

## Effect of Maternity Intensive Care Training Program on Nurses' Practical Achievement

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### ABSTRACT

**Aim of study**, to evaluate the effect of Maternity Intensive Care training program on Nurses' Practical achievement. **Setting**: The study was conducted at intensive care unit, at Ain Shams University Maternity Hospital. Quasi- experimental Design was utilized. A convenient sample was obtained, including all nurses (40 nurses) who were worked and accepted to participate in study, at previously mentioned study setting. **Tools of Data Collection** were Arabic Structured interviewing questionnaire and Observational checklist in addition to instruction supportive material. **The results** showed statistically significant improvements in nurses' practice at immediately, and after three months of intervention , **study revealed that** high significant relation between before & immediately, and after three months of intervention related to Nurse's skills (Before intervention and After three months of intervention). It also revealed highly significant relation between Nurse's skills with age, Qualification and Years of Experience .In conclusion, implementing training educational program for maternity intensive care was effective to enhance nurses' practice achievement, which was a better achievement of patients' needs. Therefore, it is recommended that this educational program be used in other settings for confirmation of the results and for improvement of the training program.

**Key words:** training program, maternal intensive care unit, practical achievement.

2005, developing countries accounted for more than 99 % (WHO, 2005).

### Introduction

In Egypt 2008 maternal mortality rate was 55/100,000 live births, indicating a steady decline from 75 deaths/100,000 live births in 2002 and 33 deaths/100,000 live births in 2015 (Egyptian Ministry of health, 2008) (The World Fact book, 2015). Whereas worldwide, every minute, a woman dies in pregnancy or childbirth; this is more than half a million women a year. Of these estimated maternal deaths worldwide in

Maternity intensive care for critically ill obstetric patients is crucial care especially during abnormal pregnancy, delivery, and puerperium, leading to complications threatening their life for which they need intensive monitoring, therapy or life support system. The mother admitted to intensive Care, needs assessment, monitoring and the treatment must take into account both maternal and fetal wellbeing to save their LIFE& reduce maternal fetal mortality and morbidity (Eoin Casey, 2013).

Additionally, direct obstetric death is the death of a woman resulting from obstetric complications of pregnancy, labor and puerperium; from interventions, omissions or incorrect treatment; or from a chain of events resulting from any of the above. It includes conditions such as pregnancy-related hypertensive diseases, hemorrhage, dystocia, genital tract sepsis, and spontaneous or induced abortion. Indirect obstetric death is the death of a woman resulting from a previously existing disease or a disease that developed during pregnancy and was not due to direct obstetric causes but was aggravated by the physiological effects of pregnancy (**Ronsmans, 2004**).

Furthermore, the Department of Health for England (DH) were defined that Intensive Care Nurse as a resisted nurse who has the Correct knowledge, professional practical skills and competently provide care to meet the needs of a critically ill mother without direct supervision. The knowledge, skills and competencies they require to nurse critically ill mothers should reflect the level of mother need, rather than being determined by the mother care environment ( for example, a high dependency or Intensive Care unit). Moreover Intensive Care Nursing professional organizations have previously developed guideline for, intensive Care staffing, in order to assist nurses, in making informed decisions in relation to mother care. (**Needleman, 2002**)

Critical care nurses will need to keep pace with the latest information and evident knowledge competent practical develop skills to manage new treatment methods and technologies. As issues relating to patient care become increasingly complex and new technologies and treatments are introduced, critical care nurses will need to become ever more knowledgeable (**American Association of Critical-Care Nurse, 2015**)

In order to ensure the right number of appropriately qualified staff, the employer

should support a full programme of professional development. They should be aware that as well as improving patient care, the provision of high quality training and development is linked with the improved retention of staff. Schemes that facilitate role development, such as rotational posts between varying levels of critical care dependency, offer staff the variety and challenge of working in new areas. They also improve staff confidence and the ability to work in the varied settings in which critically ill patients are located. To develop a learning culture, managers and employers need to identify support and resources to help staff succeed in their professional development. Support mechanisms include the provision of mentors, formal study time, supervised practice and alternative practice placements. (**Needleman, 2002**)

The provision of managerial training and education - this will support nurses' integral role in commissioning, provision and evaluation of critical care services, from daily operational management to strategic planning. Educational provision for outreach nurses. Provision should be negotiated with the workforce development confederation or the consortia which provide education for the trust (**Intensive Care Society, 2002**).

