

Health Awareness of Mothers with Preschool Children Regarding Household Poisoning

Shymaa Mohamed Belal ⁽¹⁾, Fathia Ahmed Mersal ⁽²⁾, Mona Abo Bakr Abd Ellatif ⁽³⁾

1. B.Sc., Tanta University.

2. Professor of Community Health Nursing, Faculty of Nursing, Ain Shams University-Cairo-Egypt.

3. Assistant Professor of Community Health Nursing, Faculty of Nursing, Ain Shams University

Abstract

Background: Household Poisoning according to WHO refers to ‘an injury sustained due to exposure to a substance that causes cellular injury or death at home. **The study aimed to** assess health awareness of mothers with preschool children regarding household poisoning. **Research design:** A descriptive exploratory design was utilized to achieve the aim of this study. **Setting:** The study was conducted at the MCH center of Al shrouk city which include two center (100 m center, El_Rihan center) each center contains 6 clinics (dental, family planning, physiotherapy, antenatal care, immunization) the reason for choosing this city, it covers all class level. The sample size of 100m center was 150 mothers, and 110 mothers from El Rihan center. **Sample:** Purposive sample of 260 mothers from the above-mentioned setting was involved in this study. **Tools: Self-administered questionnaire: It included three parts as follows: Part (1):** Sociodemographic characteristic of mothers. **Part (2): sociodemographic characteristic of children part 3** Mothers knowledge regarding household poisoning. **Second tool : consist of two checklists.** First checklist: mothers reported practices as regards household poisoning prevention in kitchen, bathroom, storage area, **second checklist:** mothers reported practices as regards first aid for household poisoning of their children less than 6 years. **Third tool:** assessing mother attitude regarding household poisoning consist of 16 items (all precaution to prevent household. **Result:** 94.6% of mothers had unsatisfactory knowledge regarding household poisoning, 93.5% of mothers had inadequate total practices whenever, 75.0% of them had negative attitude toward prevention of household poisoning . **Conclusion:** there was a highly statistically significant correlation between studied mothers’ total knowledge and their reported practice. In addition, there were statically significant correlation found between mothers’ total knowledge and total attitude about household poisoning while there was no statistically significant relation between studied mothers’ total attitude and their total reported practices about household poisoning. **Recommendation:** Health education program for mothers about safe housing condition should be held in MCH centers by community health nurse. **Further study:** Improve community health awareness about poisoning prevention and how to provide first aid for children in emergency situations through mass media specially television and internet.

Keywords: Mothers, Health, Awareness, Children, Household, Poisoning, Prevention, First aid, Nursing.

Introduction:

Poisoning according to WHO refers to ‘an injury sustained due to exposure to a substance that causes cellular injury or death’. Exposure to such substances can be by ingestion, inhalation, injection, or absorption. Poisoning may occur intentionally or unintentionally, but most poisoning cases occur in children and most of these are unintentional. Acute childhood poisoning is a major health problem worldwide and is deemed one of the leading causes of unintended deaths. Also, it is still a serious issue in developing countries

where it represents a common cause of emergency department presentation and admission (*Aatef et al., 2022*).

According to WHO poisoning is one of the top five causes of death from unintentional injuries in children and mortality due to acute unintentional poisoning among children under 4 years of age varies from 0.3 to 7 per 100,000 people in different countries of the world. In low-income and middle-income countries, only 2% of poisonings occurred in children under 1 year of age, compared with 54% in the 1–4-year age group (*Jullien, 2021*).

Pesticides, household chemicals, medication, Carbon monoxide, poisonous plants, bites, and stings are common causes of childhood poisoning. Patterns of prevalence and risk factors change over time and in cases of acute poisoning of children, there are differences from one country to another and some variability is evident even between geographic areas within a country and according to the cultural and economic characteristics of different communities (*Benabdellah et al., 2020*).

Severe poisoning could have substantial and irreparable effects such as psychological emotional; it can also lead to death. Treatment for cases of poisoning could be costly for families as well as healthcare systems. Disability caused by poisoning not only affects a child's health but also his or her education and the life of other members of the family. Many costs are imposed on the healthcare system from cases of accidental poisoning (*Zyoud et al., 2019*).

The quality or state of mothers' awareness is the knowledge and understanding that something is happening or exists and mothers' awareness about poisoning prevention is the knowledge and understanding of poisoning and its preventive measures and their practices applicability toward prevention of poisoning for their children under 5 years (*Merriam, 2022*).

The home and its surroundings could be dangerous places for children, particularly for the possibility of unintentional poisoning. Children are naturally curious, exploring in and around the home. Thousands of children are admitted to emergency departments because they have inadvertently consumed some type of household product, medicine, or pesticide. Most of these "accidental" poisonings could have been prevented by increasing mothers' awareness about poisoning prevention and correct first aid practices in case of poisoning to prevent its complications (*Abu El-Naga et al., 2022*).

