Effect of Emergent Nursing Educational Intervention on Nurses' Performance for Patients with Acute Poisoning

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Abstract

Background: Acute poisoning is a major health problem leading to emergency department admission and inducing significant patient morbidity and mortality throughout worldwide. Nurse's performance plays an important role in the management of acute poisonings. **The aim** of the study was to determine the effect of emergent nursing educational intervention on nurses' performance for patients with acute poisoning. **Design**: A quasi- experimental design was utilized. **Setting:** The study was conducted at Tanta University Poisoning Control Center (T.U.P.C.C) at Tanta University Hospitals and Elmanshawy General Hospital Emergency Department (E.G.H.E.D). **Subjects**: All nurses (27) nurses from Tanta University Poisoning Control Center and (10) nurses from Elmanshawy General Hospital) affiliated to ministry of health. **Tools:** Two tools were used to collect data: **Tool (I)**; Nurses' Structured Interview Scheduled Sheet and **tool (II);** Nurses' observational checklist about emergent nursing intervention of acute poisoning patient. **Results:** the present study revealed that there was a significant improvement of studied nurses' knowledge and practice immediate and one month post implementation of educational intervention among both study groups at different setting, where P value P <0.05 .**Conclusion:** The study findings revealed that nurses' performance of emergent intervention for patient with acute poisoning was improved after implementation of educational intervention. **Recommendation:** Developing a system of periodical nurse's evaluation to determine strategies for updating their knowledge and enhancing their practice regarding acute poisoning management.

Key words: Acute poisoning, Emergent nursing and Nurses performance.

Introduction

Acute poisoning is a global problem that has constantly increased over the last few years and is a major cause of morbidity and mortality all over the world [(1)]. It is a common problem in the emergency departments; those patients are rushing to the hospital at the earliest possible moment, irrespective of the amount and nature of the poison. This requires accident and emergency team to have knowledge, skills and positive self-esteem to perform critical assessment and emergent care to ensure an optimal patient outcome [(2)].

According to the statistics of poison control center in (2017) it was estimated that 2.115.186 million persons were exposed to poison in the United States. Across all ages 77.0% of poison reported cases were from unintentional exposure, 18.9% were from intentional exposure, and about 2.4% of total exposures were from adverse reactions [(3)].Although the epidemiology of poisoning in Egypt is difficult to be established, a statistical record at Tanta University Hospitals indicated that the number of patients with acute poisoning admitted to the poisoning control center in 2019 was 2793 patients[(4)]. in addition a statistical record at Elmanshawy General Hospital indicated that the number of patients with acute poisoning in 2019 was 2033 patients [(5)].

Poisoned patient admitted to the emergency department comes either in the form of Fulminant poisoning produced from massive dose of substances that result in death very rapidly, sometimes without any preceding symptoms, the patient appears to collapse and deteriorate suddenly as in acute poisoning produced by exposure to a single dose or several small doses within a day, in which the toxic effects occur immediately or within hours from the time of exposure associated with abrupt onset of symptoms [(6,7,8).]

The emergency nurse is considered as the first member who deals with acutely poisoned patient. So, she should be aware for using universal measures to protect herself during management of patients with acute poisoning, followed by emergent intervention which is a sequence of resuscitation and stabilization, assist in toxic diagnosis, therapeutic interventions such as decontamination, enhanced elimination of absorbed toxins and antidotes. Finally, supportive, psychosocial interventions must be performed for acutely poisoned patients and workplace safety interventions[,(9,10,11,12)].

Significance of the study:

Acute poisoning is a global health problem that getting worse throughout the world because the development of new chemicals

and drugs, leading to increase morbidity and mortality[13,14]. Nurses play a core role in emergency department to deal with acute poisoning patient. There are many studies used to assess nurse's performance toward emergent care of acute poisoning and revealed that nurse's improper performance regarding emergent intervention for acute poisoning. In Tanta, there is a lack of studies to improve nursing performance about acute poisoning. Hence there is an urgent need to design program for nursing care to improve knowledge and skills of management of patient with acute poisoning.

Aim of the study was to:

Determine the effect of emergent nursing educational intervention on nurses' performance for patients with acute poisoning.

Research Hypothesis:

- The mean scores of the studied nurses' knowledge and practice regarding acute poisoning care post implementation of educational intervention are higher than pre educational intervention scores.

-Nurse's performance is expected to be improved post implementing of emergent nursing educational intervention for patients with acute poisoning.

Subjects and Method:

Study design:

A quasi- experimental design was utilized in this study.

Study setting:

The study was conducted at Tanta University Poisoning Control Center (T.U.P.C.C) which accommodates of (10 beds) at Emergency Hospital affiliated to Tanta University Hospitals. Tanta City, Egypt and Elmanshawy General Hospital Emergency Department (E.G.H.E.D) (6 beds) affiliated to Ministry of Health, Tanta City, Egypt.

Subjects:

All nurses who are working in the previous mentioned setting (27 nurses from Tanta University Poisoning Control Center and 10 nurses from Elmanshawy General Hospital) who are involved directly in immediate care of acutely poisoning patients regardless of their age, sex, years of experience, level of education and residence.

