https://menj.journals.ekb.eg

Print ISSN: 2735-3974
Online ISSN: 2735-3982
DOI:10.21608/menj.2024.411231

MNJ
Menoufia Nursing Journal
Faculty of Nursing
Menoufia University

# Effect of Instructional Module on Mother's Knowledge and Practice Regarding Management of Household Poisoning among their Children

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**Abstract: Background**: Poisoning is one of the most common causes of admission to pediatric emergency and intensive care units. Pediatric poisonings are a common and preventable cause of morbidity and mortality throughout the world. Therefore, there is an intense need to educate mothers on how to provide first-aid management when their children are exposed to poisons. The purpose of this study was to assess the effect of instructional module on mothers' knowledge and practice regarding management of household poisoning among their children. **Design**: A quasi-experimental design was used (pre& posttest). **Setting**: The study was conducted at El- Qebly Maternal and Child Health Center (MCH) at Shebin El-Kom city. **Sample**: A purposive sample of 70 mothers was selected with their children to carry out this study. **Instruments**: Two instruments were used in this study, Structured Interviewing Questionnaire (Characteristics of studied sample, Mother's Knowledge about household poisoning) and Mother's Reported Practice Checklist. **Results**: The results of this study showed that there were an improvement on mother's knowledge about household poisoning on post intervention than pre intervention (1.86 ± 0.18 VS 0.71 ± 0.26). Also, all mothers had a satisfactory level regarding the preventive measures on posttest compared to pretest (100% VS 50% respectively), In addition, All mothers had a satisfactory level regarding the preventive measures on posttest compared to pretest (100% VS 67.1% respectively) regarding first aid management post intervention. **Conclusion**: The study concluded that instructional Module was effective in improving knowledge and appropriate practice related to household poisoning management in children. So, it was recommended that establishing preventive educational programs for mothers regarding safety home environment and household poisoning management of their children is important.

***Keywords****: Instructional Module, knowledge. Pediatric, Poisoning, Practice,*

## Introduction

Accidental poisoning in children results from the interaction of the agent, the child, and the family environment. The agent is usually insecurely stored and readily available to the child, who is frequently known to be impulsive, curious, and overactive, trying new things, and the environment that may not be safe enough to prevent accidental poisoning (Kole et al. 2023).

Poisoning according to WHO refers to 'an injury sustained due to exposure to a substance that reasons cellular injury or death '. Exposure to such substances can be by ingestion, inhalation, absorption or injection (Romeeh et al., 2022).

Accidental poisoning is a serious international problem. It is likely to remain one of the most common medical emergencies that challenge physicians and casually medical offices at any time 90% of accidental poisoning involved children under the age of five years. 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 (El Guindi et al. 2020).

The home and its surroundings can be hazardous places for children, particularly for the possibility of unintentional poisoning. Children are naturally curious, exploring in and around the home. As a result, each year millions of calls are made to poison control centres (also called poison information centres). Thousands of children are admitted to emergency departments because they have accidentally consumed some type of household product, medicine or pesticide. Most of these "accidental" poisonings could have been prevented.

Mothers take fewer precautions against childhood poisonings if these precautions involve more effort, particularly if they involve changes in their behavior and if pediatric health nurses provide health education programs and increase mothers' knowledge about poisoning prevention, safety measures and first aid, prevention is likely to be more successful and more precautions will be promoted( Perveen et al., 2023).

Educational interventions should be used in combination with other interventions seeking to prevent poisoning. Most poisonings in young children occur at home, with parents or caregivers nearby and engaged in household tasks. While continuous direct supervision (always within eyesight) would decrease the access of children to poisons, it is not practical to promote such a strategy. Continuous supervision is difficult to achieve even for caregivers in affluent households with few children (Shaban et al., 2023).

Hopefully, the current study would implement an effective instructional module on mothers' knowledge and practice regarding management of household poisoning among their children.

Lack of mothers' knowledge is an identified risk factor for unintentional pediatric poisoning thus, the level and gaps of knowledge and practice among mothers should be determined and

could be useful in developing prevention strategies.

