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Application of The Critical-Care Pain Observation Tool In Patients With Decreased Consciousness

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ABSTRACT
Background: Patients with decreased levels of consciousness may have difficulty communicating pain verbally. In such circumstances, observational assessment can help nurses document behavioral responses that may be associated with pain; however, the findings must still be interpreted in conjunction with the patient's clinical condition.
Objective: To describe the application of the Critical-Care Pain Observation Tool (CPOT) in three adult patients with decreased levels of consciousness in the Emergency Department (ED) of RSUD dr. Kanujoso Djatiwibowo, Balikpapan.
Methods: This descriptive case series included three adult patients diagnosed with non-hemorrhagic stroke, head injury, and diabetic ketoacidosis. The cases were documented between August 10 and 14, 2026. Each patient underwent one CPOT assessment, and the findings were presented descriptively according to the four CPOT domains and the total score.
Results: The patient with stroke and a Glasgow Coma Scale (GCS) score of 7 had a CPOT score of 6, comprising facial expression 2, body movement 2, muscle tension 1, and vocalization 1. The patient with head injury and a GCS score of 7 also had a score of 6, with the same domain scores. The intubated patient with diabetic ketoacidosis who was receiving mechanical ventilation scored 0 across all four observed domains. These scores describe the behaviors observed at the time of assessment.
Conclusion: CPOT can provide a structured approach to documenting behavioral responses in patients with decreased levels of consciousness who cannot adequately self-report pain. A score of 0 indicates that no behavioral indicators of pain were observed during the assessment and does not establish the complete absence of pain. This case series did not evaluate the effectiveness or diagnostic accuracy of CPOT.

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INTRODUCTION

Pain is an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage. Because pain is subjective, a person's inability to communicate verbally cannot be taken as evidence that pain is absent (Raja et al., 2020). A patient's self-report remains the primary source of pain assessment when

communication is possible, but this approach may not be feasible in patients with decreased levels of consciousness.

Patients with decreased levels of consciousness may experience pain due to underlying disease, trauma, or diagnostic and therapeutic procedures. When patients cannot provide a subjective report, nurses can observe facial expression, body movement, muscle tension, vocalization, or ventilator compliance. CPOT organizes these observations into four domains, each scored from 0 to 2, with a total score ranging from 0 to 8. The vocalization domain is used for non-intubated patients, whereas ventilator compliance is assessed in patients receiving mechanical ventilation (Gélinas et al., 2006, 2007; Zhai et al., 2020).

Several studies have evaluated the measurement properties and application of CPOT in critically ill patients, including patients with brain injury, hemiparesis or cognitive dysfunction, and those receiving mechanical ventilation (Gélinas et al., 2021; Liu et al., 2021; Hamadeh Kerbage et al., 2021). Cross-cultural adaptation and validation of the Indonesian version have also been reported (Asriyanto & Chayati, 2024). Validation studies conducted in different populations and languages support further use of the instrument, but do not automatically establish equivalent performance in every ED setting (Marques et al., 2022; Yamada & Ikematsu, 2021).

This case series has a limited objective: to describe the application of CPOT in three ED patients with different causes of decreased consciousness in an emergency-care context (Ministry of Health of the Republic of Indonesia, 2018). It was not designed to test validity, diagnostic accuracy, effectiveness, or causal relationships. The focus is on presenting the responses recorded in each CPOT domain and emphasizing the need for documentation and interpretation appropriate to the clinical context.

METHODS

Design and setting

This article used a descriptive case-series approach to describe the application of CPOT in three adult patients with decreased levels of consciousness in the ED of RSUD dr. Kanujoso Djatiwibowo, Balikpapan, Indonesia. Case data were collected between August 10 and 14, 2026. This design was not an instrument-validation study, intervention trial, or analysis of causal relationships.

