016). Additionally, home accidents in Egypt have become a common public health problem and disabilities in preschool age is the principal cause (Eldosoky, 2014). Nevertheless, community development and increased Knowledge in Egyptian society significantly impacted reducing

injury rates among children under the age of six, which were 72.5 percent in 1998, 50.3 percent in 2003, and 39.8 percent in 2014 (**Kamal, 2013**).

Accidental injuries to young children and newborns are more severe, but they can be avoided with the right information and protective practices. Because of their natural urge to explore the environment and their incapability to recognize the threats of their actions, young children are frequently involved in accidents. Minor injuries are unavoidable as children learn through experience, but providing a safe environment, as well as attentive supervision and setting safety limits, can lessen the dangers. Mothers must remember to strike a balance between overprotecting their children on the one hand and allowing them to learn about the dangers in their environment on the other (**Mohammed et al., 2013**).

First aid is defined as the giving of early care for an illness or injury by a non-expert but trained individual until medical assistance can be summoned. Prompt first aid for children in need of emergency care can make a major difference in the outcome (**Kendrick et al., 2013**).

The typical reason of home-injury mortalities are suffocation, fire and burns, sinking, chocking, falls, poisoning and epistaxis. Depending on **Centers For Disease Control and Prevention (2015)**, the majority of house accidents exist in areas with fluids, such as bathrooms, kitchens, pools, hot tubs, or areas with heat or flames, such as a kitchen or a barbecue grill. Moreover, **Ümmühan and Behice (2016)** stated that burn injuries are a major reason of unintentional injuries in children,

according to the report. Burn injuries were more prevalent in children under the age of five and females. Accidents at home can also occur as a result of poisonous substances stored beneath the kitchen sink, in the medicine cabinet, in the garage or garden shed, or even in a purse or other location where prescriptions are stored. Falling from a bed, sofa, or cot on stairs, slippery floors, from high windows, or from tilting furniture is a possibility (**El-Sabely et al., 2014**).

The community health nurse plays an essential role in mothers' health education for preventing, reducing home-accidents and the accurate practice of first aid. Ensuring Knowledge about safety actions for in-home accidents have a significant influence on reducing the prevalence of injuries among children. The prevention of child injuries at home has become a critical aim for children's well-being and health promotion. (**Kendrick et al., 2013**).

### **Significance of the study:**

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Besides all health care personnel, Healthcare nurses have a crucial role in preventing accidents among children. Furthermore, educating families, particularly mothers, about hazardous factors and defending measures and how to minimize risk-factors. In terms of their role in preventing child home accidents, they focused primarily on educating children and families about home safety through face-to-face discussions and leaflets. In Egypt, the mother is a significant caregiver and responsible for the protection of children. For that reason, the study of mother performance on prevention of home-accidents is useful in promoting future generations (**Kumari et al., 2017**).

**Aim of the study:**

Evaluate the effect of educational interventions regarding home accidents among children under age of six on mothers in rural areas through:

1. Assess rural mother's knowledge, practice, and attitudes towards home accidents among children less than six years pre-intervention.
2. Design and implement educational interventions regarding home accidents towards home accidents among children under age of six for mothers in rural areas.
3. Evaluate rural mother's knowledge, practice, and attitudes towards home accidents among children less than six years post-intervention.

limit of 95%, power of 85%, and a total population was 400 mothers (**Sackitey, 2018**). So, the computed sample size was 146 mothers. However, 15 mothers did not complete the education program sessions; five mothers did not meet the post-test and seven mothers did not attend follow up tests. So, the subject sample was 119 mothers.

**Research Hypothesis**

- The educational intervention would enhance rural mothers' knowledge, practice and attitudes score regarding home accidents among children less than six years.

**Subjects and Methods:****Research design:**

A quasi-experimental plan with pre-post- evaluation was applied.

