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Nurses' Knowledge and Practice Regarding Care of Patients with Hypovolemic Shock in the Intensive Care Unit

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Abstract

Background: Hypovolemic shock can lead to significant complications. Nurses play a pivotal role in caring for patients with hypovolemic shock. The nursing role begins with rapid assessment and management. **Aim**: To assess nurses' knowledge and practice regarding caring for patients with hypovolemic shock in the Intensive Care Unit. Research Design: A descriptive exploratory research design was utilized. **Setting**: This study was conducted in the Hehia Central Hospital intensive care unit in Egypt. **Subjects**: A convenient sample (100) of nurses. **Tools**: Two tools were used to collect data in this study, **Tool I**: the nurses' self-administered questionnaire. **Tool II**: the nurses' observational checklist regarding caring for patients with hypovolemic shock. **Results:** 59.0% of studied nurses had an unsatisfactory level of knowledge regarding the care of patients with hypovolemic shock in the intensive care unit, 56.0% of nurses had an incompetent practice level regarding the care of patients with hypovolemic shock in the intensive care unit. There was a very strong positive correlation between total nurses' practice level and total nurses' knowledge level. **Conclusion:** It can be concluded that less than half of the nurses had a satisfactory level of knowledge and demonstrated a competent practice level regarding the care of patients with hypovolemic shock in the intensive care unit. There was a highly statistically significant relationship between nurses' knowledge and practice levels regarding the care of patients with hypovolemic shock in the intensive care unit. **Recommendations:** Conduct periodic educational interventions on knowledge and practices for nurses in an Intensive Care Unit.

Keywords: Hypovolemic Shock, Intensive Care Unit, Nurse

Introduction:

Shock is a condition of extensive tissue hypoperfusion leading to hypoxia and dysfunction of the cells. There are four common forms of shock, depending on obstructive shock, distributive shock, hypovolemic shock, and cardiogenic shock are possible etiologies. The most frequent cause of adult hospitalization in the emergency department and critical care unit is distributed septic shock and hypovolemic shock ***(Baker et al., 2020).*** Hypovolemic shock is the most common type of shock which results from the loss of circulating blood volume which may result in the depletion of body fluid. So, blood carries oxygen, and oxygen is required to keep the body tissue and cells alive if an insignificant amount of blood is lost internally or externally the cells will not receive the amount of oxygen they need to furthermore the west product of oxygen metabolism (carbon dioxide) that return to the heart and lung via the blood for elimination from the body will build up in the cells and organs leading to cell or organ death (***Hill & Mitchell, 2020***).

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Surgery, trauma, burns, and hemorrhage are the causes of hypovolemic shock. Burns result in plasma loss, but trauma and bleeding result in internal or external blood loss. When cellular oxygenation remains low and the underlying sickness that causes shock is not treated, hypovolemic shock advances to stage four. Moreover, take note of the symptoms and indicators. Each phase facilitates treatment. A heart rate of 90 beats per minute, normal blood pressure, and more than 30 milliliters of urine per hour are considered to be in the first stage ***(Bonanno, 2022).*** Normal blood pressure, a heartbeat of 110 beats per minute, and 20 to 30 milliliters of urine produced per hour are the hallmarks of the second stage of hypovolemic shock. In the third stage, there is an increase in heart rate to above 120 beats per minute, hypotension, tachypnea, and 5 to 15 milliliters of urine produced each hour. In the fourth stage, the blood pressure is extremely low and the heart rate is greater than 140 beats per minute. Furthermore, traumatic shock, dehydration shock, and hemorrhagic shock might happen based on the cause of hypovolemic shock ***(Bonanno, 2024).***

Hypovolemic shock can lead to significant complications, both immediate and long-term, due to the critical reduction in circulating blood volume and subsequent inadequate oxygen delivery to vital organs. One of the most immediate complications is organ failure, with the kidneys, liver, and heart being particularly susceptible. Hypovolemic shock can also result in metabolic imbalances and systemic complications ***(Guyette et al., 2021).*** Patients with severe hypovolemic shock are also at risk for disseminated intravascular coagulation (DIC). Additionally, prolonged shock can cause irreversible brain damage due to hypoxia, potentially leading to neurological deficits or brain death. The complexity and severity of these complications underscore the importance of immediate and aggressive treatment, along with careful monitoring and support, to mitigate the risks associated with hypovolemic shock ***(Morikawa et al., 2021).***