Case selection and data collection

The three cases involved patients diagnosed with non-hemorrhagic stroke, head injury following a traffic accident, and diabetic ketoacidosis. The information analyzed included clinical condition, level of consciousness, airway status, observed behavioral responses, information provided by family members, and the recorded CPOT scores for each case. Each patient underwent one CPOT assessment. Information reported by family members was distinguished from responses directly observed during the assessment.

CPOT includes facial expression, body movement, muscle tension, and vocalization or ventilator compliance, depending on the patient's condition. Each domain is scored from 0 to 2, giving a total score ranging from 0 to 8. Domain and total scores are presented as recorded during the assessment of each case; scores were not reconstructed from the clinical narratives.

Analysis

The findings were summarized descriptively by medical diagnosis, reported level of consciousness, ventilation status, individual CPOT domain scores, and total score. No inferential tests, pre–post comparisons, or diagnostic-accuracy calculations were performed.

Ethical considerations

Ethical approval was obtained from the Research Ethics Committee (TIM KEPK) of RSUD dr. Kanujoso Djatiwibowo, Balikpapan, under approval letter number

400.14.5.4/0289/10/RSKD/VIII-2026. Consent was also obtained from the patients' families. Patient identities were anonymized, and clinical information was limited to details relevant to this report.

RESULTS

Three adult patients with decreased levels of consciousness were described. The first two patients were unable to provide an adequate pain report and showed behavioral responses assessed using the CPOT domains. The third patient had a severely decreased level of consciousness, was intubated, and was receiving mechanical ventilation.

Table 1. CPOT domain and total scores across the three cases

Case	Clinical condition	Consciousness/airway status	Facial expression	Body movement	Muscle tension	Vocalization/ ventilator compliance	Total score
1	Non-hemodinamic stroke	GCS 7 (E1 V2 M4); not intubated	2 grimacing / furrowed brow	2 limb withdrawal / restlessness with stimulus	1 muscle tension during mobilization	1 groaning	6
2	Head injury following a traffic accident	GCS 7 (E1 V2 M4); not intubated	2 grimacing / furrowed brow	2 limb withdrawal with stimulus	1 visible muscle tension	1 groaning	6
3	Diabetic ketoacidosis	E1 V-ETT M1; intubated and receiving mechanical ventilation	0 no grimacing observed	0 no protective movement observed	0 no increased muscle tension observed	0 synchronized with ventilator	0

The third patient's GCS was recorded as E1 V-ETT M1; the verbal component could not be assessed because the patient was intubated.

Case 1: Non-hemorrhagic stroke

The first patient was a 58-year-old woman with non-hemorrhagic stroke and decreased consciousness. Her GCS was recorded as 7 (E1 V2 M4). Her family reported that she had complained of a headache before her level of consciousness declined. During the assessment, she was unable to provide an adequate pain report. Observations included grimacing and a furrowed brow (score 2), limb withdrawal and restlessness in response to a stimulus (score 2), muscle tension during mobilization (score 1), and groaning (score 1). The recorded total CPOT score was 6.

Case 2: Head injury

The second patient was a 35-year-old man brought to the ED following a traffic accident, with a head injury and decreased consciousness. His GCS was recorded as 7 (E1 V2 M4). According to his wife, he had complained of a severe headache after the incident before his responsiveness declined. During examination and mobilization, he grimaced (score 2), withdrew a limb in response to a stimulus (score 2), showed muscle tension (score 1), and groaned (score 1). The recorded total CPOT score was 6.

Case 3: Diabetic ketoacidosis

The third patient was a 42-year-old woman with diabetic ketoacidosis, a severely decreased level of consciousness, endotracheal intubation, and mechanical ventilation. Her neurological status was recorded as E1 V-ETT M1; the verbal component could not be assessed because she was intubated. At the time of assessment, no facial changes suggesting grimacing

(score 0), protective movements (score 0), increased muscle tension (score 0), or ventilator asynchrony or resistance (score 0) were observed. The recorded total CPOT score was 0. This finding indicates only that no behavioral indicators were observed at the time of assessment; it does not prove that the patient was not experiencing pain.