Mothers take fewer precautions against childhood poisonings if these precautions involve more effort, especially if they involve changes in their behavior and if community health nurses provide health education programs and increase mothers' awareness about poisoning prevention, safety measures and first aid, prevention is likely

to be more successful and more precautions will be promoted (*Kendrick, 2019*).

Significance of the Study: In Egypt, acute poisoning represents a significant proportion of emergency visits of children and young people. This labors a burden on healthcare, society, and the economy and thus, it drains resources and multiplies the workload. Poisoning is considered the fourth leading cause of death in Egypt after road traffic accidents, burns and drowning. Despite the difficulty to estimate the number of poisoning cases in Egypt due to lack of reliable data, chemicals and drug poisoning are the higher causes among children (*Aatef et al., 2022*).

Knowledge, attitude, and practice are key factors in reducing the incidence of poisoning. Lack of mothers' awareness is an identified risk factor for unintentional pediatric poisoning thus, the level and gaps of awareness among mothers should be determined and could be useful in developing prevention strategies.

Aim of the study:

This study aimed to assess health awareness of mothers with preschool children regarding household poisoning through: Assessing mothers' knowledge regarding household poisoning, assessing mothers practices regarding household poisoning, assessing mother attitude regarding household poisoning.

Research questions: -

- 1-What is the level of mothers' knowledge regarding household poisoning?
- 2-What is mothers reported practices level regarding household poisoning?
- 3-What are mothers' attitudes regarding household poisoning?
- 4- Is there a relation between mothers' knowledge and their practice?
- 5- Is there a relation between mothers' knowledge and their attitude?
- 6- Is there a relation between mothers' practice and their attitude?

Subjects and Methods:

Research design: A descriptive exploratory design was utilized to achieve the aim of this study.

Setting:

The study was conducted at the MCH center of Al shrouk city which include two centers (100 m center, El_Rihan center) each

center contains 6 clinics (dental, family planning, physiotherapy, antenatal care, immunization) the reason for choosing this city, it covers all class level. The sample size of 100m center was 150 mothers, and 110 mothers from El Rihan center.

Subjects:

Sample type:

A purposive sample of 260mother from the above-mentioned setting was involved in this study.

Sample Size:

Out of a total population of 6084, 260 mothers from the above-mentioned setting were recruited and sampled with a confidence level of 90%.

$$n = \frac{N \times p(1-p)}{\left[N-1 \times \left(d^2 \div z^2 \right) \right] + p(1-p)}_{\text{ect}}$$

proportion z = standard normal variation
 d = absolute error N = size of population

Data collection tools:

Interviewing questionnaire was used

to conduct this study:

It was developed by the researcher in simple Arabic language based on the extensive review of relevant and recent literatures. It was included five parts as following:

(a): Sociodemographic characteristics such as mothers' age, education, family income, previous occurrence of household poisoning, child characteristics (age, weight, height), presence of any health problem, type of this problem, kind of poisoning, and complication (Megahed et al., 2017).

(b)Sociodemographic characteristics of children as age,gender,nursery and the number of children in the family. It was included 4 questions.

(c) A: Mothers' knowledge regarding food poisoning consisted of 7 items: definition, causes, types, signs, symptoms, complications, first aid, prevention measures and home care (Megahed et al., 2017).

Scoring system: Each question was evaluated as 2 scores for the complete correct answer, 1 score for incomplete correct and 0 score for incorrect answer. The total score for all questions related to knowledge was 4 items which represented 100% and categorized into two levels as follows:

- Satisfactory more than or equal to 60%

- Unsatisfactory less than 60%

(d): Mothers' knowledge regarding first aid for different types of household poisoning consisted of 3 points: concept of first aid, importance of first aid, and first aid that must be followed immediately after household poisoning occurs inside home (1) medication poisoning, gas poisoning, food poisoning, poisoning through the skin, and poisoning by detergent and chemical powder.

Scoring system: Mothers' knowledge data was scored as follows: 2 for complete correct answer, 1 for incomplete correct answer and 0 for wrong answer or do not know. The total level of knowledge score for mothers was categorized as follows:

- 60% or more was considered satisfactory level of knowledge

- Less than 60% was considered unsatisfactory level of knowledge.

Second tool: Consisted of two checklists.

First checklist: Mothers' reported practices regarding household poisoning prevention in kitchen, bathroom, and storage area consisted of 4 items: insecticides, caustic substances in kitchen, medication, and gas leakage (**Home Safety Council, 2015**).

Scoring system: Each question was evaluated as 1 for done and 0 for not done. The total score for all questions related to mothers' reported practices was 4 items and 19 points which represented 100% and categorized into two levels as follows:

- Adequate 60% or more
- Unadequate less than 60%

Second checklist: Mothers' reported practices regarding first aid for household poisoning of their children less than 6 years old. It composed of five parts: ingestion, inhalation, eye, skin absorption, and injection into skin. Mothers' reported practices regarding first aid for poisoning by ingestion (through the mouth), through eye, inhalation (by breathing in), absorption (through the skin) through contact with poisoning sprays, pesticide and insecticides and injection into skin as the result of bites from some animals or insects (**Queensland Poisons Information Center, 2016**).

