

# بسم الله الرحمن الرحيم





# شبكة المعلومات الجامعية

## التوثيق الالكتروني والميكروفيلم



# جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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**EFFECT OF POSITION CHANGES ON THE  
LEVEL OF CONSCIOUSNESS OF  
CRITICALLY ILL HEAD-INJURED CHILDREN**

**Thesis**

**Submitted to the Faculty of Nursing,**

**University of Alexandria,**

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# INTRODUCTION

## **INTRODUCTION**

Accidental injury is the leading cause of death and acquired disability for children over 1 year of age <sup>(1)</sup>. Head injuries account for 29% of children's hospitalization caused by injury in the US where children under 15 years of age account for 22.4% of over 35 million emergency department visits each year, that result from injury <sup>(2)</sup>. In Egypt, statistics on the exact incidence of child head injury are not available. However, the medical records of the Main University Hospital show that about 10% of children's hospitalization admitted to the emergency departments caused by head injury.

The ability to move freely, easily, rhythmically, and purposefully in the environment is an essential part of living. Mobility is a basic human need that contributes to both physical and emotional well being <sup>(3)</sup>. Immobilized patients are at risk for developing complications that affect all body systems very quickly. These complications include, muscle atrophy, loss of bony mass, contractures of joints, pressure ulcers, constipation, urinary stasis, mental confusion, sensory deprivations, cardiovascular and respiratory problems <sup>(3,4)</sup>.

Proper positioning is important in preventing complications, a patient with partial mobility can usually learn positioning techniques to use with or without the nurse's assistance, but immobile patients rely on the nursing staff to reposition them. Helping promote functional mobility is an important independent responsibility of the nurse <sup>(4,5)</sup>.

Head injury occurs in two distinct phases: primary injury is that due to direct mechanical damage inflicted at the time of injury <sup>(6)</sup>. Secondary injury occurs after the primary event and may be due to hypoxia, ischemia, or to elevated intracranial pressure (ICP) and its consequences <sup>(6,7)</sup>. Increased ICP, a special risk in all head trauma patients, contributes to secondary injury <sup>(8)</sup>. Care of the head injured child has many goals. Two primary goals include, the prevention of secondary head injury by controlling intracranial hypertension and the prevention of complications associated with immobility <sup>(9,10)</sup>.

Compared to adults, children have a higher center of gravity, an increased head-to-body ratio and weaker neck muscles that predispose the head to injury. They also have other anatomic disadvantages such as thinner cranial bones and less myelinated brain tissue, which increases the risk of injury to brain parenchyma <sup>(9,10)</sup>.

The signs and symptoms of head injury in children depend on the pathological features and severity of injury. The child with a mild head injury may remain conscious or lose consciousness for less than 5-10 minutes. Following mild and moderate head injuries, children may have amnesia about the event, headache, nausea and vomiting. A child with a severe head injury is usually unconscious for more than 10 minutes and may show signs of increased ICP <sup>(10,11)</sup>. Vital signs may also be altered, in particular, deep or irregular respiration, hypertension, or bradycardia may be apparent. These changes are indicative of elevated ICP <sup>(6,10)</sup>.



Head trauma is a leading cause of increased ICP <sup>(9)</sup>. Elevated ICP causes ischemia and necrosis of brain tissue <sup>(8,9)</sup>. Intracranial hypertension may have detrimental effects not only upon the cerebral structure and function but also upon cardiopulmonary system, e.g. slowing of heart and respiratory rate, cardiac arrhythmias and neurogenic pulmonary edema <sup>(9)</sup>.

Many nursing studies examined the relationship between ICP and nursing activities. Information learned from these studies provide the basis for nursing interventions that promote adequate cerebral tissue perfusion – the most consistent findings in these studies are those regarding the influence of positioning.

Toole in 1968 and Magnaes in 1976 reported that the head elevation is thought to decrease ICP <sup>(9)</sup>. In 1981, Hausman agreed with them and suggested that extreme head and neck flexion should be avoided as it may obstruct jugular venous outflow. He also encouraged to avoid extreme hip flexion because it leads to increased cerebral flow <sup>(12)</sup>. Roser and Coley in 1986, suggested that the patient should be nursed in flat position <sup>(13)</sup>. All researchers reported that maintaining the head and neck in neutral alignment is useful <sup>(6,7,9)</sup>.

In 1993, Schaffler said that the trendlenburg position can be used to elevate the head <sup>(14)</sup>. On the other hand, Romanini and Daly in 1994 stated that the patient should never be placed in this position <sup>(5,15)</sup>. Wong in 1995 reported that turning side to side is contraindicated because of the risk of jugular compression <sup>(16)</sup>.