#### **Justification of the study:**

In Egypt, the maternal mortality ratio dropped from 174/100,000 live births in 1992–93 to 84/100,000 live births in 2000. This drop has been attributed to the increased utilization of health services, use of modern contraceptives, hospital deliveries and use of trained birth attendants (**Gipson, 2000**). In 2008 maternal mortality rate was 55/100,000 live births, indicating a steady decline from 75 deaths/100,000 live births in 2002 and 33 deaths/100,000 live births in 2015 (**Egyptian Ministry of health, 2008**) (**The World Fact book, 2015**).

In Egypt, Morbidity rate 2015 at Maternity Hospital, Ain Shams University was Bleeding 468 cases, Toxemia 80 cases, Sepsis 350 cases, cardiovascular disease pregnancy 55 cases, diabetes mellitus 266 cases and Mortality rate was 8%. **At maternal ICU**, Mortality rate was 49 deaths / 750 cases (6.5%). Morbidity rate was Diabetes mellitus 68 cases, Toxemia 210 cases, cardiovascular disease pregnancy 92 cases, Sepsis 27 cases, Bleeding 82 cases and Shocked 11 cases (**The World Fact book, 2015**), (**Computer statistic of Ain shams hospital, 2015**).

Non previous studies were conducted at maternal and neonatal health nursing department Faculty of Nursing Ain-Shams University for evaluating nurses' practice in intensive care unit. So the present study is aiming to study the effect of maternity intensive care guideline on nurses' practical skills.

**Aim of the study:**

To evaluate Effect of Maternity Intensive Care training program on Nurses' Practical achievement

**This aim will be achieved through following:**

1. Assessment of nurses' practical achievement in the maternity intensive care unit.
2. Designing and implementing training program for nurses in maternity intensive care to enhance their practical achievement.
3. Evaluating the effect of maternity intensive care training program on nurses' practical achievement.

**Research hypothesis:**

An educational training program was expected maternity intensive care nurse to enhance nurses' practical achievement in maternity intensive care unit pre and post intervention.

**Research Design:** A Quasi-experimental was utilized

**Setting:** The study will be conducted at intensive care unit, at Ain Shams University Maternity Hospital.

**Sample:**

**a) Type:** convenient sample was obtained

**b) Size:** Convenient and available nurses (40 nurses) who were worked in maternal intensive care unit and accepted to participate in study, at previously mentioned study setting.

**Criteria:** - Age of nurses from (20- ≥ 38), nurses work in the maternity intensive care unit & labour unit and from different social class

**Tools of Data Collection:**

1. **A Structured interviewing questionnaire .it was designed by researcher:** To assessed nurse's general characteristics (age, level of education, qualification, years of experience, attendance of training programs, and area of residence) included the questions from (1 to 8).
2. **Observational checklist:** it consisted of all nursing procedures which were done by nurses in maternity intensive care unit, as a general care for (Toxemia, Hemorrhage, Sepsis, Shock, Cardiac disease, and diabetes mellitus) adapted from the relevant literature to the topic and modified by researcher. It was used

to assess nurse's practical achievement provided for critical cases in maternity intensive care unit, pre & post-intervention and the observational checklist was assessed for correct practice and incorrect practice. The total correct practice was scored  $60\% \geq$  in while incorrect practice total scored 60%. Each item in the checklist was scored as correct practice (2") scored while incorrect practice (1") scored.