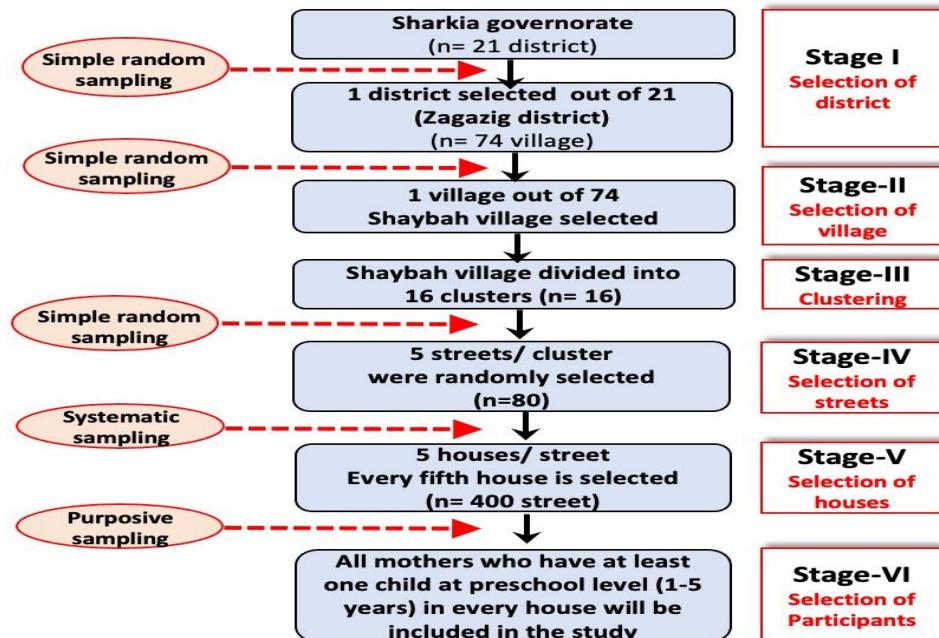
**Setting:**

The research was carried out in Shaybah, Zagazig City, at Sharkia Governorate, Egypt.

**Sample size**

Sample size was estimated by Epi info. 7.0 programs based on confidence

### Sampling technique:



**Figure (1):** A schematic diagram showing the multistage cluster sampling technique for the studied mothers

### Inclusion criteria:

The topics employed for the current research include only mothers with one child at preschool level i.e. 1-5 years, can read and write and ready to be involved. Exclusion criteria include mothers don't have any preschool children, have any mental disorder, or rejected to contribute.

### Tools of data collection:

Three tools established by the researchers, according to recent related literature, were applied to obtain the needed data for attaining study objectives:

**Tool (I):** An interview questionnaire; it include of two parts:

- **Part (1):** For data collecting of demographic records of the mothers such as code number, age, sex, qualification, marital status, qualification, family size, number of rooms, income and source of Information.
- **Part (2):** This involved questions regarding mother's Knowledge about home accidents guided by **Kendrick et al. (2013)**, and **Sackitey (2018)**, it dealt with as basic Knowledge as definition, aims, contents of home pharmacy, the Egyptian ambulance number, civil defence, and several Egyptian police. Additionally, it included mother's awareness

concerning all types of home injuries among children and ways of prevention.

#### ❖ Scoring system:

The entire, right answer was scored 2, an incomplete correct answer was scored 1, and an incorrect answer was scored zero. For each area of knowledge, the scores of items were summed up and divided by the number of items; the total score of knowledge was 48 points. Evaluation of mother's knowledge 60% or more was considered satisfactory, and less than 60% considered unsatisfactory. The Cronbach's alpha was 0.878.

**Tool (II):** An observational checklist used to determine self-reported mothers practices regarding first aid of home accidents. It was adopted from **Fahmy et al. (2011)**. This tool was intended to assess practices regarding first aid. It consisted of: Minor and major wounds (15 steps), epistaxis (10 steps), burn (12 steps), fall/fracture, and dislocation (32 steps), chocking (15 steps), and poisoning (6 steps).

#### ❖ Scoring system:

Each step observed "done" was scored one and the "not done" zero. The total score of Practice was (90) points. The scores of the practices were summed up. The practice was considered adequate ( $\geq 60\%$ ), and inadequate ( $<60\%$ ). The Cronbach's alpha was found to be 0.985.

**Tool (III):** This section of the study sought to assess the mothers' attitudes regarding preventing child injuries in the home. It was guided by **Kamel et al. (2014)**, Ümmühan and

**Behice, (2016).** Mothers were asked to respond by any of 3 options: "Agree," "Disagree," or "Not sure," for each statement. Composed of 11 attitude statements, it is considered positive if  $>60\%$  and negative if  $<60\%$  based on statistical analysis.

#### Content Validity and Reliability of Tools:

Five experts from the community health nursing specialties tested the validity of data collection tools to evaluate clearness, relevance, applicability, comprehension, and understanding of the tools; all recommended tools adjustments were performed.

#### Fieldwork:

Beginning in March 2020 and ending in July 2020, the researchers conducted an educational program for mothers that included lectures, group discussions, posters, videos, and booklets. The study was performed in 4-stages: assessment, planning, implementation, and evaluation.

#### ▪ Assessment phase (Pre-intervention phase):

Once authorization to continue with the study was given, the researcher began preparing a plan for data collection by dividing the village into (clusters) with the help of Omda, who appointed a facilitator in the same hamlet to assist the researchers. The investigator interviewed the mothers. The researcher usually started by introducing herself to mothers and explaining the study's aim and nature briefly and reassured them that the

information obtained is firmly intimate and not be included in any applications other than current study. Researcher conducted home visits, and data about basic knowledge, attitude and practice were pre-tested by personally and individually interview every mother. A range from 6-9 interviews/day for about 15–20 minutes were performed based on each mother's response.

