

## Nurses' Performance Regarding Care of Patients with Hypovolemic Shock: Suggested Guideline

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### Abstract

**Background:** Hypovolemic shock is a clinical syndrome of inadequate tissue perfusion; it results in a decreased supply of oxygen and nutrients to cells leading to widespread cellular necrosis, multiple organ dysfunction and failure then death. The importance of educational guidelines for nurses are descriptions of what nurses are expected to know and be able to do at specific stage of their work on patients with hypovolemic shock **Aim** This study aimed to assess nurse's performance regarding care of patients with hypovolemic shock **Design** A descriptive explorative design was utilized for the conduction of this study. **Setting** The study was carried out at medical and surgical emergency room at new emergency hospital affiliated to Ain Shams University. **Study subjects** A convenience sample of all available nurses working at the previous mentioned setting **Tools I** – nurses' self – administrated questionnaire form which composed of nurse's demographic characteristics and nurses' knowledge questionnaire, **II** nurses' practice observational checklist. **Results** revealed that 53.33% of the studied nurse's had inadequate total level of knowledge about caring of patients with hypovolemic shock, while 56.7% had inadequate level of practice regarding caring of patients with hypovolemic shock. **Conclusion** there were statistically significant relation between the studied nurses' level of knowledge and their practice regarding caring of patients with hypovolemic shock. **Recommendations** Further research are recommended to evaluate the effect of educational guideline on nurse's performance regarding caring of patients with hypovolemic shock

**Keywords:** Nurses performance, hypovolemic shock, suggested guideline.

### Introduction

Hypovolemic shock is a medical emergency and an advanced form of hypovolemia due to insufficient amounts of blood and/or fluid inside the human body to let the heart pump enough blood to the body. Hypovolemic shock occurs when there is decreased intravascular volume to the point of cardiovascular compromise. It also could be due to severe dehydration through a variety of mechanisms or from blood loss. (Maxine, 2018). Hypovolemic shock is most often the result of blood loss after a major

blood vessel bursts or from a serious injury. It also get it from heavy bleeding or burns, or even from severe vomiting and diarrhea. (McGee & Steven 2018). Hypovolemic shock manifestation Difficult of breathing and disturbed conscious level, Hypotension, tachycardia, hypothermia, Cold pale skin, Oliguria or anuria (Bare, 2017). Complications of hypovolemic shock, are multiple organ dysfunction syndrome Acute respiratory distress syndrome, cardiac arrest, Renal failure, cerebral confusion, drowsiness and irritability) gastrointestinal tract (GIT) paralytic ileus) (Sanders, 2017).

Nurse role focusing on care of patient who require prompt medical attention to avoid the long term disability or death, the role of nurse also evaluate and monitor patients and manage their care in emergency department, it can be a challenge to get everything done quickly and correctly in an ever changing environment, Also the nurse have a range of expertise demonstrated across a range of knowledge and skills which they acquired through continuous professional development (Dellinger, 2018).

### **Significance of the Study**

A significant number of these deaths are the result of hypovolemic shock, And the prevalence of hypovolemic shock was 9.5-19/1000 (EMS) emergency medicine service contacts with an in-hospital mortality of shock between 33 to 52%. And the prevalence of hypovolemic shock was 55.9 in every 100.000 persons in united sate of America (Williams & Hopper, 2015) so this study was done to assess of Nurse's performance regarding care of patient with hypovolemic shock. Many of the interventions required in caring for the patient with shock call for close collaboration with other members of the health care team and a physician's orders. The nurse must anticipate such orders because they need to be executed with speed and accuracy the fifth leading cause of death in Australia. (Smeltzer& Bare, 2016).

### **Aim of the study:**

To assess of nurse's performance regarding care of patient with hypovolemic shock through the following:

1- Assessment of nurse's level of knowledge regarding care of patients with hypovolemic shock.

2- Assessment of nurse's level of practice regarding care of patients with hypovolemic shock.

3- Development of suggested nursing guideline regarding care of patients with hypovolemic shock.

### **Research question:**

1-What are the nurse's levels of performance regarding care of patients with hypovolemic shock.

### **Operational definition:**

**Performance:** it means knowledge and practice of nurses regarding caring of patients in emergency unit.

### **Subjects and Methods**

The study will be portrayed under the four main designs as follows.

Technical design.

Operational design.

Administrative design.