**A Supportive instruction brochure** was designed by researcher according practical achievement related to critical ill mothers in maternity intensive care unit. It included was (the concept of the intensive care unit , infection control measures inside the intensive care for mothers , patient rights and general nursing care provided for all cases required at intensive care for critically ill the patient mothers.

#### **Ethical Consideration:**

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The ethical research consideration in this study is including the following:

- The researcher clarified the objective and aims of the study each the nurse included in the study.
- Nurse's consent was obtained.
- The researcher assured maintaining anonymity and confidentiality of the subject data.
- Nurses were informed that they are allowed to choose to participate or not in the study and that they have the right to withdraw from the study at any time.
- The study didn't touch nurse's culture, traditional and Religion issues cause any harmful for any nurse during data collection.

- All tools of data collections were for research only and were burned after statistical analysis.

#### **Operational design:**

The operational design was conducted through 3 phases included the preparatory, implemented and evaluation phase:

#### **Preparatory Phase:**

Review of lecture international related literature about various aspect of the problem using books, articles, internet and magazines was reviewed. This review helped the researcher to be acquainted with magnitude and incidence of the problem and with the process of the tools designed, and then tools were developed & tested for being valid through a pilot study and 3 jury specialized professors in maternal and neonatal nursing, according to review comments modification were considered.

#### **Pilot Study:**

A pilot study was carried out on 10% (4 nurses) of sample size to evaluate the efficiency, validity, reliability, clarity and applicability of the tools, then the tools was modified according to the pilot study results. Nurses included in pilot study excluded from the total sample as no modification of study tools were done.

#### **Field work:**

The researcher was attended the maternity intensive care unit & labour unit at Maternity Hospital, Ain Shams University for four days per week ( two days from 8 am to 2 pm and two days from 2pm to 8 pm for seven months. Data were collected from April, 1/4/ 2015 till November 1/11/ 2015

At firstly the researcher introduced herself to each nurse and explains the aim of the study to gain her confidence and trust in

order to obtain her consent to participate in the study.

Observational checklist was utilized during their work to assess nurses' practical achievement pre intervention & immediately post intervention and three months later post intervention. The observation checklist included (assessed of patient condition, general care, nursing care of patient on ventilator, specific care for patients, and diabetic patient, patient with infection related to (hemorrhage, toxemia, cardiac patient). The guideline was implemented through (8) sessions each session includes (5) nurses, duration of session 45 minutes and end the session each nurses was received nursing ethical guideline. Method of teaching lab-top, simulation role play & lecture, group discussion and beside demonstration on cases in ICU (study field). Motivation and reinforcement by sample gift during session were used in order to enhance motivation for the sharing in this study; at the end of session the guideline was immediately distributed to guide nurses during their work throughout the study.

It was used to evaluate Effect of Maternity Intensive Care training program on Nurses' Practical Skills. It was done 3 times pre intervention, immediately and 3 months later post intervention for each nurse using the same pre-intervention tools

**Result:**

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Table 1 revealed that all nurses in the study sample were females, with age ranging between 20 and  $\geq 38$  years. The majority was carried a diploma in nursing (37.5%) and following their High qualified (32.5%). Their Mean  $\pm$ SD of Years of Experience is (8.5 $\pm$ 3.06).

Figure 1 revealed that Only 42.5% of the nurses reported having previously attended training courses. (25.0%) of total number of them (40urses) take Training course of cardiopulmonary resuscitation

(CPR) and intensive care unit (ICU) and The rest of nurses (17.5%) take Training course of infection control. Date of last courses Mean  $\pm$ SD is 3.0 $\pm$ 1.

Table 2 revealed that the major of nurse practical achievement demonstrates nurse's practical achievement related to assessing patient Condition and general care before and after intervention were highly statistically significant (P value  $\leq$  0.001).