- **Planning phase:**

Based on a literature review, characteristics of the sample, and the obtained results from assessment phase, the researcher planned the intervention sessions' content. The researcher prepared the learning booklet, and its content was validated and then distributed to mothers to be used as a guide for self-learning.

**General objective:** The general objective of the mothers' sessions was to raise the rural mother's knowledge, practice, and attitude in case of children (<5 years) home-accidents.

**Specific objectives:** By finishing this sessions, rural mothers would be able to:

- Identify the definition, aim, contents of home pharmacy, the Egyptian ambulance number, and civil defence.
- Discuss the causes of the wound and its prevention.
- Explain the causes of falling/fracture and its prevention.
- Recognize the causes of epistaxis and its prevention.
- Describe the causes of choking and its prevention.
- Identify the causes of poisoning and its prevention.
- Discuss the causes of burn and its prevention.

- Apply the mother's practice first-aid actions to her child if exposed to any home-accident.

- **Implementation phase: (Intervention phase):**

All mothers involved in current study were trained for health education intervention for three months, from March-2020 to end of July-2020. To ensure that all mothers were involved, the message was presented utilizing a question and response format. The sessions focused on the incidence of different types of wounds, causes, appropriate immediate activities and ways of avoidance, mainly the simple economic methods to make home safe for children—using PowerPoint presentation and six educational videos for each type of accident in the present study on a laptop, in addition to mother's group-discussion. Besides, the researcher helped mothers gain feedback about causes of wounds, falling/fracture, epistaxis, choking, poisoning, burn, and its prevention. These mothers were also given booklets with beautiful graphics and clear, basic wording to guide following the session.

- **Evaluation phase: (post-intervention phase):**

This phase was conducted after three months of health education intervention by applying the same tools of the pre-test to compare changes in mothers' Knowledge, Practice and attitudes.

**Pilot study:**

Prior to carrying out the main study, a pilot-study was performed on 19

mothers who were later excepted from the main study sample. The goal of the pilot research was to evaluate questions about any tools' ambiguity and feasibility. It also helped the researcher to calculate the time required to fill in the forms.

#### **Administrative and ethical considerations:**

Study permission was admitted officially from the Faculty of Nursing to the responsible authorities of research location to attain their consent for data gathering. All ethical issues were taken into account during all study phases.

#### **Statistical Design**

On an IBM compatible computer, the data were gathered, tabulated, and analyzed by SPSS version 20.0 (SPSS Inc., Chicago, Illinois, USA). The statistical tests used are percentage, mean and standard deviation, Chi-square, paired T-test, independent T-test, F-test and Spearman and Pearson correlation. A value of  $p<0.05$  was considered to be statistically significant.

#### **Results:**

**Table (1):** represent the distribution of mothers according to their demographic characteristics; 44.5% of mothers were 25-<35 years old, where their mean age was  $31.80\pm7.63$ . The study also inspected the mothers' educational background; it is noticed that mothers with university graduate-level dominated the study (43.7%). As well as housewives (63.0%). As for the marital status of the mothers (97.5%) were married, and 2.5% were either divorced or widowed. Moreover, of the

participants' mothers, 79.0% were having (2-4 children) where 47.1% have four rooms or more. The study also examined the income status of the mothers; 71.4% of them reported that their income was sufficient.

**Figure (1):** Illustrates that the sources of the mothers' Knowledge regarding home accidents were 41.2% of mothers said they had gained their knowledge from mass media, followed by friends/relatives (36.1%), then doctors/nurses (14.3%).

**Table (2):** describes the distribution of mothers according to the previous occurrence of home accidents. Wounds (54.05%) and fractures (41.44%) were observed as the most widespread injuries in children, while the least one was poisoning (2.70%). Additionally, 90.1% of the injured children were in the age  $\geq 3$  years, and 67.6% were male.

**Table (3):** Regarding mothers' Knowledge about causes and preventive actions of home- accidents and basic first-aid actions, table (3) clarify highly significant increases in the score of all studied outcomes in the post- than pre-intervention ( $p<0.001$ ). Additionally, the total satisfactory Knowledge increased from 16% in pre-intervention to 99.2% in post-intervention and slightly decreased to 87.4% at follow-up intervention.

**Figure (2):** illustrates that the total mean score of mothers' Knowledge increased from  $14.395\pm5.51$  pre-intervention to  $30.81\pm4.65$  immediately post-intervention and slightly decreased to  $29.23\pm8.09$  at follow-up intervention.

**Table (4):** showed that only 21% of the study sample adequately

identified the first aid of burn at pre-intervention compared to 94.1% in post-intervention and 84% in follow-up intervention. A considerable change was noticed between the studied sample pre, and post-intervention related to first aid of choking among males and females ( $X^2= 139.808$  at  $p= 0.001$ ). Furthermore, the total adequate Practice increased from 16.8% in pre-intervention to 89.1% immediately post-intervention. All the variations observed were highly significant ( $p= 0.001$ ).