Managing patients with hypovolemic shock centers on rapid intervention, fluid resuscitation, and comprehensive monitoring to restore circulatory volume and maintain tissue perfusion. The first step involves rapid assessment to recognize signs of shock. The medical team must quickly initiate emergency protocols, secure the patient's airway, and ensure adequate oxygenation. The priority is to begin aggressive fluid resuscitation with isotonic crystalloids. If significant blood loss is identified, blood transfusions with packed red blood cells and other blood products may be necessary ***(Kashani et al., 2022).*** Beyond immediate resuscitation, addressing the underlying cause of hypovolemic shock is crucial, whether due to hemorrhage, severe dehydration, or other factors. Pharmacological support may be required, such as vasopressors for maintaining blood pressure if fluid resuscitation alone is insufficient. Effective communication and coordination among the multidisciplinary healthcare team are essential for successful outcomes ***(Baker et al., 2020).***

Nurses play a pivotal role in caring for patients with hypovolemic shock, the nursing role begins with a rapid assessment, quickly identifying signs of shock such as low blood pressure, rapid heart rate, pale or cool skin, and confusion. Nurses continuously monitor vital signs to detect any deterioration and alert the medical team promptly for immediate intervention, and nurses establish intravenous (IV) access for fluid resuscitation. If there is substantial blood loss, maintain continuous monitoring and reassessment, adjusting treatment based on changes in the patient's condition ***(Jeffries et al., 2021).***

They also play a key role in administering oxygen therapy or mechanical ventilation if required and managing pain and sedation to keep the patient comfortable. Positioning the patient to maximize perfusion and minimize complications is another critical aspect of nursing care. Communication and documentation are essential responsibilities for nurses caring for patients with hypovolemic shock ***(Ali et al., 2023)***. They keep families informed about the patient's condition and care plan while meticulously documenting all assessments, interventions, and outcomes. Collaboration and coordination with physicians, surgeons,

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anesthesiologists, and other healthcare professionals ensure a cohesive approach to patient care. If needed, nurses prepare patients for transfer to higher levels of care, such as intensive care units (ICU) or operating rooms ***(Malbrain et al., 2024).***

Significance of the study:

Hypovolemic shock, the most common type of shock globally, occurs due to decreased intravascular volume, leading to tissue hypoxia and reduced cardiac output. It often arises from acute blood loss, as well as plasma loss in burn victims or those with peritonitis. With a growing elderly population, it predominantly impacts individuals over 60. The World Health Organization attributes 12% of global mortality to hypovolemic shock ***(Haas et al., 2020).***

Hypovolemic shock impacts the circulatory system and can lead to multi-organ failure, a major global cause of death. Severe hemorrhage has a poor outcome, with a 50% blood transfusion requirement and over 6 million trauma-related deaths annually, 20% of which result from uncontrolled bleeding and inadequate tissue perfusion ***(Ali et al., 2023)***. 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%. The prevalence of hypovolemic shock was 55.9 in every 100.000 persons in the United States of America ***(Williams and Hopper, 2015)***.

Nurses who work in the intensive care unit and emergency department play an important role in the management of hypovolemic shock patients, which helps in decreasing the mortality rate and preventing complications. They may have a lack of knowledge and improper practice regarding hypovolemic shocked patients ***(Jeonand Park 2021).*** So, this study was done to assess nurses' knowledge and practice regarding the care of patients with hypovolemic shock in an Intensive Care Unit.

Aim of the study:

This study aimed to assess nurses' knowledge and practice regarding the care of patients with hypovolemic shock in the Intensive Care Unit through the following objectives:

1- Assess the nurse's level of knowledge regarding the care of patients with hypovolemic shock.
2- Assess the nurse's level of practice regarding the care of patients with hypovolemic shock.