Table 3 revealed that highly statistically significant between before & immediately, and after three months of intervention related to Nursing Care of Patient on ventilator, Care of toxemia of nurse's practical achievement, Care of patient Hemorrhage and Care of diabetic patient (P value  $\leq$  0.001. Meanwhile, no statistically significant correlations could be shown between before & immediately, and after three months of intervention related to Care of cardiac patient and Care of patient with infection.

Table 4 revealed highly statistically significant relation between before & immediately, and after three months of intervention related to total score of nurse's practical achievement (P value  $<$ 0.001)

Table 5 demonstrated statistically high significant relation between before & of intervention related to age, Qualification and Years of Experience with Nurse's practical achievement (P value  $\leq$  0.001).

Table 6: This table shows that statistically high significant relation between immediately and after three months of intervention related to age, Qualification, Years of Experience and Training course with Nurse's practical achievement (P value  $\leq$  0.001).

Table 6 revealed that Positive correlation and highly significant between Nurse's practical achievement score with general characteristics (P value  $\leq$  0.001).

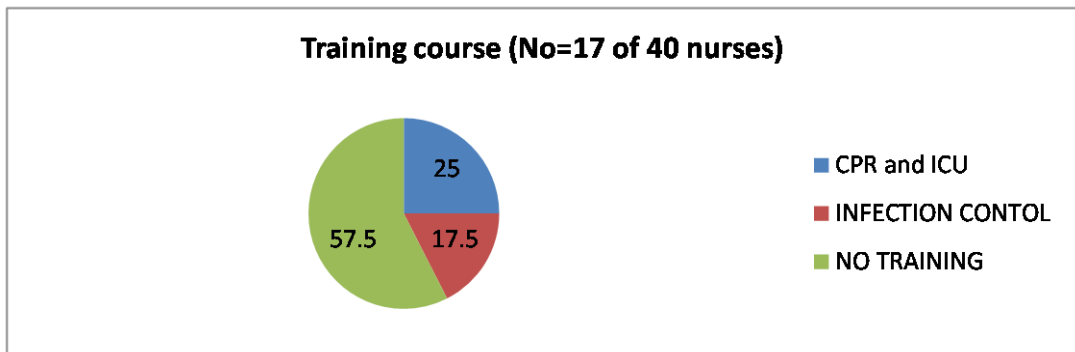
The present study findings had director attention implementation of pre service and continuous in service training program the nurse maternal intensive care unit to enhance

their practical achievement while provide maternity care at maternal intensive care unit.

**Table (1): frequency distribution according to nurses' general characteristic. (N=40)**

general characteristic	No.	%
<b>Age (years)</b>		
20-25	19	47.5
26-31	8	20.0
32-37	7	17.5
≥ 38	6	15.0
Mean±SD	32.5±5.89	
<b>Qualification</b>		
Diploma	15	37.5
Qualified above average	11	27.5
High qualified	13	32.5
Master or MD	1	2.5
<b>Years of Experience</b>		
<4 years	13	32.5
4-10 years	14	35.0
More than 10 years	13	32.5
Mean±SD	8.5±3.06	
<b>Training course</b>		
Yes	17	42.5
No	23	57.5
<b>Training course (No=17 of 40 nurses)</b>		25.0
• <b>Type of courses</b>	10	
- CPR and ICU		
- Infection control	7	17.5
• <b>Date of last courses (No=17)</b>		
Less than one year	6	35.5
From 1-3 years	4	23.5
>3 years	7	41.0
Mean±SD	3.0±1.0	

**Figure 1: distribution according to Training course of nurses in maternal intensive care unit (No=17 of 40 nurses)**



**Effect of Maternity Intensive Care Training Program on Nurses' Practical Achievement**

Table 2: frequency distribution among nurses practical achievement related to general care pre and post intervention. The study sample of nurses (N=40)

items	Before intervention		After intervention immediately		After three months of intervention		Chi-square test	
	No	%	No	%	No	%	x2	p-value
Assessing patient Condition (n=40)	30	74	40	100	38	96	9.766	0.002*
General care(n=40)	15	36.7	39	98.9	37	94	32.681	<0.001**