**Figure (3):** illustrates that the total mean score of mothers' Practice increased from  $12.43\pm7.03$  at pre-intervention to  $37.29\pm9.38$  immediately post-intervention and slightly decreased  $31.76\pm11.68$  at follow-up intervention.

**Figure (4):** represent that total positive attitude increased from 89.1% in

pre-intervention to 92.4% after intervention and improved to 99.2 at follow-up.

**Table (5):** Indicates no statistically significant relations between the studied sample's data and Knowledge Practice and attitude.

**Table (6):** displays correlations among types of home accidents, child age and child gender. There was a significant direct correlation between child gender and burn (.429\*\*) and between child gender and fracture (.385\*\*).

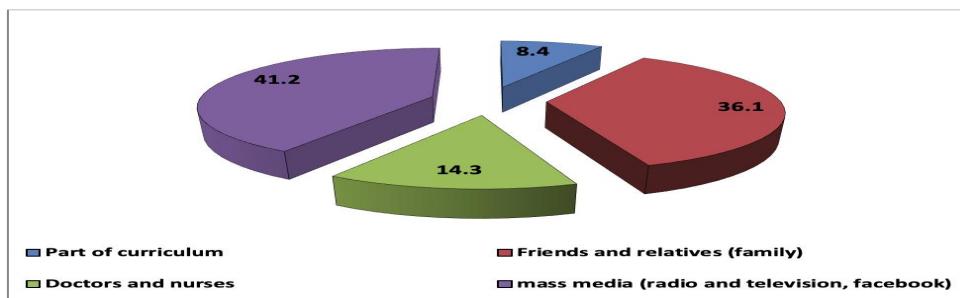
**Table (7):** shows that a highly statistically significant direct correlations were recognized among mothers' knowledge, practice and attitude in pre, post, and follow-up intervention ( $p<0.001$ ).

**Table (1):** Number and percentage distribution of mothers according to their

demographic parameters

	Parameter	No	%
<b><u>Age:</u></b>			
<25		19	16.0
25-<35		53	44.5
35-<45		39	32.8
45 +		8	6.7
<b><u>Mean of age:</u></b>		31.798 ± 7.63	
<b><u>Occupation:</u></b>			
Governmental worker		44	37.0
Housewife or not working		75	63.0
<b><u>Educational level</u></b>			
Basic education		16	13.4
Diploma		51	42.9
University and above		52	43.7
<b><u>Marital status</u></b>			
Married		116	97.5
Widowed		2	1.7
Divorced		1	.8
<b><u>Number of children</u></b>			
2-4		94	79.0
5-7		22	18.5
More than 7		3	2.5
<b><u>Number of rooms in the house</u></b>		50	42.0
3		13	10.9
4 or more		56	47.1
<b><u>Crowding index</u></b>			
Not crowded		42	35.3
Crowded		40	33.6
Severely crowded		37	31.1
<b><u>Income</u></b>			
Insufficient		14	11.8
Sufficient		85	71.4
sufficient and saving		20	16.8

**Figure (1):** Source of the Mothers' Knowledge Information about Home Accident (n=119).



**Table (2):** Number and percentage distribution of mothers according to the previous

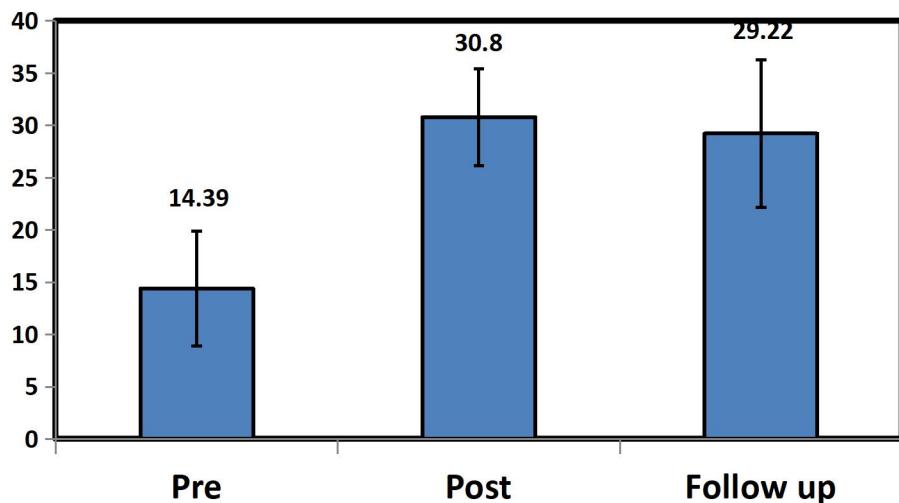
occurrence of home accidents.