Tools of the study:

Two tools were used for data collection.

Tool I: Nurses' Structured Interview Scheduled Sheet: This tool was developed by researcher after reviewing relevant literature to collect baseline data pertinent to the current study [6,7,11,12,13,14]. It consisted of two parts as follows;

Part one: Demographic characteristics of nurses, to assess data related to age, sex, marital status, level of education, total years of experience in previous mentioned department, previous and current training program on acute poisoning and previous lectures regarding poisoning during undergraduate study.

Part two: Structured nurses' knowledge interview questionnaire: This part was used to assess nurse's knowledge related to acute poisoning before, immediately and one month post educational intervention and included:

a) **Knowledge regarding acute poisoning:** Such as definition, classifications, causes of acute poisoning and clinical manifestations, this consisted 6 items.

b) **Knowledge related to emergent nursing intervention:** It includes airway management, breathing, maintenance of circulation and neurological assessment, which consisted 11 items.

c) Knowledge regarding diagnosis of poison, gastrointestinal decompression, specific therapy and supportive care, which consisted 11 items.

Scoring System:

Three level of scoring for questions included; Correct and complete answer scored (2) Correct and incomplete answer scored (1) Incorrect answer (0).

The score had been summed up and converted into total score percent according to the following category: Low level of knowledge was considered less than 60% moderate level of knowledge was considered from 60% to less than 80% high level of knowledge was considered from 80% and more.

Tools (II) : **Nurses' Observational Checklist about Emergent Nursing Intervention of Acute Poisoning Patient:** This tool was developed by the researcher after reviewing of related literature to assess the emergent nursing intervention of acutely poisoning patient [11,15,16,17]. It consisted of four domains:

1. **Emergent intervention:** It included 4 main items of resuscitation, air way management, breathing management, circulation management and disability management.
2. **Patient assessment:** It included 2 items of assessment (4 sub items) for history taking, and (8 sub items) for physical examination.
3. **Antidote and drug administration:** It included 3 main parts of antidote (22 sub items) for intravenous medications, (15 sub items) for oxygen therapy, (5 sub items) for activated charcoal.
4. **Gastrointestinal decompression**: which included 3 main parts of decontamination (4 sub items) for eye decontamination, (5

sub items) for skin decontamination, (3 sub items) for gastric decontamination which further include (4 items) for emesis, 11 items for gastric lavage and 4 items for whole bowel irrigation).

Scoring system of nurses' practice: Each item in checklist was scored as the following; correct and complete done scored (2), correct and incomplete done scored (1) and incorrect done scored (0).

- The total scoring system of nurses' practice was be calculated and classified as the following: the total score of practice ≥ 70% indicates satisfactory, the total score of practice < 70 indicates unsatisfactory.

Method

1. **Administrative process:**

An official Hospital permission was obtained from the responsible authority of poisoning control centers before conducting this study through official letters from faculty of nursing Tanta University and Elmanshawy General Hospital, explaining the purpose of the study.

2. **Ethical consideration:**

- Informed consent was obtained from the ethical committee of Faculty of Nursing, and then informed consent was obtained from every nurse included in the study informing them about the aim of the study and assuring them confidentiality of collected data.
- Confidentiality and anonymity were maintained and the right of withdrawal was reserved.
- Privacy of the studied nurses was maintained.

Developing the tools: -

- All tools were developed by the researcher after reviewing the relevant literature to assess the actual emergent nursing intervention for patient with acute poisoning.

-The developed tools were translated into Arabic and tested for content validity by reviewer experts of Critical Care Nursing, Medical-Surgical Nursing, Toxicology and Medical Biostatistics to judge clarity, comprehensiveness, relevance, simplicity, and accuracy. All of the remarks were taken into consideration; some items were re-phrased to reach the final version of the tools. The tools were regarded as valid from the experts' point of view.

Content validity: -

All tools were developed by the researcher tested for content validity by nine experts in the field of critical care nursing, medical-surgical nursing, toxicology and medical biostatistics after translation into Arabic. Modifications were carried out accordingly.

Reliability statistics: -

Alpha Cronbach's test was used to test reliability of tool I and tool II and

reliability factors were 0.831 and 0.815 respectively.

A pilot study: It was conducted before the actual study on 10% of studied nurses in both studied groups to test applicability of the different items of the developed tools. Modifications were done accordingly before the actual study.

Data collection:

- Data were collected over a period of 7 months, started from February to August 2020.
- Nurses were interviewed by the researcher in the nursing room in the poisoning control center.

The study was conducted at four phases which include: assessment, planning, implementation and evaluation.

Assessment phase: It was carried out by the researcher to collect data by using tools (I and II) to assess nurses' knowledge and practice regarding acute poisoning care. The researcher was met each nurse individually to answer the knowledge questionnaire sheet.

Planning phase:

Educational intervention about emergent nursing was planned based on assessment of nurses 'educational needs and literature review which expected to improve nurse' knowledge and performance. As a reference for the nurses, a simple illustrated structured booklet was created in a simple Arabic language and different methods of teaching were used such as video, group discussion and presentation for theoretical part and demonstration and re-demonstration for the practical part.