**Significance of the study**

Poisoning is one of the most common causes of admission to pediatric emergency and intensive care units. Poisoning in children represents an important cause of injury-related morbidity and mortality in the developing as well as the developed world. In 2015, the American Association of Poison Control Center (AAPCC) reported that more than 1.3 million children were exposed to poisoning substances, 40% of whom were children less than 3 years old (Tobaiqy et al., 2020). Acute Poisoning Cases in Children Admitted to Menoufia Poison Control Center (MPCC) during the year 2019 was 1760 cases and they were divided into 4 groups according to their ages: younger than 2 years, between 2 and 6 years, between 6 and 12 years, and between 12 and 18 years. Those from 2 to 6 years represented the highest age group (62.1%) followed by age groups of 12 – 18 years, less than 2years (15% and 12.9% respectively), and the least was 6-12 years (10%) (Kandeel & El-Farouny, 2019). Therefore, there is an intense need to help mothers to know what to do as first-aid management when their children have poisons. This can be done through an instructional module that might enhance mothers' Knowledge and practice regarding first aid management of household poisoning among their children.

**Definition of variables:**

- **Instructional Module:**

Is theoretically defined as a systematically organized learning module prepared by the researcher and validated by experts (Guglielmino, 2018). While in the current study, it is operationally defined as a method to increase mothers' knowledge about poisoning and improve their practice regarding preventive measures as well as first aid management in order to deal perfectly with poisoning before reaching the hospital.

- **Knowledge:**

Is theoretically defined as data and/or information that have been organized and processed to convey understanding, experience, accumulated learning, and expertise as they apply to a current problem or activity (Petrushenko & Vorontsova, 2020). While in the current study, it is operationally defined as information which mothers have about definition of poisoning, types of toxic substances, method of exposure to poisoning, signs and symptoms, common household toxic substances, factors which lead to increase the severity of child poisoning, and source of her information about poisoning. It will be assessed through the interviewing questionnaire part two about mother's knowledge regarding household poisoning (Instrument one).

- **Practice:**

Is theoretically defined as the actual application or use of an idea, belief, or method, as opposed to theories relating to it, which helps to develop skills.

(Benner et al., 2019). While in the current study, it is operationally defined as mother action, which includes measures regarding prevention and First aid management for poisoning. It will be assessed through mother's reported practice checklist (lnstrument two).

## Methods

### The purpose of the study:

The present study was carried out to assess the effect of instructional module on mothers' knowledge and practice regarding management of household poisoning among their children.

### Research Hypotheses:-

The following research hypotheses were formulated to achieve the purpose of the study:

**1)** Mother's Knowledge score about management of household poisoning will be higher after following the instructional module than before.

**2)** Mother's Practice score about management of household poisoning will be higher after following the instructional module than before

### Research Design:

A quasi-experimental design (pre and posttest) was utilized for this study.

This study was conducted at conducted in El- Qebly Maternal and Child Health Center (MCH) at Shebin El-Kom city.

### Sampling:

A purposive sample of 70 mothers was selected from the previously mentioned setting. A purposive sample sample was used.

The sample size was calculated according to the following equation, and the results of the pilot study.

Sample size

$$n = [DEFF*Np (1-p)]/ [(d^2/Z^2_{1-\alpha/2}*(N-1) +p*(1-p)]$$

### Instruments:

Two instruments were utilized to accomplish the purpose of the study.

### Instrument one: A structured interviewing Questionnaire:

It was developed by the researcher guided by Mohamed et al., (2021) to assess demographic characteristics of mothers and their children as well as mother's knowledge regarding household poisoning, it was consisted of two parts:

- Part one: Characteristics of studied subjects. This part included two subparts.

**a)** Mother's demographic characteristics. It was included questions such as age, marital status, no of children, residence, and level of education, occupation, and income.

**b)** Characteristics of studied children. It was included questions such as age, gender, child's ranking order among siblings, the person caring for the child, the child previously poisoned experience, and type of poisoning.

Scoring system:

| Items | Score |
|---|---|
| Complete and correct knowledge | 2 |
| Incomplete and correct knowledge | 1 |

| | |
|---|---|
| Don't know | 0 |

**Total score:**

| Items | Score |
|---|---|
| Good | ≥ 75% |
| Average | 50% - <75% |
| Poor | < 50% |

The reliability of the instrument one was tested by Cronbach's Co-efficiency Alpha (a=.0.97). Pearson correlation co-efficiency was done to test the internal consistency (r=0.88) of all items of the tool.