Parameters	No	%
<b>Occurrence of previous home accidents</b>	111	93.3
<b>Type of accidents</b>		
Wound	60	54.05
Burn	43	38.74
Chocking	10	9.01
Epistaxis	8	7.21
Fracture	46	41.44
Poisoning	3	2.70
Hospital referral	102	91.9
<b>Age of children</b>		
<3 years	11	9.9
≥3 years	100	90.1
<b>Gender of children</b>		
Male	75	67.6
Female	36	32.4

\*\*Items not mutually exclusive

**Table (3):** Home accident correct knowledge difference of studied sample pre-, post-, and follow-up intervention (n= 119).

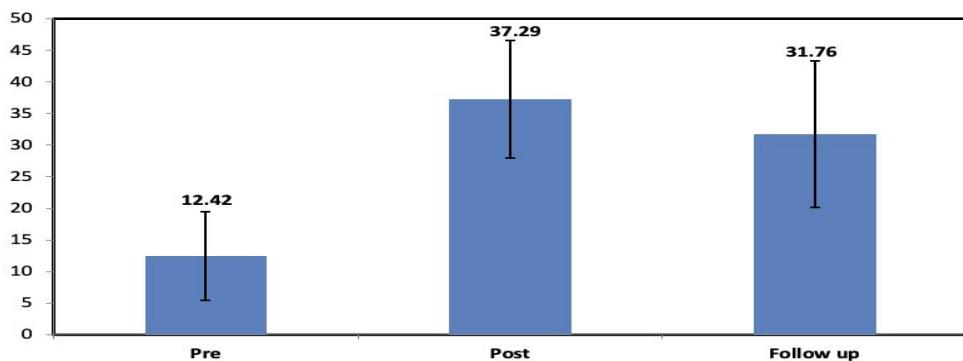
Parameter	Pre Intervention		Post Intervention		Follow-up		Pre-, Post-		Pre-, Follow	
	N	%	N	%	N	%	X <sup>2</sup>	Sig	X <sup>2</sup>	Sig
<b>Definition</b>	15	12.6	105	88.2	10 3	86. 6	136.1 4	<0.001* *	130.16	<0.001* *
<b>Aim</b>	20	16.8	110	92.4	10 7	89. 9	137.3 1	<0.001* *	127.79	<0.001* *
<b>Ambulance No</b>	13	10.9	119	100	99 2	83. 2	191.1 2	<0.001* *	124.73	<0.001* *
<b>Civil No</b>	19	16	115	96.6	10 4	87. 4	157.3 9	<0.001* *	121.57	<0.001* *
<b>Police No</b>	18	15.1	113	95	10 0	84. 0	153.4 3	<0.001* *	113.02	<0.001* *
<b>Pharmacy content</b>	97	81.5	111	93.3	10 5	88. 2	7.47	<0.001* *	2.10	>0.05ns
<b>Causes of wound</b>	16	13.4	117	98.3	98	82. 4	173.8 5	<0.001* *	113.21	<0.001* *
<b>Prevention of wound</b>	19	16	92	77.3	85	71. 4	89.97	<0.001* *	74.39	<0.001* *
<b>Causes of burn</b>	88	73.9	109	91.6	10 4	87. 4	12.99	<0.001* *	6.90	0.009**
<b>Prevention of burn</b>	31	26.1	106	89.1	99	83. 2	96.75	<0.001* *	78.38	<0.001* *
<b>Causes of fracture</b>	21	17.6	92	77.3	78	65. 5	84.94	<0.001* *	56.19	<0.001* *
<b>Prevention of fracture</b>	9	7.6	97	81.5	91	76. 5	131.7 2	<0.001* *	115.97	<0.001* *
<b>Causes of chocking</b>	15	12.6	107	89.9	10 3	86. 6	142.3 4	<0.001* *	130.16	<0.001* *
<b>Prevention of chocking</b>	15	11.1	12.6	93.3	10 5	88. 2	155.4 3	<0.001* *	136.14	<0.001* *
<b>Causes of epistaxis</b>	19	16	104	87.4	10 1	84. 9	121.5 7	<0.001* *	113.02	<0.001* *
<b>Prevention of epistaxis</b>	18	15.1	106	89.1	10 3	86. 6	130.3 8	<0.001* *	121.46	<0.001* *
<b>Causes of poisoning</b>	13	10.9	110	92.4	10 1	84. 9	158.3 1	<0.001* *	130.38	<0.001* *
<b>Prevention of poisoning</b>	15	12.6	104	87.4	10 2	85. 7	133.1 3	<0.001* *	127.25	<0.001* *
<b>Total Knowledge Satisfactory</b>	19	16	118	99.2	10 4	87. 4	168.5 8	0.000	121.5 7	:0.001**
<b>Unsatisfactory</b>	100	84	1	0.8	15	12. 6				



