

Nurses' Performance Regarding Care of Seriously Sick Children at Pediatric Emergency Departments : A Training Intervention

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ABSTRACT

Nurses play a critical role of in pediatric emergency care units (PEUs) as recommended by Emergency Nurses Association (ENA). So, they should have essential and updated information. **The aim of the current** study was to evaluate the effect of designed training intervention program on nurses' performance regarding care of seriously sick children at Pediatric Emergency Department. **A quasi- experimental research** design was utilized to conduct the current study at Pediatric emergency units at Benha university hospital and Benha Specialized pediatric Hospital. **Subjects:** A convenient sample of 50 nurses and children who admitted to emergency units were recruited in this study. **Tools:** Three tools were utilized for data collection. A structured interviewing questionnaire sheet, nurses' practice observational checklist and likert attitude scale. **Results:** It was evident from the results of the current study that, nurses' total knowledge mean scores were higher post program implementation compared with preprogram implementation and total practice scores were improved on post program test compared with pre program test. There was a statistically significant positive correlation ($P < 0.001$) between total knowledge and total practice on pre and post program phases. **Conclusion:** Based on the results of the present study, it can be concluded that, the designed training intervention program was effective in improving nurses' knowledge and practice regarding emergency care of seriously sick children. Reflecting on decreasing waiting time at emergency care departments. **Recommendations:** Continuous in-service training for nurses through educational programs must be established. In addition, pediatric emergency care must be incorporated in nursing education curriculum especially in the undergraduate nursing studies.

Key words: Nurses' Performance, Seriously Sick Children, Pediatric Emergency Department, and Training Intervention

Introduction

Pediatric emergency department known as; pediatric emergency room (PER), pediatric emergency center (PEC), pediatric emergency ward (PEW). Additionally, it is a medical treatment facility or department within a hospital, specializing in acute care of seriously ill pediatric patients who present without prior appointment, either by their own families' means or by ambulance due to

the unplanned nature of child's attendance. Whereas, the department must provide initial treatment for a broad spectrum of illnesses, some of which may be life threatening and require immediate attention (**International Federation for Emergency Medicine, 2011**).

Urgent and emergency care of children is the range of healthcare services available to who need medical advice, diagnosis and/or treatment quickly and unexpectedly.

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Moreover, deaths in the pediatric emergency department occur within 24 hours of admission. Many of these deaths could be prevented if very sick children are identified soon after their arrival and treatment is started immediately. Emergency nurses specialize in rapid assessment and treatment when every second counts, particularly during the initial phase of acute illness and trauma. She must tackle diverse tasks with professionalism, efficiency, and above all-caring. An emergency nurse can make a life or death difference to patient by her quick action based on sound knowledge. Her practice in the emergency department is the application of nursing process to patient of all ages requiring stabilization and resuscitation of variety of illness and injuries (**International Federation for Emergency Medicine 2012**).

Pediatric emergency departments (PEUs) frequently become congested with seriously sick children, resulting in pediatric patients with high acuity conditions, such as; altered consciousness, respiratory distress or hemodynamic compromise. Those may experience delays in receiving appropriate management. So, the goal of pediatric ED. It is imperative, that all hospital EDs have the appropriate resources (medications, equipment, policies, and education) and staff to provide effective emergency care for children (**Joint Commission, 2013**).

Pediatric emergency nursing is a highly specialized area that requires a nurse to have the ability to think fast and critically within the unique setting of the emergency department. So, the nurse must be competent in clinical skills, leadership skills, and customer service/people skills. As, the orientation is not focused specifically on pediatric emergency nursing due to the need to treat not only the pediatric patient, but also the family (**Baxter, 2010**).

Nurses who are responsible for provision of care in the pediatric emergency department (PED) is the first person that a

child encounters and their knowledge has been cited as an influential factor in decision-making. (**Curriculum for Paediatric Training Pediatric Emergency Medicine, 2010**). On the other hand, the poor quality of pediatric emergency care may lead to increased mortality rates and future disabilities of children with emergency conditions in the developing world. Whereas, the overall mortality rate of children admitted to the emergency units in Egypt was 0.8% annually (**Bazaraa et al., 2012**).

Nurses working in emergency care settings in which children are seen require a minimum level of knowledge, skills and competence in both emergency nursing skills and in the care of children and young people thus will be reflected on quality care and less waiting times. Whereas, parents who have been waiting for very long periods of time may leave before treatment is completed due to too long waiting time (**Majumdar, 2014**).

Children admitted to hospital often die within 24 hours of admission. As many of these deaths could be prevented if seriously ill children are identified soon after their arrival in the health facility, and treatment is started immediately. This can be facilitated by rapid triage for all children presenting in hospital to identify those who need immediate emergency care (**World Health Organization, 2016**). Provision of optimal care to all children with a wide range of life threatening illness at pediatric emergency units may be extremely challenging. So, Nurses and other ED health care providers have the necessary skills, knowledge, and training in providing emergency care to children of all ages who may be brought to the ED, consistent with the services offered by the hospital. Furthermore, nursing staff at pediatric emergency units should be trained to at least pediatric intermediate life support (PILS) or paediatric life support (PLS) level. As, nursing staff should be familiar with the principles of advanced airway support and should be also able to assist advanced

practitioners competently when
required (Bazaraa et al., 2012)

Significance of the Study:

Children who require emergency care have unique needs, especially when emergencies are serious or life-threatening. So, training of nurses with a program that is specialized to their area of practice will benefit pediatric patients. These nurses will be able to provide better patient care, develop care plans, observe subtle changes in patients' conditions to which they can report to the physicians, and feel comfortable doing all of this. These changes will lead to better patient outcomes, which is the ultimate goal in healthcare. These nurses will also feel more confident with their leadership skills and will advocate for themselves and their patients outside of the emergency department. As, nurses by the nature of their jobs play a major role in pediatric emergency care. Hence, the researcher found that, it necessitate to nurses' upgrade knowledge and improve practice.