Statistical design.

### **Technical design:**

The technical design includes research design, setting, subjects and tools for data collection.

### **Research design:**

Descriptive research as the name suggests is used for description or to describe phenomenon or idea. It is generally used to estimate the size of consumer groups in a population that act in a specific manner. Exploration. If we want to explore how young people of different racial backgrounds have used social media to learn

about or share their ideas about this event, and their motivations for doing so, we might turn to focus group interviews to explore their attitudes (where several participants are interviewed in a group setting) (Leavy, 2017)

### Research setting:

The study was carried out at medical and surgical emergency unit at new emergency hospital affiliated to Ain Shams University. The medical emergency department contain five equipped rooms with defibrillator, crash cart, three beds and one monitor. The surgical department contain one big room equipped by eleven beds, defibrillator, crash cart, and one monitor and the other two rooms equipped by three beds, defibrillator and crash cart

### Research subjects:

A convenience sample of all available nurses working at the previous mentioned setting, it included 30 nurses from different age group, gender, and different level of qualifications, working in emergency unit, 18 nurses in emergency surgical department, 12 nurses in emergency medicine department and agreed to participate in this study.

### Tools for data collection:

Two tools will be used to collect the study data as follow:

#### I. Nurses' self-administered questionnaire:

It was developed by the investigator in an Arabic language after reviewing the recent and related literatures (Smeltzer, & Bare 2016, Hinkle & Cheever, 2016, Dewit, 2017, Mattvera, 2017 & Rossian; Crusher, 2017) Wallace, 2017). It consisted of two parts:

**Part (1):** it was used to assess demographic characteristics of nurses

included: age, gender, educational levels, years of experience and previous training programs in emergency department.

**Part (2):** it was used to assess nurse's level of knowledge regarding care of patients with hypovolemic shock including 6 main items in the form of multiple-choice questions and true or false) e.g.: 1- definition of hypovolemic shock (4 questions) 2- Manifestations of hypovolemic shock (20 questions) 3- The causes of hypovolemic shock. (4 questions) 4- the medical treatment of hypovolemic shock (4 questions) 5- complications of hypovolemic shock (20 questions) 6- nursing management of patient suffering from hypovolemic shock (35 questions) 7- role of the nurse of patient suffering from hypovolemic shock (4 questions) 8- the most important nursing actions performed to patient suffering from hypovolemic shock (3 questions).

#### ❖ Scoring system:

Nurses' Level of knowledge consisted of (95) questions in the form of multiple choice (MCQ) and true or false responses were constructed in form of 4 different choices (1, 2, 3, or 4). Zero mark was given for each incorrect answer and (1) mark was given for each correct answer. The total score of questionnaires was (94) marks which evaluated as the following:

- Satisfactory level of knowledge  $\geq 80\%$  ( $\geq 76$  marks)

- Unsatisfactory score for knowledge  $\leq 80\%$  ( $\leq 76$  marks).

#### II. Nurse's practice observational checklists:

The observational checklist was conducted to assess the level of nurses' practice regarding care of patients with hypovolemic shock it was developed by researcher after reviewing the related

literatures, written in English language and was fulfilled as a direct observation by the researcher (, Eckman, 2016 ; Ignatavicius & Workman, 2016; Kowalak, 2016; Nettina, 2016, Dewit, srtomberg and Dallerd, 2017; Perry & Potter, 2017).

#### ❖ Scoring system:

The observational check list consisted of 11 checklists, each procedure consisted of three phases; pre –procedure phase, procedure phase and post –procedure phase. the investigator observed each nurse during procedure practice and recorded response to checklists.

**The total score of the nurses'practice regards each procedure was evaluated as following:** the total score of check lists is (413) marks the response were scored as: one mark for correctly performed step ,and zero for incorrect one or not done, for each area of the checklist, the scores were summed up and converted into percent. Total score evaluation was considered as: competent score of total practice  $\geq 85\%$ = (355 marks) and incompetent score was considered from  $\leq 85\%$ = (355 marks) score for each procedure.

#### Operational Design:

It was included preparatory phase, content validity and reliability of the developed tools, pilot study and field work.

#### Preparatory phase:

It involves reviewing the current and related literatures and theoretical knowledge using books, articles, internet and magazine to develop the tools for data collection concerning of nurses' performance regarding care of patients with hypovolemic shock.

