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ANALYSING TRAUMATIC BRAIN INJURY CARE THROUGH INDONESIAN NURSING STANDARDS: A CASE REPORT APPROACH

A Danang Asmara[1], Mikha Christina[1], Lutfi Rahman[1], Lurdes Acorta Freitas[1], Rurin Masruroh[1], Nur Azmi[1], Anastasia Anna[2]*

[1]Master of Nursing, Faculty of Nursing, Universitas Padjadjaran, Sumedang, Indonesia
[2]Critical and Emergency Nursing Department, Faculty of Nursing, Universitas Padjadjaran, Sumedang, Indonesia

***Corresponding Author:**
Anastasia Anna
Critical and Emergency Nursing Department, Faculty of Nursing, Universitas Padjadjaran, Sumedang, Indonesia.
anastasia.anna@unpad.ac.id

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ABSTRACT

Emergency nursing requires specialized skills and resources to address complex patient needs. However, the emergency nursing process is often underutilized, impacting care quality and patient safety. This case study evaluates nursing care for a 20-year-old male with head trauma following a traffic accident using the Indonesian Nursing Care Standards (SDKI, SIKI, SLKI). The patient, with a Glasgow Coma Scale of 7, presented with a head wound, gurgling airway, vomiting, and signs of increased intracranial pressure. Key nursing problems identified included ineffective airway clearance, ineffective breathing patterns, and the risk of ineffective cerebral perfusion. Interventions included suctioning, oxygen therapy, and positioning, but several gaps in the standards were noted, particularly in diagnosis, measurable outcomes, and intervention guidelines. This study highlights the need to refine the Indonesian Nursing Care Standards for emergencies, focusing on priority-based problem identification and evidence-based guidelines. These adjustments can improve decision-making, enhance care consistency, and reduce complications, ultimately improving patient outcomes and trust in emergency nursing services.

Keywords:
Emergency department, Indonesian nursing care standards, Traumatic brain injury

BACKGROUND

Emergency nursing is evolving as a specialized practice requiring progressive care to address dynamic nursing problems (Emergency Medicine Programme, 2021). In Indonesia, the Indonesian National Nurses Association (PPNI) has established nursing care standards, including SDKI (nursing diagnoses), SIKI (nursing interventions), and SLKI (nursing outcomes), to improve service quality and patient safety (Awaliyani et al., 2021; Talahatu et al., 2022). Despite these standards, clinical practice in emergency rooms presents unique challenges that may impact care quality. Studies show that over 50% of emergency nurses often neglect the nursing process, highlighting the need to evaluate the application of standardized care (Oka et al., 2020; Thayer et al., 2021). Head trauma, a major cause of global death and disability, serves as a critical case to assess the effectiveness of these standards in emergency settings (Saavedra-Mitjans et al., 2021).

Traumatic Brain Injury (TBI) requires rapid, accurate, and efficient management, starting with triage and history-taking to identify the severity of the injury (Currie et al., 2019). However, studies indicate that many nurses demonstrate poor practices in managing head trauma, emphasizing the importance of knowledge and skills in early intervention (Khan et al., 2023; Meister et al., 2021). Although SDKI, SIKI, and SLKI provide nationally recognized frameworks, their implementation often overlooks cultural differences and the uniqueness of emergency nursing (Dwi Fibriansari et al., 2022). This study evaluates the effectiveness of applying these nursing care standards to TBI patients through a case report of a head trauma case in an Indonesian emergency department following PPNI guidelines.

METHODS

This research employed a case report approach to describe the nursing process in a patient with acute traumatic brain injury (Rison, 2013). The sample consisted of one patient who had been diagnosed with a head injury and subsequently developed symptoms of a brain hemorrhage. Nursing assessments were carried out on patients who met the inclusion criteria, with a focus on evaluating nursing care for those with traumatic brain injuries. The ethical principles guiding this study included autonomy, by providing information and respecting patients' independent decisions; beneficence, by ensuring the best possible benefits for patients during the research; non-maleficence, by preventing or minimizing harm to patients; and veracity, by offering truthful and accurate information to both patients and relevant parties. Data analysis was conducted qualitatively by detailing the nursing assessment results of the selected patient. These findings were then compared with existing theories on nursing care.

RESULTS

A 20-year-old Garut University student was escorted by local residents to the emergency room of General Hospital on April 04, 2024 at 02.00 GMT+7, after getting into a traffic accident. Based on information from residents, the patient was riding a motorcycle at high speed and not wearing a helmet. The patient looked very sick and had head trauma with a suspected cervical fracture. On examination of consciousness, the patient responded to pain stimulation, so he was placed in the resuscitation room. All examinations and actions in the emergency room are documented in the nursing emergency care plan, as shown in Table 1.