Research questions:

- What is the nurse's level of knowledge regarding the care of patients with hypovolemic shock?
- What is the nurse's level of practice regarding the care of patients with hypovolemic shock?

1- Subject and Methods

Research design: A descriptive exploratory design was utilized to achieve the aim of this study.

Setting: The study was conducted in the intensive care unit at Mehia Central Hospital, Sharqia Governorate, in Egypt. The hospital consists of five buildings, and the intensive care unit is located in the second building and consists of three rooms: the first room has 6 beds, the second room has 8 beds, and the third room has 1 isolation bed, which means 15 beds in total.

Subject: A convenient sample of all available nurses, 100 nurses who work in the previously mentioned setting and were involved in the study.

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Tools for data collection: -

Tool I: Nurses' self-administered questionnaire: It was divided into two parts:
Part (1): Demographic characteristics: It was designed by the investigator based on the review of recent and related literature to assess the demographic characteristics of nurses, including age, gender, educational levels, years of experience, and previous training programs.

Part (2): Nurses' knowledge regarding the care of patients with hypovolemic shock: It was designed by the investigator based on the review of recent and related literature from ***(Khamis & Ibrahim, 2018) & (Abo al-ata, 2020)*** to assess nurses' level of knowledge regarding the care of patients with hypovolemic shock in the form of 15 multiple-choice questions under sub-main items as the definition of hypovolemic shock, causes of hypovolemic shock, signs and symptoms of hypovolemic shock**,** complications of hypovolemic shock, treatment, nursing care for patients with hypovolemic shock.
Scoring system: The scoring system for part (2) nurses' knowledge regarding the care of patients with hypovolemic shock will be as follows. These scores were summed and converted into a percentage. It was classified into 2 categories:

- Satisfactory level of knowledge ≥ 12 points (≥ 75%).
- Unsatisfactory level of knowledge < 12 points (<75%). ***(Abo al-ata, 2020).***

Tool II: Nurses' observational checklist regarding the care of patients with hypovolemic shock: It was designed by the investigator based on the review of recent and related literature from ***Abo al-ata, (2020)*** to assess nurses' level of practice regarding the care of patients with hypovolemic shock in the form of steps checked by the investigator as done or not done. It consisted of 32 sub-items under three sections:

Scoring system: Each skill was assigned a score according to sub-items. The total score of nurses' practices was 33 degrees, which equals 100%; each item that was evaluated as "done" was taken one degree, and "not done" was taken zero degrees. These scores were summed up and converted into a percentage score. It was classified into 2 categories:

- Competent level of practice ≥ 29 points (≥ 85%).
- Incompetent level of practice ≥ 29 points (< 85%). ***(Eckman, 2020).***

Validity of the tools: Face and content validity for the study tool were done. Two tools were translated into Arabic and were tested by a jury group of three specialists in medical-surgical and critical care nursing from Helwan University, through an opinionnaire sheet to measure the face and content validity of the tools.
Reliability of the tools: Tools were examined by assessing their internal consistency by Cronbach's alpha. **First tool:** Nurses' knowledge regarding the care of patients with hypovolemic shock Cronbach's alpha showed 0.74, which indicated acceptable reliability. **Second tool:** Nurses' observational checklist regarding the care of patients with hypovolemic shock showed 0.81, which indicates good internal consistency.
Pilot Study: A pilot study was conducted on 10% of the study subjects (10 nursing personnel), who were selected randomly. From the beginning of April 2024 and completed by the end of April 202٤. The pilot study aimed to confirm the clarity, and applicability of the tools and to estimate the time required for fulfilling the questionnaire sheet. Based on the pilot study, no modifications were required, and the final versions of both tools were prepared. So, nursing personnel from the pilot study were included in the entire study.

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Field Work:

The actual fieldwork started at the beginning of May 2024 and was completed by the end of August 2024. The investigator met the Director of Mehia Central Hospital to explain the aim of the study to gain approval for Data collection. The investigator collected the data by herself by meeting nurse personnel and explaining the purpose of the study to them in their setting. The questionnaire sheet was completed by the nursing personnel. The investigator went to the hospital mentioned on the day shift three days per week. The time needed to complete both study tools ranged between 25 and 40 minutes. The investigator checked the completeness of each filled sheet after the nurse educators completed it to ensure the absence of any missing data.

