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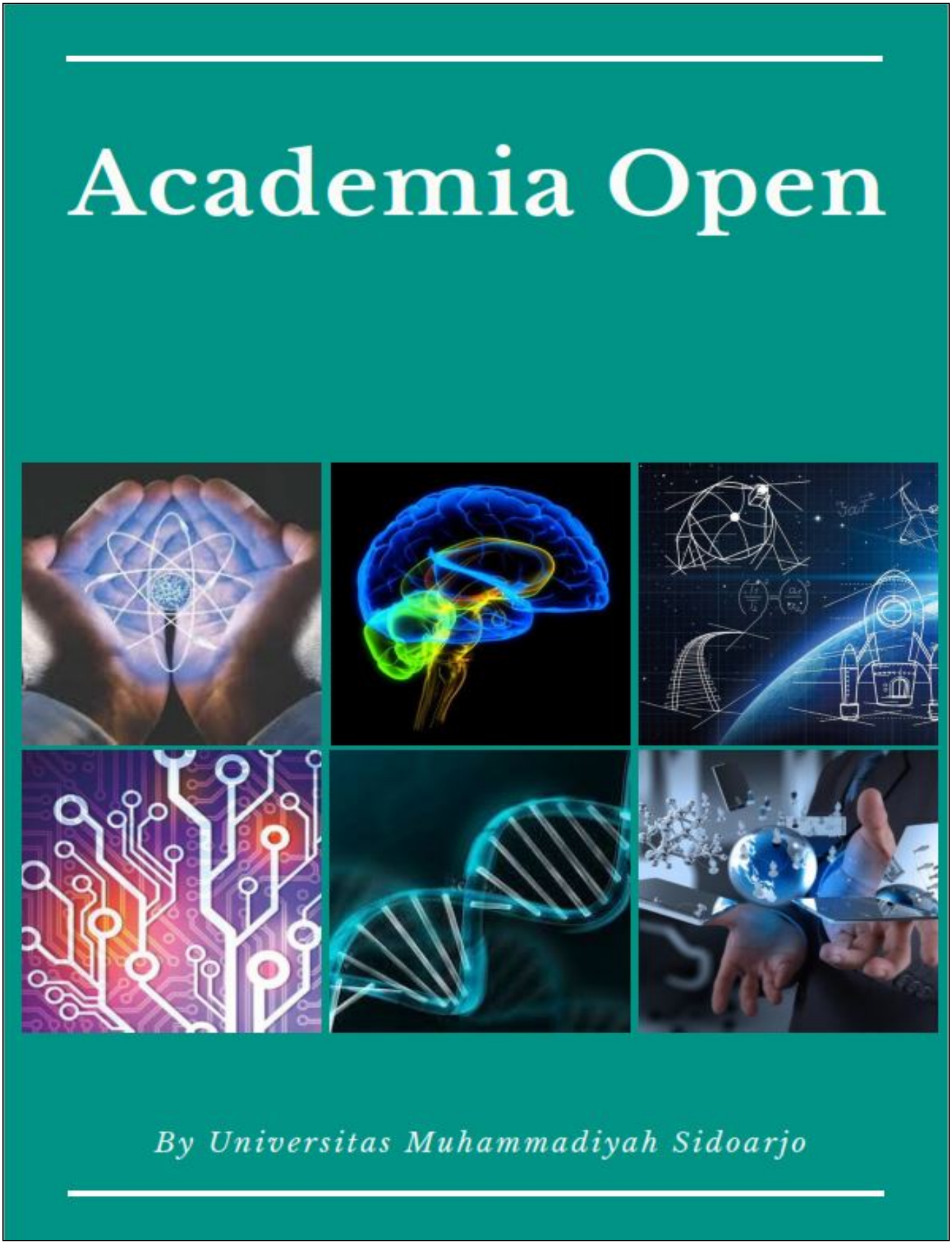

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Nurses' Knowledge Regarding Management of Hypovolemic Shock: A Cross-Sectional Study

Pengetahuan Perawat Mengenai Manajemen Syok Hipovolemik: Sebuah Studi Cross-Sectional

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Abstract

Hypovolemic shock, a common post-surgery complication, poses significant challenges globally, particularly in trauma-related fatalities. Understanding nurses' knowledge of hypovolemic shock management is crucial for improving patient care and reducing mortality rates. However, research assessing nurses' knowledge in this area remains limited, especially in specific hospital settings. This cross-sectional study aimed to evaluate nurses' knowledge of hypovolemic shock management at Al-Basrah Teaching Hospitals. Data from 120 nurses were collected using a questionnaire-based survey and analyzed using SPSS version 26. Results indicated that most nurses demonstrated good knowledge (58%), while 39% had moderate knowledge and 3% had inadequate knowledge. This study highlights the need for targeted educational interventions to enhance nurses' understanding of hypovolemic shock management, potentially leading to improved patient outcomes and reduced mortality rates.