Scoring system: Each question was scored as 1 for done correctly and 0 for done incorrectly which represented 100%.

The total practices were classified into:

- Adequate 60% or more
- Inadequate less than 60%

Third tool: Assessing mothers' attitude regarding household poisoning consisted of 16 items: all precautions to prevent household poisoning, attend courses, pass my experience, not use gasoline, store products in original bottles, keep medicine out of reach of children (Zyoud et al., 2019).

• Scoring system: Mothers' attitude data regarding household poisoning was scored as follows: 2 for agree, 1 for uncertain attitude and 0 for disagree. The total level of attitude score of mothers was classified into:

- >60% or more positive level attitude.
- <60% negative level of attitude

Validity:

It was tested by 5 experts from community health nursing, faculty of nursing Ain Shams University to review the tools for clarity, relevance, comprehensiveness, understanding and applicability.

Reliability: Reliability is the consistency of measurement tool. The degree to which the instrument measures the same way each time, it is used under the same condition with the same subjects, and it was done by using an alpha Cronbach test. The Cronbach's alpha model which is a model of internal consistency was used in the analysis of mothers' knowledge, reported practices of prevention first aid, mother's attitude regarding household poisoning, and the Statistical equation of Cronbach's alpha reliability coefficient normally ranges between 0 and 1. Higher values (more than 0.7) contribute to acceptable reliability.

Reliability of knowledge Reliability statistics

	Cornbach's Alpha	No. of item
Knowledge	0.753	14
Practice	0.693	54
Attitude	0.801	16

1) Operational design:

The operational design included the preparatory phase, content validity, pilot study and field work.

Preparatory Phase:

It included reviewing of the related literatures and theoretical knowledge of various aspects of the study using books, articles, internet periodicals and magazines to develop tools for data collection and the theoretical part. The questionnaire was developed in the English language, and then translated into Arabic language and re-translated to English to ensure its accuracy, i.e., the translation- back-translation technique was used.

Ethical considerations:

The research approval was issued from the Scientific Research Ethical Committee in the Faculty of Nursing at Ain Shams University before starting the study. The researcher clarified the importance and aim of the study to all mothers included in the study, in addition to Oral consents were obtained from them. They were assured that anonymity and confidentiality would be guaranteed and the right to withdraw from the study at any time. Ethics, values, culture, and beliefs were respected. They were informed that the collected data would be used only for research purposes, as well as for their benefit.

Pilot study:

It was carried out on 5% of the total sample (13 cases) for one week to evaluate the feasibility, applicability and time needed to fill the tool to find the possible obstacles that might be faced during data collection. The sample was chosen randomly from the previously mentioned setting. There were no modifications found after the pilot study. The sample of pilot study was included in the research.

Field work:

This study started from the beginning of March 2022 until the end of August 2022, covering six months for data collection. An official approval letter clarifying the purpose of the present study was issued from the Dean of the Faculty of Nursing at Ain Shams University to the General Director of MCH centers and Scientific Research Ethical Committee in the Faculty of Nursing as an approval to conduct this study. The previously mentioned setting was attended by the researcher one day/week for each center (Sunday in 100 m center,

Wednesday in El-Rihan center) from 9.00 a.m. to 12 p.m.

Firstly, the researcher met the mothers at the Nursing Lab. The researcher met them in groups; the total sample (260) was divided into small groups of 10. The researcher held the first meeting by interviewing all mothers to introduce herself and briefly explain the nature and the purpose of the study. They were informed that participation in this study was voluntary, and they had the right to withdraw at any time without giving any reason. Oral approval of students to share in this study was achieved.

Secondly: Assessment Phase:

In this phase, the researchers collecting the following data:

Interviewing questionnaire was distributed to each mother to assess mothers' socio-demographic characteristics, knowledge, and reported practices regarding household poisoning prevention and first aid for household poisoning. The questionnaire took about 20-30 minutes to complete.

Administrative design:

An official permission was issued from the Dean of the Faculty of Nursing at Ain Shams University to the General Director of MCH center of Alsharqia city and Scientific Research Ethical Committee in the Faculty of Nursing as an approval to conduct this study.

Statistical analysis: Data were collected, coded, and entered into a personal computer (P.C) IBM compatible 2.6 GHz. They were analyzed using Statistical Package for Social Science (SPSS), under windows version 20. The collected data were organized, revised, analyzed, tabulated using number and percent distribution. Proper statistical tests were used to determine whether there were statistically significant differences between the variables of the study. The statistical tests used in this study were: Chi-square test (X^2) for qualitative variables, Mean and standard deviation, correlation coefficients (r) to find correlations between quantitative data, Spearman rank correlation to find correlations between categorized data. $P > 0.05$ there is a statistically insignificant difference, $P < 0.05$ there is a statistically significant difference, $P < 0.01$ there is a statistical highly significant difference.