In the fieldwork study, the investigator systematically observed nurses using a Nurses' Observational Checklist specifically designed for the care of patients with hypovolemic shock. These observations were conducted during predetermined shifts, ensuring that data was collected consistently across different times of day. The investigator focused on capturing critical interventions, such as the initial assessment, fluid administration, and continuous monitoring of vital signs. The checklist allowed the investigator to document specific actions taken by the nurses, ensuring that each aspect of care was thoroughly evaluated. This time-specific observation enabled the investigator to assess how nurses managed hypovolemic shock under varying conditions and workload pressures, providing valuable insights into real-time nursing practices.

Ethical considerations: Before the study's conduct, approval was obtained from the scientific research ethical committee at the Faculty of Nursing Helwan University. In addition, approval was obtained from the Chief executive officer and Director of Mehia Central Hospital for data collection. The nursing personnel were informed about the aim of the study. Anonymity and confidentiality were guaranteed. Written consent was obtained from the nursing personnel before inclusion in the study. Nursing personnel were informed that they were allowed to participate or not in the study and that they had the right to withdraw from the study at any time.

Statistical Items: Data collected from the sample studied was revised, coded, and entered using a PC. Computerized data entry and statistical analysis were fulfilled using the Statistical Package for Social Sciences (SPSS), version 26.0. Numbers and percentages were calculated for qualitative variables and means, and standard deviations were calculated for quantitative variables. The Pearson correlation coefficient was used for relations between quantitative variables, while the Chi-square correlation was used for relations between qualitative variables. Any test was considered significant if the p-value <0.05.

2- Results:

Table (1): Frequency and percentage distribution of demographic characteristics among the nurses studied (n = 100).

Items		Studied nurses (n = 100).	
		No.	**%**
Age (year)	▪ 20<30	81	**81.0%**
	▪ 30<40	18	18.0%
	▪ 40<50	1	1.0%
	Mean ± SD	**40.0 ± 14.1**	
Gender	▪ Male	26	26.0%

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	▪ Female	74	**74.0%**
Educational Level	▪ Nursing Diploma	4	4.0%
	▪ Technical Institute of Nursing	35	35.0%
	▪ Bachelor's degree in nursing	43	**43.0%**
	▪ Postgraduate studies	18	18.0%
Years of experience in ICU	▪ Less than 1 year	28	28.0%
	▪ 1<5 years	58	**58.0%**
	▪ 5<10 years	9	9.0%
	▪ More than 10 years	5	5.0%
	Mean ± SD	**5.3 ± 3.7**	
Have you attended training courses on how to deal with patients suffering from hypovolemic shock?	▪ Yes	62	**62.0%**
	▪ No	38	38.0%
How long did you attend the training courses?	▪ 1<3 years	57	**57.0%**
	▪ 3<5 years	3	3.0%
	▪ More than 5 years	2	2.0%

Table (1) illustrates that 81.0% of the studied nurse's ages ranged between 20 < and 30 years old with a **Mean ± SD of 40.0 ± 14.1**. Regarding gender, 74.0% of them were female. As regards educational level, 43.0% of them hold a bachelor's degree in nursing. Concerning years of experience, 58.0% of them had from 1 < 5 years with **Mean ± SD = 5.3 ± 3.7**. Also, 62.0% of them attended training courses on how to deal with patients suffering from hypovolemic shock and 57.0% of them who attended courses had attended training courses for 1<3 years.