Highlight:

1. Comprehensive assessment: Nurses' knowledge evaluated at Al-Basrah Teaching Hospitals.
2. Knowledge distribution: Majority of nurses showed good understanding of shock management.
3. Practice implications: Highlight importance of targeted educational interventions for nurses.

Keyword: Hypovolemic Shock, Nurses' Knowledge, Management, Al-Basrah Teaching Hospitals, Patient Care

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Introduction

Hypovolemic shock is a typical side effect for hospitalized patients after surgery or invasive procedures, but as it is a response rather than a disease, its exact etiology is unclear [1]. Every year, 5.8 million deadly incidents connected to trauma occur worldwide, resulting in mortality and incapacity. About 40% of fatalities connected to trauma are caused by hemorrhage [2]. The most prevalent kind of shock is called hypovolemic shock, which results from a drop in blood volume in circulation and can occur when body fluids are exhausted [3]. Consequently, blood transports oxygen, and for bodily tissue and cells to remain alive, oxygen is required. A tiny quantity of blood loss, either internally or externally, will prevent the cells from getting the oxygen they need. Moreover, carbon dioxide, a byproduct of oxygen metabolism, will accumulate in the organs and cells, which causes the eventual death of the cells or organs [4].

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. Hypovolemic shock, however, is the most prevalent kind of shock among children suffering from diarrheal illnesses in underdeveloped nations. The hypovolemic shock comes in two flavors: hemorrhagic and non-hemorrhagic. Hemorrhagic shock is the outcome of a sudden drop in the effective intravascular volume due to hemorrhage [5].

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 [6]. 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 [7]. Each phase facilitates treatment. Ninety beats per minute heart rate, normal blood pressure, and more than 30 milliliters of urine per hour are considered to be in the first stage. 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. 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 [8].

To treat individuals suffering from hypovolemic shock, fluid loss must be stopped and circulation must be improved. The medical staff has to work together to provide hypovolemic shocked patients with the proper treatment as soon as possible. For the patient to succeed, effective collaboration and honest communication are essential [9].

Providing first aid to patients who have experienced trauma and hypovolemia shock, the A nurse is essential in assessing the patient's level of consciousness and vital signs, assessing the patient's level of consciousness, inserting the intravenous catheter, administering oxygen as prescribed by the physician, applying direct pressure to the site of any bleeding, increasing the intravenous fluid level as directed by the physician, and interpreting laboratory results that contribute to the diagnosis of hypovolemia [10]. Furthermore, by administering intravenous fluid and blood products as directed by a physician, closely monitoring the patient's urine output, and maintaining efficient perfusion of tissue Correct fluid volume loss can be prevented by adopting the trend-Lenberg posture, giving oxygen as prescribed to maintain normal pulse oximetry, and giving medicine as prescribed by a doctor [11].

Moreover, monitoring for serious side effects including cardiovascular overload and pulmonary edema is part of the nursing care provided to the patient during fluid replacement. Assisting the patient with hypovolemic shock while the nurse is involved helps prevent serious side effects such as multiple organ dysfunction syndromes, Acute tubular necrosis and acute respiratory distress syndrome can cause disseminated intravascular coagulation[2].

Before starting any specific treatment, Knowing the specific kind of shock is crucial. even if this can occasionally be difficult to perform. Undifferentiated shock is the term used to describe this. To learn more about differential diagnosis, please see the section below. For individuals who come with hypovolemic shock, differentiating between hemorrhagic and non-hemorrhagic hypovolemic shock is essential since it will dictate how they will be treated. To maximize survival and reduce the need for blood transfusions Early resuscitation and effective bleeding source management are critical in hemorrhagic hypovolemic shock. The treatment of bleeding sources can be done endoscopically, surgically, or, increasingly frequently, by interventional radiology. Hemorrhagic shock resuscitation had a higher success rate when blood products were used instead of crystalloids [12]. The study's purpose is to assess the knowledge of nurses regarding patients with hypovolemic shock.

Methods

A. Research Design

A cross-sectional, descriptive study approach was employed.at Al-Basrah teaching hospitals to assess nurses' knowledge regarding management of hypovolemic shock.

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B. Setting and Samples

The study was conducted at Al-Basrah Teaching Hospitals, including 120 nurses. The researchers use a non-probability (convenience) sampling method. Inclusion criteria include any nurse who works in the Intensive Care Units, both sexes (male and female), and agrees to participate in this study. Exclusion criteria involve any nurse who refuses to participate in this study. The study ran from November 10, 2022, until October 20, 2023.