#### Tools Validity and reliability

**Testing Validity** of the proposed tools by using face and content validity. **Face validity** aimed at inspecting the items to determine whether the tools measure what supposed to measure. **Content validity** was conducted to determine whether the content of the tool cover the aim of the study. It was measured by a jury of 7 experts, three of them professors, two assistant professors and two of them lecturers of medical surgical nursing at faculty of nursing, Ain Shams University. The expertise reviewed the tool for clarity of sentences, relevance, accuracy, comprehensiveness, simplicity and applicability, minor modification was done. Finally, the final forms were developed.

#### Testing reliability:

The reliability of the tools was assessed through measuring their internal consistency by Cronbach Alpha Coefficient test that was reliable at (0.847) according to knowledge & (0.774) according to practice.

#### Pilot study:

A pilot study was carried out on 10% (5 nurses) of nurses under the study to ensure clarity and applicability of the tools and time required. To fill out no radical modifications needs so, the five nurses were included in the study.

#### Field Work:

To carry out the study, an approval was obtained from the hospital director, and nursing director of Ain shams university hospital. A letter was issued to them from the faculty of nursing Ain Shams University explaining the aim of the study in order to obtain permission and cooperation to the study.

By interviewing the nurses, the aim of the study, component of tools and effect of this study on their performance were explained and take their approval (oral consent) to participate in the study prior to any data collection.

Data were collected beginning from March 2019 to the end of September 2019 the researcher visited the emergency department at the research setting three days weekly (Sunday, Monday and Tuesday) during morning shift from 9.00am to 1.00pm only 1-2 sheets were fulfilled weekly because the limited time of the studied nurses under the study.

The researcher using the observational checklist prior to administering of the questionnaire to ensure the maximal realistic observation of nurses' practice were assessed by researcher while nurses are performing most common procedures. it took 30-35 minutes for observing each nurse for each procedure to be fulfilled by the researcher.

Then self-administered questionnaire sheet was distributed and fulfilled by the nurses. It took about 20-30 minutes to fulfilled by nurses. The answer was recorded by nurses themselves.

#### **Administrative design:**

An official letter from the Faculty of Nursing was directed to the director of the intended study setting. A full explanation about the aim of the study will be explored. Nurses' consent was obtained to carry out this study.

#### **Ethical consideration:**

##### **The ethical research considerations in the study include the following:**

The research approval was obtained from the ethical committee in Ain Shams

University before starting the study. The researcher was assured maintaining anonymity and confidentiality of subjects' data. nurses were informed that they are allowed to choose to participate or withdraw from the study at any time without any consequences.

#### **Statistical design:**

All data were collected, entered, organized, categorized, and analyzed through computer using statistical package of social science (SPSS) version 17 tabulated and subjected to statistical analysis, also Microsoft Office Excel is used for data handling and graphic presentation.

Qualitative variables are described by the mean, standard deviation (SD).

Data were presented using descriptive statistics in the form of number and percentage. distribution of qualitative variable as mean, standard deviation (SD), chi-square –and (p-value) test were also used to test of significance (the relation between qualitative variables) and regarding significance of result, the observed difference and associations were considered as following:

- $P > 0.05$  not significant (NS)
- $P < 0.005$  significant (S)
- $P < 0.01$  highly significance (HS)

#### **Results**

**Table (1):** shows that mean age of nurses were  $35 \pm 8.3$ , While 66.67% of the nurses were married. While regarding to job categories, 93.33% of them were staff nurses and according to the training courses in emergency units 50% of nurses received courses.

**Figure (1):** showed that 67% of the nurses were female and 33% were male.

**Figure (2):** Frequency and Percentage distribution for years of experience of nurses included in the study (n=30). According to years of experience 50% of them had (less than 5 years), also 33% was more than 10 years from the total number of nurses included in the study.

**Figure (3):** showed that 67% of the nurses had diploma, and 33% of them were graduate from technical institute of nursing.

**Table (2):** shows that, 63.33% of the studied nurse's had satisfactory level of knowledge regarding nursing management related to primary survey also 50% of nurses had satisfactory level of knowledge regarding manifestation. While 90% of nurses had unsatisfactory level of knowledge regarding to the most important measures and 73.33% of nurses regarding to total nursing management while regarding to total satisfactory level of nursing knowledge scale 53.33% of them have unsatisfactory level of knowledge.