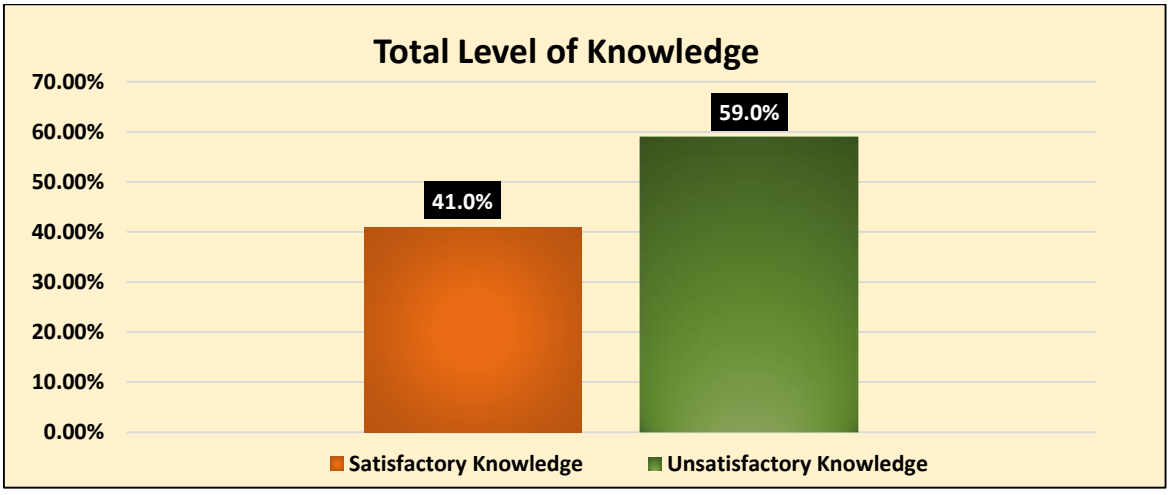

Figure (1): Percentage distribution of the total level of nurses' knowledge regarding care of patients with hypovolemic shock in the intensive care unit.

Fig (1) clarifies that 59.0% of studied nurses had an unsatisfactory level of knowledge regarding the care of patients with hypovolemic shock in the intensive care unit. While 41.0% of them had a satisfactory level of knowledge regarding the care of patients with hypovolemic shock in the intensive care unit.

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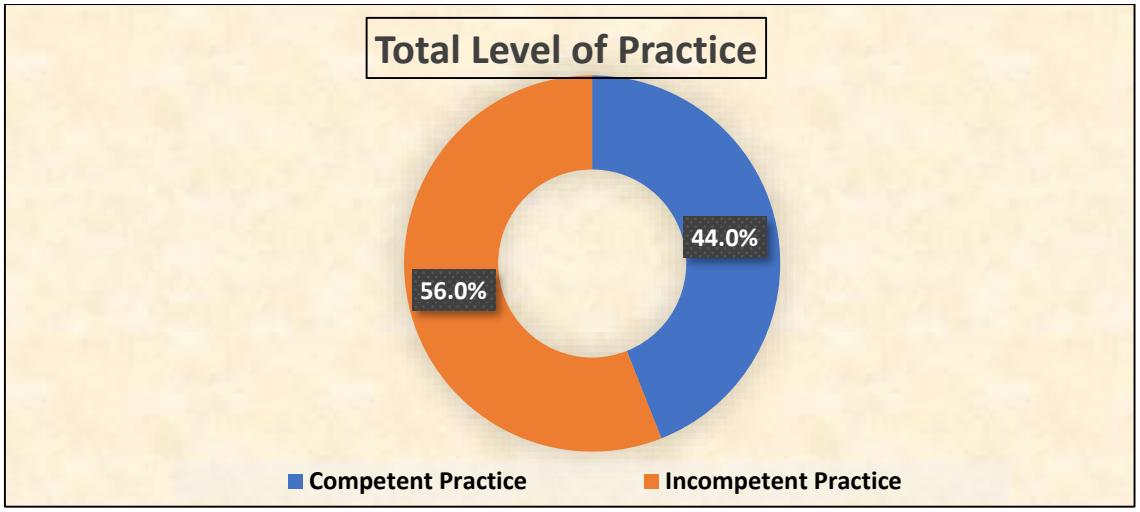

Figure (2): Percentage distribution of total nurses' practice level regarding the care of patients with hypovolemic shock in the intensive care unit.

Fig (2) shows that 56.0% of nurses had an incompetent practice level while 44.0% of them had a competent level of practice regarding the care of patients with hypovolemic shock in the intensive care unit.