**Instrument two: Mother's Reported Practice Checklist.**

It was developed by the researcher guided by Mohamed et al., (2021). It consisted of two parts:

- **Part one**: Mothers ' reported practices for the prevention of household poisoning . It included 3 items; making home safe (9 items), preventive practices for medication risks (4 items), preventive practices for poisoning from cleaning supplies and chemicals (9 items).
- **Part two**: First aid management for household poisoning. It included 4 items; first aid for poisoning by swallowing (7items), poisoning through the skin (4 items), poisoning through the eyes (5 items), and poisoning by inhalation (7items)

**Scoring system:**

| Items | Score |
|---|---|
| Done | 1 |
| Not done | 0 |

**Total score:**

| Items | Score |
|---|---|
| Satisfactory | 60 % - ≥ 75% |
| Unsatisfactory | < 60 % |

The reliability of the instrument two was tested to determine the extent to which items in the tool were related to each other by Cronbach's Co-efficiency Alpha (a=.0.98). Pearson correlation co-efficiency was done to test the internal consistency (r=0.85) of all items of the tool.

**Validity:**

For validity assurance purpose, Instruments were submitted to a jury of five specialists (three professors in the Pediatric Nursing field and two professors in the Pediatrics Medical field).

**Pilot study:**

A pilot study was done on 7 mothers with their children (10% of the sample size) after developing the instruments and before starting the data collection to test the applicability, practicability, consistency, clarity and the feasibility of the study instruments and to estimate the needed time to fill the instruments. No necessary modifications were done. So, the sample of the pilot study was included in the total sample.

**Ethical consideration:**

An approval was obtained from ethical and research committee of Faculty of Nursing, Menoufia University. A written consent forms was obtained from mothers who have children from 1-6 years. An initial interview with mothers was done to inform them about the purpose and benefits of the study. Also, they informed that the study is voluntary, harmless and they can withdraw from the study at any time without penalty.

**Procedure:**

An official permission to carry out the study was obtained from the director of the selected setting after submitting an official letter from the Dean of the Faculty of Nursing at Menoufia University explaining the purpose of the study and method of data collection. Meeting was conducted first with the director of the setting to obtain permission for conducting the research explaining the purpose and expected outcomes.

After that data was collected over a period of 3 months starting from 1st of September 2023 to the end of November 2023. Data was collected from mothers as follows: Characteristics of mothers and their children was assessed at the beginning of the study using instrument one, part1 (pretest). Mother's knowledge about household poisoning was assessed at the beginning of the study using instrument one, part2 (pretest). Assessment of mother's reported practices about prevention of household poisoning was done using instrument two, part1 (pretest).

Assessment of mother's reported practices about first aid management regarding household poisoning was done using instrument two, part2 (pretest). Area of knowledge and practice deficit about children's household poisoning was identified to be considered while preparing the instructional module for mothers. Mothers were divided into small groups. Each group contained from 6-10 mothers. The researcher met the mothers at pediatric outpatient clinic and vaccination room two days per week (Monday& Sunday).

Instructional module on mothers' knowledge and practice regarding first aid management of household poisoning was designed and implemented into three sessions: First session about Mother's Knowledge regarding household poisoning. It included information about definition of poisoning, types of toxic substances, methods of exposure to poisoning, signs and symptoms of poisoning, common household toxic substances, the most common types that lead to poisoning, signs leading to increase severity to poisoning, evidence of poisoning and factors leading to identification of toxicity substance. It lasted for 30-40 minutes.

Second session about Mothers ' practices regarding preventive measures for household poisoning. It included measures to make home safe, prevent medication risks, and prevent poisoning from cleaning supplies and chemicals. It lasted for 30-40 minutes. Third session about First aid management for household poisoning. It included; first aid management for poisoning through swallowing, skin, eyes and inhalation. It lasted for 30-40 minutes.

Each group received 3 sessions; the sessions included oral presentation, feedback questions and teaching assisting tools such as booklet and brochures containing information about poisoning and first aid management of household poisoning. Finally, Reassessment of mother's knowledge and reporting practices, as well as first aid management, was done

immediately after the implementation of the sessions using instrument one & two (posttest).