Implementation phase:

Educational intervention about emergent nursing was implemented by the researcher to all nurses in the poisoning control center.

Educational session

Educational sessions were given to all nurses included in the study and it was implemented over four sessions. Nurses were divided into small groups each one ranges from 2-5. Sessions for nurses were carried out during the morning and afternoon shift.

The content of sessions divided into two theoretical and two practical sessions as follows:

The following was the main topic of the theoretical sessions:

Session 1*:* providing basic knowledge to nurses about of acute poisoning classifications, causes, clinical manifestations and drug complications.

Session 2: includes basic knowledge of acute poisoning management as; resuscitation and initial stabilization, diagnosis of type of poison, nonspecific therapy, specific therapy& supportive care.

The following was the main topic of the practical sessions:

Session 3: Focused on teaching nurses practice regarding application of resuscitation, stabilization and assessment of patient with acute poisoning.

Session 4: Focused on teaching nurses practice related to decontamination, administration of antidotes and supportive care**.**

Evaluation phase:

- Evaluation was done for both theoretical and practical part pre, immediately and one month post implementation of educational intervention under supervision of researcher by using part 2 of tool (1) and tool (11).
- Comparison was done to determine the effect of implementing emergent nursing intervention program on nurse's performance (knowledge and practice) regarding acute poisoning.
- A comparison was done between Tanta University poisoning control center and Elmanshawy General Hospital nurses based on expected outcomes of nurses.

Limitations:

- There are various limitations to this study. At first this study was conducted using the small sample size in two hospitals (Tanta University Poisoning Control Center and Elmanshawy General Hospital Emergency Department). Therefore, the generalization of this study results is limited.
- Another limitation of the study related to the fact that our study did not represent all the nurses in Egypt.
- Also, there are a limited number of educational intervention (National and International) for nurses to deal with acute poisoning patient.

Statistical analysis:

Data were fed to the computer and analyzed by using SPSS software statistical computer package version 26. For quantitative data, the mean and standard deviation were calculated. For qualitative data, comparison was done using Chi-square test ($\chi 2$). For comparison between means of two variables in a group, paired samples t-test was used. For comparison between means for variables during three periods of intervention in a group, or for more than two variables, the F-value of analysis of variance (ANOVA) was calculated. Correlation between variables was evaluated using Pearson and Spearman's correlation coefficient [(25)].

Result

Table (1): Illustrates percentage distribution of the studied nurses of both groups according to their demographic characteristics at two different settings. The result of this study revealed that most of the studied nurses (55.6% and 70.0%)

were in age groups between 21-30 years old and the majority (85.2% and 100%) of them were females and married respectively in T.U.P.C.C and E.G.H.E.D groups. Additionally, nearly half 48.1% in T.U.P.C.C group and more than half 60% of the studied nurses in E.G.H.E.D group had nursing technician with more than 10 years of experience of each .

Table (2): Clarifies mean scores of knowledge items of the studied nurse's regard acute poisoning care throughout all periods of implementation of educational intervention of both groups at two different settings. It was noticed that there were statistically significant differences among studied nurses' regarding total mean score of each knowledge items as acute poisoning definition, emergent nursing intervention, diagnosis of poison, gastrointestinal decompression, specific therapy and supportive care throughout all the periods of implementation of educational intervention where P <0.05. Moreover, the total mean scores of knowledge of studied nurse's pre educational intervention were (31.74±4.49 and 31.70±6.09) then enhanced immediately into (51.07±4.18 and 50.10±2.80) while the mean scores one-month post implementation of educational intervention were (47.19±3.75 and 45.70±2.05) of T.U.P.C.C and E.G.H.E.D groups respectively.

Figure (1): presents percentage distribution of the nurses' according to their total knowledge scores throughout all the periods of implementation of educational intervention of both groups at two different settings. It can be noticed that that none (0.00%) of the studied nurses in T.U.P.C.C and E.G.H.E.D group had good level of knowledge pre implementation of educational intervention compared to the majority (96.3%) ,all nurses (100%) and (88.9% &100%) had a good knowledge level immediately and one-month post program implementation respectively.

Figure (2): Shows comparison between total mean scores of knowledge of acute poisoning care of the studied nurse's throughout all periods of implementation of educational intervention of both groups at two different settings. This figure concluded that there were positive none statistically significant difference between two groups (T.U.P.C.C and E.G.H.E.D) where P value= (0.982, 0.502, 0.137) respectively in pre, immediate and one-month post implementation of educational intervention.

Table (3): Clarifies mean scores of practice items of the studied nurse's in relation acute poisoning care throughout

all periods of study of both groups at two different settings .it was observed that there were statistically significant differences among studied nurses' regarding total mean score of each practice items as; emergent intervention, patient assessment, antidote and drug administration and decontamination throughout all periods of implementation of educational intervention where P <0.05.