P ≤ 0.01 highly significant (H.S) \*\*

Table 3: frequency distribution among nurses practical achievement related to specific care pre and post intervention. The study sample of nurses (N=40)

items	Pre/ correct %		Post/ correct %		Post2/ correct %		Chi-square test	
	No	%	No	%	No	%	x2	p-value
Nursing Care of Patient on ventilator (no =14)	7	51.7	13	96.4	11	86.3	18.535	<0.001**
Care of patient Hemorrhage (no =13)	5	45.2	10	85.5	12	98	6.504	0.012**
Care of toxemia (no =8)	4	58.5	8	98.8	7	81.2	17.018	<0.001**
Care of cardiac patient (no =4)	2	62.5	4	99.2	3	97	1.841	0.174
Care of diabetic patient(no =13)	5	41.3	11	90.3	12	92.3	5.497	0.019**
Care of patient with infection(no =3)	1	30.3	3	100	2	82	0.873	0.349

P ≤ 0.01 highly significant (H.S) \*\*

Table 4: frequency distribution according to total score of nurse's practical achievement about maternity intensive care pre and post intervention, The study sample of nurses (N=40)

Nurse's skills	Before intervention		After intervention immediately		After three months of intervention		Chi-square test	
	No.	%	No.	%	No.	%	x2	p-value
Incorrect practice	37	92.5	3	7.5	5	12.5	77.653	<0.001**
Correct practice	3	7.5	37	92.5	35	87.5		

P ≤ 0.01 highly significant (H.S) \*\*

**Table 5: Relation between nurses' practical achievement and their general characteristics pre intervention, the study sample of nurses (N=40)**

general characteristic	Pre intervention Nurse's skills				Chi-square test	
	Correct (N=3)		Incorrect (N=37)		x2	p-value
	No.	%	No.	%		
<b>Age (years)</b>						
20-25	0	0.0	19	57.58	15.290	<b>0.002**</b>
26-31	0	0.0	8	24.24		
32-37	3	100.0	4	12.12		
≥ 38	0	0.0	6	18.18		
<b>Qualification</b>						
Diploma	0	0.0	15	45.45	13.250	<b>0.004**</b>
Qualified above average	1	33.3	10	30.30		
High qualified	1	33.3	12	36.36		
Master or MD	1	33.3	0	0.00		
<b>Years of Experience</b>						
<4 years	0	0.0	13	39.39	6.736	<b>0.035**</b>
4-10 years	0	0.0	14	42.42		
More than 10 years	3	100.0	10	30.30		
<b>Training course</b>						
Yes	2	66.7	15	45.45	0.075	0.785
No	1	33.3	22	66.67		

P ≤ 0.01 highly significant (H.S) \*\*

**Table 6: Relation between nurses' practical achievement and their general characteristics post intervention, the study sample of nurses (N=40)**

general characteristics	Nurse's skills After intervention immediately				Chi-square test		Nurse's skills After three months of intervention				Chi-square test	
	correct		incorrect		x2	p	correct		incorrect		x2	p
	No.	%	No.	%			No.	%	No.	%		
<b>Age (years)</b>												
20-25	18	48.6	1	33.3	83.124	<0.001	16	45.7	3	60.0	68.377	<0.001
26-31	6	16.2	2	66.7			6	17.1	2	40.0		
32-37	7	18.9	0	0.0			7	20.0	0	0.0		
38 or more than	6	16.2	0	0.0			6	17.1	0	0.0		
<b>Qualification</b>												
Diploma	15	40.5	0	0.00	78.073	<0.001	12	34.3	3	60.0	68.336	<0.001
Qualified above average	8	21.6	3	100.0			9	25.7	2	40.0		
High qualified	13	35.1	0	0.00			13	37.1	0	0.00		
Master or MD	1	2.7	0	0.00			1	2.9	0	0.00		
<b>Years of Experience</b>												
<4 years	12	32.4	1	33.3	76.210	<0.001	10	28.6	3	60.0	68.336	<0.001
4-10 years	12	32.4	2	66.7			12	34.3	2	40.0		
More than 10 years	13	35.1	0	0.00			13	37.1	0	0.00		
<b>Training course</b>												
Yes	15	40.5	2	66.7	54.159	<0.001	15	42.9	2	40.0	66.944	<0.001
No	22	59.5	1	33.3			20	57.1	3	60.0		