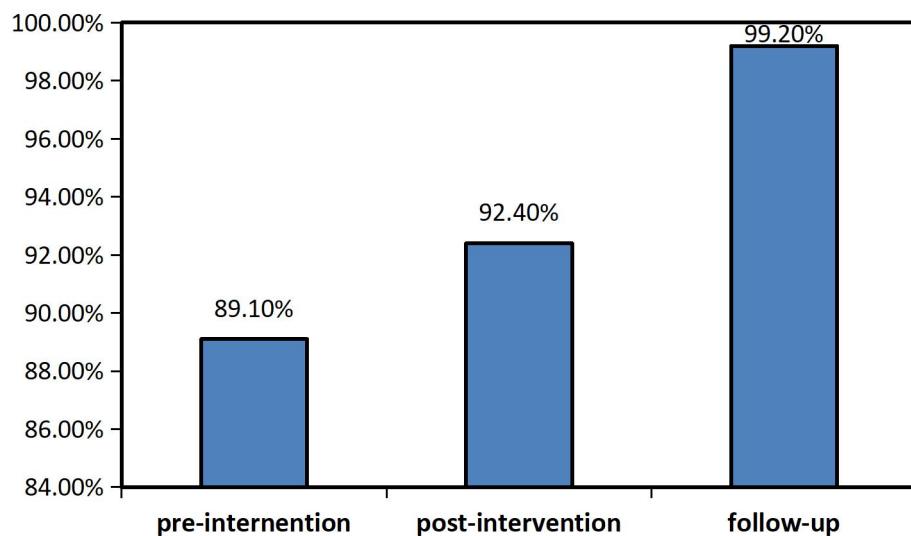
**Figure (2):** Total means scores knowledge difference of Studied Sample pre-, post- and follow-up intervention (n= 119).

**Table (4):** Home Accident Practice Difference of Studied Sample Pre, Post, and Follow Up Intervention (n= 119).

Parameter	Pre intervention		Post Intervention		Follow up		Pre-Post		Pre-Follow	
	N	%	N	%	N	%	X <sup>2</sup>	Sig	X <sup>2</sup>	Sig
<b><u>First aid of wound</u></b>										
Adequate	22	18.5	103	86.6	103	86.6	110.55	0.000	110.55	0.000
Inadequate	97	81.5	16	13.4	16	13.4				
<b><u>First aid of burn</u></b>										
Adequate	25	21	112	94.1	100	84	130.19	0.000	94.78	0.000
Inadequate	94	79	7	5.9	19	16				
<b><u>First aid of fracture</u></b>										
Adequate	20	16.8	101	84.9	94	79	110.30	0.000	92.19	0.000
Inadequate	99	83.2	18	15.1	25	21				
<b><u>First aid of poisoning</u></b>										
Adequate	8	6.7	93	78.2	77	64.7	124.27	0.000	87.13	0.000
Inadequate	111	93.3	26	21.8	42	35.3				
<b><u>First aid of epistaxis</u></b>										
Adequate	15	12.6	110	92.4	94	79	152.07	0.000	105.64	0.000
Inadequate	104	87.4	9	7.6	25	21				
<b><u>First aid of chocking</u></b>										
Adequate	18	15.1	109	91.6	87	73.1	139.81	0.000	81.14	0.000
Inadequate	101	84.9	10	8.4	32	26.9				
<b><u>Total Practice</u></b>										
Adequate	20	16.8	106	89.1	96	80.7	124.73	0.000	97.14	0.000
Inadequate	99	83.2	13	10.9	23	19.3				



**Figure (3):** Total means scores practice difference of studied sample pre-, post- and follow-up intervention (n= 119).



**Figure (4):** Total home accident attitudes difference of studied sample pre, post, and follow-up intervention.

**Table (5):** Relations between Personal Data Knowledge Practice and Attitude of Studied Sample (n= 119).

Parameter	Knowledge		Practice		Attitude	
	F	sig	F	sig	F	sig
Age	0.503	0.681	0.637	0.593	0.977	0.406
Job (T test)	0.399	0.691	0.105	0.917	-0.722	.472
Marital status	0.097	0.908	0.488	0.615	0.185	0.832
Education	10.016	0.000	4.797	0.003	73.688	0.000
Crowding index	1.563	0.214	1.165	0.316	0.316	0.833
Income	1.595	0.207	1.853	0.161	0.273	0.762
Occurrence of accidents (T test)	0.341	0.733	0.593	0.554	-1.021	0.309

**Table (6):** Correlations among Types of Home Accidents, Child Age and Child Gender (n=119).

Parameters	Child age		Child gender
	R	Sig.	
<b>Wound</b>	R	-0.397	-0.121
	Sig.	<0.001***	0.190
<b>Burn</b>	R	0.036	0.429
	Sig.	0.701	<0.001***
<b>Chocking</b>	R	-.006	0.002
	Sig.	0.949	0.982
<b>Epistaxis</b>	R	0.075	-0.131
	Sig.	0.415	0.155
<b>Fracture</b>	R	0.033	0.385
	Sig.	0.725	<0.001***
<b>Poisoning</b>	R	-0.003	-0.017
	Sig.	0.970	0.856

**Table (7):** Correlations between mothers' knowledge practice & attitude among studied sample pre, post, and follow-up intervention (n=119).