Figure (3**)**: Demonstrates percentage distribution of the studied nurses' according to their total practice level of both studied groups throughout all the period of implementation of educational intervention. It was noticed that the minority (25.9% and 20%) of T.U.P.C.C and E.G.H.E.D had satisfactory practice level pre-program implementation, which enhanced to 100% of both studied groups immediately and one-month post implementation of educational intervention

Figure (4): Illustrates comparison between total mean scores of practice level of studied nurse's throughout all periods of implementation of educational intervention of both groups at two different settings. This figure clarified that there was a positive statistically significant difference between two groups (T.U.P.C.C and E.G.H.E.D) pre- implementation where p= (0.002*). While, there was no significance difference between two groups immediately and one-month post program implementation where P= (0.620, 0.298) respectively.

Table (4): Shows Correlation between total knowledge level and total practice level of the studied nurses in both studied groups at two different settings. It was found that there was a positive significant correlation between the total knowledge scores and total practice scores of the studied nurses in E.G.H.E.D groups one-month post implementation of educational intervention where (r=0.739, P=0.015).

Table (1): Percentage distribution of the studied nurses of both groups according to their demographic characteristics at two different settings.

Demographic Characteristics	The studied nurses (n=37)				χ^2 P
	T.U.P.C.C (n=27)		E.G.H.E.D (n=10)		
	N	%	N	%	
Age (in years)					
▪ (21-30)	15	55.6	7	70.0	
▪ (31-40)	8	29.6	2	20.0	4.688
▪ (41-50)	0	0.0	1	10.0	0.196
▪ (51-60)	4	14.8	0	0.0	
Range	**(22-55)**		**(21-46)**		t=1.251
Mean ± SD	**33.19±9.27**		**29.10±7.36**		P=0.219
Gender					
▪ Male	4	14.8	0	0.0	FE
▪ Female	23	85.2	10	100.0	0.557
Marital status					
▪ Married	25	92.6	10	100.0	FE
▪ Single	2	7.4	0	0.0	1.00
Educational level					
▪ Diploma	11	40.7	1	10.0	
▪ Technician	13	48.1	6	60.0	5.453
▪ Bachelor	3	11.1	2	20.0	0.142
▪ Post studies	0	0.0	1	10.0	
Experience (in years) in emergency department					
▪ None	0	0.0	6	60.0	
▪ < 5	2	7.4	1	10.0	4.451
▪ (5-10)	12	44.4	3	30.0	0.325
▪ > 10	13	48.1	0	0.0	
Range	**(2-15)**		**(0-10)**		t=2.658
Mean ± SD	**9.00±3.10**		**2.30±3.47**		P=0.204
Attendance of training programs about management for acute poisoning patients (in weeks)					
▪ None	16	59.3	8	80.0	3.198
▪ < 1	4	14.8	2	20.0	0.362
▪ (1-2)	5	18.5	0	0.0	
▪ > 2	2	7.4	0	0.0	

T.U.P.C.C: Tanta University Poisoning Control Center
E.G.H.E.D: Elmanshawy General Hospital Emergency Department
FE: Fisher' Exact test

Table (2): Mean scores of knowledge items of the studied nurse's acute poisoning care throughout all periods of implementation of educational intervention of both groups at two different settings

Knowledge items	The studied nurses (n=37)							
	T.U.P.C.C (n=27) Mean ± SD			χ^2 P	E.G.H.E.D(n=10) Mean ± SD			χ^2 P
	Pre	Immediately	Post 1 month		Pre	Immediately	Post 1 month	
1-Knowledge items about acute poisoning	7.37±1.27	11.11±1.05	10.44±1.188	F=77.92 P=0.000*	6.80±1.87	10.80±0.92	10.00±0.67	F=28.01 P=0.000*
2- Knowledge items about emergent nursing intervention	11.48±2.19	20.04±1.88	18.19±2.13	F=134.27 P=0.000*	11.40±2.87	20.30±1.37	18.00±1.49	F=52.15 P=0.000*
3- Knowledge items about diagnosis of poison, gastrointestinal decompression, Specific therapy& Supportive care	12.89±2.19	19.93±1.88	18.56±1.67	101.35 0.000*	13.50±2.63	19.00±1.56	17.70±2.11	F=17.96 P=0.000*
Total knowledge mean scores	31.74±4.49	51.07±4.18	47.19±3.75	F=134.27 P=0.000*	31.70±6.09	50.10±2.80	45.70±2.05	F=52.15 P=0.000*

T.U.P.C.C: Tanta University Poisoning Control Center .

E.G.H.E.D: Elmanshawy General Hospital Emergency Department.