**Statistical Analysis**

Data were fed to the computer and analyzed using IBM SPSS software package version 20.0 (Armonk, NY: IBM Corp). Qualitative data were described using number and percent. The Kolmogorov-Smirnov test was used to verify the normality of distribution. Quantitative data were described using range (minimum and maximum), mean and standard deviation. Significance of the obtained results was judged at the 5% level of Significance.

**Results**

**Table (1)**: Mother's Knowledge about Household Poisoning on Pre and Posttest. This table illustrated mother's knowledge about household poisoning on pre and posttest. As clarified in the table, there were an improvement in mother's knowledge about household poisoning post intervention compared to pre intervention. For this reason, there were highly statistical significant differences between pre intervention and post intervention ($p < 0.001$).

**Table (2)**: Level of Mother's Reported Practice Regarding Preventive Measures on Pre and Post Intervention. This table clarified level of mother's reported practice regarding preventive measures on pre and post intervention. The table reflected that all mothers had a satisfactory level regarding the preventive measures on posttest compared to pretest (100% VS 50% respectively).

**Table (3):** Level of Mother's Reported Practice Regarding First Aid Management on Pre and Post Intervention. This table clarified level of mother's reported practice regarding first aid management on pre and post interventions. The table reflected that all mothers had a satisfactory level regarding the preventive measures on posttest compared to pretest (100% VS 67.1% respectively).

**Table (4):** Mother's Overall Levels of Reported Practice (first aid management and preventive measures) on pre and post intervention. This table represented mother's overall levels of reported practice (first aid management and preventive measures) on pre and post intervention. The table clarified that mothers had satisfactory level on post intervention compared to pre intervention (100% VS 41.4 % respectively).

**Table (1): Mother's Knowledge about Household Poisoning on Pre and Posttest.**

| Mother's Knowledge | Pre | | | | | | Post | | | | | | P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Don't Know | | Incomplete and correct Knowledge | | Complete and correct Knowledge | | Don't Know | | Incomplete and correct Knowledge | | Complete and correct Knowledge | | |
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | |
| 1. Definition of poisoning. | 20 | 28.6 | 50 | 71.4 | 0 | 0.0 | 2 | 2.9 | 28 | 40.0 | 40 | 57.1 | <0.001* |
| 2. Types of toxic substances at home. | 12 | 17.1 | 50 | 71.4 | 8 | 11.4 | 0 | 0.0 | 8 | 11.4 | 62 | 88.6 | <0.001* |
| 3. Poisoning occurrence. | 10 | 14.3 | 56 | 80.0 | 4 | 5.7 | 0 | 0.0 | 0 | 0.0 | 70 | 100.0 | <0.001* |
| 4. Household cleaning substances that lead to poisoning. | 8 | 11.4 | 52 | 74.3 | 10 | 14.3 | 0 | 0.0 | 0 | 0.0 | 70 | 100.0 | <0.001* |
| 5. Symptoms indicating home poisoning. | 4 | 5.7 | 66 | 94.3 | 0 | 0.0 | 0 | 0.0 | 6 | 8.6 | 64 | 91.4 | <0.001* |
| 6. Medicines at home that lead to poisoning. | 47 | 67.1 | 0 | 0.0 | 23 | 32.9 | 10 | 14.3 | 0 | 0.0 | 60 | 85.7 | <0.001* |
| 7. Factors increase the severity of poisoning. | 27 | 38.6 | 41 | 58.6 | 2 | 2.9 | 4 | 5.7 | 4 | 5.7 | 62 | 88.6 | <0.001* |
| 8. Factors determine the toxicity of poisoning. | 22 | 31.4 | 44 | 62.9 | 4 | 5.7 | 2 | 2.9 | 2 | 2.9 | 66 | 94.3 | <0.001* |
| 9. Signs indicating the occurrence of poisoning. | 19 | 27.1 | 47 | 67.1 | 4 | 5.7 | 0 | 0.0 | 4 | 5.7 | 66 | 94.3 | <0.001* |
| 10. Information received about home poisoning before. | 62 | 88.6 | 8 | 11.4 | 0 | 0.0 | 0 | 0.0 | 18 | 25.7 | 52 | 74.3 | <0.001* |
| 11. Knowing the emergency number | 49 | 70.0 | 21 | 30.0 | 0 | 0.0 | 0 | 0.0 | 4 | 5.7 | 66 | 94.3 | <0.001* |

