

Nurses' Knowledge and Practice toward Children with Accidental Poisoning in Zagazig Poison Control Centers

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Abstract

Background: Accidental poisoning is a leading cause of unintentional injuries among children in low-income and middle-income countries. **Aim:** This study aimed to assess nurses' knowledge and practice toward children with accidental poisoning in the Poison Control Centers. **Research design:** A cross-sectional descriptive study was conducted from 1st of September 2022, to 30th of January 2022, at Zagazig Poison Control Centers (ZPCC) affiliated to Zagazig University Hospitals and Zagazig General Hospital, Sharqia Governorate, Egypt. A convenient sample of (n=95) nurses were enrolled in this study. Nurses' knowledge questionnaire and nurses' practice observational checklists were used for data collection. **Results:** less than half (47.4%) of studied nurses had poor knowledge about accidental poisoning, while 32.6% had average knowledge and 20% had good knowledge. Moreover, 61% studied nurses had unsatisfactory practice about accidental poisoning, while 39% had satisfactory practice. **Conclusion:** this study concluded that nurses had poor level and average level of knowledge about accidental poisoning in addition to unsatisfactory levels of practice. Overall, there was a high positive correlation between total knowledge and total practice. **Recommendation:** There are obvious needs for conducted educational training programs for nurses to improve their knowledge and practices regarding accidental poisoning in children.

Keywords: Accidental Poisoning, Children, Poison Center, Nurses' knowledge, Nurses' Practices.

Introduction

Poisoning is a leading cause of morbidity and mortality as an unintentional injury all over the world (Ahmed et al., 2022). Due to a lack of information and prevention strategies, low-income and middle-income nations are lagging behind high-income countries in the reduction of poisoning events (Filippelli et al., 2020; Ahmed et al., 2022). This distinction can be attributable to the prompt and appropriate handling of poisoning cases, population awareness, preventive actions, and regulatory legislation (Filippelli et al., 2020). Poisoning is defined as a term used to describe an occurrence in which toxic substances reach the body through the mouth, blood vessels, food, or injections, causing the death and destruction of the body's cells (Shahkolai et al., 2019; Saad, Abo El-Ata, & Abdu El-kader, 2021). Both intentional and unintentional poisoning is possible. Toxicology may be defined as the study of the action of poisons on the living organism (Satpathy & Parida, 2020; Saad, Abo El-Ata, & Abdu El-kader, 2021).

One of the most common causes of unintended injuries to children worldwide is poisoning. Nearly 200,000 individuals every year pass away from unintentional poisoning, according to the WHO. About 80% of these fatalities take place in developing and middle-income nations. Ten percent of all unintentional injuries to children in low- and middle-income nations are caused by accidental poisoning (Mew et al., 2017; Ahmed et al., 2022).

Acute poisoning affects 32.6 percent of children under the age of three and 44.2 percent of children under the age of five worldwide. It is the fourth reason for admission to the pediatric emergency room, after trauma, burns, and drowning (Soave et al., 2022). Due to varying access to healthcare facilities, global data on poisoning-related morbidity are mostly unavailable, and regional data are not comparable. This has a substantial influence on children's health (Dayasiri et al., 2018).

The underlying causes of poisoning vary between nations and depend on a variety of

factors, including demography, socioeconomic position of the local people, level of education, and local customs and beliefs. Additionally, different poisoning patterns may occur depending on the age and gender of the victims (Keka et al., 2014; Alwan et al., 2022).

Due to their natural curiosity and propensity to explore and investigate their surroundings, children are more likely than adults to become poisoned. Since they do not understand the hazard and possibly cannot read the warning label, they typically eat what they discover (Shahkolai et al., 2019; Berta et al., 2020; Tobaiqy et al., 2020; Alwan et al., 2022).

The majority of pediatric poisonings include non- or minimally toxic substances, but on rare occasions, some are extremely toxic and necessitate prompt medical attention in order to avoid serious injury or death. According to the most recent data available, poison control centers nurses need to be knowledgeable about the treatment of poisoning and ready for the common causes of pediatric poisoning (Lee et al., 2019).