*** Significant at level P<0.05.**

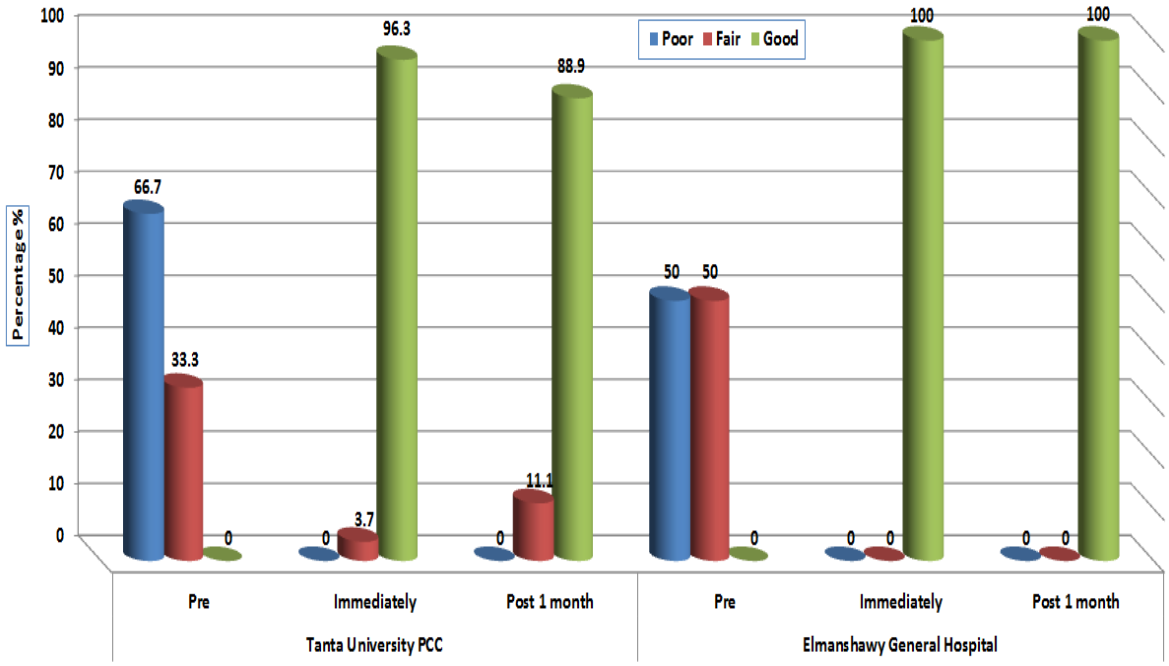

Fig (1): Percentage distribution of the nurses' according to their total knowledge scores throughout all periods of implementation of educational intervention of both groups at two different settings.

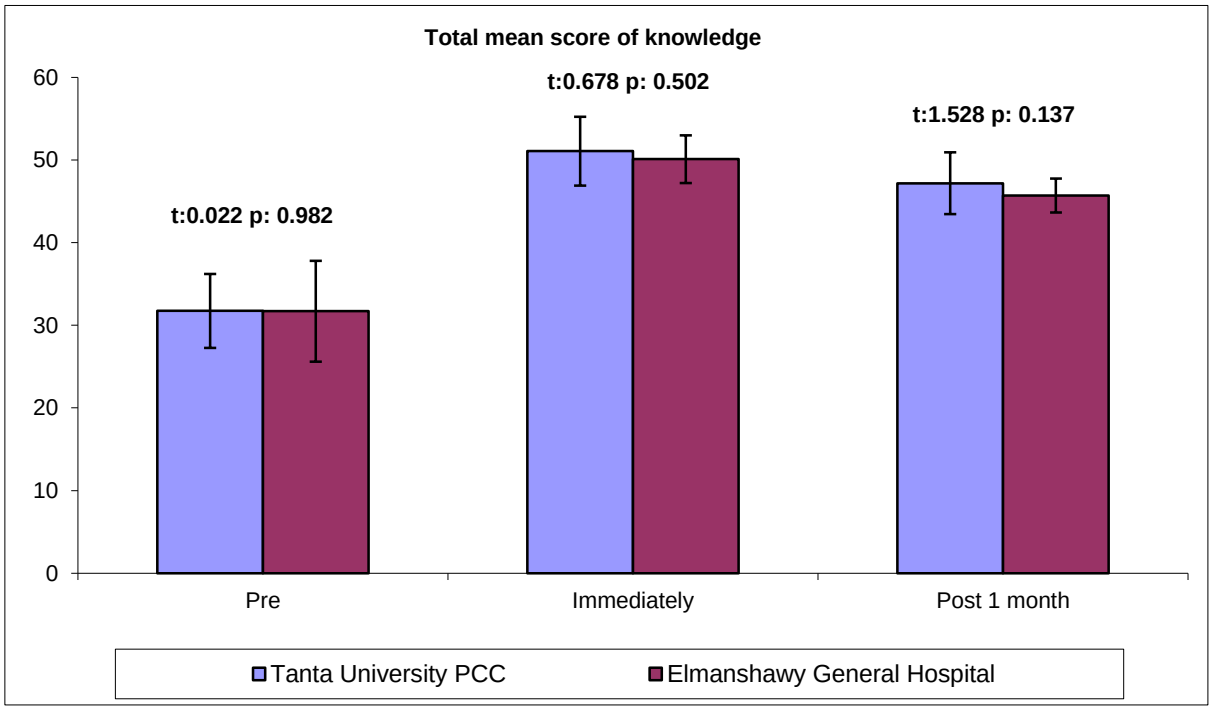

Fig (2): comparison between total mean scores of knowledge of acute poisoning care of the studied nurse's throughout all periods of implementation of educational intervention of both groups at two different settings.