P ≤ 0.01 highly significant (H.S) \*\*



**Table 6: Correlation between nurses' practical achievement scores and their general characteristics.**

	Spearman's rank correlation coefficient	
	Practice skills scores	
	R	P
<b>Practice</b>		
<b>Age</b>	0.647	<0.001**
<b>Qualification</b>	0.674	<0.001**
<b>Experience years (total)</b>	0.328	<0.001**
<b>Training course</b>	0.448	<0.001**
<b>Date of last courses</b>	0.416	<0.001**

P ≤ 0.01 highly significant (H.S) \*\*

### **Discussion**

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The Aim of the study: to evaluate the effect of Maternity Intensive Care training program on Nurses' practical achievement. This aim was significantly provide through present study research hypothesis an instruction training program was enhance nurses' practical achievement in maternity intensive care unit because the present study findings were regarding to subjects general characteristics, all nurses were females and half of the studied subjects, had 20-25 years old and the mean age  $32.5 \pm 5.89$ . Regarding their years of experience, one third of the studied subjects had 10 or more years of experience. Finally, the majority of the studied subjects were having diploma degree. It may be due to the majority of Egyptian nurses were graduate of secondary nursing schools. Moreover more than one third of them take Training course, quarter of this sample take Training course of cardiopulmonary resuscitation (CPR) and intensive care unit (ICU).the Mean  $\pm$ SD of Date of last courses was  $3.0 \pm 1$  (Gaumer ,2008).

These general characteristics findings were consistent with **Refai (2012)** in a published doctorate thesis entitled, a study to evaluate the impact of a designed teaching protocol about advanced cardiac life support on critical care nurses' practices at Benha University Hospital, Cairo, Egypt, the study revealed that the majority of nurses were in the age group (20–25 years old). Also, the majority of studied nurses had secondary diploma degree. Finally, study findings indicated that the most of studied nurses units had not trained.

The findings of the present study showed a highly significant differences between pre-and immediate post- and post three months as

regarding nurses practice achievement. Training in ICU should be compulsory in all nurse training institutions through an organized program. This finding is supported by (**Mekinen, 2010**): who illustrated that overall level of practice was significantly improved after guideline intervention.

As well, (**Herlitz ,2006 and Seada, 2003**) who stated that the result of the present study also revealed an improvement in nurse's skills scores as the majority of them received an above average score immediately after implementation of the guideline and in the follow up period relative to the satisfactory score in the pre program phase.

However, findings of the current study reported a gradual decrement in nurse's practice by time all over the after three months post guideline implementation. In this respect (**Taha, 2004 and Seada, 2003**) reported that the results of the test were declined with limited value after 2 months period, than immediately after the guideline intervention.

Nurse's practice achievement about assessing patient Condition and General care: the present study showed that there was significant and highly significant improvement post implementation than pre implementation. In agreement with these findings of the present study (**Ramsay, 2009; Hamed, 2009; AL-Kanday, 2007 & Seideline, 2006**) found that nurses working in intensive care unit and cardiac care unit had unsatisfactory practice about Check & Prepare Emergency car ,cardiopulmonary resuscitation, emergency drug and General care for patient in ICU. This means that nurses who are working in both units area were in need for a continuous training, educational program to review and refresh their practice and knowledge.