The type of poison, the amount exposed, the period of time after exposure, and the child's vulnerability all influence the treatment methods used. When treating hazardous ingestions, stabilizing the child comes first and should focus on the ABCs (airway, breathing, circulation). No matter how poisonous it may be, essential physiological functions must be maintained. Prevention is the answer to the issue of child poisonings. For improved patient management, nurses should be knowledgeable about emergency management, evaluation, antidote delivery, and supportive therapy (Hockenberry, & Wilson, 2018; Mohamed, 2020; Joda et al., 2021).

Management should prioritize avoiding poisoning; nurses can discuss various preventive measures. To facilitate protection of the child, the environment should be modified during infancy before she or he crawls. The nurse should teach caregivers to call the poison control center before instituting treatment if their child has been exposed to a toxic substance (Hockenberry, & Wilson, 2018; Perry et al., 2022).

Good medical and nursing cares are the cornerstone of the assessment and subsequent therapy of possible poisoning in children and adolescents, as is the case with any clinical pediatric practice. In most circumstances, a thorough history and examination, followed by supportive therapy as needed, will guarantee a positive outcome. Over investigation with subsequent improper antidote therapy use may lead to harmful interventions that are not warranted (Anderson, 2021; Sun et al., 2021).

Significance of the study

From January 2011 to August 2012, 300 children up to 12 years with acute poisoning admitted to the Pediatric Department and Poisoning Treatment Unit, Zagazig University Hospitals. The majority of all cases (99%) were due to accidental poisoning (Hassan & Siam, 2014). Moreover, from 1 January 2018 to 31 December 2018, 624 children with acute poisoning (<18 years old) admitted to Zagazig University hospital emergency department or referred from other hospitals in El-Sharqia Governorate (Mahmoud, 2019). Additionally, 304 acutely poisoned children aged from 1 to 18 years old from both genders were admitted to the Poison Control Center of Ain Shams University Hospitals (PCC-ASUH) during the period from June 2020 to November 2020. Nurses play a crucial role at poison control center, so nurses' knowledge and practice toward children with accidental poisoning should be assessed and considered.

Aim of the study

This study aimed to assess nurses' knowledge and practice toward children with accidental poisoning in poison control centers. This aim achieved through answering the following research questions;

- RQ₁. What are the levels of nurses' knowledge about accidental poisoning?
- RQ₂. What are the levels of nurses' practices regarding accidental poisonings?
- RQ₅. Does there is a correlation between nurses' knowledge and their practices?

Methods

Research design

A descriptive cross-sectional design was employed to accomplish this study.

Setting

The study was carried out at Zagazig Poison Control Center (ZPCC) affiliated to Zagazig University hospitals and Zagazig General Hospital, Sharqia Governorate, Egypt.

Participants

The sample of the study consisted of a convenient sample of (n=95) nurse who agreed to participate over a period of six months, from September, 2021 to February, 2022.

Tools of Data Collection

Two tools were used for data collection as the following:

Tool I: Self-administered questionnaire contain the following parts:

Part I: Demographic Characteristic form

Developed by the researchers, presented the demographic profile of the studied nurses, it recorded nurses' age, gender, educational level. Additionally, it present work related data included, attending training programs regarding toxicological emergencies, and years of experience in emergency unit.

Part II: Nurses' Knowledge questionnaire

Adapted from **Tassew et al., (2021); Nigatu et al., (2022):** to assess nurses' knowledge about poisoning; includes (23) closed ended questions covering the areas of concept of accidental poisoning, early stages of acute poisoning, initial management, indication of gastric lavage, complication, signs and symptoms of acute poisoning, cause of poisoning, warning sign.

The scoring system for nurses' knowledge responses as the following: Correct response scored as one (1) points, and incorrect response scored as zero (0) point. The cut-off point of good score is >75% of total score which means that the nurse has good

knowledge about accidental poisoning. Average score is between 60%-75% of the total score means that the nurse has acceptable knowledge about accidental poisoning. Poor score is <60% of total score, which means that the nurse has insufficient knowledge about accidental poisoning.

Tool (II): Nurses' practice observational checklists:

Nurses' practice observational checklists, adopted from **Mwaura et al., (2012) ; Abebe et al., (2019)** used to assess nurses' practice about poisoning; includes nurses' practice regarding accidental poisoning, this tool includes 6th observational checklists about nasogastric tube insertion (22 items), gastric lavage (23 items), antidote administration (7) items, perform the dermal and ocular decontamination measures (9), Initial management of poisoning (8), and resuscitation (15).