Operational Definitions:

Nurses 'Performance in the current study will be measured through assessing knowledge, practice and attitude of nurses working at the pediatric emergency units

Seriously Sick children: Who has a life-threatening illness that can include various acute phases of illness. Whereas, children with these conditions were included in the current study such as; asthma, pneumonia, dehydration, convulsions, respiratory distress, neonatal feeding difficulties, jaundice and aspiration of foreign body or choking.

Training intervention: The designed training intervention program about deficit knowledge and practices instructed for nurses regarding their performance at the pediatric emergency units.

Aim of the study:

This study was aimed to evaluate the effect of designed training intervention program on nurses' performance regarding care of seriously sick children at Pediatric Emergency Department. This aim was achieved through the following:

1-Assessing nurses' knowledge, practice, and attitude related to care of seriously sick children at Pediatric Emergency Department.

Assessing nurses' opinions regarding factors affecting decision making at pediatric emergency department.

2- Designing and implementing training intervention program based on nurses' actual needs about care of seriously sick children at Pediatric Emergency Department.

3-Evaluating the effect of training intervention program on nurses' knowledge , practice, and attitude towards care of seriously sick children at Pediatric Emergency Department.

Research Hypotheses:

1-Nurses' knowledge and practice about care of seriously sick children at Pediatric Emergency Department. will be improved significantly after implementation of training intervention program.

2- The level of nurses' attitude towards care of seriously sick children will be changed significantly after implementation of training intervention program.

3- There are a significant relationship between nurses' knowledge, practice, and attitude related to care of seriously sick children and their personal data.

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5-Waiting time will be decreased after implementation of training intervention program

Subjects and Method:

Research Design:

A quasi experimental design was used to conduct this study.

Settings:

The study was carried out at the pediatric emergencies departments at Benha University Hospital, whereas, it include one unit composed of two beds for seriously ill children and one for newborn and infant and Benha Specialized pediatric Hospital, as it include also one unit composed of four beds.

Sampling:

A convenient sample included two groups; the first one was all available nurses who working at pediatric emergency departments from both Hospitals (31 from Benha Specialized pediatric Hospital and 19 from Benha University Hospital). Second group included 357 pediatric patient (newborn infants up to 16 years) with different medial emergencies conditions.

Tools of data collection: Three tools were utilized to collect data of the current study as the following:

Tool (I): A structured interviewing questionnaire sheet:

It was developed by the researcher after extensive review of related scientific literatures as; (**International Federation for Emergency Medicine,(2011), Biarent et al.,(2010)Furtado et al.,2010**). It was written in Arabic language to assess the nurses' knowledge regarding care of seriously sick children. It comprised four main parts:

Part1: Personal data of the studied nurses as age, gender, qualifications, years of experience, attendance of CPR training courses.

Part 2: Personal data of the admitted children during the study period as; age, gender, initial diagnosis.

Part 3: Knowledge of the studied nurses: It consisted of true / false and multiple choice questions covering the questions related to; emergency care and related concepts (5 questions), basic laboratory investigations for all pediatric patients at emergency care(2 questions), I.V fluids available and commonly used for pediatric patients (2 questions), appropriate sizes of pediatric equipment according to age and weight (10 questions), precautions during CPR technique(5questions), immediate nursing management of a child with common emergencies (10 questions), and counseling, discharge from hospital and follow-up care. With total questions of 47 questions

The scoring system consisted of giving a score of one for the correct answer and zero for the incorrect answer for multiple choice, true and false questions, the scores of the items were summed up and the total divided by number of the items. These scores were converted into percentage scores and mean and standard deviation.

The scoring system for knowledge classified as follows:

- Satisfactory knowledge level: Equal to or more than 75%.
- Unsatisfactory knowledge level: Less than 75%.

Part 4: Nurses' opinion assessment sheet: Which included the studied nurses' opinions related to factors affecting nurses' decision making during caring of sick children at pediatric emergency department

as; lack of equipment and supplies at the unit, excessive work overload, and lack of families ethical communication with the nurse..... ect). It composed of 10 items and the, nurses answered with always, sometimes or rarely.

Tool (II): Nurses' practice observational checklist: It was adopted from (Barton et al, 2013), to assess nurses' practices regarding care of seriously sick children, which include the following practices; initial assessment(6 items), history-taking and past co morbidity(4 items), prioritizing children according to the severity of the condition(4 items), obtain a complete set of vital signs (20 items) , obtain glucometer checks for any child with a decreased level of consciousness (3 items), apply decontamination facilities and prevent cross infection(5items), Pain assessment and management(10), parenteral nutrition and drug administration (15 items), use of supplemental oxygen (7items), choking child manoeuvres (8 items), airway opening manoeuvres (7items), provision of assisted ventilation (10items), suctioning (5 items) applying ethical considerations(5item) and finally, referral and discharge care(5items) and. With a total practice scores of 114 scores.