Table (3): Mean scores of total practice items of the studied nurse's in relation acute poisoning care throughout all periods of study of both groups at two different settings

Practice items	The studied nurses (n=37)							
	T.U.P.C.C (n=27) Mean ± SD			χ2 P	E.G.H.E.D(n=10)			χ2 P
	Pre	Immediately	Post 1 month		Pre	Immediately	Post 1 month	
1. Emergent intervention	55.30±5.98	88.37±2.27	80.41±3.94	F=427.35 P=0.000*	54.50±9.99	87.60±2.46	77.80±2.53	F=77.24 P=0.000*
2. Patient assessment	16.56±2.42	23.26±0.76	21.22±1.73	F=100.92 P=0.000*	14.30±3.46	23.60±0.69	20.70±1.70	F=44.11 P=0.000*
3. Antidote and drug administration	68.44±2.77	80.15±1.82	76.41±2.26	F=182.37 P=0.000*	63.40±3.47	79.60±1.71	74.90±2.54	F=97.83 P=0.000*
4. Decontamination	36.41±2.66	54.30±2.47	48.93±3.07	F=307.01 P=0.000*	29.90±5.76	(54-58) 56.00±1.15	(44-54) 50.70±3.46	F=122.64 P=0.000*
Total practice mean score	176.70±10.38	246.07±5.32	226.96±7. 43	F=182.37 P=0.000*	162.10±15.53	246.80±3.25	224.10±7.19	F=97.83 P=0.000*

T.U.P.C.C: Tanta University Poisoning Control Center
E.G.H.E.D: Elmanshawy General Hospital Emergency Department

*** Significant at level P<0.05**

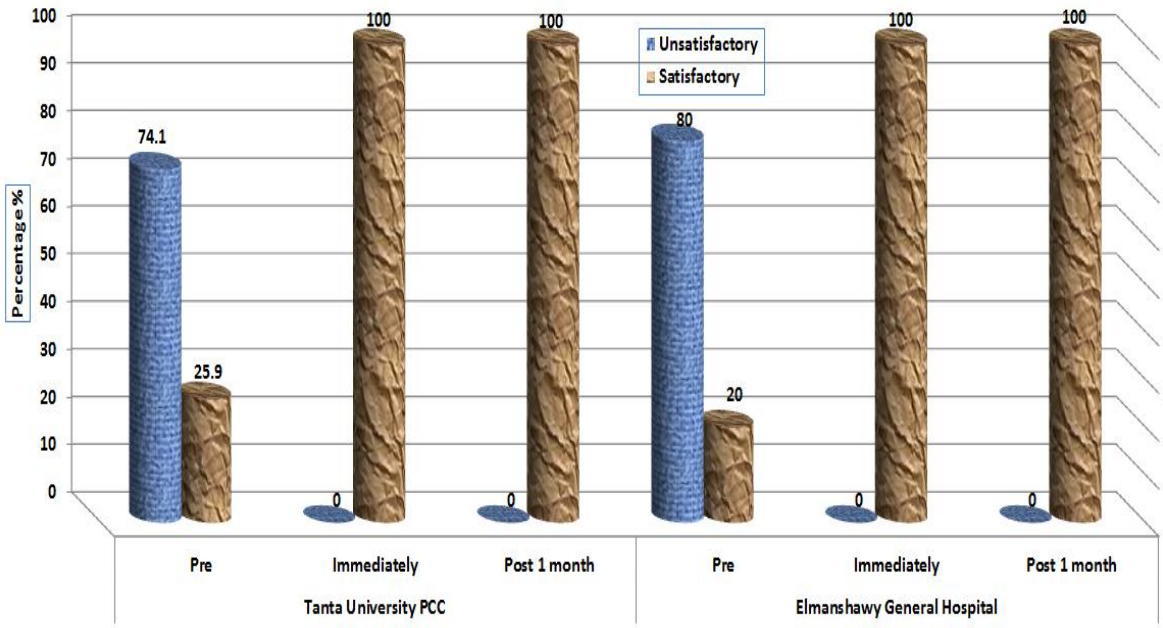

Figure (3): Percentage distribution of the studied nurses' according to their total practice level of both studied groups throughout all the period of implementation of educational intervention.