The scoring system of practice: The observational nursing intervention will be measured using done or not done checklist. The data will be scored by (1= done, 0= not done).The cut-off point of competent nurse is >70% of total score. This means that nurses' practice was classified as the following: "satisfactory" if the percent score was 70% or more, "unsatisfactory" if less than 70%.

Validity and Reliability

The adapted tools were tested for their reliability by using Cronbach's alpha coefficient test in SPSS program version 24 by a statistician. It was carried out on 10 of poison control centers nursing staff and the results were as the following: Internal consistency reliability (Cronbach's α) for knowledge emerged as "good"0.876and internal consistency reliability (Cronbach's α) for practice emerged as 0.903 "excellent".

Pilot study

The validated questionnaire was subsequently pre-tested on 10% of studied nurses, who later were included from the main study. It is carried out prior to data collection to assess the feasibility, duration, and adverse events of a full-scale research project and to enhance the study design. No changes were

need, so the pilot study sample was included in the study.

Data collection

Data were collected using data collection tools. Data was collected by the authors via a one-on-one interview over a period of 6 months from September, 2021 to February, 2022. First, the researchers explained the study to nurse managers in each hospital to obtain permission. Second, the purpose, methods, significance and assurance of the anonymity and confidentiality of the study was explained to participants.

Ethical Considerations

The study received ethics approval from the research ethics committee of the Faculty of Nursing, Zagazig University. Data were collected via questionnaires that were Completion of the questionnaire constituted an agreement to participate in the study. The questionnaire was filled in anonymously and the data were kept confidential and used for research purposes only.

Administrative design:

Necessary official approval to conduct the study was obtained from faculty of Nursing, Zagazig University, and from Zagazig University Hospital, and Zagazig General Hospital after explaining the purpose of the study.

Statistical Analysis

The collected data was coded and entered to the statistical package of social sciences (SPSS) (SPSS Inc; version 24; IBM Corp., Armonk, NY, USA). After complete entry, data was explored for detecting any error, then, it was analyzed by the same program for presenting frequency tables with percentages. Qualitative data was presented as number and percent. Besides, Quantitative data were described as mean / SD as appropriate. Differences between variables were examined using ANOVA tests. Spearman correlation (r) was performed to measure the strength of a linear relationship between ordinal variables. The results were considered statistically significant at $P \leq 0.05$.

Results

The study included 95 nurses; their mean age was 33.97 ± 4.08 years. Of all participants 80% (76 out of 95) were females, 77.9% (74 out of 95) were married. Furthermore, 55.8% of them (53 out of 95) had a technical nursing degree, 41% (39 out of 95) had 10 – 15years of experience. Regarding their attendance of training programs about accidental poisoning, 81.1% (71 out of 95) did not attend training programs. (**Table 1**)

As regard nurses' knowledge about accidental poisoning, **table 2** reveals that 46.4%, 47.3%, 50.6%, 52.7%, 50.6%, 47.4%, 48.4% and 57.9% of them had poor knowledge concerning accidental poisoning concepts, stages of acute poisoning, initial management, gastric lavage indication, complication, signs and symptoms of acute poisoning, causes, and warning sign of accidental poisoning, respectively.

Concerning the nurses' practice related to accidental poisoning, **table 3** shows that 40%, 60.5%, 80%, 81.1%, 78.9%, and 72.6 % of nurses had unsatisfactory practices related to nasogastric tube insertion, gastric lavage, antidote administration, dermal and ocular decontamination, initial management of poisoning, and resuscitation, respectively

Figure 1 described those less than half (47.4%) of studied nurses had poor knowledge about accidental poisoning, while less than one third (32.6%) had average knowledge and only one fifth (20%) had good knowledge.

Figure 2 describes those more than half (61%) of studied nurses had unsatisfactory practice about accidental poisoning, while more than one third (39%) had satisfactory practice.