The scoring system consisted of two scores: As a score of one for done and a score of zero for not done.

The scoring system for practice classified as follows:

- Competent practice level: Equal to or more than 80%
- Incompetent practice level: Less than 80%

Tool (III): Attitude Likert Scale: which adopted from Frommelt, (2003) and modified by the researcher to suit the Egyptian nurses' cultures. It contains 12

items tool using a three-point likert scale to indicate nurses' attitudes toward care of children at pediatric emergency unit. The scale consists of an equal number of positively and negatively worded statements with response options of ; agree, disagree, and uncertain.

The scoring system for attitude classified as follows:

- Positive attitude: Equal to or more than 60%
- Negative attitude: Less than 60.0%

Preparatory phase:

Validity and Reliability of the Study:

The researcher reviewed the past, current regional and international related literatures covering all aspects of the study using; textbooks, articles, journals and scientific magazines. This helped the researcher to be acquainted with the research problem and as a guide in developing the study tools. To measure the content validity of the study tools, the researcher assure that items of the tools were adequately represent what are supposed to measure by presented it to five experts , including; one medical–surgical nursing, one pediatric medicine, and three of pediatric nursing field from the Faculty of Nursing Cairo, El-Menofia and Benha Universities, The experts agreed on the contents, but recommended minor language changes that would make the information clearer and more precise. The suggested changes were made. Internal consistency reliability of all items of the tools was assessed using Chronbach's Alpha. It was 0.83 for structured interviewed questionnaires sheet, and was 0.86 for nurses practices observation checklist.

Exploratory phase:

Ethical Considerations and Human Rights:

An official permission to conduct the study was obtained from the hospital managers. Then participation in the study was voluntary; each nurse was informed about the purpose, procedure, benefits, nature of the study and each nurse had the right to withdraw from the study at any time without any rationale, then oral/written consent obtained from them. Subjects were informed that obtained data will not be included in any further researches. Confidentiality and anonymity of each subject was assured through coding of all data and all information has taken was protected.

Pilot Study

A pilot study was carried out on 10% of total sample size (5) nurses over a period of one month to test feasibility, clarity, objectivity and applicability of the study tools. Carrying out the pilot study gave the researcher experience to deal with the included study subjects, and the data collection tools. Based on the results of the pilot study, needed modifications were done and pilot study subjects were excluded from the actual study sample.

Field work:

The field work was performed from the beginning of from the beginning of March to the end of May 2015, to collect data by the researcher. The researcher was available three days per week (Saturday, Monday, and Tuesday) in the morning and afternoon shifts. The numbers of nurses who were assessed and taking educational program per week were ranged from 3-5 nurses. The structured interviewing questionnaire sheet was filled out by the nurse and observational checklists were collected by the researcher and the average times required for completion of each tool was around 10-15 minutes. The researcher was observing the nurses' practice regarding care of seriously sick children at

the pediatric emergency departments for the same specified nurse during her actual practices.

Procedure:

• **Preparation phase:**

It was concerned with designing and testing different data collection tools, in addition, the administrative arrangements to carry out the study as well as to conduct the pilot study. In the beginning, the researcher introduce herself to the studied nurses. Whereas, nurse who accept to participate in the study individually interviewed by the researcher to explain the nature, purposes, and the desired outcomes of the study and an oral consent was obtained from this nurse.

• **Implementing phase:**

Data were collected from the beginning of March to the end of May 2015. The researcher visited the selected study settings three times weekly during their working shifts (Saturday, Monday, and Tuesday) in the morning and afternoon shifts by rotation in the previously mentioned study settings. Each nurse was interviewed individually for 10 – 15 minutes to fill out the structured interviewing questionnaire sheet (**Tool I &Tool III**). The researcher clarified and answered any related questions. Then, each nurse was observed during her practice on morning and afternoon shifts using nurses' observational check lists (**Tool II**). The time needed for each observation for each nurse was depends on the nature of the practice and time consumed to be performed. Each nurse was observed for three times during providing care for seriously sick children at the pediatric emergency departments. The researcher was observing the nurses' actual practices. The scores of the three observations were calculated after that, the mean was taken.

• **Program Construction, Implementation, and Evaluation:**

The intervention training program was designed based on the actual needs assessment of nurses then implemented and evaluated. The aim of this program was to upgrade nurses' knowledge and improve their practice and helping them to change negative attitude by positive attitude regarding care of seriously sick children at pediatric emergency departments. The implementation of the intervention training program was carried out in the previously mentioned study settings. The guiding booklet was distributed and implemented with the studied nurses. Whereas, the researcher explained the contents of the guiding booklet and how to use as a personal reference later on. Training of nurses was conducted using a laptop with MS Power Point presentations 2010 made from contents of the guiding booklet. The program was implemented for a group of nurses that entail (3-5) according to working circumstances, there mental and physical readiness.

The intervention training program was implemented over three weeks period in addition to one week for pre and post-test. A time schedule suitable for nurses was developed to conduct the program that included; date, place, topic, time and duration of each session. The total number of sessions was 9 sessions for theory and practice (3 for theory and 6 for practice) in each setting, each session took about 35 to 45 minutes include periods of discussion during their training.