At the airway and cervical control stage of the examination, gurgling sounds were heard, and the patient vomited blood once with a volume of about 20 cc of fresh red color. There were signs of edema and bruising on both eyelids/raccoon eyes. There was an open wound on the left temporal with suspicion of cervical fracture. The nursing problem that was established was ineffective airway clearance. The first nursing action taken was when the patient vomited; the patient was logrolled to the left to remove vomit. After there was no vomit, suction was performed for 10 seconds to pull the remaining vomit. After suction, the airway patency was evaluated. An Oropharyngeal Airway (OPA) was placed to anticipate the tongue's base blocking the airway. Then, the nurse performed cervical control on the patient because there was a suspicion of a cervical fracture characterized by an open wound in the left temporal area accompanied by decreased consciousness.

At the breathing examination stage, an inspection found that the patient's breathing frequency was 30 times per minute with 91% oxygen saturation. The patient appeared short of breath with the use of breathing muscles. The respiratory rhythm was irregular, and the chest development was symmetrical; there were no traces of open wounds in the chest area, and there was no tracheal shift and jugular vein elevation. No abnormalities were found on auscultation, percussion, and chest palpation. The nursing problem raised is ineffective breathing patterns. Ac-

Table 1. Nursing Emergency Care Plan

Nursing Assessment	Nursing Problem Diagnose	Nursing Intervention
A. AIRWAY		
	□ Risk / Ineffective airway clearance □…… ..	□Airway clearing
clear		□ Neck collar
□Not Clear		□ suction
□Tounge fall		□ Head tilt-chin lift
□Sputum □Blood		□ Jaw thrust
spasm foreign object		□ Heimlich maneuver
Airway sound:		□ Oro/ nasopharyngeal airways
□Gurgling □Stridor normal		□ Fowler/ semi fowler positions
No airway sound		□ Effective cough technique
.....		.....
B. BREATHING		
	□Risk / ineffectiveness breathing pattern	□Observing frequency: rhythm, deep breathing
1. Breathing pattern	risk / Gas exchange disorders □……	□Observing signs of distress breathing: use of breathing muscle, intercostal retraction
□Apnea congestion		□*Semi fowler* if no contraindication
□Bradipnea □Tachipnea		chest physiotherapy if there are no contraindication
s orthopnea		
2. Respiratory frequency: 30 times/minute		
O2 saturation: 91%		
3. Breathing sound		Collaboration:
□Vesicular □Wheezing		□ Oxygen: NRM 10 liter/minutes
□Ronchi □Stridor		□ Blood gas artery
4. Breathing rhythm		
□Regular □Irregular		
5. Sign of breathing distress		
□Use of muscle breathing		
□Chest retraction / intercostal		
nostrils		
6. Types of breathing		
□Chest breathing		
abdominal breathing		

A. CIRCULATION		
	risk / ineffective tissue perfusion risk/fluid volume deficit □……	□Pulse measurement
1. Acral: □Warm □Cold		□Acral measurement
2. Anemic: □nes □No		□BP measurement
3. Cyanosis: □Yes □No		□Give fluids orally
4. Capillary refill time: □< 2 second □> 2 second		□Monitoring turgor skin, mucosa membrane, and capillary refill time
5. Pulse:		□Give direct pressure to the bleeding source
a. Frequency: 125 times/minutes		□Put in shock position
b. Rhythm: □Reguler. irregular		□Urinary catheter
c. Power:		□Monitoring intake and output fluid
□Strong □Weak		Identifying bleeding source
6. BP: 110/ 80 mmHg MAP: 60 mmHg		Collaboration:
7. Skin: □Moist □Dry		□IV line installation, Asering 500 cc
8. Turgor: □ Normal□ Less normal		
B. DISABILITY		
	□~~Risk~~ / ineffective cerebral tissue perfusion	□Observing consciousness level
1. Consciousness level: Somnolen		□Pupil assessment
2. GCS: E:1 M:4 V:2		□Muscle strength measurements
3. Pupil □ isokor □ anisokor		□Pain assessments
Light Responses: +		□Head up 15-30 degrees if no contraindications
Diameter: 2 mm		
4. Extremity		Collaboration:
Sensoric: □Yes □No		giving therapy for indication
Motoric: □Yes □No		
1. Muscle strength: 0 0 0 0		

A. EXPOSURE		
1. Any trauma: Faces	□Pain	□Pain assessment and PQRST
2. Any lesion: faces		□Teaching relaxation techniques
3. Wound size:	□Physical mobility impairment	□Limit activities that increase pain activity
4. Depth of wound:		□Observing signs of compartments syndrome
		□Dressing
		□Splinting
		Collaboration: .....