Results:

Table 1 shows the demographic characteristics of the mothers, regarding age, it shows that 75% of them their age ranged from 25 to 35 years with mean age 32.60 ± 4.374 . Regarding education, 70.8% of mothers reported being university educated, and 68.8% of them were working moreover, 48.0% worked in governmental organizations. Regarding their income 56.2% of mothers reported enough income and the marital status analysis shows that 81.2% of them were married.

Table (2) presents the demographic characteristics of the children; regarding children age it shows that 65.0% of them their age was >4 years old and the mean of age was (3.88 ± 1.021) years, (50.4%) of them were males. Regarding going to nursery 58.8% of them were going. In relation to the number of pre-school children, it was found that 85.8% of them had one child.

Table 3 shows the children medical history, it shows that 52.7% of them their weight ranged from 16: 20 with mean (18.41 ± 3.163) kilogram. Moreover 50.4% of their height ranged from 85-100 with mean (96.16 ± 9.32) CM. Regarding their body mass index, this table reveals that 61.5% were normal (18.5 to 24.9) Kg/m² with mean (20.01 ± 3.06) . This table also shows that 79.8% of children didn't suffer from any health problems. Moreover 64.2% of children who had health problem were suffering from allergic reaction. Regarding previous child poisoning 92.7% of children didn't suffer from poisoning moreover, 85.0% of those who had poisoning reported that they were having food poison. In addition, this table showed that almost all children (100.0%) didn't have any complications.

Table (4) reveals total mothers' knowledge about household poisoning, 40.0% of them had Complete correct answer regarding concept of poisoning. Whenever, 68.5%, 65.4% & 69.6% had incomplete correct answer about causes of household poisoning, types of household poisoning and ways toxic substances enter the body respectively. In addition (41.5% & 69.6) of mothers had wrong answers about symptoms and signs of poisoning and most vulnerable to household poisoning respectively.

Figure (1) reveals that most of studied mothers (95.4%) had satisfactory knowledge

regarding first aid for different types of household poisoning and the minority of them (4.6%) had unsatisfactory total knowledge.

Figure (2) illustrated that most of studied mothers (98.1%) had unsatisfactory total knowledge regarding prevention of household poisoning whenever, the minority of them (1.9%) had unsatisfactory total knowledge.

Regarding mothers' reported practice regarding household poisoning, figure (3) illustrates that most of studied mothers (93.5%) had inadequate total practices while the minority of them (6.5%) had adequate total practices.

Regarding mothers' reported practice about first aid for the child Figure 4 reveals that (91.2%, 87.3% & 98.5%) of mothers had inadequate practice regarding bites poisoning, ocular poisoning and swallowing poisoning respectively. Whenever, (42.7% & 78.1%) of mothers had adequate practices regarding poisoning absorption and by inhalation respectively.

Regarding Studied mothers' total reported practice regarding household poisoning

figure 5 shows that most of studied mothers 91.5% had inadequate total practices whenever, the minority of them 8.5% had adequate total practice.

Regarding studied mothers' total attitude about household poisoning, figure 6 reveals that 75.0% of mothers had negative attitude toward prevention of household poisoning while, 25.0% of them had positive attitude.

Regarding Studied mothers' total reported practice regarding **household poisoning** figure 7 shows that most of studied mothers 91.5% had inadequate total practices whenever, the minority of them 8.5% had adequate total practice.

Table 5 reveals that there was a highly statistically significant correlation between studied mothers' total knowledge and their reported practice. In addition, it reveals that statically significant correlation found between mothers' total knowledge and total attitude about household poisoning ($p < 0.05^*$).

Table 6 shows that there was no statistically significant relation between studied mothers' total attitude and their total reported practices about household poisoning ($P > 0.05$).

Table 1: Number and Percent distribution of mothers regarding their demographic characteristics (N=260).

Mothers' characteristics	No	%
Age/years		
<25 y	4	1.5
25-35 y	195	75.0
>35 y	61	23.5
Mean and SD	32.60±4.374	
Educational level		
not read or write	2	0.8
Read and write	10	3.8
Intermediate Education	64	24.6
University Education	184	70.8
Mothers job		
Work	179	68.8
Not work	81	31.2
Type of work		
B's own work	75	41.9
Governmental work	86	48.0
Folding work	18	10.1
Monthly household income		
Enough	146	56.2
Enough and save	92	35.4
Not enough	22	8.5
Marital status		
Married	211	81.2
Divorced	41	15.8
Widow	8	3.1

Table 2: Number and Percent distribution of Children regarding their Demographic characteristics (N=260).

Child characteristics	No	%
Age/years		
<4 y	91	35.0
≥4 y	169	65.0
Mean and SD	3.88±1.021	
Gender		
Male	131	50.4
Female	129	49.6
Goes to nursery		
Yes	153	58.8
No	107	41.2
The number of children of pre-school age		
1	223	85.8
2	37	14.2

Table 3: Number and Percent distribution of Children regarding their medical history (N=260).