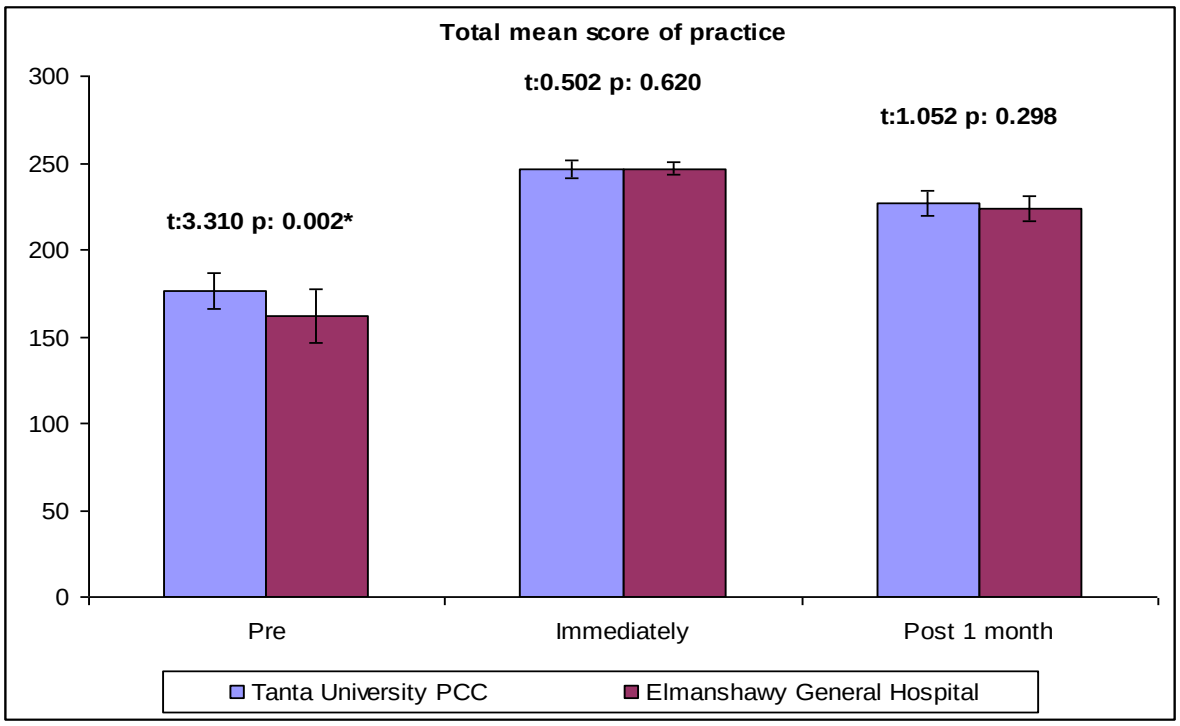

Figure (4): Comparison between total mean scores of practice level of studied nurse's throughout all periods of implementation of educational intervention of both groups at two different settings.

Table (4): Correlation between total knowledge level and total practice level of the studied nurses in both studied groups at two different settings

Total knowledge level	The studied nurses (n=37) Level of practice									
	T.U.P.C.C (n=27)				χ^2 P	Elmanshawy General Hospital (n=10)				χ^2 P
	Unsatisfactory		Satisfactory			Unsatisfactory		Satisfactory		
	n	%	n	%		n	%	n	%	
Pre										
▪ Poor	15	55.6	3	11.1	FE	5	50.0	0	0.0	FE
▪ Fair	5	18.5	4	14.8	0.175	3	30.0	2	20.0	0.222
r , P	0.208 , 0.299					0.464 , 0.177				
Immediately										
▪ Fair	0	0.0	1	3.7	-	0	0.0	0	0.0	-
▪ Good	0	0.0	26	96.3		0	0.0	10	100.0	
r , P	0.328 , 0.095					0.206 , 0.568				
Post 1 month										
▪ Fair	0	0.0	3	11.1	-	0	0.0	0	0.0	-
▪ Good	0	0.0	24	88.9		0	0.0	10	100.0	
r , P	0.110 , 0.585					**0.739 , 0.015***				

r: Pearson correlation coefficient Significance at level P<0.05. ** Highly significance at level P<0.01.

Discussion

Acute poisoning is a major health problem leading to emergency and intensive care unit (ICU) admission. Early diagnosis and immediate effective management certainly contributes to improvement of patient outcomes, save patient live and decreasing mortality.[15].Implementation of the educational intervention led to significant improvements in nurses' knowledge and practice immediately and one-month post program implementation in both studied groups. This improvement might be related to the majority of nurses who are enthusiastic to learn and have highly expressed need to learn more about acute poisoning management.

Concerning the acquisition of knowledge in relation to acute poisoning, the result of the current study revealed that the nurses hadn't a good level of knowledge about acute poisoning pre implementation of program of both study groups. This might be related to the fact that most nurses had nursing technician in nursing education in which the content was limited in their curriculum, lack of availability of manual booklets, nurses abandon reading, work overload and most of nurses did not attend of training programs about management for acute poisoning patients.

These results were congruent with **Sayed et al, (2015)** [6], who revealed that all studied nurses in Cairo University had unsatisfactory level of knowledge. Also, a study conducted by **Abebe, (2019)** [18] in Ethiopia Dessie referral hospital and concluded that the studied nurses had unsatisfactory knowledge level about initial management of acute poisoning. However, **Hakami et al, (2018)**[19] concluded that most of the studied sample in Riyadh City had adequate knowledge level. As well, **Goktas et al, (2014)** [20] reported that the majority of studied sample had good knowledge level in Istanbul regarding first aid in poisoning .

