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NURSING DIAGNOSIS IN PATIENTS WITH HYPOGLYCEMIA IN THE EMERGENCY DEPARTMENT

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ABSTRACT

Hypoglycemia is a condition involving decreased blood glucose levels. It can cause symptoms affecting multiple systems and have serious consequences if left untreated. Nurses play a crucial role in swiftly and appropriately detecting and treating hypoglycemia in the emergency department. Research on nursing diagnoses was the first step in determining interventions for hypoglycemic patients in the emergency department of the Muhammadiyah Babat General Hospital. The study employed a descriptive retrospective design using secondary data from medical records. The study sample included 73 hypoglycemia patients admitted to the emergency room from January to December 2024, selected using consecutive sampling, and data was collected on May, 2025. The data was analyzed descriptively. The results showed that all patients experienced similar signs and symptoms: low blood glucose levels, drowsiness, decreased appetite, weakness, dizziness, strange behavior, and physical weakness. The nursing diagnosis that emerged for all patients was blood glucose level instability. These findings suggest that hypoglycemia has a consistent clinical impact and requires a structured nursing response. Decreased intracranial adaptive capacity, a diagnosis listed in the nursing pathway that is usually associated with severe hypoglycemia, was not found in this study. This may be due to limitations in neurological assessments and supporting examinations.

Keywords

Emergency Department, Hypoglycemia,Nursing Diagnosis

INTRODUCTION

Hypoglycemia is a condition in which blood glucose levels drop below normal (below 70 mg/dL), causing symptoms such as trembling, cold sweats, dizziness, loss of consciousness, and seizures. It is an emergency situation which must be treated immediately to prevent serious complications or even death (Dwi et al., 2024).

Hypoglycemia is frequently experienced by patients with diabetes mellitus, particularly those undergoing insulin therapy or taking oral hypoglycemic agents (Widyatama et al., 2023). Common

causes include excessive insulin doses, delayed eating, excessive physical activity, and impaired metabolic function (Riduansyah et al., 2023). Extreme drops in blood sugar levels can impair brain and central nervous system function, which can impact patient safety (Lega et al., 2023).

The World Health Organization (WHO) (2024) states that hypoglycemia is a serious complication that can worsen the quality of life for patients with diabetes. In Indonesia, the 2023 Basic Health Research (Riskesdas) found that 10.9% of patients with diabetes had experienced hypoglycemia (Kemenkes RI, 2023). These data indicate that this condition cannot be ignored, as it can lead to an increased number of patient visits to hospital emergency rooms (Ervina et al., 2023). Hypoglycemia requires a quick and appropriate response, including monitoring blood glucose levels, administering oral or parenteral glucose, and educating patients about proper diet and medication use (Arifin et al., 2022). Nurses in emergency rooms play an important role in this process because they are the first health workers to assess patients' conditions. Accurate nursing diagnoses are key to determining the appropriate intervention (Lowe et al., 2022).

Nursing diagnosis is the result of a nurse's clinical decision based on the patient's subjective and objective data as outlined in the formulation of nursing problems. This diagnosis directs appropriate and efficient nursing actions. SDKI (Indonesian Nursing Diagnosis Standards) is a national reference in determining nursing diagnoses that are appropriate to the patient's condition (Elsayed et al., 2023). However, in practice, diagnoses are often selected differently by different nurses because the selection is influenced by experience, knowledge, and understanding of applicable standards.

Widayanti (2021) showed that the most common diagnoses for patients with hypoglycemia were nutritional deficiency and fluid imbalance risk. Meanwhile, Setyawan (2022) stated that the dominant diagnoses were blood glucose level instability, acute pain, and self-care deficits. However, since the above research was conducted on only one person, it cannot be used as a reference for establishing nursing diagnoses in hospitals. Additionally, results from similar studies are limited. Therefore, researchers are interested in further research related to nursing diagnoses in hypoglycemia patients, especially during the acute phase in the emergency department.

This study aims to identify the most common types of nursing diagnoses in hypoglycemia patients in the emergency department of the Muhammadiyah General Hospital Babat Lamongan, based on the Indonesian Nursing Diagnosis Standards (SDKI).

METHOD

This quantitative study used a retrospective descriptive approach to identify nursing diagnoses in hypoglycemic patients based on medical record data. Data were collected from the General Hospital of Muhammadiyah Babat in Lamongan Regency from May 10-12, 2025, from medical records from January to December 2024.

The study population consisted of 119 patients with hypoglycemia in the emergency department during that same period. Using the consecutive sampling technique, 46 patient data were excluded because they did not meet the inclusion criteria. These criteria included hypoglycemia with stroke comorbidities, as this affected the results of the study. Thus, 73 patient data were determined as the research sample. The inclusion criteria were adult patients who entered the emergency

room with a hypoglycemia diagnosis, whether diabetic or non-diabetic, and who were hospitalized in the emergency room. Exclusion criteria included adult patients with hypoglycemia and comorbid diagnoses such as brain injury, stroke, or brain tumor, as well as patients undergoing outpatient care.