Items	Spearman correlation	Practice		Attitude
<b>Pre program</b>				
Knowledge	r P value	0.637 0.000	0.252 0.006	
<b>Immediate post</b>				
Knowledge	r P value	0.940 0.000	0.806 0.000	
<b>Post 3 months</b>				
Knowledge	r P value	0.848 0.000	0.144 0.119	

### Discussion:

Childhood home accidents get less attention than other diseases, despite their prevalence and preventability. Every year, more than one million children under the age of five are injured in household accidents, for which they are transported to emergency departments in Egypt. Most of them could be avoided by raising awareness and improving home environment. Additionally, the first five years of child's life are regarded crucial because they teach the infant to examine and react to his environment. Injuries in children (<5.0 years old) are a significant cause of injuries and deaths, necessitating active reduction and intervention. The targeted populations in the current study were rural mothers. This target is selected because parents, particularly mothers, play an essential role in providing a safe environment to decrease or prevent children's home accidents. Additionally, home accidents are more common in rural areas than in urban areas according to **El-Sabely et al. (2014)**, and **El Seifi et al. (2018)**.

The current study revealed the primary sources of Information about home accidents were T.V./Radio/Facebook followed by friends/relatives (family) and doctors/nurses. This might be because the media plays such a large role in distributing Information. It is the most effective instrument for raising societal awareness. This finding is supported by research conducted in Menoufia Governorate, Egypt, by **Megahed et al. (2016)**, which mentioned that mass media were the main source of Knowledge for 43.3% of the participants. In the same line, the study done in India by **Gholap (2017)** found that 55.6% got Information about home accidents prevention. From television and radio.

Regarding the mothers' age in the present study, the highest percentage of mothers was 25-<35 years. This finding agrees with that of **El-Sabely et al. (2014)** in Egypt, who found that the highest percentage of mothers (35.3%) was in the age group of 25 - < 35 years.

The present study result revealed that less than two-thirds of rural mothers were not working. This finding agrees with that of **El-Sabely et al. (2014)** in Egypt, who mentioned that 58% of mothers were not working, and the majority of mothers were housewives, and the home accidents rate was high among their children. This finding is supported by research conducted in Menoufia Governorate, Egypt, by **Megahed et al. (2016)**, which reported that 69.3% of the mothers were housewives.

In the present study, the distribution of rural mothers according to the previous occurrence of home accidents, wounds represented more home injury than fractures. This finding is in agreement with that of a study conducted in **Sharkia Governorate, Egypt**, by **El-Sabely et al. (2014)**, which found that 84.7% of the mothers reported that the children had suffered from 37.3% cut wound, followed by 29.3%, fall, 12% burn, 3.3% animal bite then 1.3%. poisoning from an injury at home

The current study result revealed that most of the present injured children were aged  $\geq$ three years, and regarding sex differences, slightly more than two-thirds of the injured children were boys. These results agree with those of **Eldosoky (2014)**, which aimed to assess home-related injuries among children: Knowledge, attitudes and Practice about first aid among rural mothers and found that more than half of the injured children were boys (58.7%) than girls (41.3%). As well, this is supported by **El Seifi et al. (2018)** and **Ozturk (2010)**, who recorded that boys children are the most affected by injuries (60.3%). It's probably because boys are active and rushing than girls.

One of the main objectives of the current study was the assessment of mothers' Knowledge scores regarding causes and prevention of home accidents will be improved after the educational intervention. This study showed that rural mothers' Information about the six types of accidents was insufficient. Level of education and socioeconomic status were found to impact mothers' Knowledge and Practice scores. Additionally, this finding is alarming and needs immediate and active measures to prevent such accidents by conducting education programs via mass media, including Information about accident prevention in school curricula and creating group education sessions in homes. **Wang et al. (2012)** in **China** recorded the same result that mothers' Information on injury avoidance and safety promotion was insufficient. This finding was also consistent with that of **Lafta et al. (2014)**, which aimed to assess mothers' Knowledge of domestic accident prevention involving children in **Baghdad City**, and found that only 6.3% of the mothers achieved a score that indicated good Knowledge of accident prevention versus 93.7% who showed poor Knowledge.

Moreover, this study is in line with **Megahed et al. (2016)**, who found that 64.8% of the mothers had insufficient Information about home accidents. The findings of **Abd El-Aty (2005)** evaluated information and Practice of 600 mothers in rural areas, **Assiut Governorate**, towards home accidents between children under six years. They recorded that about three-quarters (74.5%) of mothers did not know home accidents causes. However, these previous findings disagree with those of a study of 230 mothers in Iran, where 75% were found to have good Knowledge (**Hatamabadi et al., 2013**).

Surprisingly, none of the sources from which the mothers got their information is associated with a good level of Knowledge in accident prevention. These differences may be related to the differences in the educational level of the studied sample and the location.

