

# An Implementation of Head Up Position to Trauma Brain Injury Patients on the Level of Consciousness

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## ABSTRACT

Traumatic brain injury is a leading cause of death among motorized vehicle users and is caused by a failure to maintain road safety. Traumatic brain injury can result in physical, psychological, and even fatal changes. Patients with head injuries may experience impaired consciousness due to bleeding in the head, which causes an increase in intracranial pressure. Nursing interventions such as head positioning at 30° may be given to patients with traumatic brain injuries. To examine the implementation of giving a 30° head-up position to the level of consciousness in patients with traumatic brain injury. The results obtained from giving the patient a 30° head-up position are that the patient has an increased level of consciousness. The patient's level of consciousness at the initial assessment was GCS E2 VX M5, and nursing intervention was carried out by giving the head-up position 30° for three days, namely E4 VX M5. Giving a head-up position of 30° affects the level of consciousness in patients with traumatic brain injury.

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## I. INTRODUCTION

Head injuries can occur due to a sudden blow or impact to the head accompanied by no or decreased consciousness (Pawestri et al., 2019). Traumatic brain injury is a traumatic disorder that occurs in the brain with or without interstitial bleeding in the brain substance without being followed by a break in the continuity of the brain (Utami

et al., 2021). The prevalence of traumatic brain injury in America shows an increase in cases, namely as many as 500,000 cases that occur every year (Utami et al., 2021). In Indonesia, traffic accidents and deaths are serious problems. Based on data from the Central Statistics Agency, there has been an increase in the number of accidents in Indonesia, where as many as 116,411 incidents occurred in 2019. The 2018 Basic

Health Research results show that the prevalence of head injuries in Indonesia is 11,064 cases.

Traumatic brain injury severity was measured using the Glasgow Coma Scale. The Glasgow Coma Scale is the total score of three components that can be assessed based on a person's response: eye, motor, and verbal (Nika, H. 2022). Patients with head injuries can experience impaired consciousness due to bleeding in the head to experience a coma. If there is bleeding in the head, it can result in a hematoma, which causes an increase in intracranial pressure. Increased intracranial pressure can cause pain and dizziness in patients.

Treatment of head injuries can be done by controlling increased intracranial pressure. Nursing intervention by giving the head position 30° may be administered to patients with head injuries. This action aims to reduce intracranial pressure by increasing return blood flow from the intracranial origin, thereby lowering intracranial pressure (Pawestri et al., 2019). Head-up position refers to raising the patient's head higher than 30° from the bed, with the body parallel to the bed and the legs straight and not bending (Kusuma & Anggraeni, 2019). According to research (Utami et al., 2021), giving a head-up position effectively increases awareness, reduces intracranial pressure, and

increases consciousness. Therefore, the authors are interested in reporting a case of a patient with a traumatic brain injury who was given a nursing intervention in the form of positioning head up 30° in the ICU room.

## 2. CASE REPORT

Patient A is female and 28 years old. The patient's main complaint is that the patient has decreased consciousness. The patient was a referral patient from the health center and came to the emergency room on November 5, 2022, at 15.30 with the main complaint of decreased awareness after a traffic accident. The patient's family said the patient had a traffic accident around 13:00 and did not wear a helmet. Before being taken to the hospital, the patient vomited four times, had blood coming out of his right ear, and had four seizures at the primary health center. During the emergency room assessment, the patient lost consciousness with GCS E2V1M5, blood pressure 120/70 mmHg, pulse 64 times per minute, temperature 36.7 °C, SpO<sub>2</sub> 99%, RR 22 times per minute.

The patient had undergone a craniotomy operation and experienced a decrease in consciousness. The patient could not breathe spontaneously and needed breathing assistance using a 15 liter

per minute with Jackson rees. The patient was taken to the ICU for respiratory assistance using a ventilator. On November 6, 2022, at 00:15 WIB, the patient was transferred to the ICU room with a low level of consciousness (GCS: E1VXMI). The patient was placed on a BIPAP FiO<sub>2</sub> 32% ventilator, PEEP 5, and ASB 14. At the time of assessment in the ICU, with GCS E2VXM5, blood pressure 118/60 mmHg, RR 12 x/minute, SpO<sub>2</sub> 100%, and pulse 79 x/minute, the patient has BIPAP installed at 32%, PEEP 5 ASB 14, left-hand infusion installed, NGT installed, and a catheter attached.

Giving the patient the head-up position 30° is the implementation action to help overcome decreased intracranial adaptive capacity. This implementation was carried out for three days, from November 7, 2022, to November 9, 2022. During the initial assessment of the patient's level of consciousness, namely GCS E2 VX M5. The patient is ensured to be supine, with the head elevated and the legs straight and not bent. This position was maintained for 2 hours and evaluated by the researcher.