Table (4) stated that high significant model detected through F test value was 8.979 with p value .001**. The model explains 57% of the change in nurse's knowledge score detected through R^2 value 0.571. Also, revealed that age had negative slight effect on the knowledge of nurses, while, education level, attended training courses, and high experience had high positive predictor effect on their knowledge at p value <0.01 **.

Table (5) shows that there was slight significant relation between nurses' age and their total practice at p value $<0.05^*$. In addition, there was high significant relation between education level, experience, and training courses with their total practice at p

value $<0.01^{**}$. But there was no relation between marital statuses with total practice at p value >0.05 .

Table 6 reveals that there was high positive correlation between total knowledge and total practice at p value $<0.01^{**}$.

Table (1): Distribution of studied nurses according to their socio characteristics (n=95)

Items	N	%
Age (Year)		
20 - <30	22	23.1
30 - <40	57	60
≥ 40	16	16.9
Mean S.D	33.97±4.08	
Education level		
Secondary nursing degree	24	25.3
Technical nursing degree	53	55.8
Bachelor nursing degree	18	18.9
Gender		
Male	19	20
Female	76	80
Marital status		
Married	74	77.9
Not married	21	22.1
Years of experience		
<5 years	19	20
5 - <10	17	17.9
10 - 15	39	41
>15	20	21.1
Training courses about accidental poisoning		
Yes	18	18.9
No	77	81.1

Table (2): Distribution of studied nurses according to their knowledge regarding accidental poisoning (n=95)

Items	Good >75%		Average 60 – 75%		Poor <60%	
	n	%	n	%	n	%
Concept of accidental poisoning	18	18.9	33	34.7	44	46.4
Early stages of acute poisoning	20	21.1	30	31.6	45	47.3
initial management of poisoning	16	16.8	31	32.6	48	50.6
Indication of gastric lavage	16	16.8	29	30.5	50	52.7
Complication of poisoning	19	20	28	29.4	48	50.6
Signs and symptoms of acute poisoning during early stages	21	22.1	29	30.5	45	47.4
Cause of poisoning	22	23.2	27	28.4	46	48.4
Warning sign of accidental poisoning	14	14.7	26	27.4	55	57.9

Table (3): Distribution of studied nurses according to their practice regarding accidental poisoning (n=95)

Items	Satisfactory		Unsatisfactory	
	n	%	n	%
Nasogastric tube insertion	57	60	38	40
Gastric lavage	28	29.5	67	60.5
Antidote administration	19	20	76	80
Dermal and ocular decontamination	18	18.9	77	81.1
Initial management of poisoning	20	21.1	75	78.9
Resuscitation	26	27.4	69	72.6

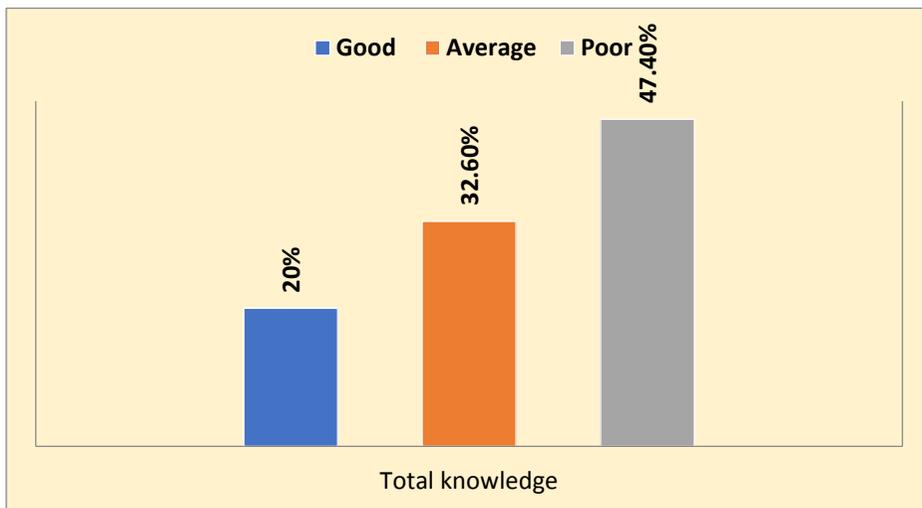


Figure (1): Distribution of studied nurses according to their total knowledge regarding accidental poisoning (n=95)