Child characteristics	No	%
Weight/kg		
≤15	53	20.4
16: 20	137	52.7
>20	70	26.9
Mean & SD	18.41±3.163	
Height/cm ²		
<85	34	13.1
85-100	131	50.4
>100	95	36.5
Mean & SD	96.16±9.32	
BMI/kg/m ²		
Underweight (less than 18.5 Kg/m ²)	84	32.3
Normal (18.5 to 24.9 Kg/m ²)	160	61.5
Overweight (25 to 29.9 Kg/m ²)	14	5.4
Obese and morbid obese (30 or more Kg/m ²)	2	.8
Mean and SD	20.01±3.06	
Presence of health problems		
Yes	53	20.4
Presence of health problems (n=53)		
Heart disease	0	0.0
Chest diseases	15	28.3
Immune diseases	1	1.9
Allergic diseases	34	64.2
Bone diseases	0	0.0
Hereditary diseases	3	5.7
History of pervious poisoning		
Yes	20	7.7
kind of poisoning (n=20)		
Chemical (detergents or medicines).	3	15.0
Food	17	85.0
Child have any complications		
Yes	0	0.0

Table 4: Number and Percent distribution of mothers regarding total their knowledge about household poisoning (N=260).

Knowledge Items	Complete correct answer		Incomplete correct answer		Wrong answer	
	No	%	No	%	No	%
Concept of poisoning	104	40.0	133	51.2	23	8.8
Causes of household poisoning	29	11.2	178	68.5	53	20.4
Types of household poisoning	49	18.8	170	65.4	41	15.8
Ways toxic substances enter the body	18	6.9	181	69.6	61	23.5
Symptoms and signs of poisoning	24	9.2	128	49.2	108	41.5
Ways to prevent poisoning	37	14.2	136	52.3	87	33.5
Most vulnerable to household poisoning	16	6.2	63	24.2	181	69.6



Figure 1: Percentage distribution of mothers' total knowledge regarding first aid for different types of household poisoning (N=260).

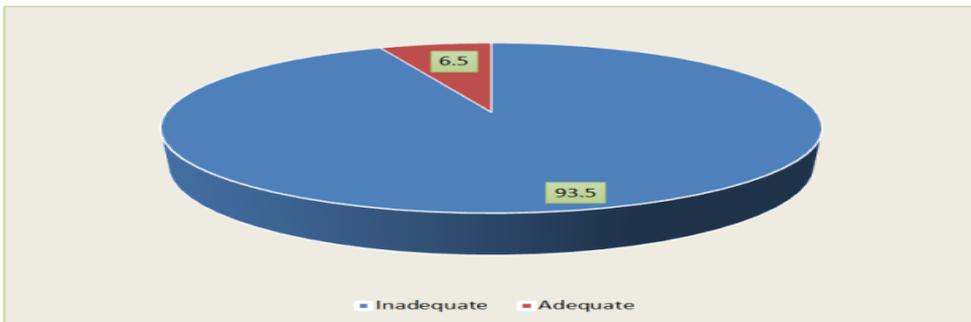


Figure 2: Percentage distribution of mothers' total knowledge regarding prevention of household poisoning (N=260).

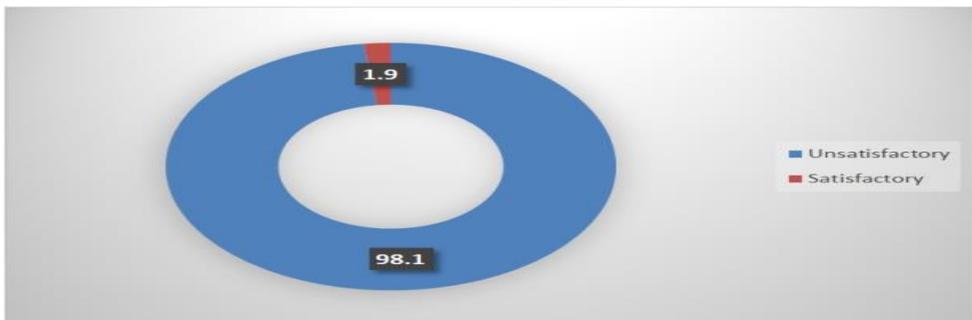


Figure 3: Percentage distribution of studied mothers' reported practice regarding household poisoning (N=260).