At the beginning of the first session an orientation of the program and its importance and outcomes were explained. In addition, a feedback about the previous session was done and the objectives of the new topic were explained. Simple words and Arabic language were used to suite the nurses' level of understanding. At the end of each session, nurses' questions were discussed to correct any misunderstanding. In addition to re-demonstration for practical procedures.

Different teaching strategies were used for implementation of the program such as; lectures, small group discussion, brain storming, role play, demonstration and re-demonstration. Suitable teaching aids as booklet, colored posters, doll and real objects were prepared especially for practice. Nurses were motivated to cooperate and participate actively in different stages of the study.

Evaluation:

Upon the completion of the intervention training program the post program evaluation was done for the study sample to attain the outcomes of the implemented program using the same tools for data collection.

Administrative design

An official permission for data collection was obtained from the hospitals' managers and head of Pediatric emergency departments at Benha University Hospital, and Benha Specialized pediatric Hospital through submission of official letters issued from the dean of Benha faculty of nursing. The title, objectives, and outcomes of the study were illustrated as well as the main data items to be covered, and the study was carried out after gaining the necessary permission. The study was carried out during the period from the beginning of March 2015 to the end of May 2015).

Statistical design

The collected data revised, organized, tabulated and analyzed by using SPSS (Statistical Package for the social Science Software) statistical package version 20 on IBM compatible computer. Numerical data (Quantitative data) was presented in tables by using Mean, Standard deviation ($\bar{X} \pm SD$) and analyzed by applying t-test for normally distributed variables, while qualitative data were expressed as frequency and percentage and chi-square was used. Additionally, other

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statistical tests such as, t test was used as a parametric test of significance for comparison between two samples means. Pearson correlation (r) was used to measure the correlation between quantitative variables.

P-value at .05 was used to determine significance regarding:

- P-value > .05 to be statistically insignificant.
- P-value \leq .05 to be statistically significant.
- P-value \leq .001 to be high statistically significant.

Results:

Table(1) reveals, distribution of the studied nurses regarding their personal data. As, more than two thirds (64.00%) of them were aged 20 < 30 years, with a mean age of 26.44 \pm 4.89years. Regarding qualifications of them, it was found that, more than nearly three quarters of them were (72.%) had diploma of secondary nursing school. Moreover, concerning the nurses' years of experience, it was noticed that more than two thirds of them (70%) were having work experience less than 10 years with a mean years of experience 6.98 \pm 4.872.

Table (2) describes, the personal data of the children who attended the pediatric emergency unit during the study period. It was found that, nearly half(45.00%) of them had age of 9<12 years. While nearly two thirds(62.00%) of them were male. Additionally, more than half (26.00%,27.00%) of children who admitted to the pediatric emergency had an initial diagnosis of asthmatic status and dehydration.

Table (3) clarifies the studied nurses' opinions about factors affecting nurses'

decisions making at PEUs. Whereas, the majority (84.00%, 88%,and80.00% respectively) of them answered by always in relation to ; lack of equipment and supplies at the unit, excessive work overload and lack of families ethical communication with the nurse. Moreover, all (100%)of them answered by always on asking about lack of financial support. Additionally, the majority (90.00%80.00%,80.00%,82.00% and 70.00% respectively) of them answered by always on asking about; exposure to threats and infection, lack of nurse's experience, difficulties in getting senior or specialist, overcrowding of emergency care areas and few processes allowed for rapid transport for specialty services.

Table (4) displays, distribution of the studied nurses regarding their attitude towards working at the pediatric emergency units. It was obvious that, after implementation of the program, the majority of them(90.0%, 84.0%,78.0%,92.0% and 100%) respectively agreed on the statements of ; length of time taken to care for a pediatric patient at emergency unit is vitally important, the family should be involved in the care of the child, the nurse should answer all family questions honestly, the family should be involved in decision making and the educational level of the family should be taken into account compared with pre programs answers. Moreover, there was statistically significant improvement in all items of nurses' attitude after program implementation (p= <0.001)

Table (5) views, the distribution of the studied nurses regarding their knowledge mean scores throughout the program phases. It was found that, There was statistically significant difference between nurses' knowledge mean scores relation to all items pre/post program implementation (p < 0.001).

Figure(1) manifests, the distribution of the studied nurses regarding their total knowledge scores throughout the program

phases. As, the majority of the studied nurses(78%) had satisfactory total knowledge scores post program implementation compared with(86%) have unsatisfactory pre program total knowledge scores.

Table (6) reveals, distribution of the studied nurses regarding their practice mean scores throughout the program phases. It was revealed that the mean scores of the studied nurses regarding their practice post program implementation were higher than pre program implementation practice mean scores with a statistical significant differences(P <0.001)

Figure (2) presents, distribution of the studied nurses regarding their total practice scores pre and post program implementation. It is clear that, the majority of them (85%)

have competent practice post program implementation compared with (87%) have incompetent practice pre program implementation.

Table (7) reveals correlation between total knowledge, practice and attitude and personal data of the studied nurses and Waiting time through the program phases. It is clear that, there was a positive statistically significant correlation between total knowledge and total practice scores of them (r= .754, p=.001).Moreover, there is a positive correlation between knowledge and attitude with years of experience (r= .563, p=.001 and r= .634, p= .001 respectively). This table also demonstrates a statistically significant correlation between nurses' practice and years of experience and attitude scores (r= 0.451, p=.001 and .891, p=.001).