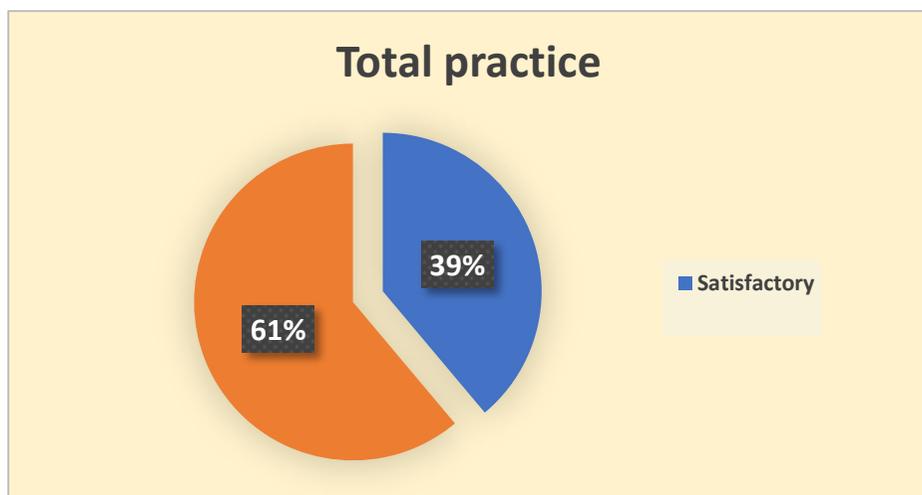


Figure (2): Distribution of studied nurses according to their total practice regarding accidental poisoning (n=95)

Table (4): Best fitting multiple linear regressions model for total knowledge

	Unstandardized coefficient		standardized coefficient	T- test	P value
	B	Std. Error			
Age	-1.545	0.256	.299	2.767	.014*
Qualification	2.670	0.482	.401	5.908	.002**
Training courses	3.280	0.654	.560	7.044	.000**
Experience	1.766	0.236	.263	3.897	.007**
Dependent variables: Total knowledge					
R square 0.571 Model ANOVA 8.979 p value .001**					

Table (5): Relation between socio characteristics of studied nurses and their total practice (n=95).

	Total practice				Chi-square p. value
	Satisfaction N=37		Un-satisfaction N=58		
Age:					
20 - <30	19	51.3	3	5.2	5.999
30 - <40	12	32.4	45	77.6	<0.05*
≥40	6	16.2	10	17.2	
Education level					
Secondary nursing	5	13.5	19	32.8	8.054
Technical nursing	16	43.2	37	63.8	<0.01**
Bachelor nursing	16	43.2	2	3.4	
Marital status					
Married	29	78.4	45	77.6	1.604
Not married	8	21.6	13	22.4	>0.05
Experience					
<5 years	2	5.4	17	29.3	7.043
5 - <10	5	13.5	12	20.7	<0.01**
10 - 15	13	35.2	26	44.8	
>15	17	45.9	3	5.2	
Training courses					
Yes	17	45.9	1	1.7	12.011
No	20	54.1	57	98.3	<0.01**

Table (6): Correlation between studied variables

	Total practice
Total knowledge	r. 0.598 p <0.01**

highly significant <0.01

Discussion:

One of the main causes of morbidity and mortality amongst children is poisoning which is defined as the contact of someone/children to such a substance that can cause signs and symptoms of organ dysfunction leading to damage or death. Poisoning is an important mode of accidental injury for all ages but is especially prevalent amongst children aged less than 5 years. According to the data published by the Toxic Exposure Surveillance System (TESS) of the American Association of Poison

Control Centers (AAPCC) more than 1,000,000 cases per year were reported (Dayasiri et al., 2017; Kasemy et al., 2022; Sahu et al., 2022; SIDDIQUI et al., 2022). In acute poisoning, sudden onset of symptoms appear after the ingestion, inhalation or after coming in contact with poisonous substance. In chronic poisoning, symptoms develop gradually over a period of time and there is complete disappearance of symptoms on the removal of patients from exposure. Acute poisoning in childhood is an important cause of morbidity and mortality and can be effectively controlled

by preventive measures (**Bhavya, & Chakrapani, 2022**).