On the other hand, regarding nurse's specific practice achievement about Nursing Care like Patient care on ventilator, Care of Hemorrhage, Care of toxemia and Care of diabetic patient in the present study, it was found that there was a highly significant improvement of the nurse's practice after guideline implementation with decrease nurse's practice after three months of guideline implementation. In agreement with these findings of the present study, (Seada, 2003) stated that nursing care of patient in ICU was improved immediately after implementation of the program with further slight increase in the follow up period (4-months after the program) but disagreement with these findings of the present study, (Seada, 2003) stated that further improved nurse's practice achievement slight increase in the follow up period (4-months after the program).

As regarding to nurse's practical achievement about Nursing Care of Patient on ventilator, there was highly significant difference between pre-and immediately post guideline implementation. This is in line with (Taha, 2004) who illustrated that nurse's practical achievement of ventilator patient, was improved significantly post program than pre-program implementation. In agreement with findings of the present study (Zevitz, 2008) emphasized that Care of Patient on ventilator to promote patient airway, thus preventing the development of hypostatic pneumonia and preventing stasis of pulmonary secretion. It is the of the nurse responsibility of the nurse.

The nurses' practical achievement after implementing guidelines demonstrated highly statistically significant, and this extended throughout the follow-up. The findings reflect the positive effect of the intervention, and this was again confirmed in the multivariate analysis which showed that the intervention as well as the knowledge score was highly significant independent positive predictors of the practice score, and they explained together almost all the improvement in this score. Thus, the practical training element of the intervention, in addition to the theoretical part was effective in modulating nurses' practice. Furthermore, a strong positive correlation was revealed between nurses' knowledge and practice scores, which again underscores the importance of the theoretical element of the guidelines.

In agreement with this, (Lin, 2013) stressed that nurses should pay more attention to systemic assessing patient Condition, health education, and ICU nursing guidance, which is the key to ensure the safety of patients. Thus, new trends based on improving nurses' knowledge through nursing care standards could enhance their knowledge and consequently improve their practical achievement.

In another study done by (Ali, 2010), the aim to develop, implement and evaluate an educational training program for newly graduate nursery school teachers about first aid of some emergency situations occurring to preschooler. The results revealed that highly significant improvement of practice of the studied group in the post test in comparison to pre test practice increased, on the average, from 0-10% to 80-95% and in first aid of emergency, shocked, epileptic convulsions, fainting, hemorrhage, and cardiac patient.

In accordance with that, (Refai, 2012) conducted study to evaluate the Impact of a designed teaching protocol about advanced cardiac life support (ACLS) on critical care nurse's knowledge and practices at Benha University Hospital, Cairo, Egypt. The design of the study was pre-test/post-test. ACLS practices (cardiopulmonary resuscitation, defibrillation, emergency medication, ECG monitor, oxygenation, suctioning, ETT intubation, and CVP) before and after the deigned teaching protocol was compared by guided observational checklist. From these observations, ACLS compliance increased significantly at p-values of <0.005 after conducting the teaching protocol on ACLS. However, a slight declinment occurred after three months of protocol implementation.

Nursing practical achievement is increasingly influenced by evidence-based standards, and nurses are expected to be knowledgeable about research findings and clinical guidelines affecting the nurses' area of clinical expertise. However, marked gaps still remain between best evidence and nursing practice. (Ludwick, 2010) reported that only 27% of nurses were aware of evidence based guidelines for managing ICU patients. The finding that nurses in our study were not aware of these guidelines therefore indicates that ICU nurses still lack knowledge and practices of evidence-based guidelines for Intensive care patients in ICU.

**Mock (2004)** stated that health professionals at all levels should have the skills to deal with ICU patients. There are national and local courses that nurses can attend; however, **Tippett (2004)** found that three months after attending the advanced ICU nursing course, emergency nurses' knowledge was not statistically significant from pre-course levels, suggesting skill retention is poor. This confirmed by **Barker's (2003)** who viewed that training should not finish on completion of the course but that ongoing training in practice is required. The correlation between nurses' total knowledge score and total practice score.