**Table (1):** This table shows that 83.3% of the nurses under the study had

competent level of practice regarding glasscoma scale, 73.3% electrocardiogram, and blood transfusion administration, 76.6% cardiopulmonary resuscitation, 56.7% have in competent level of practice regarding oxygen therapy administration, nasopharyngeal airway insertion 53.3%, regarding to total level of practice 56.7% of nurses have total competent level of practice and 43.3% of nurses have incompetent level of total practice.

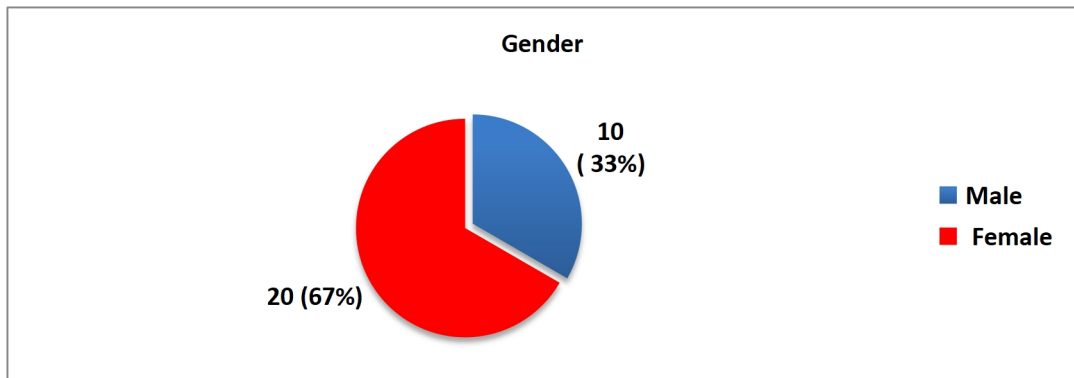
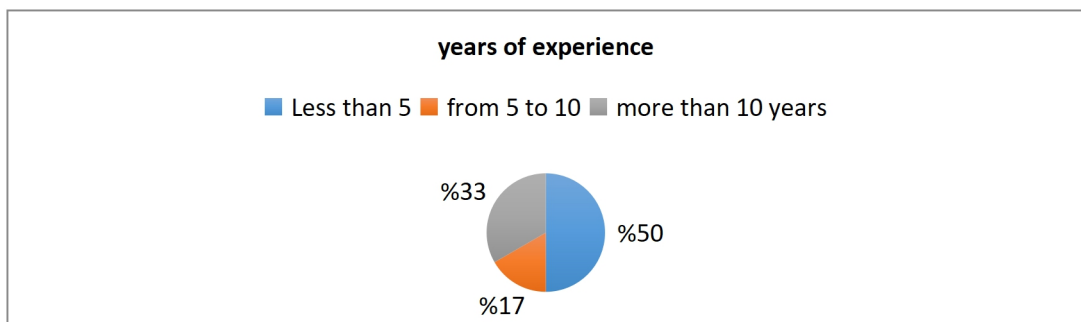
**Table (2):** This table showed that there was statistically significant relation between the studied nurses level of knowledge and their educational level, and there were highly statistically significant relation between total level of knowledge and years of experience, training courses in emergency units with p-value ( $p < 0.05$ ).

**Table (3):** This table shows that there were statistical significant relation between the studied nurses total level of practice and their educational level, years of experience and training courses in emergency units, with p-value ( $p < 0.05$ ).

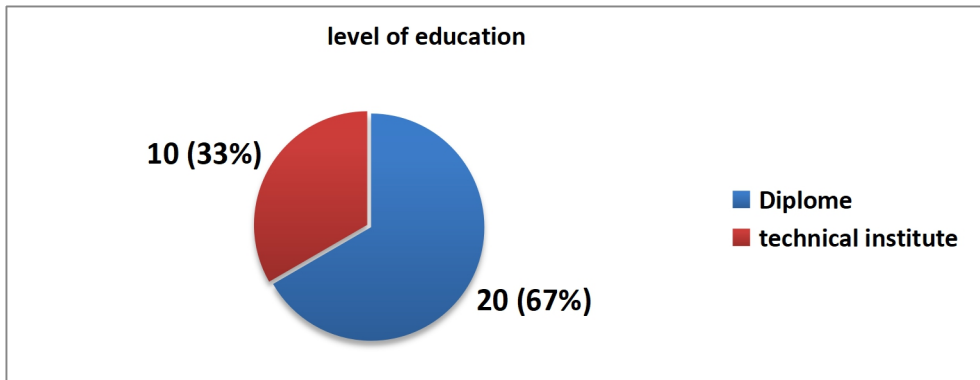
**Table (6):** This table shows that there were positive statistical significant relation between the studied nurses level of knowledge and their practice, with p-value ( $p < 0.05$ ).