The research instrument was a recapitulation sheet that identified nursing diagnoses according to the Indonesian Nursing Diagnosis Standards (SDKI). The reviewed data included assessment data, which included signs and symptoms, as well as supporting data recorded in medical records. After obtaining permission from the hospital director, data collection was carried out. The researcher then communicated with the head of medical records to obtain the necessary data. Furthermore, the researchers independently selected data based on predetermined inclusion and exclusion criteria. They then took the necessary data to be included in the recapitulation sheet and tabulated and analyzed it descriptively.

This research was deemed ethically feasible by the Health Research Ethics Committee of Muhammadiyah Lamongan University on March 12, 2025 (Approval No. 242/EC/KEPK-S1/06/2025). To uphold client confidentiality, the researchers excluded personal identifiers such as names and registration numbers from the recapitulation sheet.

RESULTS

The total study sample included 73 adult patients who experienced hypoglycemia and were admitted to the emergency department at Muhammadiyah Babat General Hospital Hospital between January and December 2024, whether or not they had comorbidities.

Table 1 Respondents Demographic Data (n=73)

Variable	Characteristics	n	%
Gender	Female	50	68.5
	Male	23	31.5
	Total	73	100
Age (years)	<30	6	8.2
	30-45	15	20.5
	46-60	23	31.5
	>60	29	39.7
	Total	73	100
Education	Primary School	38	52.1
	Junior High School	18	24.7
	Senior High School	15	20.5
	Bachelor Degree	2	2.7
	Total	73	100
Occupation	Unemployed	48	65.8
	Self-employed	10	13.7
	Farmer	14	19.1
	Teacher	1	1.4
	Total	73	100

Table 2 Medical Diagnosis (n=73)

Medical Diagnosis	n	%
Diabetes mellitus type 2 + hypoglycemia	46	63
Diabetes mellitus type 2 + hypoglycemia+ sepsis	7	9.5
Diabetes mellitus type 1 + hypoglycemia + sepsis	7	9.5
Hypoglycemia	6	8.2
Diabetes insipidus + hypoglycemia + sepsis	4	5.4
Diabetes mellitus type 2 + hypoglycemia+ stemi	1	1.3
Hypoglycemia + stemi	1	1.3
Hypovolemic shock + hypoglycemia	1	1.3
Total	73	100

Based on Table 1, 39.7% of patients with hypoglycemia were over 60 years old, 68.5% were female, and 52.1% had an elementary school education. 8% were unemployed. As shown in Table 2, type 2 diabetes mellitus and hypoglycemia were the most common medical diagnoses, accounting for 46 cases (63%).

Table 3 Signs and Symptoms of Hypoglycemia (n = 73)

Signs and Symptoms	n	%
Low blood glucose level	73	100
Drowsiness	73	100
Decreased appetite	73	100
Appears weak	73	100
Dizziness	73	100
Abnormal behavior	73	100
Physical weakness	73	100
Headache	65	89.0
Pale appearance	57	78.1
Sweating	56	76.7
Decreased consciousness	45	61.6
Palpitations	35	47.9
Vomiting / Appears sluggish or weak	35	47.9
Trembling	30	41.1
Complains of nausea	28	38.6
Feeling like vomiting	28	38.6
Impaired cognitive function	25	34.2
No interest in eating	19	26.0
Diaphoresis	18	24.6
Grimacing	18	24.6
Impaired neurological reflexes	12	16.4
Pupil dilation	10	13.7
Capillary refill >3 seconds	7	9.6
Decreased skin turgor	7	9.6
Dyspnea	5	6.8

Note: one patient had more than one sign and symptom

Table 4 Nursing Diagnosis on Hypoglycemia Patients (n = 73)

Nursing Diagnosis	n	%
Blood glucose instability	73	100
Risk of injury	39	53.4
Risk of falling	28	38.4
Nausea	22	30.1
Ineffective peripheral perfusion	11	15.1
Acute pain	7	9.6
Ineffective breathing pattern	4	5.5
Impaired gas exchange	2	2.7
Impaired physical mobility	1	1.4
Risk of fluid imbalance	1	1.4

Note: one patient had more than one nursing diagnosis

According to Table 3, the most common signs and symptoms of hypoglycemia include drowsiness, decreased appetite, weakness, dizziness, low blood glucose levels, abnormal behavior, and physical weakness. As shown in Table 4, the most prevalent nursing diagnoses in hypoglycemia patients are related to blood glucose level instability, with some cases reaching up to 100%.

DISCUSSION

The results of the study showed that all hypoglycemia patients exhibited the same clinical signs and symptoms, including low blood glucose levels, drowsiness, decreased appetite, weakness, dizziness, strange behavior, and physical weakness. These symptoms are manifestations of the body's physiological response to a lack of glucose, the brain's and other body tissues' main source of energy (Yale et al., 2018). All patients had blood glucose levels below 70 mg/dL, indicating true hypoglycemia (Hadiatma, 2020). Low glucose levels are usually caused by an imbalance between food intake and the use of hypoglycemic drugs (Suropati, 2023).