Table (2): Correlation between total nurses' practice level and total nurses' knowledge level (n = 100).

Correlations		
Items		**The total level of practice**
The total level of knowledge	Pearson Correlation	**0.940****
	Sig. (2-tailed)	**0.000**
	N	**100**
****. Correlation is significant at the 0.01 level (2-tailed).**		

Table (2) indicates a very strong positive correlation between total nurses' practice level and total nurses' knowledge level r=0.940 and is highly statistically significant at P-value (0.000**).

4- Discussion

Part (I): Demographic characteristics of the studied nurses:

Regarding the studied nurses' demographic characteristics, the present study illustrates that the majority of the studied nurses' ages ranged between 20 < and 30 years old with a **Mean ± SD of 40.0 ± 14.1**. Regarding gender, about three-quarters of them were female. This result was in agreement with **Atiyah, (2024),** whose study *"Nurses' Knowledge Regarding Management of Hypovolemic Shock: A Cross-Sectional Study"* found that most nurses treating hypovolemic shock were female, and nearly two-thirds fell between the ages of 20 and 30 years. In the same line with **Abdelmoty et al. (2021),** whose study *"Nurses' Performance Regarding Care of Patients with Hypovolemic Shock: Suggested Guideline"* was carried out at a medical and surgical emergency room at a new emergency hospital affiliated with Ain Shams University. They revealed that about two-thirds of the nurses were 20 -40 years old, and more than two-thirds of nurses were females.

This result was supported by **Jeon and Park (2021),** who reported in their study, *"An exploratory study to develop a virtual reality-based simulation training program for hypovolemic shock*

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nursing care: a qualitative study using focus group interview," that all participants were female nurses. On the other hand, this result disagreed with **Jaafar and Abed (2020),** in a study entitled *"Nurses' knowledge toward traumatic head injury during golden hour,"* who found that about two-thirds of nurses were in the age group 20-24 years with mean age 25.1±6.77. Also, this result was in disagreement with **Elsayed et al. (2020)**, whose study entitled *"Nurses' Performance Regarding Advanced Care of Trauma Patients at Emergency Department"* was carried out in the emergency department at El-Araby International Hospital in Egypt and reported that slightly more than three-quarters were males. The investigator believes that this discrepancy in findings could be attributed to the trends in the decline of gender inequality in most countries. **From the investigator's point of view, this** result could be attributed to that female nurses in Egypt are predominant in the nursing profession and male nurses are newcomers to the nursing profession as the nursing schools were recruiting females more than males.

As regards educational level, more than one-third of them hold a bachelor's degree in nursing. Concerning years of experience, more than half of them had 1 < 5 years with **Mean ± SD = 5.3 ± 3.7**. This result was in agreement with **Hussein and Hassan (2020),** who studied *"Effectiveness of educational program on nurse's knowledge concerning management of cardiogenic shock at AL-Mosul teaching hospitals"* and stated that more than three-fifths of nurses had experienced less than 5 years. This result does not align with the findings of **Abdelmoty et al., (2021),** who reported that more than two-thirds of nurses held secondary nursing diplomas. However, it is consistent with the study conducted by **Abo al-ata, (2020),** which examined *"Nurses' Knowledge and Practice Regarding Patients with Posttraumatic Hypovolemic Shock"* and found that a significant percentage of nurses lacked adequate training in this critical area. This is consistent with the findings of **Gonzalez et al. (2022)**, who highlighted that nurses with a few years of experience are prevalent in critical care environments, which can impact their confidence and competency levels in managing complex cases like hypovolemic shock.