Additionally, implementation of the educational intervention led to significant improvements in nurses' knowledge about acute poisoning, emergent nursing intervention, diagnosis of poison, gastrointestinal decompression, specific therapy& Supportive care immediately and one-month post implementation of educational intervention in both studied groups. This improvement might be related to the majority of nurses who are enthusiastic to learn and have a highly expressed need to learn more about acute poisoning management.

This result was supported by **Gharib and Fekry (2017)** [21] who carried out a study for toxicology nurses in the national

center for clinical and environmental toxicology Research illustrated that the sessions were successful in improving nurse's knowledge in Cairo university hospitals. In addition to, **Zaveri et al, (2019)** [22]result supported the present and found that there was improvement in knowledge post program implementation.

Regarding the acquisition of practice, the current study shows that most of studied nurses had unsatisfactory practice about emergent intervention, patient assessment, and antidote and drug administration and decontamination in both studied groups pre application of nursing educational intervention. This may be attributed increasing work overload, lack of nurses' evaluation against the standards nursing practice by nursing supervisor for detecting the strength and weakness point to work on it and resistance of nurses to change their practice. These results were congruent with **Rutto et al, (2012)** [23] noticed that the nurses in the acute and emergency department nurses had unsatisfactory practical about initial management for acute poisoning cases at Kenyatta hospital in Kenia. Additionally, **Blanchard et al, (2019)** [8] revealed that the studied sample didn't rely on proper treatment measures for poisoning.

On the other hand, all studied nurses had satisfactory practice level immediately and one-month post-program implementation than pre implementation of educational intervention with significant improvement in both studied groups. This improvement may be attributed to a combination of the theoretical part and the practical training element of the intervention which was effective in improving the nurses' practice, providing the nurse with a colored booklet, using audiovisual aids, proper communication, and demonstration.

This result is supported by **Bakr (2018)** [24] who reported that application of the guiding program has a positive effect to improve the practice of the studied sample regarding first aid for poisoning in rural areas in Ain Shams. As well, **Fathy et al, (2020)** [25] stated that there was a significant improvement in the studied sample practice to prevent pesticide hazards in Suez Canal University.

Regarding safety preparations of the nurses, educational sessions induced significant improvement in nurses' skills immediately and one-month post implementation of educational intervention in both studied groups compared to pre- educational intervention

regarding to (hand washing, using personal protective equipment) in T.U.P.C.C group.

This finding was supported by **Arafat et al, (2018)** [26] concluded that there was a statistically significant improvement post program implementation regarding infection control guidelines compared to before implementation in Port Said university, Egypt. In addition, **Fathy et al, (2020)** [25] indicated that the use of personal protective equipment regarding pesticide poisoning improved immediately post-test and declined slightly in the follow-up period compared with pre-program implementation in Suez Canal University, Egypt.

In relation to emergent intervention, the current study results indicated that there was significant improvement in nurses mean practice score of both studied groups immediately and one-month post implementation of educational intervention except emergent intervention in T.U.P.C.C as it considered a routine procedure in the center. **Nhan, (2019)** [27] and **Saramma et al, (2016)** [28] they stated that the practice skills of the studied sample about basic life support for the studied nurses had significantly increased after planned eductional intervention in Kerala, India. On the other hand, **Urushibata et al, (2017)** [29] mentioned that some participants were not able to adequately perform chest compressions even after training.

Regarding decontamination, the findings of the present study clarified that the nurses' practice regarding eye decontamination had a significant improvement in both studied groups post implementation of educational intervention compared to pre implementation. **Fashafsheh et al, (2013)** [30] supported this study and reported that educational intervention in North Palestine hospitals improved of studied sample practice about eye care and decrease complications.

As well, there was only significant improvement post program implementation regarding gastric lavage in E.G.H.E.D.this may be explained by the fact that nurses are newly distributed in poisoning center and decreased years of experience. And significant improvement related to bowel irrigation in both studied groups, because it is not considered as a routine practice. This result was in the same line with **Borja et al, (2018)** [31] who reported that educational intervention improved the studied nurse's performance regarding implementation of drug and food via nasogastric tube in Alexandria University.

As regards to correlation between total knowledge and total practice scores **of the studied nurses**. The current study revealed that there were positive statistically significant correlations between total knowledge and total practice scores among the studied nurses in E.G.H.E.D group one-month post implementation of educational intervention. Similarly, **Fathy et al, (2020)** [25] was in agreement with E.G.H.E.D and concluded that there was a statistically significant correlation between total knowledge and total practice score of the studied nurses post program implementation in Suez Canal University.

Conclusion:

Based on the finding of the current study; it can be concluded that implementation of emergent intervention educational intervention had a positive impact on nurses performance regarding care of patient with acute poisoning.

Recommendations

Based on the findings of the present study, the following recommendations are suggested:

- Periodic in-service training program and regular lectures should be provided to nursing staff in order to keep them of updating knowledge and practice regarding acute care of poisioning.

-Developing a system of periodical nurse's evaluation to determine strategies for updating their knowledge and enhancing their practice regarding acute poisoning management.

-Replication of the program in other hospitals to improve the nurses' knowledge and practices regarding acute poisoning management.

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