Researchers used a case study research design to provide an overview of the application of the 30-degree head-up position on the level of consciousness in head-injured patients in the ICU room.

This research was conducted for three days, from November 7, 2022, to November 9, 2022. Giving a head-up position of 30°, carried out in this study, was the provision of a standard comfort intervention, which aims to maintain or restore the role of the body, provide comfort, and prevent complications (Wahidin et al., 2020).

Giving this position is expected to improve and increase the patient's level of consciousness as measured by the Glasgow Coma Scale (GCS). GCS measurements are carried out every 1x 8 hours. The results of the implementation on the first day carried out on the patient are the level of awareness before the action is taken, namely the GCS E2 VX M5, and the evaluation results after it is carried out, namely the GCS E3 VX M5. Implementation on the second day, namely the level of awareness before taking action, namely the GCS E3 VX M5, and the evaluation results after it was carried out, namely the GCS E3 VX M5. The level of awareness before the action was taken (the GCS E3 VX M5) and the evaluation results after it was carried out (the GCS E4 VX M5) were then compared on the third day of implementation.

### 3. DISCUSSION

The results of the study on patient A showed that the patient was a post-traffic accident patient and experienced a

decrease in consciousness. The patient was admitted to the ICU after performing a craniotomy operation with the main complaint experienced by the patient, namely that the patient experienced a decrease in consciousness. Traffic accidents are the main cause of various traumas. Head injuries are the most common occurrence as a result of traffic accidents. Motorcycle riders who do not wear helmets while driving are one of the factors in accidents that result in serious and fatal head injuries. Helmet use is significantly related to the degree of traumatic brain injury a person can experience. Motorcycle riders who do not use helmets are five times more likely to experience head injuries (Ramli, 2016).

From these data, the researchers enforced the nursing diagnosis of decreased intracranial adaptive capacity associated with cerebral edema. Where traumatic brain injury is one of the related clinical conditions, a nursing diagnosis of decreased intracranial adaptive capacity can be enforced. Nursing interventions that can be given to patients with decreased intracranial adaptive capacity to increase the patient's level of consciousness are the head-up position 30°. Giving this position is an action that can be given to patients with head injuries to facilitate oxygen perfusion to the brain so that it can

increase the patient's level of consciousness (Wahidin et al., 2020). Giving a head-up position of 30°, which was carried out in this study, was the provision of a standard comfort intervention, where the purpose of this intervention was to maintain or restore the role of the body, provide comfort, and prevent complications. The heads-up position is obtained by raising the head of the bed while keeping the body parallel to the feet. This position can lower intracranial pressure and increase oxygen supply to the brain in patients with head injuries. Increased oxygen in the brain can increase metabolism, which is characterized by an increased level of consciousness and is followed by other vital signs. This position is considered effective for maintaining a level of consciousness because it corresponds to the anatomical position of the human body (Wahidin et al., 2020).

The expected outcomes from giving this position are that it can increase the patient's level of consciousness as measured using the Glasgow coma scale (GCS). GCS measurements are carried out every 1x 8 hours. The patient's level of consciousness at the initial assessment was GCS E2 VX M5, and after the nursing intervention was carried out by giving the head-up position of 30° for three days, it

was E4 VX M5. This study's results align with research by (Abdullah & Luneto, 2022) found that a head-up position of 30° influences the level of consciousness in patients with head injuries. Research (Ginting et al., 2020) states that there is a comparison between the level of consciousness before being given oxygen and being given a head-up position of 30°. Where is the head-up position 30° able to reduce intracranial pressure to facilitate venous blood flow in the brain and make oxygen supply adequate, reduce headaches, overcome nausea and vomiting, and stabilize blood pressure. Giving this position can reduce intracranial pressure, thereby affecting cerebrovascular dynamics, which can meet the oxygen demand in the brain. Increased ICP is a complication that can occur due to the suppression of vital centers in the brain, which can cause brain cell death. The head-up position can increase blood flow in the brain to maximize cerebral oxygenation.

## 5. CONCLUSION

Based on the study results, it was shown that the etiology underlying the occurrence of head injuries in patients was the accident experienced by the patient and not using a helmet while driving as a means of personal protection. Giving a head-up position of 30° addresses the priority

problem, namely intracranial adaptive decline. Giving patients this position influences the level of consciousness in patients with head injuries.