This study revealed that the following intervention, mothers' Information about the causes and prevention of rural mothers' home injuries improved significantly (burn, choking, wounds, falls, epistaxis accidents, and poisoning). This emphasizes the importance of educational programs in home accident avoidance. **Sobhy (2011)** studied the influence of a health promotion educational programme for 100 mothers in Benha City on accident prevention and first aid for preschool children, came up with a similar conclusion. and after the implementation of the health promotion programme, there was a noticeable improvement in mothers' Knowledge regarding preventing preschool children's home accidents. Furthermore, **El-Sabely et al. (2014)**, in Egypt, that avoidance and management of home injuries between children has been lately a focus and critical issue health promotion. Additionally, **El Seifi et al. (2018)** found that the mean score of total Knowledge increased from  $10.21 \pm 3.1$  in the pre-test to  $18.90 \pm 2.6$  in the post-test. Age, education level and previous home accidents were the significant predicting factors for total Knowledge. Furthermore, results were done in **Korle-Bu Teaching Hospital** by **Sackitey (2018)**, who reported that the majority of the rural mothers expressed high Knowledge on the causes and risk factors of home accidents among children aged 1-5 years, with a mean of  $11.5 \pm 1.2$  out of 15 points.

In the current research, the findings revealed that rural mothers' first aid Practice of concerns epistaxis, burn, choking, wounds, fracture, and poisoning were enhanced after the intervention. Concerning all aspects of mothers' Practice, there were highly statistically significant variations before and after the intervention. This conclusion was approved by **Sobhy (2011)**, who documented that mothers' Practice concerns first aid of home accidents between children under five years old was highly enhanced after application of the educational program. This finding was approved by **Kumari et al. (2017)**; they mentioned that in their experimental group, 100% of rural mothers were having a good level of Practice while no mothers fall in the category of average and poor levels of Practice score. This finding was also consistent with that of **Suryawanshi et al. (2016)**, whom they found that in pre-test majority of mothers (75%) had average Knowledge, (14%) had good Knowledge and (11%) had poor knowledge, whereas in post-test marked increases in Knowledge levels, that all the mothers (100%) had good knowledge regarding prevention of accidents among preschoolers. These findings are comparable with the study findings of **Janki et al. (2014)** mean post-test Knowledge score ( $24.14 \pm 2.01$ ) was higher than the mean pre-test Knowledge score ( $10.33 \pm 2.06$ ). In another study by **Silva et al. (2016)**, conducted on 155 mothers in a Basic Health Unit in northeastern Brazil, all of the self-applied questions indicated a considerable improvement in Knowledge regarding preventing childhood accidents. After the educational intervention, there appeared to be a significant difference with the questions concerning the Knowledge on preventing falls ( $p=0.000$ ), drowning ( $p=0.000$ ), and

intoxication ( $p=0.007$ ). Another Study by **Pratiksha et al. (2018)**, in rural areas of **Nagpur Distinct, Asia**, in which the t-test was 19.72 at the df 60 and level of significance 0.05. The findings of the study performed by **Kaur (2013)** also found that mean post-test Knowledge (18.25) was significantly higher than the pre-test Knowledge score (14.53). Similarly, findings found in **Gholap (2017)** reported that the majority of rural mothers have good Practice.

As for attitude, the present result study result showed a statistically significant positive attitude throughout intervention phases' improvements between pre-test and post-test intervention. Additionally, the total scores of their attitude increased to the vast majority post-intervention. This might be due to that results provided evidence that the health education program played a significant role in improving attitude scores among mothers were reported by a study done to evaluate the effect of a health education intervention on increasing Information and behaviour regarding home injuries and basic first aid procedures among rural mothers with preschool children, by **El Seifi et al. (2018)**, in **Egypt**. They found that the total attitude increased from  $6.19 \pm 1.8$  to  $10.26 \pm 2.3$  with  $p < 0.001$  for all changes.

## Conclusion

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In light of the results of the current study, it can be concluded that the study clarified that the application of health education intervention between rural mothers with children under six years of age improved their knowledge, practice, and attitude about home accidents. Additionally, the result showed that the post-test score was higher than the pre-

test score in knowledge, practice and attitude of mothers for all changes ( $p < 0.001$ ). Furthermore, highly significant direct relationship between mothers' knowledge, practice and attitude.

## Recommendations:

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1. Health promotion programs about home accidents prevention should be directed to rural mothers and children' caregivers in their homes.
2. Supportive strategies for families should be directed toward children less than six-year years.
3. Mass media has a vast responsibility in health awareness for accidents prevention among children.
4. Health education programs about causes of home accidents, first aid management and method of prevention are to be included in the curriculum at different levels.

The role of community health nurses, either individually or in the community, is very important in utilizing supportive strategies essential for home accidents prevention among children. Additionally, mothers' Knowledge, Practice and attitudes play a very important role in preventing home childhood accidents.

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