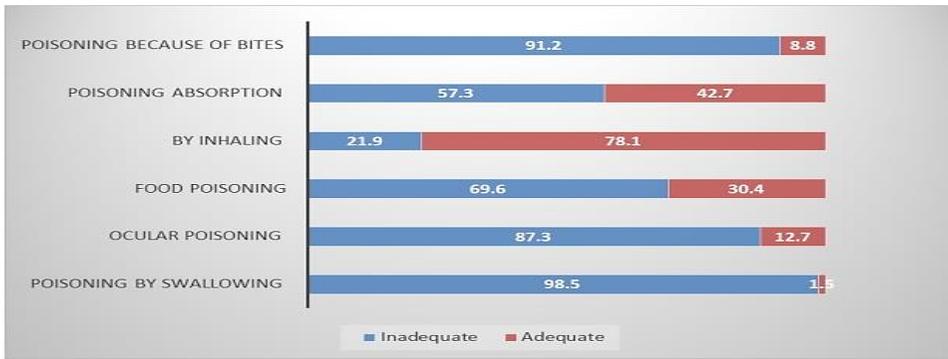


Figure 4: Percentage distribution of Studied mothers' reported practice regarding first aid for the child (N=260).

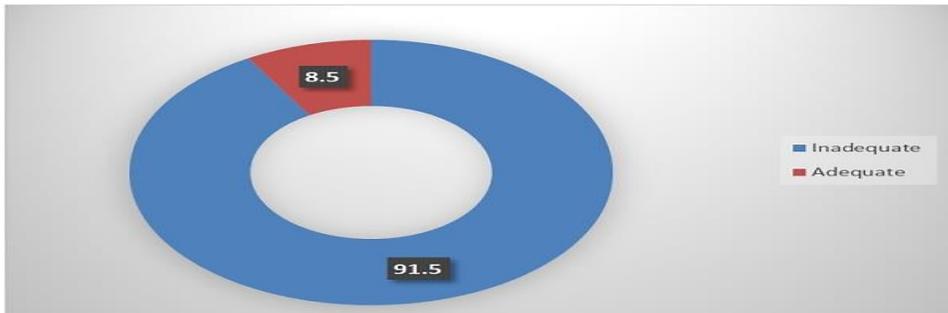


Figure 5: Percentage distribution Studied mothers' total reported practice regarding household poisoning (N=260).

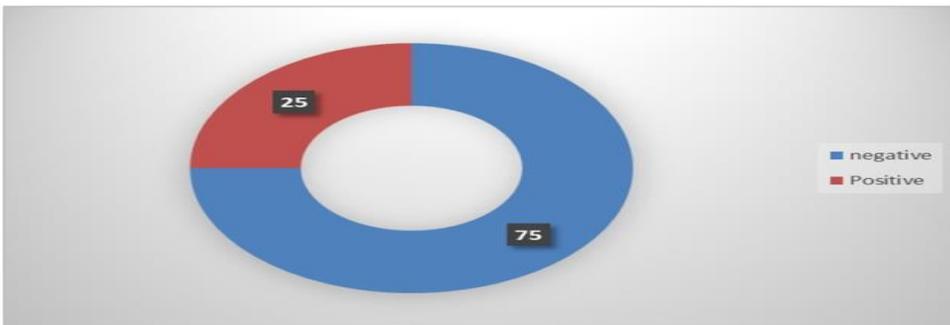


Figure 6: Percentage distribution of Studied mothers' total attitude regarding household poisoning (N=260).

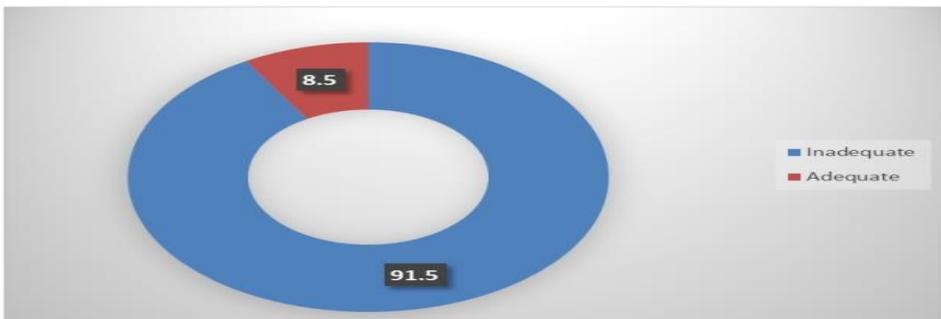


Figure 7: Percentage of Studied mothers' total reported practice regarding household poisoning (N=260).

Table 5: Correlation between Studied mothers' knowledge, reported practice, and attitude about household poisoning (n=260)

Items	Reported practice		Attitude	
	r	P value		
Knowledge	0.167**	0.007	0.122*	0.049

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

Table 6: Correlation between Studied mothers' reported practice, and attitude about household poisoning (n=260) According to research question No (6)

Items	Attitude
Reported practice	0.046 NS

Discussion

Accidental poisoning is a serious international problem. It is likely to remain one of the most common medical emergencies that confront physicians and casual medical offices at any time 90% of accidental poisoning involved children under the preschool age. Poisoning in children is always an accident due to lack of supervision of the child or to carelessness in leaving poisonous substances within the child's reach (*Oba-Daini et al., 2020*).

As regard to age of the studied mothers, the current study revealed that three quarters of them their age ranged from 25 to 35 years with mean age 32.60 ± 4.374 (**Table 1**). This result was contrasted with *Moshtohory et al. (2018)* who found that more than one third of mothers their aged ranged between 25 to 30 years with mean age of $\pm SD 33.5 \pm 2.9$ years.