**Part (I): Demographic characteristics of the studied nurse's****Table (4): Frequency and percentage distribution of demographic characteristics of nurses included in the study (n=30).**

Items	n=30	%
<b>Age</b>		
20<30	10	33.33%
30< 40	10	33.33%
≤40	10	33.33%
<b>Mean ±SD35±8.3</b>		
<b>Marital status</b>		
Single	10	33.33%
Married	20	66.67%
<b>Job categories</b>		
Staff nurse	28	93.33%
Supervisor	2	6.67%
<b>Training courses in emergency units</b>		
Yes	15	50.00%
No	15	50.00%

**Figure (1): frequency and percentage distribution of gender of nurses included in the study (n=30).****Figure (1): Frequency and Percentage distribution for level of education for nurses included in the study (n=30).**

**Figure (3):** Frequency and Percentage distribution for level of education for nurses included in the study (n=30).



**Part II: Nurse's level of knowledge regarding Care of Patients with Hypovolemic Shock:**

**Table (5):** Frequency and Percentage distribution of studied nurse's according to their level of knowledge regarding Care of Patients with Hypovolemic Shock: (n=30).

Items of knowledge	Satisfactory		Unsatisfactory	
	No	%	No	%
<b>Definition</b>	15	50.0	15	50.0
<b>Causes of hypovolemic shock</b>	10	33.33	20	<b>66.67</b>
<b>Manifestations of hypovolemic shock.</b>	15	50.0	15	50.0
<b>Medical treatment of hypovolemic shock.</b>	14	46.67	16	53.33
<b>complications of hypovolemic shock</b>	12	40.0	18	60.0
<b>Role of nurse</b>	10	33.33	20	<b>66.67</b>
<b>The most important measures</b>	3	10.0	27	<b>90.0</b>
<b>Nursing management related to</b>				
<b>Primary survey</b>	19	<b>63.33</b>	11	36.67
<b>Secondary survey</b>	8	26.67	22	73.33
<b>Tertiary survey</b>	11	36.67	19	63.33
<b>Total nursing management</b>	11	36.67	19	<b>63.33</b>
<b>Total nursing knowledge scale</b>	14	46.67	16	<b>53.33</b>



**Part III: Frequency and percentage distribution of total nurses' practice level regarding Care of Patients with Hypovolemic Shock (n=30)**

**Table (6): Frequency and Percentage distribution of studied nurse's according to their level of practice regarding care of patients with hypovolemic Shock: (n=30).**

Items	Practice level(n=30)			
	Competent		In competent	
	No	%	No	%
Nasopharyngeal airway	14	46.7	16	53.3
Oropharyngeal	16	53.3	14	46.7
Assessing of intubation	16	53.3	14	46.7
Glascomascale (GCS)	25	83.3	5	16.7
Cannulation insertion	20	66.7	10	33.3
Blood transfusion administration	22	73.3	8	26.7
Withdrawing arterial blood gasses	14	46.7	16	53.3
Oxygen therapy administration	13	43.3	17	56.7
Blood glucose measurement	21	70.0	9	30.0
Electrocardiograph (ECG)	22	73.3	8	26.7
Inserting a Nasogastric tube	17	56.7	13	43.3
Cardiopulmonary resuscitation performing	23	76.6	7	23.3
Total practice scale	17	56.7	13	43.3