Table 2. Diagnosis from Case Study

Diagnosis / Problem	Intervention	Outcome
Ineffective Airway Clearance	1. Logrolled to clear vomit. 2. Suctioned for 10 seconds. 3. OPA inserted. 4. Cervical control performed.	Airway cleared, patency restored, and cervical control ensured to prevent further injury.
Ineffective Breathing Patterns	1. Administered oxygen using a Non-Rebreathing Mask (NRM) at 10 liters per minute. 2. Evaluated oxygen saturation after 5 minutes (increased to 96%). 3. Observed breathing patterns (frequency, rhythm, depth, respiratory distress signs). 4. Placed patient in semi-Fowler position. 5. Installed a heart monitor to monitor ECG and detected sinus tachycardia. 6. Monitored vital signs (blood pressure, pulse rate, body temperature).	Oxygen saturation improved to 96%, and respiratory distress signs were reduced with the semi-Fowler position. Stable vital signs. ECG showed sinus tachycardia.
Bleeding and Potential Fractures	1. Dressed wounds with sterile gauze. 2. Bandaged suspected fractured femur. 3. Established an intravenous (IV) line with fluids at 20 drops per minute. 4. Inserted Foley catheter and monitored urine output (150 cc in 1 hour).	IV Fluids were administrated. Bleeding was controlled with wound dressing, and the suspected fractures were addressed with bandaging and monitoring.
Risk of Ineffective Cerebral Perfusion	1. Elevated the patient's head by 15-30 degrees. 2. Monitored and observed changes in the patient's level of consciousness. 3. Assessed pupil size and response.	The patient's level of consciousness was monitored, and pupil responses were evaluated, with no further deterioration noted.

tions taken in the form of oxygen installation using a Non-Rebreathing Mask (NRM) 10 liters/ minute. Evaluation was carried out 5 minutes after the installation of oxygen, and oxygen saturation rose to 96%. After that, observation of frequency, rhythm, depth of breathing, signs of respiratory distress (use of respiratory muscles, intercostal retraction, nasal breathing), and giving semi-fowler position.

At the circulation examination stage, the patient's blood pressure was 110/80 mmHg, with a body temperature of 36.5°C and a pulse of 125 beats per minute. The patient's acral was cold. The patient's capillary refill time was less than 2 seconds. There was no cyanosis on the upper or lower extremities. An intravenous (IV) line was placed with asering fluid at 20 drops per minute. No nursing problems were raised during the circulation examination. A heart monitor was installed with an ECG picture of sinus tachycardia for regular monitoring. After the circulation check, the nurse performed an exposure check. At the exposure examination stage, there were wounds and traces on the left temporal area, cheek, and chin, and there was bruising on the patient's eyelids. The patient was bleeding about 20 cc from the wound on the left temporal area. A fracture of the sinistra femur was suspected. There was a three-manus digit fracture on the left arm. No nursing problems were raised after the discovery of bleeding. Nursing actions taken were wound dressing using sterile gauze on the bleeding area and bandaging of the sinistra femur. A foley catheter was inserted with urine output of 150 cc in the first 1 hour and yellow.

During the disability assessment, the patient experienced a decrease in consciousness in the emergency room. Evaluation of the level of consciousness showed a GCS (Glasgow Coma Scale) 7 result of E (Eye) 1 M (Motoric) 4 V (Verbal) 2. On examination of the pupils, the reflexes of both pupils to light are positive and isochor 2 mm/2 mm. The nursing problem raised is the risk of ineffective cerebral perfusion. Head up 15-30 degrees was performed, followed by evaluation and observation of changes in the patient's level of consciousness and pupil size and response. At the exposure examination stage, there were wounds and imprints on the left temporal area, cheek, and chin, and there was bruising on the patient's eyelids.

Other nursing diagnoses in this case include Impaired Gas Exchange, Risk for Seizures, Impaired Skin Integrity, and Risk for Infection. Although these diagnoses are crucial, they are not addressed as immediate priorities due to the urgency of stabilizing critical conditions in the emergency room. However, they underscore the importance of a comprehensive nursing approach that prioritizes immediate life-saving measures while also considering long-term patient outcomes. All the diagnoses identified in the case are presented in Table 2.

Ethical principles were applied. Autonomy was respected by gathering information from family when the patient couldn't communicate, ensuring decisions aligned with their preferences. Beneficence was demonstrated by prioritizing life-saving actions, such as securing the airway and managing respiratory issues, to maximize the patient's chances of recovery. To prevent further harm, non-maleficence was upheld through careful handling, particularly with cervical spine precautions. Veracity was maintained by providing clear and honest updates to the family about the patient's condition and treatment. These principles guided the healthcare team's actions, balancing urgent care with respect for the patient's rights and safety.

Follow-up And Outcomes

During the follow-up stages, the patient's condition remained critically unstable. Despite initial stabilization efforts, the Glasgow Coma Scale (GCS) score failed to improve, and the patient continued to exhibit signs of significant neurological impairment, indicating a poor prognosis for recovery. Oxygen saturation levels were persistently low at 92%, and the patient experienced episodes of respiratory distress, which necessitated ongoing oxygen therapy via a Non-Rebreathing Mask at 15 liters per minute. The patient's wounds showed only minimal signs of healing, with increasing signs of infection, requiring frequent wound care, including debridement and the administration of broad-spectrum antibiotics.

The Foley catheter remained in place and was functioning; however, there were concerns regarding urinary retention and a noticeable decrease in urinary output, both of which were closely monitored and managed. Circulatory instability persisted, with fluctuating blood pressure, recorded at 148/92 mmHg, and signs of hypovolemia, including poor peripheral perfusion, necessitating increased intravenous fluid administration to stabilize circulatory volume. By the end of the treatment period, the patient's recovery trajectory remained uncertain, with the ongoing need for intensive monitoring and therapeutic interventions. Despite all efforts to manage the patient's condition, the overall prognosis remained guarded, with nursing interventions focused on preventing further deterioration and addressing complications as they arose.