Concerning the characteristics of the studied nurses, the result of the present study showed that nearly two-thirds of the studied nurses were at age group from 30 - <40. The majority of them were female, this explained females continue to dominate the profession and men are still a minority among those who practice nursing. Additionally, more than half of them had technical institute of nursing. This due to a lot of bedside nurses in governmental hospital had technical nursing degree while bachelor degree working ahead nurse and administrator position. Related to years of work experiences, more than one-third the studied nurses are ranging from 10-15 years of working experiences. The majority of studied nurses did not attend any training programs about accidental poisoning.

These results contradictory with a descriptive **Saad et al. (2021)** who revealed that more than half of the studied nurses were at age group from twenty to less than thirty years. Nearly two third of them were female, and nearly two third of them had technical institute of nursing. Nearly half of the studied nurses are having from five to less than ten years of working experiences. Moreover, the most of studied nurses join in training programs and majority of them get CPR training course.

As regard the total nurses' knowledge about accidental poisoning, the results of the current study indicated that about half of the studied nurses had poor knowledge concerning accidental poisoning concepts, stages, management, gastric lavage indication, complication, signs and symptoms, causes, and warning sign. This may be due to the fact that poisoning is especially problematic for children as it represents one of the most common medical emergencies that require health care providers to have an extensive level of knowledge. In addition, nursing care of pediatric patients vary by stage of development and each age group of pediatrics requires specific knowledge in relation to their stage of development.

These results go in the same line with **Saad et al. (2021)** who found that more than half of the studied nurses had poor knowledge regarding toxicological emergencies. The current study finding also supported by **Lafi et al., (2019)** who concluded that more than half of nurses had low knowledge and none of them had high level of knowledge regarding accidental poisoning.

On the other hand, the present finding is in contrast with **Tassew et al., (2021)** a cross sectional study entitled "Knowledge, attitude and practice of nurses working in South Gondar zone hospitals toward initial management of acute poisoning" among 149 nurses. According to this study, most of nurses (88.5%) had good knowledge of initial management of acute poisoning. Furthermore, the current study finding also disagree with **Hakami et al. (2018)** that level of knowledge was good among 77.3% of subjects but was insufficient among 22.7% of them regarding the care of patients with acute poisoning.

Moreover, **Rutto et al., (2012)** in a study entitled "Nurse's knowledge, attitude and practice on the initial management of acute poisoning among adult casualties: Study at Kenyatta National Hospital, Kenya" found out that with higher nursing qualification and training on courses related to emergency care, knowledge and skills of A&E nurses on the initial management of acute poisoning is enhanced

Moreover, **Abebe et al., (2019)** on a study entitled "Assessment of knowledge and practice of nurses on initial management of acute poisoning in Dessie referral hospital Amhara region, Ethiopia, 2018". Based on the given 13 items to assess the general knowledge of nurses on poisoning, the score ranges from 2 to 9 with the range of 7 with the mean score of 7.48 (SD=0. 0.839) for the entire respondents that was 57.5% for the given items that was less than 75% which was unsatisfactory level of knowledge. The mean score of general knowledge on poisoning was high among nurses who had training on initial management of poisoning than those nurses who had not the training.

Concerning “Assessment of Nurses Knowledge Regarding Initial Management of Poisoning among Children under 5 Years in Alamal National Hospital”, carried by **Abdallah. (2018)**, More than two third of study group were knowledgeable about immediate management of poisoning and majority of study group were knowledgeable about prevention of poisoning.

Mohammed et al (2021) in a study entitled “Effect of Emergent Nursing Educational Program on Nurses’ Performance for Patients with acute poisoning” revealed that there was a significant improvement in the mean scores of the total level of knowledge and practice immediately and one-month post program implementation in both studied groups at $P < 0.05$, with only significant difference between two groups in pre-program implementation regarding total practice at $P < 0.05$. Findings revealed that nurses’ performance of emergent intervention for patient with acute poisoning had improved after application of educational program. From the researcher point of view, these findings may returned to the demographic profile of the nurses, as more than half of them had technical institute of nursing, and the majority of studied nurses did not attend any training programs about accidental poisoning.

