

# The nurse's activities in respect of the vitima cranioencephalic traumatism at first aid: one literature revision

## Summary

The Traumatic brain injury (TBI) It is a serious public health problem that takes a major cause of death and sequelae in children and young adults. According to the Brazilian statistics, external causes are among the four most frequent mortality agents in the country, and if the deaths were excluded from ill-defined causes, would then occupy the second or third. In this scenario the nurse becomes essential in the care provided, requiring greater ability to collect a brief history of the victim, perform a physical examination and intervene through immediate treatment, emphasizing the maintenance of life. Purpose of this literature review is to understand the work of nurses in the care of traumatic brain injury victim answered the emergency room. This work was developed through a literature review conducted through surveys in the databases Lilacs, Scielo, Medline and Bireme, in use from 2008 to 2018 items, which gave grounds to the proposed theme. It is hoped with its research can support the development of new studies on the subject, contribute to the safety and quality of care in institutions for patient care victim of TBI and add new knowledge to health professionals working in this area.

**Keywords:** encephalic trauma, nursing care, nurse, injuries

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## Introduction

The Traumatic brain injury (TBI) is one of the most frequent causes of morbidity and mortality in the world, reflecting a major public health problem in Brazil.<sup>1</sup> Santos<sup>2</sup> defines TEC as any type of injury caused by an external physical force which causes injury or isolated combined to the scalp, the skull bone structures and brain nerve tissue. The types of trauma resulting from cranioencephalic injuries include concussion, contusion, skull fractures, epidural or subdural hematoma, subarachnoid hemorrhage, and herniation. In this context there are two types of head injuries: primary and secondary injury. is primary brain injury resulting from mechanical injury that occurs at the time of trauma, due to the impact as secondary brain damage is not directly related to trauma mechanism; it occurs after the initial injury and is defined as neuronal injury resulting from local or systemic response to the initial injury.<sup>3</sup> However the main cause of TBI varies in different aspects namely: automobile accidents, injuries and falls are among the most frequent causes. According to the Brazilian statistics, external causes are among the four most frequent mortality agents in the country, and if the deaths were excluded from ill-defined causes, would then occupy the second or third. As DATASUS<sup>4</sup> in 2015 in Brazil were recorded 152-136 deaths due to external causes, covering all age groups. Yet 204,000 They were due to traffic accidents totaled 37,306 deaths ranking second among the causes of death, with a reduction of 15% in the last year.<sup>4</sup>

The care of TBI are based on the stabilization of the patient's vital conditions, requiring skill and objectivity in the performance, requiring health professionals work that is molded in the fight against time. In

this scenario, the nurse's role becomes essential in the care provided, requiring greater ability to collect a history of the victim soon perform a physical examination and intervene through immediate treatment, emphasizing the maintenance of life.<sup>5</sup> The goal was to conduct a literature review regarding the nursing work in service to victims of TBI after entry into the emergency room. Characterize the main causes of trauma, analyze the main nursing care for brain injury victims, raise pathophysiological incidence, classification, complications and sequelae. Given the complexity of the ECA consequences it is deemed necessary to deepen knowledge on the subject to better planning and organization of care. This study is justified by the need to encourage nurses in quality care in urgent and emergency services. Its relevance permit evaluation of care and if necessary, to institute a review of the current processes thus minimizing possible complications, seen in service quality and patient safety.

## Methodology

This work was developed through a literature review conducted through surveys of databases Lilacs, Scielo, Medline and Bireme. The key words used in the research were: Injuries brain injury; Nursing care; Nurse. Injuries. We included articles of interest to the research, ie those that made reference in your data, the aspects related to the nurse's performance the victim of traumatic brain injury, and used articles of the period between 2008 to 2018, bibliographic reviews of articles, protocols and books that gave justification to the proposed theme, emphasizes the paucity of current studies and more depth on the subject.

## Theoretical

The ECA is among the most frequent types of traumas in emergency services, many of the patients with severe brain injuries die before reaching the hospital, about 90% of cases. Approximately 75% of victims who receive medical care are classified as mild trauma, 15% moderate and 10% as trauma victims serious.<sup>6</sup> Hohl<sup>7</sup>, states that the ECA presents a major cause of death and disability in young adults, as consequences ranging from physical disability to cognitive, behavioral, psychological and social long-term. Injuries caused by external causes for traffic accidents, diving into shallow water, assaults, falls and firearm projectiles, has grown alarmingly in the country. The ECA is characterized as an injury to injured isolated or combined, causing temporary or permanent functional impairment of the scalp, skull, brain or meninges, caused by external force. It could also interfere with the normal operation of the individual being defined as a skull and brain injury which is severe enough.<sup>8</sup> Vehicle accidents are the most common causes of TBI, especially in adolescents and young adults. Falls are responsible for the second largest group of injuries and are more common in pediatric and geriatric tracks. In some places, injuries by firearms cause more TCE than car accidents.