Table (1): Distribution of the studied nurses regarding their personal data. (No= 50)

Item	No (50)	%
Age in years		
20<30	32	64.00
30<40	17	34.00
40<50	1	2.00
X ±SD	26.44±4.891	
Gender		
Male	9	18.00
Female	41	82.00
Qualifications		
Bachelor degree in nursing	9	18.00
Diploma of Clinical nursing institute	5	10.00
Diploma of Secondary nursing school	36	72.00
Working setting		
Benha.university hospital	19	38.00
Benha Specialized hospital for children	31	62.00
Years of experience		
< 10 years	35	38.00
>10years	15	62.00
X ±SD	6.98±4.872	
Attendance CPR training courses		
Yes	36	72.00
No	14	28.00

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Table (2): Distribution of children attended the pediatric emergency unit during the study phases(no= 357)

Items	No (357)	%
Age in years / days		
<1 year	61	17.00
1<3	54	15.00
3<6	24	7.00
6<9	34	9.50
9<12	162	45.00
12≤	22	6.00
Gender		
Male	223	62.00
Female	135	38.00
Initial diagnosis		
Asthmatic status	92	26.00
Pneumonia	5	1.00
Allergic reaction	5	1.00
Appendicitis	19	5.00
Hypoglycemic coma	3	0.80
Feeding difficulties in neonates	35	10.00
URI	65	18.00
fever without focus	12	3.00
Neonatal Jaundice	17	4.00
Foreign body	2	0.50
Dehydration	95	27.00
Febrile convulsions	8	2.00

Table (3): Distribution of the studied nurses regarding their opinions about factors affecting nurses' decisions making at PEUs(No= 50)

Items	Always		Sometimes		Rarely	
	No	%	No	%	No	%
Lack of equipment and supplies at the unit	42	84.00	0	0.00	8	16.00
Excessive work overload	44	88.00	0	0.00	6	12.00
Lack of families ethical communication with the nurse	40	80.00	0	0.00	10	20.00
Lack of training programs regarding pediatric emergency care	23	46.00	20	40.00	7	14.00
Lack of financial support	50	100.00	0	0.00	0	0.00
Exposure to threats and infection	40	90.00	5	10.00	5	10.00
Lack of nurse's experience	40	80.00	3	20.00	7	14.00
Difficulties in getting senior or specialist	40	80.00	2	20.00	8	16.00
Overcrowding of emergency care areas	41	82.00	6	12.00	3	6.00
Few processes allowed for rapid transport for specialty services	35	70.00	10	20.00	5	10.00

Table(4): Distribution of the studied nurses regarding their attitude towards working at the pediatric emergency units throughout the Program Phases(no=50).

Nurses' attitude	Pre program implementation						Post program implementation						Chi square test	p
	Agree		Disagree		Uncertain		Agree		Disagree		Uncertain			
	No	%	No	%	No	%	No	%	No	%	No	%		
length of time taken to care for a pediatric patient at emergency unit is vitally important.	42	84.0	6	12.0	2	4.0	45	90.0	3	6.00	2	4.0	5.92	≤0.05
Excessive work overload affects quality of care	45	90.0	3	6.0	2	4.0	35	70.0	8	16.0	7	14.0	6.30	≤0.05
Family should be involved in the care	8	16.0	38	76.0	4	8.0	42	84.0	6	12.0	2	4.0	47.05	≤0.05
Having a feeling of un satisfaction with working in this unit	3	6.00	39	78.0	8	16.0	0	0.0	25	50.0	25	50.0	14.82	≤0.05
Having a feeling of fear in case of sudden death in children	23	46.0	25	50.0	2	4.00	2	4.0	31	62.0	17	34.0	30.12	≤0.05
The nurse should answer all family questions honestly	7	14.0	36	72.0	7	14.0	39	78.0	7	14.0	4	8.0	42.63	≤0.05
Having feeling of unsafe work environment	7	14.0	40	80.0	3	6.0	0	0.0	44	88.0	6	12.0	8.19	≤0.05
The nurse should all the time tolerate family nervousness	3	6.0	12	24.0	35	70.0	33	66.0	7	14.0	10	20.0	40.2	≤0.05
The nurse shouldn't be nervous with child and family in difficult situations	1	2.0	46	92.0	3	6.0	0	0.0	6	12.0	44	88.0	67.5	≤0.05
Priority of care could be given to all children without bias	25	50.0	24	48.0	1	2.0	3	6.0	44	88.0	3	6.0	24.1	≤0.05
The family should be involved in decision making	34	68.0	13	26.0	3	6.0	46	92.0	4	8.0	0	0.0	9.5	≤0.05
Educational level of the family should be taken into account when giving health information	25	50.0	19	38.0	6	12.0	50	100.0	0	0.0	0	0.0	33.3	≤0.05

A statistical significance difference ($P \leq 0.05$)

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Figure (1):Distribution of the studied nurses regarding their total knowledge scores pre and post program implementation