Concerning the total nurses’ practice, the present study results showed that most of nurses had unsatisfactory practices. This may be contributed to the fact that pediatric patients with acute poisoning are a heterogeneous group as management of a child with poisoning requires more than an understanding of the multifactor that interfere with poisoning management. To apply nursing management, the individual pediatric patient’s needs must be considered. Nursing management will be determined by an individualized approach that based on the timing of ingestion, type of substance, and amount of the ingested substance as well as the clinical condition of the pediatric patient. Unfortunately, the nurse let the decision of management to the physician and only carry out the order as it is. In addition, nurses have no autonomy while the physician have the responsibility to manage pediatric cases of poisoning with minimum nursing

support. Physicians usually mentioned that poisoning in pediatrics need very urgent intervention and there is no chance for errors, so physicians minimize the role of nurse. The researchers are in argument with the physicians’ opinions because if nurses are trained at high qualified level, they will be able to practice well in the field of poisoning.

Concerning the total nurses’ practice the present study results shows that most of nurses had unsatisfactory practices related to nasogastric tube insertion, gastric lavage, antidote administration, dermal and ocular decontamination, initial management of poisoning, and resuscitation. This finding contradictory with the study done by **Mohamed. (2020)** showed that more than half of the studied nurses had competent level of practice regarding care of patients with acute or ganophosphate poisoning. Furthermore, **Saad et al., (2021)** demonstrated that, more than two-thirds of studied nurses had acceptable overall practices regarding toxicological emergencies, 19.8% of them had competent overall practices while only 3.7% of them had incompetent overall practices regarding toxicological emergencies

This current study finding goes in the same line with **Abdel Fatah Mahmoud et al., (2021)**. In a quasi experimental research study entitled “Effect of Guidelines Protocol for Nurses’ Performance Regarding Care Provided toward Poisoned Pre-school Age Children”, found that the most of them had incompetent in their total performance scores.

The current study showed that there was slight significant relation between nurses’ age and their total practice at p value $< 0.05^*$. In addition, there was high significant relation between education level, experience, and training courses with their total practice at p value $< 0.01^{**}$. But there was no relation between marital statuses with total practice at p value > 0.05 . Also, revealed that age had negative slight effect on the knowledge of nurses, while, education level, attended training courses, and high experience had high positive predictor effect on their knowledge at p value < 0.01 . Additionally, revealed that there was high positive correlation between total knowledge and total practice at p value $.001^{**}$.

Freeda et al., (2019) in a study entitled "Effectiveness of Self Instructional Module (SIM) on knowledge regarding management of selected poisoning in children among paediatric staff nurses. Found an association between the mean pre-test knowledge with their selected sociodemographic variables such as age ($\chi^2=9.13$), gender ($\chi^2=5.24$), religion ($\chi^2=6.48$), professional qualification ($\chi^2=6.65$), area of work ($\chi^2=18.55$), total years of experience ($\chi^2=11.30$) and experience in managing a child with poisoning ($\chi^2=5.63$)

Moreover, **Saad et al., (2021)** demonstrates that, there was a positive statistically significant correlation between studied nurses' overall knowledge and overall practice regarding toxicological emergencies. On the same line **Mohamed. (2020)** who revealed that there are highly statistically significant relation between nurses' level of knowledge, practice, and attitude regarding nurses' performance for patients with acute or ganophosphate poisoning. Also, **Hakami et al. (2018)** reported that there was a significant association between higher educational semesters, training about first aid as well as training in poison control centers. On the other hand, **AbdEl Fatah Mahmoud et al., (2021)** found that there was no statically significant relation between of the studied nurses' total knowledge scores and their personal characteristics, there was no statistically significant relation between of the studied nurses' total performance scores and their personal characteristics.

Conclusion

The study concluded that less than half of studied nurses had poor knowledge about accidental poisoning, while less than one third had average knowledge and only one fifth had good knowledge. Moreover, more than half of studied nurses had unsatisfactory practice about accidental poisoning, while more than one third had satisfactory practice. Significantly, there was a high positive correlation between total knowledge and total practice.

Recommendation

Based on the previous findings we can recommend that nurses at poisoning control

centers are in need to periodic training sessions and evaluations to improve nurses' knowledge and practice about accidental poisoning.

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