Regarding education of the studied mothers, the current study revealed that, high percentage of mothers reported being university educated (**Table 1**). This result disagreed with *Nour et al. (2018)* who found more than half of mothers in the study sample had University education.

Regarding working, the current study found that more than two thirds of them were working, moreover, about half of them worked in governmental organizations. Regarding their income more than half of mothers reported enough income (**Table 1**). These results were contrasted with *Sivri & Ozpulat. (2016)* who found that more than two thirds of mothers were housewives. This disagrees with *Zyoud et al. (2019)* who found that less than three fifths of the studied sample had average income.

In relation to marital status, the current study result found that most of them were married (**Table 1**). This result was in accordance with *Akturk & Erc. (2016)* who found that most of the studied samples were married.

Regarding children age of the studied children, the current study result revealed that about two thirds of them their age was >4 years old and the mean of age was (3.88 ± 1.021) years.

This result was supported with *El Seifi et al. (2018)* who reported that more than half of children aged five years. Also, this finding agreed with *Singh & Gurung. (2018)* who reported that approximately two fifths of children aged three years old.

The investigator's point of view this might be due to criteria of selection of sample and poisoning is common in preschool children.

As regard to gender of the studied children, the current study result revealed that half of them were males. This result was similar with *Basu (2016)* who reported that more than half of children were males.

Regarding going to nursery more than half of them were going. In relation to number of pre-school children, the majority of them had one child (**Table 2**). This result was contrasted with *Abel Galil et al. (2018)*, who reported that approximately two fifths of families had 2-6 children.

As regards children medical history, the current study result revealed that more than half of them their weight ranged from 16: 20 with mean (18.41 ± 3.163) kilogram. Moreover, half of them their height ranged from 85-100 with mean (96.16 ± 9.32) CM. Regarding their body mass index, less than two thirds of them were normal (18.5 to 24.9) Kg/m^2 with mean

(20.01±3.06). More than three quarters of children were free from health problems. Moreover, less than two thirds of children who had health problems were suffering from allergic reactions. Regarding previous child poisoning, vast the majority of children didn't suffer from poisoning. Moreover, most of those who had poisoning reported that they were having food poisoning. In addition, all of children didn't have any complications (**Table 3**)

This result was similar with *Moshtohry et al. (2018)*, who reported that three quarter of children had no history of previous poisoning.

As regards total knowledge about household poisoning, the current study result revealed that two fifths of them had a completely correct answer regarding the concept of poisoning. Whenever, unsatisfactory answer about causes of household poisoning, types of household poisoning and ways toxic substances enter the body respectively. In addition, more than half of mothers had wrong answers about symptoms and more than two thirds of them had wrong answers about signs of poisoning and most vulnerable to household poisoning (**Table 5**).

This result was contrasted with *Sivri & Ozpulat. (2016)* who found that more than one tenth of them had correct answer regarding meaning, more than one third of them had correct answer regarding causes, minority of them had correct answer regarding types, one tenth of them had correct answer regarding meaning signs and symptom.

This result was similar with *Mohammed et al. (2021)* who revealed that highly percentage of the studied mothers had poor knowledge while, less than one third of them had good knowledge. These findings were disagreed with *Nour et al. (2018)* who found that more than one third of them had poor knowledge.

The investigator's opinion is that minority of the studied mothers had satisfactory knowledge may be due to the high number of university graduated mothers among this study sample; however, the percentage of the mothers who had unsatisfactory knowledge can't be denied and needed to be corrected and elevated through interventional educational programs as the lack of mothers' knowledge and misconception not only affects the prevention

and management of the poisoning event, but it also increases the complications, disability, and fatality.

From the investigator point of view Knowledge is one of the main aspects that will define the extent of community awareness of public health concepts. Every mother has a different level of knowledge about childhood poisoning, its preventive measures and first aid. The availability of such information would allow community health nurses and poison management control centers to plan preventive interventions to educate the community efficiently.

As regards total knowledge regarding first aid for different types of household poisoning, the current study reveals that one quarter of them had a complete correct answer regarding first aids of poisoning through the skin. Whenever, around two thirds of mothers had incomplete correct answer about concept of first aid, Importance of first aid in cases of household poisoning and first aid for food poisoning respectively. In addition, around half of mothers had wrong answers about first aid of medication poisoning, first aids of poisoning by detergents and chemical powders and first aids of Gas poisoning respectively (**Table 7**).

The current study result contrasted with *Mohammed & Elsayed, (2022)* who revealed that 90% the majority of the studied mothers had knowledge about first aid. While 36.9% more than one third of them reported correct answers related to first aid for different conditions with total mean score of mothers' knowledge 19 ± 2.8 , mothers' knowledge about first aid is fair.