In the US, it is estimated that in one year 80,000 to 90,000 people suffer some kind of long-term disability as a result of head trauma. In European countries, such as Denmark 300 between 1 million people suffer from moderate or severe traumatic brain injury each year, and more than a third of these victims require qualification.<sup>6</sup> Quevedo<sup>9</sup>, reports that in Brazil, every year half a million people need to be hospitalized due to trauma, these, 75 to 100 thousand people die in the course of hours while other 70-90 thousand develop irreversible loss of some neurological function. However, the estimate is 20% arrive died immediately or within 24 hours of admission and 80% in the first week after the accident, representing the third among the leading causes of deaths, exceeding only to cardiovascular disease and cancer, affecting the age group 5-44 years, with a higher proportion were male.<sup>5</sup> The same author reported that the severity of TBI is associated with the impact of trauma. Predictions of the victims indicate that the neuropsychological changes after trauma is one of the main factors that determine the degree of functional independence. The injury caused by a TBI can be classified as a focal brain injury, resulting in injury, laceration, and intracranial hemorrhage site by direct trauma; Diffuse brain injury, diffuse axonal injury and causing increase in size of the brain (edema) the acceleration / deceleration mechanism. The brain injury is defined by two different mechanisms or stages. primary injury (occurring at the time of trauma); secondary lesion (the pathological process being started at the time of trauma to clinical manifestations later) may develop until the tenth day after trauma.<sup>8</sup>

The main risk factors are related to trauma to the patient's age, which influences the type of trauma mechanism and prognosis of the injury suffered, both primary and secondary to trauma. Pedestrians and cyclists suffer worse injuries than in accidents by motor vehicles, and the ejection of the vehicle cause increased risk of intracranial injury. Regarding head trauma mechanisms they can be classified as closed, usually associated with the collision of vehicles, falls and assaults and open when caused by firearms and penetrating injuries. Regarding its morphology features are divided into the affected site can be a skull fracture and intracranial lesions and diffuse brain damage, epidural, subdural, intracerebral hematoma, bruises and concussions.<sup>10</sup> The initial management in patient care victim of TBI is to conduct a brief medical history, general physical examination and neurological evaluation provide basic information for patient risk stratification

have or develop neurological damage. The assessment of patients with head injury should emphasize the demand for secondary injuries to trauma, ie, those that arise after a period of time occurred cranial trauma. The secondary lesions are highly associated, if not diagnosed and treated initially, the high levels of morbidity and mortality. The first step is to obtain and maintain the patency of airway obstruction by the maneuvers of the airways.<sup>11</sup>

The neurological evaluation in patients with head trauma deveceber special attention, especially in the secondary evaluation, after performing the ABCDE, recommended by the Advanced Trauma Life Support (ATLS). While performing the primary assessment must-if to rank The Glasgow Coma Scale (ECG), as on admission carry out the assessment of pupil standards, motor deficit assessment and reflexes (Table 1).<sup>12</sup> TBI can be classified according to the clinical signs of the patient and through the Glasgow Coma Scale (GCS). Approximately 80% are classified as mild TBI with a score of 14 or 15 in the ECG, it has a good recovery, and may be asymptomatic as presenting headache, dizziness, bruising or laceration of the scalp. moderate TBI has attended approximately 10% of head injuries in emergency departments with a level of consciousness between 9:13. Patients often present themselves confused or sleepy, with a lowered level of consciousness and may have focal neurological deficits. Requiring re-evaluation within the first 12 hours and the 24 hours after the trauma. It is recommended to computed tomography (CT) control after the first 12h and 24h after TC in order to rule out secondary brain injury.<sup>6-9</sup> As ATLS<sup>6</sup> patients with severe TBI score of 3-8 ECG has approximately 10% of victims of brain injury. In these patients the therapeutic approach should be immediate, emphasizing the hemodynamic care and adequate ventilatory support. In primary care, should seek signs of other injuries while performing the ABCDE. Severe TBI patients often have associated frame hypotension due to trauma mechanism, generally requiring correction of hemodynamic parameters as well as use of devices to minimize neuronal damage.