## REFERENCES

- Abdullah, M. R. Y. dan S. I. Luneto. 2022. Pasien cedera kepala the effect of 30 degree head elevation on the awareness pendahuluan cedera kepala atau tbi ( traumatic brain injury ). *Jurnal Kesehatan : Amanah*. 6(2)
- Bosawer, S. S., R. Rahmadian, dan Z. D. Rofinda. 2021. Hubungan penggunaan helm dengan derajat cedera kepala akibat kecelakaan lalu lintas pada pengendara sepeda motor di rsup dr. m. djamil padang tahun 2016-2017. *Jurnal Ilmu Kesehatan Indonesia*. 1(3):352-357.
- Fithrah, B. A., M. Rasman, dan S. C. Saleh. 2019. Pengelolaan central diabetes insipidus pasca cedera kepala berat managing central diabetes insipidus in post severe head injury patient. 8(2):99-104.
- Ginting, L. R., K. Sitepu, dan R. A. Ginting. 2020. Pengaruh pemberian oksigen dan elevasi kepala 30o terhadap

- tingkat kesadaran pada pasien cedera kepala sedang. *Jurnal Keperawatan Dan Fisioterapi (Jkf)*. 2(2):102–112.
- Kristyaningsih, P., & Rahmawati, I. 2022. 2019. Primary survey pasien cedera kepala oleh perawat. 38–45.
- Kusuma, A. H. dan A. D. Anggraeni. 2019. Pengaruh posisi head up 30 derajat terhadap nyeri kepala pada pasien cedera kepala ringan. *Jurnal Ilmu Keperawatan Dan Kebidanan*. 10(2):417.
- Marbun, N. A. S., Kep, M., Sinuraya, N. E., Amila, N., Kep, M., Kep, S., ... & Kep, M. (2020). *Manajemen Cedera Kepala*. Ahlimedia Book.
- Oktarina, Y. dan C. A. Simajuntak. 2017. Perbandingan glasgow coma scale dengan full outline of unresponsiveness score dalam mengukur tingkat kesadaran pasien terintubasi endotracheal tube di ruang intensive care unit. *Seminar Workshop Nasional*. 218–222.
- Pawestri, D. W., Supono, dan Mustayah. 2019. Head up 30 derajat untuk memperbaiki mean arterial pressure pada pasien cedera kepala. *Prosiding Seminar Nasional*. 2007:7–19.
- Ramadhan, H. N. 2019. Pelaksanaan pencegahan dan pengendalian ventilator associated pneumonia (vap) di ruang icu. *The Journal of Hospital Accreditation*. 1(1):3–8.
- Riduansyah, M., M. Zulfadhilah, dan A. Annisa. 2021. Gambaran tingkat kesadaran pasien cedera kepala menggunakan glasgow coma scale (gcs). *Jurnal Persatuan Perawat Nasional Indonesia (JPPNI)*. 5(3):137.
- Siahaya, N., L. B. S. Huwae, O. W. Angkejaya, J. B. Bension, dan J. Tuamelly. 2020. Prevalensi kasus cedera kepala berdasarkan klasifikasi derajat keparahannya pada pasien rawat inap di rsud dr. m. haulussy ambon pada tahun 2018. *Molucca Medica*. 12:14–22.
- Surfiani, F., A. Muzaki, dan W. Widodo. 2021. Literature review: pengaruh pemberian oksigenasi dan posisi elevasi kepala 30 untuk meningkatkan kesadaran pasien cedera kepala. *Jurnal Keperawatan*. 1–9.

- Umam, K. dan J. Susanto. 2020. Gambaran aktivitas perawat tentang penatalaksanaan masalah pk: peningkatan tekanan intrakranial. *Jurnal Kesehatan Vokasional*. 4(4):176.
- Utami, M. P. S., N. W. Rahayu, dan N. W. Astuti. 2021. Perubahan tingkat kesadaran pada pasien cedera kepala sedang ( cks ) dengan terapi oksigen dan posisi head up 30 ° : literatur review. *Jurnal Keperawatan Notok Usumo (JKN)*. 9:52–57.
- Wahidin, Ngabdi Supraptini. 2020. Penerapan teknik head up 30° terhadap peningkatan perfusi jaringan otak pada pasien yang mengalami cedera kepala sedang. *Nursing Science Journal (NSJ)*. 1(1):7–13.
- Yuniandita, N. dan D. Hudiyawati. 2020. Prosedur pencegahan terjadinya ventilator associated neumonia (vap) di ruang intensive care unit (icu): a literature review. *Jurnal Berita Ilmu Keperawatan*. 13(1):62–74.
- Yunus, M. 2020. Pengetahuan dan sikap perawat tentang penatalaksanaan pasien dengan cedera kepala. XIV:132–141.