



Introduction

The word hydrocephalus is a term derived from two Greek words "hydro" meaning water and "cephalus" meaning head and this condition is known as "water on the brain" (*Rizvi, 2005*). However, it is a condition characterized by an increase in cerebrospinal fluid (CSF) in the ventricles of the brain, which causes an increase in the size of the head and pressure changes in the brain. It occurs as a result of an imbalance between the production and absorption of CSF (*Price & Gwin, 2009*).

Hydrocephalus is the most common cause of increased intracranial pressure in children. Rates of morbidity and mortality decrease significantly with appropriate treatment, especially if carried out early. Hydrocephalus has been noted to affect several domains of development including memory, mathematical skills, visual skills and general cognition (*Wolraich et al., 2008*). Hydrocephalus is not a specific disease, but results from underlying brain disorders. It is one of the most frequently seen disorders of the nervous system (*Ricci & Kyle, 2009*).

An estimated 750,000 child suffer from hydrocephalus worldwide and 160,000 ventriculoperitoneal shunts are implanted each year worldwide. There are no robust population-based statistical data worldwide and it is conceivable that the prevalence of this condition is much higher as ready access to diagnosis and treatment is not available in certain parts of the world (*Johnson & Virgo, 2006*).



The prevalence of hydrocephalus is an important consideration because it is a long-term condition with 75 percent of children requiring a permanent shunt that diverts excess CSF fluid from the ventricles into another body cavity. The crude mean prevalence rate for infantile hydrocephalus had been estimated to be 0.6 per 1000 child, which may be declining due to improvements in neonatal care. However, these studies excluded neural tube defects and brain tumors, which can be associated with the development of hydrocephalus (*Smith & Martin, 2009*).

Surgical intervention is the only effective mean for relieving brain pressure and preventing further damage to the brain tissue. Surgery involves removing the obstruction or inserting a shunting device that bypasses the point of obstruction and drains the excess CSF into a body cavity, usually the peritoneum (*White, 2006*).

Mechanical failure and infection together account for the vast majority of shunt complications (*Moore & Newell, 2005*). Shunt infections typically occur within 1 to 2 months of surgical placement or revision. In this case, the child may present with a fever and possibly unusual redness or swelling along the shunt system. If left untreated, the condition may develop into sepsis, encephalitis, peritonitis, or meningitis (*Adirim & Smith, 2009*).

Nursing management of the child with hydrocephalus may focus on monitoring vital signs, head circumference and neurological signs. Preventing infections, providing loving care to the child, supporting the family, increasing the family's knowledge about the condition and setting realistic growth and development goals are some of the priorities of nursing care (*White et al., 2011*).



Therefore, this study was conducted to evaluate the effect of nursing care protocol in prevention and management of hydrocephalic patient developing infection, assess nurses' knowledge and practices regarding pre and post operative management of children with shunted hydrocephalus and to assess the frequency of the occurrence of shunt infection.