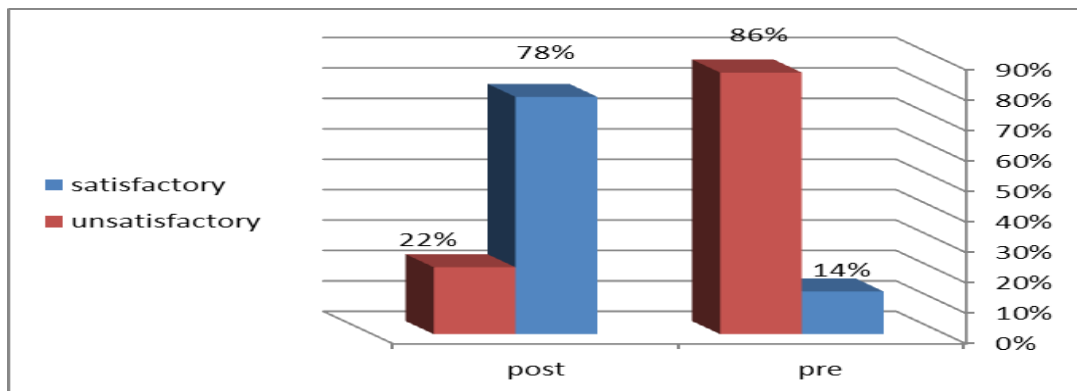


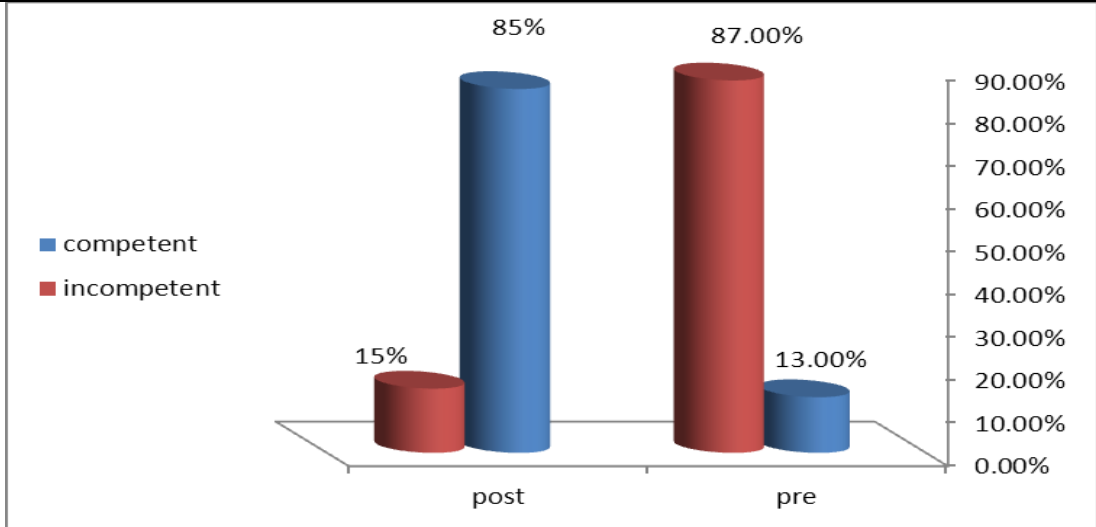
Table (5):Distribution of the studied nurses regarding their knowledge mean scores throughout the Program Phases(no=50)

Nurses' knowledge	Pre program	Post program	t	P value
	X+SD	X+SD		
Emergency care and related concepts	1.67+2.95	1.81+4.516	5.41	0.05≥
Basic laboratory investigations for all pediatric patients at emergency care	0.34+0.83	724.+1.51	10.12	0.05≥ .
I.V fluids available and commonly used for pediatric patients	1.28+2.36	961.+4.916	1.26	0.05≥ .
Appropriate sizes of pediatric equipment according to age and weight	1.26+4.88	1.09+8.43	2.56	0.05≥
Common drugs used in the pediatric emergency units	2.004+2.31	1.24+4.43	2.93	0.05≥
Precautions during CPR technique	853.+2.98	847.+4.16	2.30	0.05≥
Immediate emergency nursing management of a child with common emergency condition	1.22+2.64	2.63+7.94	7.80	0.05≥
Non pharmacological pain relief	.651+.462	964. +1.65	1.87	0.05≥
Counseling, discharge from hospital and follow-up care	854.+1.42	1.32+2.984	1.68	0.05≥
Total	9.33+20.96	11.36+42.38	25.64	0.05≥

A statistical significance difference ($P \leq 0.05$)

Table (6): Distribution of the studied nurses regarding their practice mean scores throughout the Program Phases(no=50)