The drowsiness experienced by all patients arises from decreased energy supply to the brain. Glucose is the central nervous system's only fuel, so a decrease in glucose levels causes a decrease in brain metabolic activity, resulting in drowsiness as a form of brain cell protection (American Diabetes Association, 2023). An overall decrease in appetite was also present. Hypoglycemia disrupts the function of the arcuate nucleus in the hypothalamus, which regulates hunger and is influenced by stress hormones, such as epinephrine, that suppress the appetite center (Riduansyah et al., 2023).

All patients exhibit physical weakness due to decreased ATP production in muscles and nerve cells caused by insufficient glucose (Romalina, 2023). This interferes with muscle contraction, causing the body to feel tired, weak, and slow to respond to stimuli (Romalina, 2023). The dizziness experienced by all respondents arises from impaired cerebral perfusion and decreased electrical activity in areas of the brain responsible for balance and consciousness. This dizziness is influenced by vasoconstriction due to stress hormones (Purba, 2020). Behavioral changes, such as agitated confusion or unfocused speech, were also observed in all patients. These changes indicate disturbances in the prefrontal cortex and limbic system due to glucose deficits affecting the regulation of emotions and cognition (Putri, 2024). Physical weakness is one of the most easily recognized symptoms because the body lacks energy due to disruption in the glycolysis pathway and Krebs cycle, which ultimately causes the body to be unable to function optimally (Amin, 2020).

The symptoms observed in this study, such as trembling, cold sweat, hunger, pale, anxiety, and decreased consciousness, are consistent with previous findings on the typical signs of hypoglycemia (Riduansyah et al., 2023). These symptoms are an adaptation of the body to metabolic stress, particularly that involving the central nervous system (Budiawan et al., 2020).

However, research by Hölzen et al. (2024) shows that not all patients with hypoglycemia display clinical symptoms. Some patients experience hypoglycemia without any specific complaints, which can increase the risk of delayed treatment. It can be concluded that the symptoms of hypoglycemia vary, with some patients displaying symptoms and others not, which may be correlated with the amount of glucose reduction in the blood.

The symptoms of hypoglycemia describe how the body responds to a lack of glucose as its main energy source. This is especially true for the brain and central nervous system (Temorubun, 2023). In terms of care, recognizing symptoms as signs of metabolic disorders that require immediate treatment is important, as is monitoring blood glucose levels (Dwiyatna et al., 2022).

The most prominent and consistent nursing diagnosis in all patients in this study was blood glucose level instability. This diagnosis reflects the body's inability to maintain blood glucose levels within normal, safe limits (Ervina et al., 2023). Previous studies have also noted this diagnosis in hypoglycemic patients in various hospitals, such as Dr. Ramelan Surabaya General Hospital (Setyawan, 2022) and Sultan Agung Islamic Hospital in Semarang which noted additional diagnoses of risk of injury and nutritional deficits (Widayanti, 2021).

According to the Indonesian Nursing Diagnosis Standards (SDKI), a diagnosis of blood glucose instability ca n be made based on symptoms such as low blood sugar, weakness, impaired consciousness, and other signs of neuroglycopenia (PPNI, 2019). This diagnosis is important because it is directly related to the risk of serious complications, such as coma, seizures, or even death, if not treated quickly and appropriately (Sukmadani, 2020). Therefore, it is crucial to understand the symptoms and determine the right nursing diagnosis when handling hypoglycemic patients in the emergency room.

In addition to blood glucose level instability, the SDKI lists other diagnoses found in hypoglycemic patients, including risk of injury, risk of falling, nausea, ineffective peripheral perfusion, acute pain, ineffective breathing patterns, gas exchange

disorders, physical mobility disorders, and risk of fluid imbalance (PPNI, 2019).

Some nursing diagnoses commonly found in previous studies on hypoglycemic patients, such as "self-care deficit and skin integrity disorder" (Temorubun, 2023), did not appear in this study. This is because the assessment focused more on the acute physiological conditions that were apparent at the onset when the patient first arrived at the emergency department, prioritizing the management of hypoglycemia from a critical care perspective to save lives rather than other nursing issues that could be addressed after the patient was transferred to inpatient care (Rohmah et al., 2023).

Limitation of this study include its reliance on secondary data derived from medical records, so researchers cannot verify patients' conditions when data was missing. The data collection process depended heavily on medical records in terms of both data availability and completeness. This has the potential to affect the speed and efficiency of the data collection process.

CONCLUSIONS

The most common signs and symptoms in patients with hypoglycemia include low blood glucose levels, drowsiness, decreased appetite, apparent weakness, dizziness, abnormal behavior, and physical weakness. The most prominent nursing diagnoses identified in patients with hypoglycemia are blood glucose instability, risk of injury, risk of falling, nausea, ineffective peripheral perfusion, acute pain, ineffective breathing patterns, impaired gas exchange, impaired physical mobility, and risk of fluid imbalance.

It is recommended that future researchers conduct real-time data collection, although this may require extended research time to produce more valid and comprehensive results. Accurate assessment will significantly aid in determining precise nursing diagnoses.

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