DISCUSSION

In emergencies, nurses must apply critical thinking to provide nursing care. In addition to intervening quickly, precisely, and accurately, nurses must also understand the service process, diagnosis, interventions, and outcomes per the unit's applicable standards. This understanding is very important to assist nurses in making clinical decisions efficiently and appropriately. Decision-making by nurses in caring for patients with acute conditions is very complex. Therefore, nurses should deepen their understanding of emergency decision-making (Nibbelink and Brewer, 2018). This in-depth understanding will help nurses meet the goal of the emergency room, which is to provide optimal, fast, precise, and integrated health services in emergency management to prevent death and disability, with an initial response time of no more than five minutes and a definitive treatment time of no more than two hours (ElGammal, 2014).

The appointment of the diagnosis of ineffective airway clearance in the case above shows some data that supports the suitability of the causes classified in the SDKI, namely due to secretions retained in the airway. In this case, there was residual blood vomit in the airway, and a gurgling sound was heard, so suction was performed. This intervention follows SIKI on airway management, namely therapeutic measures by suctioning mucus for less than 15 seconds. OPA insertion is done immediately to prevent the base of the tongue from closing the airway. The timeliness of the evaluation has yet to be explained in the SLKI. It will cause variations in the timing of the evaluation and, of course, affect the documentation results, which causes a decrease in the quality of the actions provided.

The log roll technique performed on the patient when the patient vomits can reduce the risk of aspiration. There is a suspicion that the patient has a cervical injury with the observation results obtained by the patient experiencing decreased consciousness, an open wound on the left temporal, nausea vomiting accompanied by shortness of breath with a breathing frequency of 30 times per minute, this is following that patients who experience cervical injury one of the symptoms is that the patient will lose part or all of the sensory and / motor function (including respiratory muscle function) resulting in respiratory complications (World Health Organization (WHO), 2021). Patients with cervical spine injuries can be given a tilted position with the logroll technique to reduce the risk of aspiration by keeping the head and neck in a fixed position in this case (Grasselli et al., 2023), the neck collar intervention was not performed before the logroll, thus risking worsening the injury (Atmadja et al., 2021). Logrolling without cervical fixation may increase the risk of secondary injuries to the spine, such as cervical fractures that are not detected initially. Missing cervical fixation can aggravate the injury and worsen the patient's condition (Grenier et al., 2022). Barriers to cervical fixation during logrolling include limited equipment, time constraints, and inadequate training. Addressing these requires ensuring equipment availability, regular training, and integrating cervical stabilization into emergency protocols and simulations (Ladny and Gawel, 2022). Neck collar placement is done after the logroll, but neck fixation is not done during the logroll. This shows that there needs to be a systematic review sequence in the emergency room so that the interventions carried out are not missteps.

On inspection of the chest, there was an increased breathing pattern of up to 30 times per minute, irregular breathing rhythm, and the use of breathing muscles. The nursing diagnosis raised in the case was ineffective breathing patterns. Respiratory frequency of less than 12 times per minute or more than 24 times per minute increases the risk of poor care outcomes in patients with head injuries (Ristanto et al., 2016). Based on a previous study, the cushing triad reflex is in the form of widening pulse pressure (increased systolic pressure, decreased diastolic pressure), bradycardia, and irregular breathing, with an increase in blood pressure as a reflex to brainstem ischemia seen in patients with increased ICP, one of which is due to intracranial hemorrhage and cerebral oedema (Dinallo & Waseem, 2024). Based on the analysis of the case presentation, the more appropriate nursing problem to be established is ineffective cerebral tissue perfusion. Decreased oxygenation and perfusion to the brain is caused by increased intracranial pressure (Ristanto et al., 2016). On the other hand, based on the SDKI, the etiologic that can be established for the nursing diagnosis of ineffective breathing patterns are airway centre suppression and traumatic brain injury. However, the list of interventions on the SIKI only addresses ventilation and oxygenation problems, so it does not address the etiologic associated with increased intracranial pressure. The patient experienced a decrease in consciousness with further evaluation of the level of consciousness showing GCS 7 results where there was E1M4V2. With head trauma and decreased consciousness, the nurse raised the diagnosis of the risk of ineffective cerebral perfusion. The nurse performed head up 15-

30 degrees. The 30-degree head-up position is a way of positioning a person's head 30 degrees from the bed with a parallel body position and straight or non-bending legs (Wahidin and Supraptini, 2020). Setting a 30-degree head-up position in traumatic brain injury patients provides better results because it can increase cerebral tissue perfusion, which can accelerate the healing process of patients with head injuries (Huda, 2017). Cerebral hypoxic conditions characterized by SpO2 <95% also require patients to receive oxygen therapy. Immediate evaluation, conducted minutes to hours after acute interventions, involves measuring SpO2, respiratory rate, and ABG and assessing symptom relief. Short-term evaluation, within 24-48 hours post-subacute interventions, includes monitoring PEFR or FEV1, symptom improvement, and chest imaging changes if needed (Miller et al., 2005). Providing oxygen and an up position of 30 degrees in patients with mild, moderate, and severe head injuries can increase venous flow through the jugular vein so that oxygen can adequately reach the brain and have an impact on increasing consciousness in patients with moderate to mild head injuries (Ginting et al., 2020).