Concerning to total knowledge regarding first aid for different types of household poisoning, the current study result revealed that most of studied mothers had satisfactory knowledge regarding first aid for different types of household poisoning and the minority of them hadq unsatisfactory total knowledge (**Figure 1**). This result was contrasted with *Mahrous et al., (2019)* who found that most of the studied mothers had poor knowledge regarding first aid. Also, this result was in disagreed with *Al-Johani et al., (2018)* who found that the highest average knowledge percentage was observed regarding the first aid.

As regard to total knowledge regarding prevention of household poisoning, the current

study result illustrated that most of studied mothers had unsatisfactory total knowledge regarding prevention of household poisoning whenever, the minority of them had unsatisfactory total knowledge (**Figure 2**). This result was in the same line with *Abel Galil et al. (2018)* who found that a high percentage of the mothers in the studied sample had total satisfactory knowledge. While this result was contrasted with *Aatef et al., (2022)* who found that 63.1% less than two-thirds of the studied mothers had knowledge about poisoning prevention.

As regard to reported practice regarding prevention household poisoning, the current study result illustrated that the majority of studied mothers had inadequate (unsatisfied) total practices whenever, the minority of them had adequate (satisfied) total practices (**Figure 2**). This result nearly to support with *Kufa, (2021)* who found that more than one quarter of them had suitable practices in the event of a house mishap.

While this result was contrasted with *Zyoud et al., (2019)* who found that more than two thirds of mothers had unsatisfactory total reported practices level about poisoning.

Regarding total reported practice regarding first aid for the child, the current study result revealed that the majority of studied mothers had inadequate total practices whenever, the minority of them had adequate total practice (**Figure 4**). This result was accordance with *Farouk , et al.,(2021)* who found that the majority of the studied mothers had inadequate poisoning first-aid practices before implementation of the educational program.

Moreover, contrary to these findings, *Aatef et al., (2022)* who found that slightly more than two thirds of them had total satisfactory practices and about one-third of them had unsatisfactory practices which is a worrying percentage and needs prompting interventions to raise their awareness about childhood poisoning first-aid practices.

Regarding total reported practice regarding household poisoning, the current study result revealed that the majority of studied mothers had inadequate total practices whenever, the minority of them had adequate total practice (**Figure 5**).

This result was in the same line with *Mohammed et al., (2021)* who found that highly percentage of the studied mothers had unsatisfactory total practices level about poisoning and less than one third of them had satisfactory total level of practices about poisoning. Also, this result was similar with *Abel Galil et al. (2018)* who reported that a high percentage of the mothers had unsatisfactory total reported practices level about poisoning.

Regarding mothers' total attitude about household poisoning, the current study result revealed that three quarters of mothers had negative attitude toward prevention of household poisoning while, one quarter of them had positive attitude (**Figure 6**).

This result was similar with *Kufa, (2021)* who found that more than one third of the studied mothers had a positive attitude. Also, this result was accordance with *Mohammed et al., (2021)* who revealed that highly percentage of the studied mothers had total negative attitude about poisoning of preschool children.

As regard to correlation between studied mothers' knowledge, reported practice, and attitude about household poisoning, the current study result revealed that there was highly statistically significant correlation between studied mothers' total knowledge and their reported practice. In addition, there was statically significant correlation found between mothers' total knowledge and total attitude about household poisoning ($p < 0.05^*$) (**Table 5**).

This result was similar with *Zyoud et al. (2019)* who revealed that there was a significant positive correlation between knowledge, attitude, and practice. Also it was in the same line with *ElMezayen et al. (2020)* who found that there was statistically highly positive correlation between score of practice and total score of knowledge regarding Food poisoning be due to knowledge play an important role in changing behavior leading to change of practices.

From the investigator's point of view this result may be due to level of knowledge effect on level of practice, the current study result revealed that there was no statistically significant relation between studied mothers' total attitude and their total reported practices about household poisoning ($P > 0.05$) (**Table 6**)

This result was contrasted with *Mohammed et al. (2021)* who found that there was a positive statistically significant correlation between attitude scores and total reported practices regarding to poisoning among their preschool age children.

Conclusion:

In the light of the current study findings, it can be concluded that,

Most of the studied mothers had unsatisfactory knowledge regarding household poisoning, whereas the minority of them had satisfactory knowledge. Most of the studied mothers had inadequate total practices, whereas the minority of them had adequate total practices. Also, three quarters of the mothers had a negative attitude toward prevention of household poisoning, while one quarter of them had positive attitude. Additionally, there was a highly statistically significant correlation between the studied mothers' total knowledge and their reported practices. In addition, there was a statistically significant correlation found between the mothers' total knowledge and total attitude about household poisoning. Moreover, there was no statistically significant relation between the studied mothers' total attitude and their total reported practices about household poisoning.

Recommendations

A health education program should be developed for mothers who have children to educate them with the most current information and practices regarding poisoning among preschool children. Booklets should be available and distributed to all mothers about poisoning and health-related practices.

Further study

Further studies about poisoning prevention and first aid among mothers of preschool children

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