From the investigators' point of view, the findings regarding the educational level and years of experience among the nurses could be attributed to several factors. The substantial proportion of nurses holding a bachelor's degree may reflect the increasing emphasis on higher education in nursing as a means to enhance the quality of care in critical settings. Studies have shown that nurses with a bachelor's degree tend to have better clinical reasoning and decision-making skills, which are crucial in managing complex cases such as hypovolemic shock ***(Hosseini et al., 2022).*** Furthermore, the distribution of experience, with over half of the nurses having between 1 to 5 years in the field, suggests that many of these nurses are still early in their careers. This period can be critical for professional development and skill acquisition. Research indicates that nurses with several years of experience often demonstrate increased confidence and competency in their practice, which directly influences patient outcomes ***(Kumar et al., 2021).***

As regards training courses, more than two-thirds of them attended training courses on how to deal with patients suffering from hypovolemic shock and more than half of them who attended courses had attended training courses for 1<3 years. This result aligns with findings by **Ali et al. (2022),** whose study on the *"Effect of an Educational Program on Nurses' Performance and Health Outcomes for Patients with Traumatic Head Injury"* reported that two-thirds of nurses had attended relevant training programs to improve their clinical skills. This also reflects the trends noted by **ECCO (2020),** which emphasized the value of specialized ICU training for shock management to bolster patient care quality. However, this finding does not align with **Abdelmoty et al. (2021),** who found that more than two-thirds of nurses held only secondary nursing diplomas and thus may have had fewer opportunities

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to engage in advanced training related to critical care. This contrast highlights the diversity in training access across different settings and levels of nurse education.

From the investigators' point of view, this result could be attributed to the recognition among healthcare professionals of the importance of specialized training in improving patient outcomes. Continuous education and training are vital in equipping nurses with the necessary skills and knowledge to handle complex and time-sensitive situations effectively. The fact that over half of the nurses had participated in training for 1 to 3 years indicates a sustained commitment to learning and skill enhancement. This aligns with findings from **Ali et al. (2023),** which highlight that ongoing training plays a crucial role in increasing nurses' confidence and competence in their clinical practice. Additionally, **Zahra et al. (2022)** noted that regular exposure to training on specific conditions like hypovolemic shock significantly enhances nurses' ability to respond effectively in emergencies.

Part (II): Nurses' knowledge regarding the care of patients with hypovolemic shock in the Intensive Care Unit

The present study clarifies that more than half of the studied nurses had an unsatisfactory level of knowledge regarding the care of patients with hypovolemic shock in the intensive care unit. While less than half of them had a satisfactory level of knowledge regarding the care of patients with hypovolemic shock in the intensive care unit.

The findings of this study align with research by **Ahmed and Hassan (2020)** in their study, *"Knowledge and Practice Regarding Hypovolemic Shock Management among Intensive Care Nurses in Egypt,"* published in The Egyptian Journal of Critical Care Medicine. Ahmed and Hassan reported that most nurses lacked adequate knowledge of essential shock management procedures, underlining a critical need for improved training programs in ICUs. Similarly, **Ali and Salem, (2021)**, in their study *"Assessment of Knowledge Levels in Hypovolemic Shock Interventions among Critical Care Nurses,"* published in The Journal of Nursing Education and Practice, found that more than half of the nurses scored below satisfactory on knowledge assessments, especially in advanced patient monitoring and response techniques.

In contrast, these findings differ from those of **Alotaibi and Almazrou, (2020)** in their study, *"Knowledge and Practices of ICU Nurses in Hypovolemic Shock Management: A Saudi Perspective,"* published in the International Journal of Nursing Studies, **Alotaibi and Almazrou** reported that the majority of ICU nurses demonstrated satisfactory levels of knowledge, which they attributed to targeted education programs and continuous professional development. Similarly, in the study by **Farooq, et al. (2021)**, titled *"The Effect of Focused Simulation Training on ICU Nurses' Competency in Managing Hypovolemic Shock"* in the Journal of Intensive Care Medicine, nurses displayed high knowledge scores, with more than two-thirds meeting satisfactory levels, suggesting that intensive, scenario-based training programs can effectively boost knowledge in critical care scenarios.

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Part (III): Nurses' practice regarding care of patients with hypovolemic shock in the Intensive Care Unit

Regarding total nurses' practice level regarding the care of patients with hypovolemic shock in the intensive care unit, the present study displays that more than half of the nurses had an incompetent practice level while less than half of them had a competent level of practice regarding the care of patients with hypovolemic shock in the intensive care unit.