Nurses' practice	Pre program	Post program	t	P value
	X+SD	X+SD		
Initial assessment	2.20+.989	3.66+.871	7.96	≤0.05
History-taking and past co morbidity	1.72+.757	3.18+.560	11.65	≤0.05
Prioritizing children according to the severity of the condition	2.26+.777	3.44+.540	8.67	≤0.05
Obtain a complete set of vital signs	13.96+1.47	15.58+1.10	6.50	≤0.05
Obtain glucometer checks for any child with a decreased level of consciousness	1.84+.791	2.56+.501	5.49	≤0.05
Apply decontamination technique and prevent cross infection	2.48+.862	3.84+.467	9.97	≤0.05
Pain assessment and management	4.02+1.13	6.92+.899	14.04	≤0.05
Parenteral nutrition and drug administration	10.38+1.25	12.28+1.01	7.61	≤0.05
Give supplemental oxygen	5.18+1.10	6.46+.645	4.54	≤0.05
Apply choking child manoeuvres	5.54+.705	7.24+.916	1064	≤0.05
Apply child and infant CPR	5.32+.843	6.0+.638	7.17	≤0.05
Provision of assisted ventilation	7.38+.635	8.16+.783	6.21	≤0.05
Suctioning	2.76+.770	4.14+.534	10.09	≤0.05
Apply ethical consideration	1.98+.684	3.50+.677	11.28	≤0.05
Referral and discharge care	1.16+.791	3.86+.350	21	≤0.05



A statistical significance difference ($P \leq 0.05$)

Figure (2): Distribution of the studied nurses regarding their total practice scores pre and post program implementation(no=50).

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Table (7): Correlation between total knowledge and total practice of the studied nurses post program implementation.

Items	Pearson correlation coefficient					
	Total knowledge		Total practice		Total attitude	
	r	p	r	P	r	P
Total knowledge	1	-	.754	0.001	.563	>0.05
Total practice	0.754	0.001*	1	-	.451	0.001
Total attitude	.563	0.001*	.451	0.001	1	-
Gender	.132	>0.05	.129	>0.05	.120	>0.05
Age	.614	>0.001*	.462	0.001*	.634	0.001*
Years of experience	.634	<0.001*	.891	0.001*	.780	0.001*
Waiting time	.0358	<0.001*	.691	0.001*	.647	0.001*

A statistical significance difference ($P \leq 0.05$)

Discussion

Globally, emergency nursing may be the most challenging branch of the profession in general, and when it comes to pediatric care, definitely takes a special breed of professionals to bring about significant change in their lives. As emergency nurses are the front line of care, patient advocates, first to assess and continue to manage pediatric patients. As this study was aimed to evaluate the effect of designed training intervention program on nurses' performance regarding care of seriously sick children at Pediatric Emergency Department. So, Staff nurses development and continuing education, and training are shown to cover a very broad expanse of responsibilities.

Concerning nurses' personal data, it was found that, more than two thirds of them were aged 20 < 30 years, this may be one of the leading causes to their lack in knowledge. As regards qualification of them, it was found that, more than nearly three quarters of them were having diploma of secondary nursing school. This may be contributed to large number of nurses preferred not to complete higher education. not in accordance with. While, in relation to the nurses' years of experience, it was noticed that, more than two thirds of them having work experience less than 10 years. This may be due to hospital policy that the older nurses had administrative duties than practical duties as the youngest nurses.

In relation to the admitted children personal data, it was noticed that, the majority of them had

an initial diagnosis with asthmatic status and dehydration. This may be due to, during the study period is the season of spring as it exacerbate symptoms of asthmatic status and spread of gastroenteritis and then worsen to dehydration. As reported by, **Villeneuve et al., (2005)**, who found a relationship between meteorological conditions and the number of emergency department visits for pediatric asthma.

Regarding nurses' opinions about factors affecting nurses' decisions making at PEUs. It was found that, the majority of them answered by always in relation to ; lack of equipment and supplies at the unit, excessive work overload and lack of families ethical communication with the nurse. Moreover, all of them answered also, by always on asking about lack of financial support. Additionally, the majority of them answered by always on asking about; exposure to threats and infection, lack of nurse's experience, difficulties in getting senior or specialist, overcrowding of emergency care areas and few processes allowed for rapid transport for specialty services.

This reflected the nature and actual circumstances of the pediatric emergencies units in almost poor countries with lack of supplies, resources and supervision. This supported by **Barton et al .,(2013)** who stated that, improved resources for pediatric care and more pediatric emergency nurses essential for provision of appropriate care of pediatric patients.

In the same context, **Johansen and Forberg, (2011)** stated that, in the emergency room it is important for nurses to make fast,

accurate decisions about the seriousness and urgency of the patient especially the pediatric patient. As, the nurses cannot work without the right tools. so funding should also include ample medications, well-equipped rooms, right equipment and medical tools, upgraded training sessions, along with modernized hospital and state policies to support every development for the department. Also, **Johnson and Winkelman (2011)** reported that, overcrowding poses a challenge to the maintenance of quality of care provided to patients in the emergency department.

As regards distribution of the studied nurses regarding their attitude towards working at the pediatric emergency units. It was obvious that, after implementation of the program, the majority of them agreed on the statements of ; length of time taken to care for a pediatric patient at emergency unit is vitally important, the family should be involved in the care of the child, the nurse should answer all family questions honestly, the family should be involved in decision making and the educational level of the family should be taken into account compared with pre programs answers. Moreover, there was statistically significant improvement in all items of nurses' attitude after program implementation .This is may be due to lack of training or curriculum concerned with changing attitudes of care providers which affect quality of care. As reported by **Beitz et al.,(2013)** that, survey of ED physicians and nurses provides important new information about the knowledge, attitudes and reported practices. Notably, providers expressed gaps in their skills and practices related to risk assessment and provision of referral resources, which were recently identified as Joint Commission goals emergency patients care. With increasing discussion about ED-based universal screening and brief interventions for , an understanding of care provider beliefs and behaviors is important for the design of effective programs to improve care.