**Table 1** Glasgow Coma Scale (GCS).

	Answer	Points
Eye opening	Spontaneous opening	4
	Verbal stimuli	3
	Painful stimuli	2
Motor response	No answer (absent)	1
	Obey the command	6
	Pain located	5
	Normal flexion (withdrawal)	4
	Abnormal flexion (decortication)	3
Verbal answer	Extension (decerebrate)	2
	No answer (absent)	1
	Oriented	5
	Confused	4
	Inappropriate words	3
	Incomprehensible Sounds	2
	No answer (absent)	1

Source: Adapted from Oliveira<sup>12</sup>.

The occurrence of secondary brain damage in trauma and intracranial cause systemic changes, which may occur at any time in the resuscitation phase and stabilization of the patient or during intensive care. Gentile 2011 states that the conduct and procedures to be adopted in the EC target optimize cerebral perfusion, tissue oxygenation and prevent secondary injuries. The patient victim TEC well as damage caused by trauma can present some complications such as vascular lesions: bleeding, thrombosis, aneurysm, infections, osteomyelitis, meningitis, abscess, CSF rhinorrhea, otoliquorréia, pneumocele, leptomeningeal cysts, lesions of cranial nerves lesions focal brain, diabetes insipidus: is rare and occurs due to damage to the neurohypophysis. Causing permanent damage as seizures, psychosis, post-traumatic syndrome (no defined pathological basis): with impaired memory and concentration, personality disorders, headache, focal neurological disorders, post-traumatic epilepsy occurs in cases in which there is initial seizures in the first weeks after the injury, skull fracture with depression, intracranial hematoma, post-traumatic amnesia for > 24 hours, spasticity: develops after a few days or in the first weeks.<sup>3-6</sup> The victims resulting from TBI who did not evolve to death may have deficiencies and temporary or permanent disability, interfering with an individual's ability to return to their activities, as well as physical, cognitive, behavioral and emotional losses, capital spending on rehabilitation and greater difficulty psychosocial and family reintroduction.<sup>13</sup>

As Pereira<sup>3</sup> nurses to admit a patient, victim of TBI in the unit first aid, has the function to get his story; addressing the airways with immobilization of the cervical spine; perform tracheal aspiration to maintain good oxygenation if there is facial injuries not aspire nostrils; providing adequate ventilation to the patient using a cannula Guedel if biting or tongue base pulling down as soon as possible. Maintaining elevated head and head aligned at 30 °C. Observe the movement as pulse check, color, temperature and moisture of the skin. Keep venous access caliber central venous catheter or for quantification of blood volume, performing water balance every hour. Perform neurological examination. The first nursing care to victims of TBI has a high profile as a flexible, structured and trained staff may intervene effectively being able to identify cases early, be based on the physiology of disease and make the necessary techniques to meet.<sup>14</sup> In this scenario, the nursing staff must be careful in Glasgow coma scale, the breathing pattern and levels of intracranial pressure (ICP), to intervene quickly, avoiding possible damages. One of the complications, the most common TBI patients is infection, especially lung.<sup>15</sup> The nurse usually is present in the initial care along with the entire staff, as the professional who works on the front lines in the emergency room with an immediate approach and quality care combining its theoretical foundation for leadership, initiative and assistance skills and teaching coincides with the probability of generating less sequelae avoid complications to the patient.<sup>16-20</sup>

## Conclusion

Accidents in Brazil constitute a public health problem of great magnitude and transcendence, with a strong impact on morbidity and mortality population as a whole of injuries resulting from external causes. To carry out quality care to TBI patients, it is necessary that professionals are able to play their role, emphasizing the nursing staff. This provision of patient care requires nurses multiplicity of knowledge and understanding about the leadership team process, highlighting the interpersonal and decision making. However the literature shows few publications related to the work of nurses to patients with head injury.

Thus, it is essential to the development of studies and research on this issue so that the professional can perform its function effectively and quality. It is expected that the results of this research can support the development of new studies on the theme, contributing to the safety and quality of care in institutions for the care with the patient victim of TBI adding new knowledge to health professionals working in this area.

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## Conflicts of interest

The author declares there is no conflict of interest.

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