The present study indicates that more than half of the nurses caring for patients with hypovolemic shock in the intensive care unit exhibit an incompetent level of practice, while less than half demonstrate a competent level. These findings align with research conducted by **Brnzevska, (2024)** in *"INTENSIVE CARE UNIT-THE ROLE OF THE NURSE IN PATIENT TREATMENT,"* which reported that a majority of ICU nurses lacked the essential skills and knowledge necessary for effective patient care in shock situations. This study emphasizes the pressing need for targeted educational programs to improve nursing competencies in critical care settings.

In contrast, the findings of the current study differ from those of **Weile et al. (2021)** in *"Simulation-based team training in time-critical clinical presentations in emergency medicine and critical care: a review of the literature,"* which reported that the majority of ICU nurses demonstrated a competent level of practice, attributing their success to comprehensive training and ongoing education programs. This suggests that institutional support and resources can significantly influence nursing competencies in critical care.

Part (IV): Relation between variables of the study.

Regarding the correlation between total nurses' practice level and total nurses' knowledge level, the present study indicates a very strong positive correlation between total nurses' practice level and total nurses' knowledge level these r=0.940 and highly statistically significant. This finding underscores the critical relationship between knowledge and practice in nursing, particularly in managing complex conditions like hypovolemic shock.

These results align with the findings of **Pueyo-Garrigues et al. (2022)** in their study titled *"Nurses' Knowledge, skills and personal attributes for competent health education practice: An instrument development and psychometric validation study,"* where they reported a significant positive correlation (r = 0.92) between nurses' knowledge levels and their practical competencies. They concluded that increased knowledge leads to improved clinical practices, which is essential for patient care in critical situations.

Conversely, a study by **King et al. (2023)** titled *"Factors that optimise the impact of continuing professional development in nursing: A rapid evidence review"* indicates that while knowledge is crucial, a practical application can also be influenced by external factors such as institutional policies and support systems. Their findings suggest that merely improving knowledge may not suffice if the work environment does not promote the application of that knowledge in practice.

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In conclusion, enhancing nurses' knowledge and practice regarding the care of hypovolemic shock is essential for improving patient outcomes in critical settings. By identifying gaps in education and ensuring access to ongoing training and evidence-based guidelines, we can equip nursing professionals with the necessary skills to recognize and respond effectively to this life-threatening condition. Ultimately, a well-informed nursing workforce will lead to more timely interventions, better patient care, and increased survival rates for individuals experiencing hypovolemic shock.

5- Conclusion:

In light of the current study findings, it can be concluded that less than half of nurses had a satisfactory level of knowledge and demonstrated a competent practice level regarding the care of patients with hypovolemic shock in the intensive care unit. There was a highly statistically significant relationship between nurses' knowledge and practice levels regarding caring for patients with hypovolemic shock in the intensive care unit. Additionally, demographic factors such as age, gender, educational level, years of experience, and training attendance were significantly associated with both knowledge and practice levels.

6- Recommendations

Recommendations for Education:

1. Revise nursing curricula to include a stronger focus on critical care topics, specifically hypovolemic shock. Emphasizing pathophysiology, assessment techniques, and management strategies will better prepare nursing students for real-world challenges.
2. Implement mandatory continuing education programs for practicing nurses that cover advances in the understanding and management of hypovolemic shock. Workshops and online courses can provide up-to-date information and reinforce best practices.

Recommendations for Clinical Practice:

1. Develop and implement standardized clinical protocols for the assessment and management of hypovolemic shock in healthcare settings. These protocols should include clear guidelines on recognizing early signs, fluid resuscitation methods, and monitoring vital signs.
2. Integrate simulation-based training programs into nursing practice to enhance skills related to the rapid identification and management of hypovolemic shock. This hands-on approach allows nurses to practice real-life scenarios and improves their confidence and competence in emergencies.

Recommendations for Further Research:

1. Investigate the effectiveness of various training interventions, such as simulation exercises and continuing education courses, improving nursing practices and patient outcomes related to hypovolemic shock.

2. Perform longitudinal studies to evaluate the impact of improved nursing education and standardized protocols on patient outcomes in cases of hypovolemic shock. This research can provide valuable data to support changes in clinical practice and education.

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