In the same line, **Denis et al.,(2012)** reported that, whenever possible, the delivery of emergency care to children should occur in the presence of care givers and other key family members. The option of family presence should be offered for all aspects of emergency care, including invasive procedures and resuscitation. The vast majority of families believe they should be present during medical treatment, and family presence does not appear to reduce efficiency or

success rates for invasive or resuscitation procedures. EDs should develop policies, practices and ED culture changes supporting family presence. Families will often be juggling multiple priorities such as the care of other children, and may have practical needs such as nutrition for other children, breast-feeding, and nappy-changing

Regarding nurses' knowledge about pediatric emergency care it was noticed an improvement in their knowledge with, statistically significant difference between nurses' knowledge mean scores in relation to all items pre/post program implementation. This could attributed to, lack of training and educational programs specific to pediatric emergency care with the urgent need for training. This is also, supported by **Ahmed et al.,(2007)**who reported that, nurses might be poor in their knowledge related to lacking of updating knowledge, available suitable educational materials, and refresher courses. Additionally, **Hegazy et al. (2010)** reported that education has a vital role in improving nurses' knowledge and consequently

Concerning the nurses' practice mean scores throughout the program phases. It was revealed that the mean scores of the studied nurses regarding their practice post program implementation were higher than pre program implementation practice mean scores with a statistical significant differences. This may be due to not all nursing students undertake an emergency care module or placement meaning that even if a nurse is appointed to work in pediatric emergency department they may not initially have the emergency care skills required. This supported by **Emergency Department Clinical Nurse Specialist,(2016)** who stated that, the emergency nurse acts with compassion and respect for human dignity and the uniqueness of the individual. Additionally, the emergency nurse acts to protect the individual when health care and safety are threatened by incompetent, unethical, or illegal practice. So, the lead nurse and consultant should ensure staff are taught, assessed and maintain competence in relevant basic emergency care skills. Furthermore, **Barata et al., (2014)** stated that, the use of emergency care practice guidelines in pediatric emergency care, in particular, have been shown to decrease length of stay, improve resource utilization, and facilitate efficient through put of nursing care

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Regarding correlation between total knowledge, practice, attitude and personal data of the studied nurses and waiting time through the program phases. It is clear that, there was a positive statistically significant correlation between total knowledge and total practice scores of them. Moreover, there is a positive correlation between knowledge and attitude with years of experience. It was also found a statistically significant correlation between nurses' practice and years of experience and attitude scores. This is may be due to the lack of nurses' knowledge with negative attitude may reflect incompetent practice. So the improvement in knowledge will reflect an improvement in practice. **McNeill, (2016)** reported that, he staff in the institution voiced concerns about a lack of confidence related to their ability to respond to pediatric emergencies. However, the results of the study found that many characteristics of the nurses, such as the nurses' knowledge of pediatric emergency care, years of clinical experience, years of pediatric life support certification, years of specialty certification, years of nursing education, and years of caring for pediatric patients, did not predict self-efficacy.

Additionally, **Barton et al.,(2013)** reported that, the emergency nurse attains knowledge, skills and competence that reflect current practice. As emergency nurses must remain diligent in the pursuit of lifelong learning. Moreover, **Joint Commission, (2013)** stated that, education influences the practice and knowledge of nurses and improves the qualitative indices of emergency department.

Considering, correlation between nurses' knowledge, practice, and attitude with waiting time. It was found that, there was a statistical significant correlation between them. This could be attributed to the improvement in nurses' knowledge, attitude and practice will decrease waiting time for seriously sick child and family. This in accordance with **Lehmann et al., (2009)** concluded that, the number of interruptions and length of time affects on patients' satisfaction and medical outcomes, as well as, long waiting time which may result in serious consequences.

Regarding effect of the designed intervention training program, the current study revealed that, there was an improvement in knowledge, practice and attitude of nurses at pediatric emergency departments after program implementation. This result agreed with **Bimal et**

al.,(2009) who reported that there were implications for the creation, implementation, and application of written protocol of care and training sessions as well as for nursing education. In addition to, nursing care interventions can and do make a difference every day in the outcomes of patients. As, well as standardization of nursing practice, has resulted in the production of policies, protocols and guidelines aimed at directing numerous aspects of nursing care. The primary goal of any training is to improve performance (**Sergeev et al., 2012**).

Limitation of the study

Some of the nurses were too overloaded with work, so, the researcher suffered from their lack of cooperation in the study.

Conclusion

Based on the results of the present study, it can be concluded that, the research hypothesis is accepted while it was found that, the designed intervention training program was effective in improving nurses' knowledge, practice and attitude regarding care of seriously sick children.

Recommendations:

In the light of the findings of the current research, the following recommendations are suggested:

- 1- Continuous in-service training for nurses through educational programs must be established. In addition, a follow-up educational sheet must be designed in order to check nurses' progress in each educational session.
- 2- The essential need for refreshing courses to inform nurses about updating knowledge in the field of pediatric emergency care
- 3- Curriculum of nursing schools needs to be continuously evaluated and modified so that the current hospital practices go hand in hand with the theoretical part
- 4- Particular attention should be given to the practical part in the training of nurses and nursing

supervisors who work in the field of care of seriously sick children.

This would help to improve nurses' knowledge, practice and attitude.

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