**Part V: Relation between total level of knowledge and demographic characteristics of nurses:**

**Table (7): Relation between total level of knowledge and demographic characteristics of nurses (n=30).**

Items	Total knowledge				Chi	P value
	Satisfactory (n=14)		unSatisfactory (n=16)			
	NO	%	NO	%		
<b>Age</b>						
20<30	5	35.7	5	31.3	1.875	0.392
30<40	6	42.9	4	25.0		
≤40	3	21.4	7	43.8		
<b>Gender</b>						
Male	4	28.6	6	37.5	0.017	0.897
Female	10	71.4	10	62.5		
<b>Educational level</b>						
Diploma	6	42.9	14	87.5	4.838	0.028*
Technical institute	8	57.1	2	12.5		
<b>Years of Experience</b>						
>5	1	7.1	14	87.5		
5>10	4	28.6	1	6.3		<0.001**
≥10	9	64.3	1	6.3	19.42	
<b>Training courses in emergency units</b>						
Yes	12	85.7	3	18.8		
No	2	14.3	13	81.3	10.848	0.002**
<b>Job categories</b>						
Staff nurse	12	85.7	16	100		
Supervisor	2	14.3	0	0	0.691	0.406

**Part VI: Relation between overall nurses' level of practice and demographic characteristics**

**Table (8): Relation between overall nurses' level of practice and demographic characteristics (n=30).**

Items	Total practice				Chi square	P value
	Competent (n=17)		Incompetent (n=13)			
	No	%	No	%		
<b>Age</b>						
20<30	6	42.9	4	25.0	1.900	0.387
30<40	7	50.0	3	18.8		
≤40	4	28.6	6	37.5		
<b>Gender</b>						
Male	7	50.0	3	18.8	0.424	0.515
Female	10	17.4	10	26.5		
<b>Marital status</b>						
Single	8	57.1	2	12.5	2.053	6.152
Married	9	64.3	11	68.8		
<b>Educational level</b>						
Diploma	8	57.1	12	75.0	4.904	0.027*
Technical institute	9	64.3	1	6.3		
<b>Years of experience</b>						
>5					3.937	0.039*
5>10	6	42.9	9	56.3		
≥10	3	21.4	2	12.5		
≥10	8	57.1	2	12.5		
<b>Training courses in emergency units</b>						
Yes	12	85.7	3	18.8	4.887	0.027*
No	5	35.7	10	62.5		
<b>Job categories</b>						
Staff nurse	15	107.1	13	81.3	0.293	0.588
Supervisor	2	14.3	0	0		

**Part VII: Relations between nurse's total level of practice and their total level of knowledge (n=30).**

**Table (6): Relations between nurse's level of total practice and their level of total knowledge (n=30).**

Total practice	Total knowledge				Chi-square test	
	Satisfactory (n=14)		Unsatisfactory (n=16)		x <sup>2</sup>	P value
	No	%	No	%		
competent (n=17)	11	87.6	6	37.5	+ve5.693	0.047*
Incompetent (n=13)	3	21.4	10	62.5		

## Discussion

Regarding the studied nurses' demographic characteristics, the current study revealed that, about two third of the nurse's age was 20 -40 years this is because in emergency department need the young age nurses can be fast in the emergency situation. This finding was in agreement result of with **El Sayed, and refeet (2018) who studied** Impact of Training Program about Management of Hypovolemic Shock on Nurses' Knowledge and Performance and **reported that** half of the nurse's age 25 years.

The current study showed that more than two third of nurses were females, because the nursing schools were recruiting of females more than males. This finding disagreement with **Taib, and abdulla. (2018) who studied** the nurses' knowledge and practices concerning cardiogenic shock and **reported that** the majority of nurses' in this study were males this study result may be due to the most graduate from the nursing school was female.

Regarding years of experience in emergency department, results revealed that, half of the nurses under study were having  $\leq 5$  years of experience because they are newly graduate from nursing school. This finding disagreement with **Lawer (2019) who studied** Assessment on Management of Hypovolemic Shock in Galkayo Public Hospital, Somalia **which reported** the majority of the studied nurses' were from 5-10 years of experience.

Regarding the level of education more than two third of nurses on the study was diplome it can be due to the nursing schools graduate diplome more than technical institute and the technical institute take two years more than diplome to graduate this finding agreement with **Taib, (2018) who**

**studied** Assessment of nurses' knowledge and practices concerning cardiogenic shock which **reported that** more than half of nurses was graduate of school.

**Nurses' level of Knowledge Regarding Care of Patients with Hypovolemic Shock.** Concerning nurses' total level of knowledge about Definition, Causes of hypovolemic shock, manifestations., medical treatment, complications of hypovolemic shock, role of nurse, the most important measures, nursing management related to (primary survey-secondary survey- tertiary survey) the current study results revealed that more than half of nurses under the study have unsatisfactory level of knowledge this is may be due to lack of interest to reading of medical books or lack of time to read or staff shortage .