DISCUSSION

This case series describes the application of CPOT in three ED patients with decreased levels of consciousness due to different clinical conditions. The recorded total scores were 6 for the patient with stroke, 6 for the patient with head injury, and 0 for the patient with diabetic ketoacidosis receiving mechanical ventilation. These findings are descriptive observations from three cases and do not establish diagnostic accuracy, effectiveness, or causal relationships between diagnosis, level of consciousness, and pain responses.

In the first two cases, the CPOT score of 6 consisted of facial expression 2, body movement 2, muscle tension 1, and vocalization 1. This pattern illustrates that observable behaviors can be documented systematically even when patients cannot provide an adequate pain report. Family reports of headache before the decline in consciousness provide contextual history and should not be treated as direct observations made during CPOT assessment.

CPOT organizes observed behaviors into structured domains. The literature supports the use of observational tools to assist pain assessment in critically ill patients who cannot self-report, although findings must still be interpreted alongside neurological status, ventilation status, possible medication effects, and the circumstances of observation (Asriyanto & Chayati, 2024; Hamadeh Kerbage et al., 2021; Korean Society of Critical Care Medicine, 2022; Lewis et al., 2025; Zhai et al., 2020). CPOT implementation research also highlights the importance of structured application in clinical practice (Alotni et al., 2025). In patients with neurological injury, motor responses and behavioral expressions must be interpreted in the context of the underlying condition (Gélinas et al., 2021; Liu et al., 2021).

The third case illustrates the need for caution when interpreting a score of 0. This score means that no behavioral indicators of pain were observed during the assessment. It cannot be used to conclude that the patient was definitely pain-free, particularly in a patient with severe impairment of consciousness who is intubated. Reviews of pain assessment in sedated, mechanically ventilated adults emphasize the need to consider the limitations of observable responses and the clinical context (Hamadeh Kerbage et al., 2021; Korean Society of Critical Care Medicine, 2022; Lewis et al., 2025). Records of sedation, analgesics, or other factors that could influence behavioral responses should be reviewed; if such information is unavailable, their effects cannot be determined.

In patients receiving mechanical ventilation, the fourth CPOT domain assesses ventilator compliance rather than vocalization. Documentation should therefore specify the indicator assessed and the score assigned for that domain. In intubated patients, the verbal component is recorded as V-ETT because it cannot be assessed through ordinary verbal responses. Accordingly, the third patient's neurological status is recorded as E1 V-ETT M1, without assigning a numerical score to the verbal component.

The practical contribution of this report is to emphasize the importance of recording each domain score, the total score, the behaviors supporting the scores, ventilation status, and the assessment context together. Structured assessment and clear documentation can support communication among healthcare professionals, while family information can supplement the patient's history without replacing direct observation (Rababa et al., 2021; Shahid et al., 2022). CPOT does not replace neurological examination, emergency assessment, clinical history, information from family members, or the nurse's professional judgment.

LIMITATIONS

This report includes only three cases with different clinical conditions; therefore, the findings cannot be generalized to all ED patients with decreased levels of consciousness. Each patient underwent only one CPOT assessment. No repeated assessments, pre–post analgesic comparisons, comparisons with other instruments, or diagnostic-accuracy testing were performed. Information about formal assessor training, assessment by a second observer, and

exposure to analgesics or sedatives at the time of assessment was not analyzed. The findings should therefore be understood as a description of CPOT application in a specific context.

CONCLUSION

In three adult ED patients with decreased levels of consciousness, CPOT was used to document observable behavioral responses. The patients with stroke and head injury each had a total score of 6, whereas the patient with diabetic ketoacidosis receiving mechanical ventilation had a score of 0. A score of 0 indicates that no behavioral indicators of pain were observed during assessment and does not rule out the possibility of pain. This report describes CPOT application in three cases and does not demonstrate the instrument's effectiveness or diagnostic accuracy. CPOT findings should be integrated with the clinical condition, neurological examination, patient history, family information, and clinical judgment.

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