Based on the analysis, the diagnosis of cerebral perfusion in traumatic brain injury patients is appropriate. However, in the SDKI, the available diagnosis is not "ineffective cerebral perfusion" but "risk of ineffective cerebral perfusion." Cerebral perfusion problems have occurred, no longer a risk with existing data on patients such as decreased consciousness with GCS 7 (E1M4V2). The frequency of evaluating a patient's GCS score is determined by their current score and any changes over time. Patients with a GCS below 15 should be observed every 30 minutes. Once the GCS reaches 15, evaluations should continue every 30 minutes for the next two hours. If the GCS is still in 15, monitoring can be adjusted to once an hour for four hours, followed by every two hours. However, if the GCS drops below 15, the observation frequency should revert to every 30 minutes (Carney et al., 2017). This structured approach ensures timely detection of neurological changes and facilitates appropriate interventions. Patients with impaired cerebral perfusion require immediate action, such as raising the head 15-30 degrees and administering oxygen as needed (Rutto et al., 2022). Raising the head position 15-30 degrees is already listed in the list of actions in the emergency room, but the use of oxygen has yet to be available. In addition, existing interventions in the emergency room do not provide treatment for increased intracranial pressure, which is also the etiologic of this diagnosis (Olson et al., 2019). Another intervention patients need is to stabilize MAP (Pinto et al., 2018), where the MAP value has a minimum limit yet to be mentioned in SIKI. SIKI does not specifically cover prioritizing nursing interventions in cases often found in the emergency room. For example, the act of mobilizing patients with the logroll technique or administering oxygen due to cerebral hypoxia needs to be described in detail or regulated in SIKI. This limitation may result in uncertainty for health practitioners in the ED in dealing with critical trauma cases. In addition, the priority of emergency nursing interventions should be reflected in SIKI because it presents nursing interventions in the form of observation, therapy, education, and collaboration, also known as OTEK. In practice in the field, the principle of handling in the emergency room is to overcome the most life-threatening conditions based on assessing airway and breathing in the primary survey so that nurses will provide therapy first, then make observations.

The outcome criteria in the SLKI can be effectively applied in the inpatient setting but are only partially suitable for the ED; nurses need to conduct periodic evaluations after nursing interventions, especially in head trauma patients, to detect signs of deterioration and address changes in condition immediately. Oxygenation is evaluated five minutes after NRM administration, as respiration function is important to ensure adequate oxygenation to the brain. Respiratory function evaluation is done by measuring respiratory frequency and oxygen saturation, but there is no ideal evaluation system for traumatic brain injury cases because each has advantages and disadvantages (Bruijns et al., 2014). In addition, the SLKI does not include time standards for periodic observation and evaluation, leaving patients at risk of not being fully monitored in the ED. The SLKI outcome standards do not comply with the SMART principle (Specific, Measurable, Achievable, Relevant, Time-bound) and cannot be measured objectively by different nurses in each shift. The assessment of patient conditions in the emergency room must be consistent and objective so that each nurse can provide appropriate treatment without subjective interpretation, ensuring that the quality of service is maintained and the expected results can be better achieved. One example is the outcome of the nursing problem of ineffective cerebral perfusion risk related to MAP results, namely improved MAP. The outcome of improved MAP cannot be said to be objective because the MAP value is in the form of a number or numeric, which should only be written according to the normal MAP target for head trauma patients, which

is greater than 60-70 mmHg (Pinto et al., 2018).

In emergencies, time is a critical priority in determining the quality of services that prioritize life-saving. Therefore, there is a need for an easy and accurate way to implement it (Wilson, 2012). The SDKI provides guidelines for common nursing diagnoses in Indonesia. However, in emergencies in the emergency room, its use may have limitations because the process of establishing nursing diagnoses based on SDKI requires a slightly longer time to determine the nursing problem, then determine the cause/etiologic, and finally choose the signs/symptoms (Pokja and SDKI DPP PPNI, 2017). For example, in the case presentation, for the diagnosis of ineffective airway clearance, if written according to the SDKI rules, it is written, "ineffective airway clearance associated with the presence of foreign bodies in the airway characterized by gurgling sounds and the presence of blood in the patient's mouth." This diagnosis process requires more time to think and write the documentation. Based on a review shows that regarding Emergency Care, in an emergency, it is necessary to establish an effective diagnosis, immediate nursing intervention/immediate nursing treatment based on the initial assessment, as well as immediate evaluation to prevent more severe conditions (Grover et al., 2017). Therefore, in the emergency room, it is more appropriate to focus on nursing problems only, as found in the case presentation, which is enough to establish the issue of ineffective airway clearance. This focus on the nursing problem allows for faster and more efficient intervention and evaluation in line with the demands of the emergency.