**Table (2): Level of Mother's Reported Practice Regarding Preventive Measures on Pre and Post Intervention (n = 70).**

| Level of mother's reported practice regarding preventive Measures | Pre | | | | Post | | | | p |
|---|---|---|---|---|---|---|---|---|---|
| | Unsatisfactory (< 60 %) | | Satisfactory (≥ 60%) | | Unsatisfactory (< 60 %) | | Satisfactory (≥ 60%) | | |
| | No. | % | No. | % | No. | % | No. | % | |
| 1. Making home safe. | 47 | 67.1 | 23 | 32.9 | 0 | 0.0 | 70 | 100.0 | <0.001* |
| 2. Medication risks. | 35 | 50.0 | 35 | 50.0 | 0 | 0.0 | 70 | 100.0 | <0.001* |
| 3. Cleaning supplies and chemicals. | 33 | 47.1 | 37 | 52.9 | 0 | 0.0 | 70 | 100.0 | <0.001* |
| Total | 35 | 50.0 | 35 | 50.0 | 0 | 0.0 | 70 | 100.0 | <0.001* |

**Table (3): Level of Mother's Reported Practice Regarding First Aid Management on pre and post intervention.**

| Mother's reported practice regarding First aid management | Pre | | | | Post | | | | p |
|---|---|---|---|---|---|---|---|---|---|
| | Unsatisfactory (< 60 %) | | Satisfactory (≥ 60%) | | Unsatisfactory (< 60 %) | | Satisfactory (≥ 60%) | | |
| | No. | % | No. | % | No. | % | No. | % | |
| 1. Poisoning by swallowing | 52 | 74.3 | 18 | 25.7 | 2 | 2.9 | 68 | 97.1 | <0.001* |
| 2. Poisoning through the skin | 36 | 51.4 | 34 | 48.6 | 0 | 0.0 | 70 | 100.0 | <0.001* |
| 3. Poisoning through the eyes | 33 | 47.1 | 37 | 52.9 | 0 | 0.0 | 70 | 100.0 | <0.001* |
| 4. Poisoning by inhalation | 54 | 77.1 | 16 | 22.9 | 0 | 0.0 | 70 | 100.0 | <0.001* |
| Total | 47 | 67.1 | 23 | 32.9 | 0 | 0.0 | 70 | 100.0 | <0.001* |

**Table (4): Mother's Overall Levels of Reported Practice (first aid management and preventive measures) on pre and post intervention.**

| Mother's overall levels of reported practice | Pre | | Post | | p |
|---|---|---|---|---|---|
| | No. | % | No. | % | |
| Unsatisfactory (<60%) | 41 | 58.6 | 0 | 0.0 | <0.001* |
| Satisfactory (≥ 60%) | 29 | 41.4 | 70 | 100.0 | |
| Total score (0 – 45) | | | | | |
| Mean ± SD. | 23.16 ± 11.57 | | 43.06 ± 2.24 | | <0.001* |

## Discussion

The accidental poisoning is a central problem in childhood age and a significant cause of morbidity and mortality at this age worldwide (Hemmati et al., 2024). Meanwhile, more than 90% of all poisonings occur within the home environment which the household products can poison the children (WHO, 2020). Therefore, there is an intense need to increase mother's Knowledge and improve their awareness regarding prevention and

first aid management of household poisoning among their children. This can be done through an instructional module.

The current study hypothesized that mother's knowledge score about household poisoning would be higher after following the instructional module than before. Also, mother's Practice score about management of household poisoning would be higher after following the instructional module than before

Concerning hypothesis one, the present study illustrated that there were increase in mother's knowledge about household poisoning post intervention compared to pre intervention. This result could be related to the positive effect of the instructional modules on improving mothers' knowledge about household poisoning, which explained all information as definition of poisoning, types of toxic substances, method of exposure, signs and symptoms, common household toxic substances, the most common medicines leading to poisoning and factors leading to increased severity of child poisoning through sessions and illustrated booklet which significantly enhance the mothers' knowledge on post intervention.

This result was consistent with Sackitey (2018) who conducted a study about "Knowledge, Attitude and Perception on Prevention of Home Accidents among Mothers who Came to the Pediatrics Department of the Korle-Bu Teaching Hospital." The study showed that, less than two fifths of the studied mothers had satisfactory level of knowledge before the guiding program implementation compared to the majority of them after the program with statistical significance difference.