From the analysis of mean scores of study subjects practices regarding general care and specific care, the researcher found a highly statistical significant difference in total of practice among pre- intervention, immediately post, and three months following the guideline implementation. This indicates a positive effect of the guideline to improve nurses' practices achievement regarding general care and specific care in maternity intensive care units.

The researcher used statistical tests to identify the direction of differences in practice scores, it was clear that the highly significant difference was between the pre and all post intervention scores. The improvement of nurses' practices as a result of implementing a guideline was well recognized and supported by many researchers around the world.

As regarding to relation between Nurse's practical achievement and general characteristics pre intervention this result revealed that, Qualification nurse and age were statistical significant difference and statistically high significant with Years of Experience These findings supported by **(Taha, 2006)** Who found that, Qualification nurses received significantly better scores because they are more involved and more responsible for patient checking and provide care for patients.

On another hand relation between Nurse's practical achievement and general characteristics immediately and After three months intervention this result revealed that, that statistically high significant relation between immediately and after three months of intervention related to age, Qualification, Years of Experience and Training course with Nurse's skills. These current findings

aren't coincided with reported by **(Ally, 2012)** who showed that there is no significant difference in practice between ICU nurses with general characteristics (ICU training and years of working experience). Significant difference in practice was found between ICU nurses with different Qualification.

However, regarding correlation between general characteristics, and practice scores, the current study showed a positive correlation between general characteristics, and practice with statistic highly significant differences immediately post- and after three months post guideline implementation. This agrees with **(Christoffer, 2007)** who found that there were a positive correlation between general characteristics and skills. In contradict **(Hamed, 2009)** revealed that there is no statistical significant in relation between general characteristics and practice.

Findings of the present study reported that there is a positive correlation and highly significant between nurse's knowledge and practice. This agree with **(Shahin, 2012) & (Mohammed & Taha, 2014)** who stated that a highly statistical significant correlation between participants' scores of knowledge and practice in pre-program, post program, 1 month and 2 months following the instructional program. This strong correlation between nurses' knowledge and practice is highly expectable; however, the effective establishment of intensive care management is often hindered by lack of knowledge, basic knowledge about intensive care patients is essential for nursing practice.

This result was congruent with a recent study which was about "intensive care. The study found that intensive care is directly influenced by nurses. Therefore, critical care nurses (CCNs) should be provided with the knowledge, skills, and abilities to care for this important segment of the ICU patient to achieve the best practice and optimal outcomes for maternity intensive care patients **(Watts, 2011)**.

While the findings of this study supported that there is a positive correlation between nurse's knowledge and practice scores. This reflects the importance of integration between theory and practice providing an optimum learning environment; play an important role in developing relationships by positive regard for the individual and structure learning experiences, which facilitate

the acquisition of the clinical skills of nursing. In the same vein, (Taha, ,2006) illustrated that nurses should attain and maintain a high level of nursing knowledge and nursing practice but to be effective in practice, nurses must gain knowledge before they enter practice. These findings contradicted (Mahrous, 2003) reported that there is no correlation between knowledge and practice of diploma nurses.

### **Conclusion**

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In conclusion, implementing nursing training educational program for maternity intensive care is effective in inducing improvements in nurses' related practice, which is a better achievement of patients' needs. From the statistical analysis, it was clear that the highly significant was between pre Intervention, immediately and three months post Intervention skills scores.

### **Recommendation**

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1. Pre service and in-services continuous training program for nursing staff of maternity intensive care unit.
2. Specialize intensive care unit nurses must be available at maternal intensive care unit.
3. Strategy to manage work over load.
4. Established Standards of practices regarding maternal intensive care
5. Periodic update nurse's practical achievement about maternal intensive care through attending national and international conferences and workshops.
6. This nursing training program must be utilized in other settings for confirmation of the results and for improvement of the training program.
7. Dissemination the present study findings for all maternal intensive care unit in Cairo governed.

### **Limitation of the study:**

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- There were few nurses refused to wait and participate in the study to attend the training session due to work load and emergency situation.

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