These findings were is disagreement with **Elsayed, (2018). Who studied** Impact of Training Program about Management in Hypovolemic Shock on Nurses' Knowledge and Performance: Evidence-Based Practice Guidelines, **which reported** that the majority of studied nurses have unsatisfactory level of knowledge regarding caring of patient with hypovolemic shock.

**Nurses practices regarding caring of patient with hypovolemic shock.** Concerning the nurses' total level of practices, findings of this study documented that more than half of the nurses under study have adequate total level of practice this is may be due to half of study nurses have training program that lead to improve their skills, this finding agree with **Lawer (2019) who studied** Assessment on Management of Hypovolemic Shock in Galkayo Public Hospital, Somalia **which reported** he found half of studied nurse have adequate level of practice

The current study found that, there was statistical significant relation between the studied nurses level of knowledge and their

educational level, years of experience also there was a highly statistically significant relation between knowledge level and training courses in emergency units, while there were no statistically significant relation between total knowledge level and both age and gender of the studied nurses and marital status. This finding disagrees with **Taib (2018)**. **Who studied** Assessment of nurses' knowledge and practices concerning cardiogenic shock **who reported** that there were no statistically significant relation between total knowledge level and both age, gender, marital status, level of education, training courses, years of experience. And agreement with **Hassan, (2019)**. **who studied** nurses' performance regarding patient with traumatic head injury in Intensive Care Unit **who found** that there was, a statistically significant relation between training course and knowledge level, also there was a highly statistically significant relation between knowledge level and marital status, education level and years of experience the group with five to ten years of experience has the highest proportion of satisfactory knowledge level, while there were no statistically significant relation between total knowledge level and both age and gender of the studied nurses.

Also the current study found that there was statistical significant relation between the studied nurses' level of practice and their educational level, years of experience and training courses in emergency units this result agrees with **El sayed, (2018)**. **Who studied** Impact of Training Program about Management of Hypovolemic Shock on Nurses' Knowledge and Performance **reported that** there was a significant positive association between nurses' knowledge and practice regarding hypovolemic shock management with highly statistical significant differences.

The relation between nurses' total knowledge score and total practice score. Findings of the present study reported that

there were positive statistical significant relation between the studied nurses' level of knowledge and their practice, this finding agrees with **Elsayed, (2018)** **who studied** Impact of Training Program about Management of Hypovolemic Shock on Nurses' Knowledge and Performance **reported that** the current study reported that there was a significant positive correlation between nurses' knowledge and practice. But this study was contradicted by the study of **Maarouf, (2014)** who's study about "Nurses' performance for patients with traumatic head injury during golden hour "at Ain Shams University. Who stated that no statistically significant correlation between nurses knowledge and practice.

### Conclusion

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Based on the study findings, it was concluded that more than half of the studied nurses at emergency department had unsatisfactory total level of knowledge and more than two fifths of them had in adequate total level of practice regarding caring of patients with hypovolemic shock, It was concluded also that, there was statistical significant relation between the studied nurses level of knowledge and their educational level, years of experience and training courses in emergency units. the current study found that there was statistical significant relation between the studied nurses' level of practice and their educational level, years of experience and training courses in emergency units There were statistical significant relation between the studied nurses' level of knowledge and their practice regarding care of patients with hypovolemic shock.

### Recommendations

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The results of this study projected the following recommendations

**Knowledge recommendations:**

None

- Orientation and periodic in-service training program for nurses in emergency department regarding caring of patients with hypovolemic shock for continuous updating their knowledge.

- Developing a simplified and comprehensive booklet including guidelines about nursing care of patients with hypovolemic shock in emergency department.

**Practice recommendations:**

- Application the guidelines related to caring of patients with hypovolemic shock in the emergency department and critical department as policy in the hospitals.

- Continuous evaluation of nurses' practice is essential to identify their needs in ER about caring of patient with hypovolemic shock.

- On-going and regular in-service educational and training programs to improve practices regarding caring of patient with hypovolemic shock.

**Research recommendations:**

- Further studied is recommended to evaluate the reflection of in-service training program regarding caring of patients with hypovolemic shock in emergency department on nurses' performance and consequently on the patients' outcome.

- The study should be replicated on large sample and different hospitals setting in order to generalize the result.

**Declaration of Competing Interest**

None

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