Another study by Bakr et al., (2018) who studied "The Effect of Guiding Program on Mothers' Health Awareness Regarding Household Poisoning of Their Children Less Than Six Years Old in Rural Areas." The study found that none of the studied mothers were knowing or posting the national poison control hotline number in home before the guiding program compared to more than half of them after program implementation. This may be due to the fact that there is a defect in the health awareness of the studied mothers regarding the national poison control hotline number.

The results of the present study showed that mean and standard deviation of mother's knowledge about household poisoning was significantly higher on post-intervention compared to pre-intervention ($1.86 \pm 0.18$ VS $0.71 \pm 0.26$). This justify the use of simple information which help mothers to understand easily.

This finding came in agreement with Kaur (2013) who conducted a study about "Aten Years Retrospective Analysis of Telephone Calls to The National Poisons Information Centre, All India Institute of Medical Sciences, New Delhi, India." The study showed that mean post-test Knowledge (18.25) was significantly higher than the pre-test Knowledge score (14.53).

Bedsides, this finding was in line with Afshari et al., (2017) who conducted a study in 2014 "On 72 Mothers with at Least One Child Under 5 Years who were Living in Catchment Areas of

Four Rural Health Houses in Twiserkan County, Located in west Iran." The study showed that mean score of knowledge in the intervention group was statistically significant after the intervention.

Regarding hypothesis two, the present study demonstrated that mother's reported Practice score about management of household poisoning was higher after following the instructional module than before. This result could be related to the booklet which explained all Practices about management of household poisoning which significantly improved mothers' reported practice on post intervention compared to pre intervention.

Also, there was an improvement in mothers ′reported practices regarding preventive measures for making home safe on post intervention compared to pre intervention. This justify the use of illustrated pictures in the booklet with use of simple instructions.

This result was consistent with Romeeh et al., (2022) who conducted a study about "Mothers' Awareness about Poisoning Prevention among their Children under Five Years Old." The study concluded that two-thirds of caregiver had total satisfactory practice about home safety measures, and one third had total unsatisfactory practices according to the scoring system of this study. One explanation of this study results from the investigator's opinion is that many younger mothers in this sample had completed university education. Therefore, they may have more health awareness and more motivation to join training courses or read texts about newborn and childcare and implement more preventive measures. Another reason may be the majority of mothers in this study sample are working mothers with moderate socioeconomic levels and this may help them to modify and implement more preventive and safety measures to avoid poisoning in their homes.

Also, this result was consistent with Abel Galil et al., (2021) who studied "Mother's Knowledge and Practices Regarding Care of The Children with Accidental Poisoning at Zagazig University". The study concluded that slightly less than two-thirds of the mothers in the studied sample had adequate preventive poisoning practices (63.7%) for making home safe.

In the same line, another study by Aly (2020) who conducted a study about "Knowledge, Attitude and Practice of Mothers towards Household Child Toxicity and Unused Medications: Ismailia, Egypt." The study showed that, there is a clear improvement in mothers' reported practices regarding all items of household poisoning prevention measures in the kitchen post program compared to the minority before the program with highly statistically significant difference.

On the contrary, Nageh et al., (2020) who conducted a study about " Mothers' Knowledge and Subjective Practice toward the Most Common Domestic Injuries among Under-Five Children in Mansoura Locality from Both Urban and Rural Areas." They stated that mothers' score level of subjective practices related to safety measures taken in the home

environment to prevent poisoning was 100% improper according to their scoring system (Improper = scores less than 75% of total scores). These marked variations in the results of both studies may be due to different scoring systems, subjects and methods.

On the other hands, this study showed that there was an improvement in mothers ′reported practices regarding preventive measures for medication risks on post intervention compared to pre intervention. So, there were highly statistically significant differences between pre and posttest reported practices. This might be due to the use of simple and easy instruction during the sessions as well as mothers education level.

This finding came in agreement with Mohammed et al., (2013) who conducted a study about "Investigating Mothers' Reported Practices Regarding Children's Household Poisoning Prevention Measures in the Bathroom." They showed that, only one third of the studied mothers are using child-resistant caps for medications, including vitamins, prescription drugs and over-the-counter drugs before program implementation compared to nearly three quarters after program implementation. Furthermore, nearly one tenth of them are flushing unidentified and out-of-date medicines down the toilet.