C. Measurement and Data Collection

The study's instrument is a questionnaire (for knowledge) that was created and produced following in-depth evaluations of relevant papers and literature. There are four components to the study tool. The first section discusses the demographics of the research sample. The second and third sections address nurses' knowledge of hypovolemic shock, nursing care of hypovolemic shock. The second domain for nurses' knowledge consists of 10 questions in multiple-choice form, correct answer receives a score of one, while an incorrect answer receives a score of zero. Therefore, the researcher divided the knowledge domain into three levels according to the mean of score {Weak = (0 – 0.33), medium = (0.34 – 0.67), good = (0.68 – 1)}. Data is gathered using a developed questionnaire (Arabic version). The researcher is solely responsible for conducting the interviews with the study sample after providing an explanation and clarification of the study's objectives and obtaining each nurse's initial consent to participate in the study. It took around six to ten minutes for each nurse to finish filling out the questionnaire. The period of data collection ranged from November 2022 to February 2023.

D. Data Analysis

The data from this study were analysed using version 26 of the Statistical Package for Social Sciences (SPSS). Frequency and percentage were used to analyze the demographic variables (gender, age, years of experience, education level, and workplace). The mean of score and standard deviation were used for knowledge domains.

E. Ethics Approval and Consent to Participate

The ethical committee had approved the protocol of the study, College of Nursing, Basrah City, Iraq (November 8, 2022). All participants gave informed consent to be enrolled in the study.

Result and Discussion

A. Result

According to the study's findings, 69% of the participants were female, and 68% of them were in the 20–30 age range. The majority of nurses (56%) have fewer than five years of experience. When it comes to educational levels, the Nursing Institute has the biggest percentage (39%). Of these, 41% work in burns, surgery, and obstetrics.

According to the study's findings, most nurses have a solid understanding of the pathophysiology, symptoms, causes, case type, and age group at risk of hypovolemic shock, with a mean score of 0.68 on the knowledge domain. Nurses have a modest level of skill in the diagnosis, risk factors, and classification of hypovolemic shock at the mean score (0.34 – 0.67).

The average score and standard deviation (0.67+0.168) for the overall assessment of knowledge about hypovolemic shock were found to be medium in the study.

The research also shows how well the nurses handled hypovolemic shock. With a mean score of 2.34 to 3, most nurses agreed on the nursing care, nursing intervention, and intravenous solutions most commonly employed in conjunction with hypovolemic shock. The typical score for nurses who respond "don't know" about therapy is 1.67 – 2.33.

B. Discussion

Part I: Talking about the Study's Socio-Demographic Features The sociodemographic characteristics of the nurses included in this study serve as an example. In this study, participants' ages ranged from 20 to 30 years old, with 68% of them being female (69%) and equal numbers of men (31%). The majority of nurses (56%), in terms of years of experience, have fewer than five years of experience. In terms of educational levels, the Nursing Institute has the biggest percentage (39%). Most of them (41%) are employed in burns, surgery, and obstetrics. this result is in contrast with [13]. Hemorrhagic, hypovolemic shock was resuscitated with Ringer's solution using bicarbonate versus lactate. This result was in agreement with [14], whose study was about "Assessment on the management of hypovolemic shock in Galkayo public hospital, Somalia" who found that more than two-fifths of nurses were in the

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age group 30-40 years.

On the other hand, this result agreed with [15], in a study entitled "Nurses' knowledge toward traumatic head injury during golden hour" which found that about two-thirds of nurses were in the age group 20-24 years with a mean age of 25.1±6.77.

Part II: Regarding the nurses' understanding of hypovolemic shock, these findings are consistent with the conclusions that the majority of nurses (58%) have excellent knowledge, 39% have moderate knowledge, and 3% have inadequate knowledge. These outcomes concur with the findings [16].

Regarding the pathophysiology, signs and symptoms, etiology, case type, and vulnerable age group at the mean score (0.68 – 1), the majority of nurses are well-versed in hypovolemic shock. The nurse's understanding of the description, risk factors, and categorization of hypovolemic shock at a mean score (0.34 – 0.67) is deemed to be moderate.

The mean score and standard deviation of the total evaluation of knowledge for hypovolemic shock were both medium (0.67+0.168). This result was supported by [17], a study that reported that more than two-thirds of nurses were married.

Part III: Regarding the nursing care of hypovolemic shock, the majority of nurses (72%) concur, 27% are ignorant of the topic, and 3% disagree.

On the other hand, this result is contradicted by [18], in a study entitled "Effect of an education program on nurse's performance regarding traumatized patient care during the golden hour in the emergency room at Zagazig University Hospital" who found that more than half of nurses near to three-quarters of nurses had an unsatisfactory level of knowledge preprogram.

Regarding nurse intervention, nursing care, and intravenous solutions that are most frequently utilized in hypovolemic shock, the majority of nurses concur, with a mean score of 2.34 to 3. The mean score for nurses who indicated they didn't know about therapy was 1.67 to 2.33.