Emergency care in Indonesia faces significant challenges, ranging from limited infrastructure to geographical barriers. Not all healthcare facilities, particularly in remote areas, have adequately equipped Emergency Departments (EDs) or advanced diagnostic tools such as ventilators, leading to delays in handling critically ill patients who must be referred to larger hospitals (Kinder et al., 2022). Additionally, a shortage of trained medical personnel, such as specialists and staff with competencies in Advanced Cardiac Life Support (ACLS) or Advanced Trauma Life Support (ATLS), compromises the quality and speed of decision-making in critical cases. The inefficient referral system, weak coordination between healthcare facilities and lengthy administrative processes further exacerbate delays (Dickinson and Joos, 2021). Geographical challenges, such as difficult transportation access in remote areas or islands, prevent patients from missing the golden hour for critical care. Furthermore, the need for more public awareness regarding when to seek emergency care, combined with financial constraints and limited health insurance coverage, worsens the situation. Adopting technologies like electronic triage systems or telemedicine is also uneven, slowing diagnosis and treatment processes (Kruk et al., 2018). These challenges call for a holistic approach, including improvements in infrastructure, training for healthcare providers, referral system reforms, and technology integration to enhance emergency care services in Indonesia.

CONCLUSION

The implementation of 3S-based nursing care (SDKI, SLKI, SIKI) in patients with head injuries in the emergency room has several shortcomings in the effectiveness of diagnosis, outcomes, and interventions. Barriers include a mismatch between the initial diagnosis and the patient's condition and difficulty determining specific and measurable outcomes. Although 3S provides a systematic framework, its application in the ED is constrained by limited information in emergency settings and unrealistic outcomes. The implementation of SIKI is also challenging in dynamic emergencies. This study emphasizes the need for adjustments to the 3S framework and refinement of the standards of diagnosis, outcomes, and nursing interventions. Recommendations for future research include the development of diagnosis standards that are more suitable for emergency room conditions, evaluation of the effectiveness of SLKI, and comparative studies between 3S and other care methods to find the most effective approach in improving the quality of nursing care in patients with head injuries in the emergency room.

From the patient's point of view, the mismatch between the initial diagnosis and their actual condition can lead to delays in receiving appropriate care, potentially affecting their recovery. Unrealistic outcomes or inadequate explanations about treatment goals might further diminish their confidence in the care process. By incorporating the patient's perspective, nursing care standards can be adjusted to prioritize clear communication, realistic goal-setting, and active involvement of patients and their families. This patient-centered approach can enhance satisfaction and contribute to more holistic and effective emergency nursing care.

The findings from this single case study provide valuable insights into emergency nursing practices in Indonesia, particularly in addressing context-specific challenges such as resource limitations, cul-

tural considerations, and patient care complexities in emergency settings. By highlighting the application of theoretical frameworks and tailored interventions, the study offers a foundation for developing best practices that can be adapted and implemented more broadly. Recognizing the limitation of a single case, further research is indeed necessary to generalize these recommendations. Plans to expand this study include testing the proposed strategies across multiple cases or hospitals to ensure their applicability and effectiveness in diverse settings. This approach will provide a more robust evidence base, enabling the development of standardized guidelines that align with the unique demands of emergency nursing in Indonesia. Future studies will also focus on incorporating interdisciplinary collaboration and evaluating long-term outcomes to enhance the quality and sustainability of emergency nursing practices.

REFERENCES

Atmadja, S., Andika, Sekeon, S, S.A., Ngantung, J, D., 2021. Diagnosis and Treatment of Traumatic Spinal Cord Injury Diagnosis Dan Tatalaksana Cedera Medula Spinalis Traumatik. Jurnal Sinaps 4, 25-35.

Awaliyani, V.A., Pranatha, A., Wulan, N., 2021. Pengaruh Penggunaan Buku SDKI, SLKI Dan SIKI Terhadap Peningkatan Pengetahuan Perawat Dalam Membuat Dokumentasi Keperawatan Berbasi SDKI, SLKI dan SIKI di Rumah Sakit KMC Kuningan Tahun 2021. Journal of Nursing Practice and Education 2, 22-32. https://doi.org/10.34305/jnpe.v2i1.334

Bruijns, S.R., Guly, H.R., Bouamra, O., Lecky, F., Wallis, L.A., 2014. The value of the difference between ED and prehospital vital signs in predicting outcome in trauma. Emerg Med J 31, 579-582. https://doi.org/10.1136/emermed-2012-202271

Carney, N., Totten, A.M., O'Reilly, C., Ullman, J.S., Hawryluk, G.W.J., Bell, M.J., Bratton, S.L., Chesnut, R., Harris, O.A., Kissoon, N., Rubiano, A.M., Shutter, L., Tasker, R.C., Vavilala, M.S., Wilberger, J., Wright, D.W., Ghajar, J., 2017. Guidelines for the Management of Severe Traumatic Brain Injury, Fourth Edition. Neurosurgery 80.