Also, this finding was in line with Moshtohry et al., (2018) who studied "Effect of Guiding Program on Mothers' Health Awareness Regarding Household Poisoning of Their Children Less Than Six years Old in Rural Areas." They concluded that there were high level of negligence of families and those who are involved in childcare, ignorance about poisoning, packaging of produced drugs in attractive colors, uninformed use of drugs, nonprescription sale of some drugs and leaving them within reach of children lead to increase in poisonings on pretest than on posttest.

Our study found that, there were improvement in mothers ′reported practices regarding preventive measures of poisoning from cleaning supplies and chemicals on post intervention compared to pre intervention. For this reason, there were highly statistically significant differences between pre and post reported practices. This justify the good presentation and the preventive technique used to change mothers behavior.

This finding was consistent with Bakr et al., (2018) who studied "Effect of Guiding Program on Mothers' Health Awareness Regarding Household Poisoning of Their Children Less Than Six years Old in Rural Areas." They showed that only two fifths of the studied mothers keeping dangerous product, cleaning products, medications and chemicals in containers with child-resistant closures before guiding program implementation compared to more than four fifths after program implementation with highly statistical significance difference.

The present study demonstrated the mean and standard deviation of mothers reported practices regarding preventive measures on pre and post-intervention. The table reflected that

the total Mean ± SD of Mothers ′ reported practices regarding preventive measures was significantly higher on post intervention compared to pre intervention (21.40 ± 1.18 VS 11.99 ± 6.15). So, there were highly statistically significant differences between pre and post reported practices ($p \leq 0.05$).

This finding came in agreement with Fardazar et al., (2016) who conducted a study about "Assessment the Effect of Educational Intervention on Preventive Behaviors of Home Accidents in Mothers with Children Less than 5- Year Based on Protection Motivation Theory (PMT)." They reported that there were statistically significant differences between the mean scores of all types of preventative techniques and behaviors in the home regarding accidents with children under 5 years old after the program's intervention than before ($P<0.05$).

Furthermore, Megahed, et al., (2016) who conducted a study about "Education Program for New and Experienced Mothers around Childhood Accidents Safety and Emergency Intervention." The study showed that significant post-study improvement in mothers' practices with safeguarding against juvenile accidents.

Moreover, this study clarified that the majority of the caregivers had improvement in mothers ′reported practices regarding First aid management for poisoning by swallowing on post intervention compared to pre intervention, except for monitor breathing and perform artificial respiration if necessary (60.0%). Therefore, there were highly statistically significant differences between pre and post-test reported practices. This could be due to the positive effect of the booklet as it offer the steps of first aid management for poisoning by swallowing simply and gradually as well as the video used and the illustrated pictures. As regard artificial respiration, it was 60.0%, this might be due to the difficulty of the procedure and may need more training time.

This finding came in agreement with Syan et al., (2022) who conducted a study on "The Effect of Educational Program about First Aid and Prevention of Choking for Mothers of Preschool-Age Children". They illustrated that most of mother answered incorrectly the questions related to first aid for chocking, and prevention of chocking before the program. While after the program, a few percent were answered incorrect, with highly statistically significant difference between mothers' knowledge regarding prevention and first aid of chocking before and after program using mobile education.

In the same context, these findings were agreed with another study conducted by El Seifi et al., (2018) about "The Application of Health Education Program among Mothers Having Children Less than Five Years Improves Their Knowledge, Self-Efficacy and Attitude about Home Chocking". They showed that there were improvements in first aid measures for choking applied after

application of the education program than before.

The present study showed that there were improvements in mothers ' reported practices regarding first aid management for poisoning through the eyes, skin and inhalation on post-intervention compared to pre-intervention. Therefore, there were highly statistically significant differences between pre and post-test reported practices.

This finding came in agreement with Farouk & Awadin (2021) who studied "The Effect of Educational Interventions Regarding Home Accidents among Children under the Age of Six on Mothers in Rural Areas." The study found that, most mothers had adequate poisoning first-aid practices after implementing the educational program than before.

In same line, Mahrous et al., (2019) who conducted a study about "Effect of an Educational Intervention about Home First Aid Measures on Mothers' Knowledge." The study revealed that mothers' first aid practices for poisoning were significantly improved after the implantation of the educational interventional program.