These findings concur with [19]. An Investigative Research to Create a Virtual Reality-Based Hypovolemic Shock Simulation Training Programme Focus group interviews were used in this qualitative study on nursing care. The standard deviation and mean score (2.52+0.310) for the overall evaluation of the nursing care of hypovolemic shock were in agreement with [20]: research and best practices in clinical gynecology and obstetrics.

Conclusions

The majority of participants in this research were female, and their ages ranged from 20 to 30. In terms of years of experience, the majority of nurses have worked for fewer than five years. When it comes to educational levels, the Nursing Institute has the largest proportion. They are mostly employed in obstetrics. The majority of nurses are well-versed in hypovolemic shock. The majority of nurses are proficient at managing hypovolemic shock.

N = 120 nursing personnel

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Descriptive Statistics of Demographic Variables			
Demographic Variables	**Variables Classes**	**F**	**Percent**
Gender	**Male**	**37**	**31%**
	Female	**83**	**69%**
	Total	**120**	**100%**
Age	**20 – 30**	**81**	**68%**
	30 – 40	**23**	**19%**
	More than 40	**16**	**13%**
	Total	**120**	**100%**
Years of experience	**Less than 5**	**67**	**56%**
	5 – 10	**40**	**33%**
	More than 10	**13**	**11%**
	Total	**120**	**100%**
Education level	**High school**	**27**	**23%**
	Nursing Institute	**47**	**39%**
	College of Nursing	**46**	**38%**
	Total	**120**	**100%**
Workplace	**Emergency, ICU, CCU**	**35**	**29%**
	Esoteric, fractures, kidney	**36**	**30%**
	Obstetrics, surgery, burns	**49**	**41%**
	Total	**120**	**100%**

Figure 1. *Distribution of the Variables Associated with the Demographic Features*

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Mean score and descriptive statistics for knowledge questions						
what domain is hypovolemic shock	N	Min	Max	Mean Score	Std. Deviation	Ass.
The definition of hypovolemic shock is the inability to…	120	0	1	0.57	0.498	Moderate
Which symptoms match those of hypovolemic shock?	120	0	1	0.79	0.408	Good
Why does shock from hypovolemia happen?	120	0	1	0.82	0.389	Good
What domain does hypovolemic shock fall under?	120	0	1	0.80	0.402	Good
Among the diseases that can be fatal are those that cause complications from hypovolemic shock: When hypovolemic shock occurs,	120	0	1	0.66	0.476	Moderate
Patients with hypovolemic shock typically are.....	120	0	1	0.72	0.448	Good
Being a medical practitioner, you know that the most susceptible age group needs to be identified.	120	0	1	0.55	0.500	Moderate
Which age group is most vulnerable?	120	0	1	0.68	0.470	Good
Among the diseases that can be fatal are those that cause complications from hypovolemic shock: When hypovolemic shock occurs,	120	0	1	0.43	0.498	Moderate
Patients with hypovolemic shock typically are.....	120	0	1	0.75	0.435	Good

Figure 2. *Consequently, the scope of knowledge for hypovolemic shock for N = 120 nursing staff members*

Mean Score	Frequency	Percentage	Assessment
0 – 0.33	4	3 %	Weak
0.34 – 0.67	47	39 %	Medium
0.68 - 1	69	58 %	Good
Total	120	100 %	

Table 1. *Overall Assessment of Knowledge about Hypovolemic Shock*

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	Management domain	N	Mean Score	Std. Deviation	Ass.
1	Maintain the person's warmth to prevent hypothermia.	120	2.47	0.840	Always
2	The ideal posture for a patient in hypovolemic shock	120	2.58	0.729	Always
3	Refusing to affix a foliar catheter to a patient experiencing vascular shock	120	2.33	0.853	Sometimes
4	Every fifteen minutes, check the vital signs of those who are in hypovolemic shock	120	2.77	0.586	Always
5	administering diuretics to a hypovolemic shock sufferer.	120	2.31	0.887	Sometimes
6	The patient was given two crucial solutions: normal saline and ringer lactated.	120	2.75	0.638	Always
7	As the patient lies down with his feet elevated, take his blood sample for the total blood percentage as soon as possible.	120	2.62	0.699	Always
8	Applying local pressure to the injured site to halt aggressive bleeding	120	2.74	0.642	Always
9	administering drugs like dopamine that stimulate the heart's pumping action	120	2.62	0.758	Always
10	Giving oxygen to a patient in hypovolemic shock is not essential.	120	2.29	0.854	Sometimes
11	Maintain the person's warmth to prevent hypothermia.	120	2.34	0.884	Always

Figure 3. *Results Domain of management about hypovolemic shock N= 120 nursing staff*

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