Currie, D., Snedden, T., Pierpoint, L., Comstock, R.D., Grubenhoff, J.A., 2019. Factors Influencing Primary Care Follow-Up After Pediatric Mild Traumatic Brain Injury. J Head Trauma Rehabil 34, E11-E19. https://doi.org/10.1097/HTR.0000000000000461

Dickinson, A., Joos, S., 2021. Barriers to integration of primary care into emergency care: Experiences in Germany. Int J Integr Care 21. https://doi.org/10.5334/ijic.5442

Dinallo, S., Waseem, M., 2024. Cushing Reflex. Treasure Island (FL).

Dwi Fibriansari, R., Astuti, A., Maisyaroh, A., Widyanto, E.P., 2022. Perceptions of Applications of Standard Nursing Language in Nursing Care Documentation. https://doi.org/https://doi.org/10.19184/jpsti.v1i1.73

ElGammal, M.E., 2014. Emergency department triage. Why and how? Saudi Med J 35.

Emergency Medicine Programme, 2021. A framework to support the delivery and recording of Nursing Care in Emergency Care Networks in Ireland. Ireland.

Ginting, L.R., Sitepu, K., Ginting, R.A., 2020. Pengaruh Pemberian Oksigen Dan Elevasi Kepala 30o Terhadap Tingkat Kesadaran Pada Pasien Cedera Kepala Sedang. Jurnal Keperawatan dan Fisioterapi (JKF) 2, 102-112. https://doi.org/10.35451/jkf.v2i2.319

Grasselli, G., Calfee, C.S., Camporota, L., Poole, D., Amato, M.B.P., Antonelli, M., Arabi, Y.M., Baroncelli, F., Beitler, J.R., Bellani, G., Bellingan, G., Blackwood, B., Bos, L.D.J., Brochard, L., Brodie, D., Burns, K.E.A., Combes, A., D'Arrigo, S., De Backer, D., Demoule, A., Einav, S., Fan, E., Ferguson, N.D., Frat, J.-P., Gattinoni, L., Guérin, C., Herridge, M.S., Hodgson, C., Hough, C.L., Jaber, S., Juffermans, N.P., Karagiannidis, C., Kesecioglu, J., Kwizera, A., Laffey, J.G., Mancebo, J., Matthay, M.A., McAuley, D.F., Mercat, A., Meyer, N.J., Moss, M., Munshi, L., Myatra, S.N., Ng Gong, M., Papazian, L., Patel, B.K., Pellegrini, M., Perner, A., Pesenti, A., Piquilloud, L., Qiu, H., Ranieri, M. V, Riviello, E., Slutsky, A.S., Stapleton, R.D., Summers, C., Thompson, T.B., Valente Barbas, C.S., Villar, J., Ware, L.B., Weiss, B., Zampieri, F.G., Azoulay, E., Cecconi, M., 2023. ESICM guidelines on acute respiratory distress syndrome: definition, phenotyping and respiratory support strategies. Intensive Care Med 49, 727-759. https://doi.org/10.1007/s00134-023-07050-7

Grenier, G., Despatis, M.-A., Lebel, K., Hamel, M., Martin, C., Boissy, P., 2022. Removal of the cervical collar from alpine rescue protocols? A biomechanical non-inferiority trial in real-life

mountain conditions. Scand J Trauma Resusc Emerg Med 30, 42. https://doi.org/10.1186/s13049-022-01031-3

Grover, E., Porter, J.E., Morphet, J., 2017. An exploration of emergency nurses' perceptions, attitudes and experience of teamwork in the emergency department. Australas Emerg Nurs J 20, 92-97. https://doi.org/10.1016/j.aenj.2017.01.003

Huda, N., 2017. Efektifitas Elevasi Kepala 30o Dalam Meningkatkan Perfusi Serebral Pada Pasien Post Trepanasi di Rumah Sakit Mitra Surabaya. Jurnal Ilmiah Keperawatan STIKES Hang Tuah Surabaya 12, 1137. https://doi.org/10.30643/jik.v12i1.20

Khan, Z., Karatas, Y., Hamid, S.M., 2023. Evaluation of health care professionals' knowledge, attitudes, practices and barriers to pharmacovigilance and adverse drug reaction reporting: A cross-sectional multicentral study. PLoS One 18, e0285811. https://doi.org/10.1371/journal.pone.0285811

Kinder, F., Mehmood, S., Hodgson, H., Giannoudis, P., Howard, A., 2022. Barriers to Trauma Care in South and Central America: a systematic review. European Journal of Orthopaedic Surgery and Traumatology 32, 1163-1177. https://doi.org/10.1007/s00590-021-03080-3

Kruk, M.E., Gage, A.D., Arsenault, C., Jordan, K., Leslie, H.H., Roder-DeWan, S., Adeyi, O., Barker, P., Daelmans, B., Doubova, S. V., English, M., Elorrio, E.G., Guanais, F., Gureje, O., Hirschhorn, L.R., Jiang, L., Kelley, E., Lemango, E.T., Liljestrand, J., Malata, A., Marchant, T., Matsoso, M.P., Meara, J.G., Mohanan, M., Ndiaye, Y., Norheim, O.F., Reddy, K.S., Rowe, A.K., Salomon, J.A., Thapa, G., Twum-Danso, N.A.Y., Pate, M., 2018. High-quality health systems in the Sustainable Development Goals era: time for a revolution. Lancet Glob Health. https://doi.org/10.1016/S2214-109X(18)30386-3