Also, this result was consistent with Uskun et al., (2018) who studied "The Attitudes and Behaviors of Housewives in The Prevention of Domestic Accidents and Their First Aid knowledge Levels." They reported that attitudes and behaviors of caregiver were affected positively by the education levels.

On contrary, Sobhy et al., (2018) who conducted a study about "Mothers Perception regarding Poisoning among their Preschool Children." They found that only half had sufficient training in the first-aid measures for skin and eye exposures. Thus, only slightly more than half of the mothers had adequate total first-aid practices, which is quite worrying since the first-aid measures may be lifesaving when applied appropriately and in due time.

On the other hand, this finding was inconsistent with Dayasiri et al., (2018) who studied "Patterns and Outcome of Acute Poisoning among Children in Rural Sri Lanka." They demonstrated that approximately one-third of the parents or caregivers of children exposed to accidental poisoning had inadequate or even harmful first-aid practices.

The present study clarified that all mothers had a satisfactory level of reported practice regarding the preventive measures posttest compared to pretest (100% VS 67.1% respectively). This justifies the effectiveness of the instructional module.

This finding came in line with Kunswa et al., (2018) who conducted a study about "Effect of Guiding Program on Mothers' Health Awareness Regarding Household Poisoning of their Children Less Than Six Years Old in Rural Areas." The study showed that there was a clear improvement in mothers' reported practices regarding all items of children' household poisoning preventive measures after guiding program implementation compared to the minority before the program.

This result was inconsistent with Khalil et al., (2022) who conducted a study about "Mothers' Awareness

about Poisoning Prevention among their Children under Five Years Old." The study revealed 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.

Also, this study showed that total mean ± SD of mothers ′reported practices regarding first aid management was significantly higher on post interventions compared per intervention (21.66 ± 1.64 VS 11.17 ± 5.99 respectively). Therefore, there were highly statistical significant differences between the two mean score (P<0.001).

This result was in line with Kunswa et al., (2018) who conducted a study about "Effect of Guiding Program on Mothers' Health Awareness Regarding Household Poisoning of their Children Less Than Six Years Old in Rural Areas." The study presented that there is a clear improvement in the total mothers' reported practices regarding first aid of household poisoning among their children less than 6 years old as observed in 92% of the mothers who follow satisfactory practices after the program implementation compared to 32% only before it.

The current study showed that there was highly statistically positive correlation between total knowledge and total reported practices scores regarding first aid management (r = 0.287, p =0.016) on post intervention compared to per intervention.

This result was consistent with Abd Allah et al., (2018) who established a study about "Mother's Knowledge and Practices Regarding Care of the Children with Accidental poisoning in Poisoning Control Center at Zagazig University." This study showed that, there was a positive statistically significant correlation between mothers' total knowledge and total reported practices scores about children poisoning first aid management.

The current study showed that there was highly statistically positive correlation between overall knowledge and overall mother's reported practices scores (r = 0.560, p < 0.001) on post intervention.

This findings came in agreement with Abd El – Samea et al., (2021) who conducted a study to "Assess Mothers' Perception Regarding Poisoning among Their Preschool Children." They showed that there was a positive statistically significant correlation between mothers' total knowledge and total reported practices score regarding poisoning among their preschool age children.

On the contrary, Adhikari et al., (2017) who studied " The Awareness and Practice of Mothers Having Under-five Children Regarding Preventing Childhood Accidents in Parsauni of Bara District, Nepal." The study concluded that there was no statistically significant correlation between the awareness and practices of mothers regarding childhood accidents.

These differences in results may be due to socio-demographic characteristics, differences in samples, culture, and

custom differences between Indian and Egyptian mothers.

To capitulate, mother's knowledge increased and they had a satisfactory level of reported practice after applying the instructional module regarding management of household poisoning than before.

**Conclusion:**

The current study concluded that educational intervention in mothers is much more effective in improving knowledge and appropriate behavior related to household poisoning in children. Educational intervention related to household poisoning in children has the potential to make a significant impact on the health of children. The motivation of mothers is needed to play a role in preventing household poisoning in children.

**Recommendations:**

This study recommended that Providing education program about household poisoning prevention, home accidents, first aid management and method of prevention for students in school curriculum at different levels and through mass media.

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