Ladny, M., Gawel, W., 2022. Neck Stabilization In Trauma Patient: An Emergency Medicine Perspective. Disaster and Emergency Medicine Journal. https://doi.org/10.5603/DEMJ.a2022.0007

Meister, K.D., Pandian, V., Hillel, A.T., Walsh, B.K., Brodsky, M.B., Balakrishnan, K., Best, S.R., Chinn, S.B., Cramer, J.D., Graboyes, E.M., McGrath, B.A., Rassekh, C.H., Bedwell, J.R., Brenner, M.J., 2021. Multidisciplinary Safety Recommendations After Tracheostomy During COVID-19 Pandemic: State of the Art Review. Otolaryngol Head Neck Surg 164, 984-1000. https://doi.org/10.1177/0194599820961990

Miller, M.R., Hankinson, Bursasco, V., Casaburi, R., Coates, A., Crapo, Enright, 2005. Standardisation of spirometry. ersjournals. https://doi.org/10.1183/09031936.05.00034805

Nibbelink, C.W., Brewer, B.B., 2018. Decision-making in nursing practice: an integrative literature review. J Clin Nurs 27. https://doi.org/10.1111/jocn.14151

Oka, P., Nurhesti, Y., Ketut, N., Prapti, G., Oka, M., Kamayani, A., Suryawan, A., 2020. Analisis Penggunaan Diagnosis Keperawatan Berbasis SDKI dan NANDA. https://doi.org/https://doi.org/10.24843/coping.2020.v08.i02.p02

Olson, A., Rencic, J., Cosby, K., Rusz, D., Papa, F., Croskerry, P., Zierler, B., Harkless, G., Giuliano, M.A., Schoenbaum, S., Colford, C., Cahill, M., Gerstner, L., Grice, G.R., Graber, M.L., 2019. Competencies for improving diagnosis: an interprofessional framework for education and training in health care. Diagnosis (Berl) 6, 335-341. https://doi.org/10.1515/dx-2018-0107

Pinto, A., Berritto, D., Russo, A., Riccitiello, F., Caruso, M., Belfiore, M., 2018. Traumatic fractures in adults: missed diagnosis on plain radiographs in the Emergency Department. Acta Biomed 89.

Pokja, T., SDKI DPP PPNI, 2017. St Andar Intervensi.

Rison, R.A., 2013. A guide to writing case reports for the Journal of Medical Case Reports and BioMed Central Research Notes. J Med Case Rep 7, 239. https://doi.org/10.1186/1752-1947-7-239

Ristanto, R., Indra, M.R.I., Poeranto, S., Setyorini, I., 2016. Akurasi revised trauma score sebagai prediktor mortality pasien cedera kepala. Jurnal Kesehatan Hesti Wira Sakti 4, 76-90.

Rutto, A., Koech, P., Korir, A., Groom, R., White, R., 2022. Perfusion Practice in Kenya. J Extra Corpor Technol 54, 5-18. https://doi.org/10.1182/ject-5-18

Saavedra-Mitjans, M., David, P.-M., Frenette, A.-J., Arbour, C., Perreault, M., Williams, V., Bernard, F., Williamson, D., 2021. Experiences and attitudes towards Agitated behaviors in Traumatic brain injury in the Intensive Care Unit patients (ECSTATIC): a protocol for an interprofessional mixed-method study. BMJ Open 11, e045816. https://doi.org/10.1136/

bmjopen-2020-045816

Talahatu, O., Korespondensi, P., Kesehatan, F., Kristen, U., Maluku, I., 2022. Diseminasi Penerapan SDKI, SLKI dan SIKI di Rumah Sakit Umum Daerah Kota Masohi. Karya Kesehatan Siwalima. https://doi.org/https://dx.doi.org/10.54639/kks.v1i2.788

Thayer, J.G., Ferro, D.F., Miller, J.M., Karavite, D., Grundmeier, R.W., Utidjian, L., Zorc, J.J., 2021. Human-centered development of an electronic health record-embedded, interactive information visualization in the emergency department using fast healthcare interoperability resources. Journal of the American Medical Informatics Association 28, 1401-1410. https://doi.org/10.1093/jamia/ocab016

Wahidin, Supraptini, N., 2020. Penerapan Teknik Head Up 30 derajat terhadap Peningkatan Perfusi Jaringan Otak Pada Pasien yang Mengalami Cedera Kepala Sedang. Nursing Science Journal (NSJ). https://doi.org/https://doi.org/10.53510/nsj.v1i1.14

Wilson, E., 2012. Emergency management of severe burns, Journal of Paramedic Practice. https://doi.org/10.12968/jpar.2012.4.2.114

World Health Organization (WHO) [WWW Document], 2021. URL https://www.who.int/ (accessed 11.21.24).