Physical and Psychosocial Stressors among Caregivers of Patients with Cerebrovascular Stroke

Thesis

Submitted for Partial Fulfillment of Master Science in Nursing Degree (Psychiatric Nursing)

By

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Introduction

Stroke is the primary neurological problem in the world and the third leading cause of death worldwide. A stroke is defined as a sudden loss of brain function resulting from disruption of the blood supply to a part of the brain ***(Smeltzer & Bare, 2000 and Black et al., 2003)***. A stroke causes a wide variety of neurological deficits, depending on the location of the lesion (which vessels are obstructed), the size of the areas of inadequate perfusion, and the amount of collateral blood flow. The risk of stroke increases with advancing age. In the over 75-age group, approximately 10% will experience a stroke ***(Hoeman, 2002).***

Patients suffering from stroke are at risk for many complications related to impaired neuromuscular functions. The patient with severe motor impairment is at risk for constipation, dehydration, contractures, urinary tract infections, pressure ulcers and pneumonia. Sensory losses put the patients at risk for traumatic injuries ***(Clemen-Stone et al., 2002 and Adams, 2003).***

The importance of stroke as a public health problem has been appreciated only in recent decades in developed and increasingly in developing countries ***(Lancaster, 2003).*** Disability that affects one member of the family inf1uences the other members of the family. It is important for the nurse to

work with family (caregivers to help identify their strengths and manage the disabilities ***(Cookfair, 1996).***

A caregiver is defined as someone who regularly helps a relative or friend who is disabled or ill with tasks like dressing, shopping or household tasks, or who offers other sorts of practical or emotional Support ***(Bugge et al., 1999).*** Several studies have reported great burden and stress among family members caring for chronically disabled relatives who have stroke disorders. In addition, poor health of stroke patients has been associated with the desire by family members to institutionalize the patient. The caregiver's health and functional ability are recognized as factors that contribute to stress or burden. Lower levels of physical and mental well-being limit their ability to perform care giving tasks ***(Allender et al., 2002).***

Family stress often have a feeling of confusion is usually expressed as anger, guilty, aggression and felling of helplessness or inadequacy. They may be a loss of control and particularly decision making ***(Lusk,etal2005).***

With shortened hospital stays and early discharge, more responsibility meet patients' needs has been shifted to the caregivers at home, who are typically responsible for assisting the patient with self-care, providing transportation, helping with procedures, and assisting with medications, and symptoms management. Caregivers' needs were summarized as

informational and psychological needes ***(Dewey et al., 2002 and Howard, 2004).***

Significance of the study:

The family members of a patients with stroke are at risk for problems controlling movement. The stroke patients in housing, employment, and insurance coverage are additional source of burden. so assessment of caregivers, burden and the effect of their knowledge regarding dealing with stroke patient is essential to help them dealing with the stressor of caregiver. This would assisting and prevent the consequences of stressors on family caregivers.

Aim of the Study

To assess physical and psychosocial stressors among family caregivers of patients with cerebrovascular stroke.

Research question:

What are the physical and psychosocial stressors among care givers of patient with cerebrovascular stroke?

Stroke

Definitions of Stroke:

Stroke is defined as an abnormal condition of the cerebral blood vessels characterized by an occlusion or hemorrhage that causes ischemia and damage to the brain tissue perfused by the involved vessel ***(Bode et al., 2004)***. Howevers, ***Nettina (2001)*** defined stroke as the onset and persistence of neurological dysfunction lasting longer than 24 hours and resulting from disruption of blood supply of the brain and indicates infarction rather than ischemia. ***The World Health Organization [WHO] (2009)*** defined stroke as a rapidly developing clinical signs of focal or global disturbance of cerebral function with symptoms lasting 24 hours or longer or leading to death with no apparent cause other than of vascular origin.

Epidemiology of Stroke:

Each year, stroke occurs in more than 50 million individuals worldwide, and is responsible for approximately 5 million deaths, being the second leading cause of death ***(Khoga, 2003 and Shabekashy, 2003).*** Four hundred, twenty-one cases with stroke were reported in Egypt in the year 2005. These stroke cases were found among a random sample of 10% of patients admitted to general and central hospitals ***(MOHP, 2005).***

In the United States, 700.000 strokes, responsible for 165.000 deaths, occur each year ***(Mancia, 2003).*** The National Stroke Association (NSA) (2004) reported that 500.000 to 600.000 persons suffer a new or recurrent stroke each year, resulting in 150.000 deaths in the United States ***(Kammersgaard, 2002 and Ingall, 2004).***

The numbers of strokes may be increasing because of the growing elderly population where the incidence is higher. Men have a 25% increased risk of stroke because of high rates of hypertension and poorer health risk habits ***(Vedhara et al, 2002).***

Pathophysiology of Stroke:

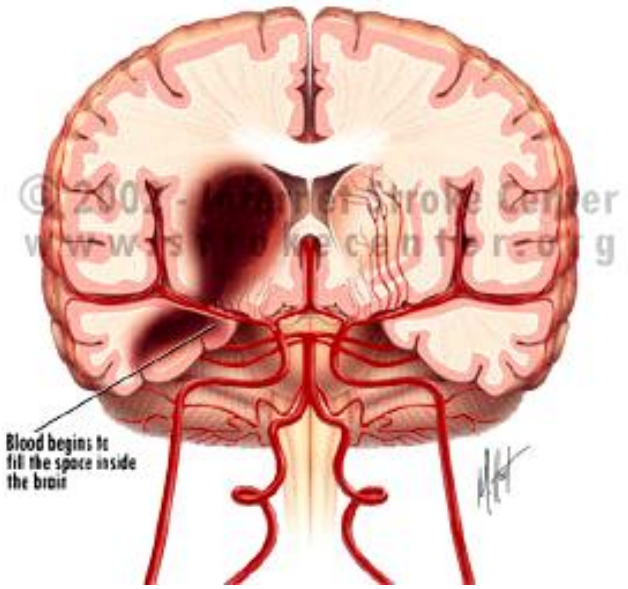
The brain is very sensitive to loss of blood supply. The brain cannot resort to anaerobic metabolism in the absence of oxygen and glucose. Hypoxia can cause cerebral ischemia. Short-term ischemia leads to temporary or transient ischemic attacks (TIAs). Long-term ischemia leads to permanent infarction of cerebral cells ***(Burke and Laramie, 2004).***

The patients' baseline oxygen level and ability to compensate will determine how irreversible changes occur. Cerebral perfusion pressure must fall to two-thirds of normal before the brain doesn't receive adequate blood flow. These numbers are based on a normal baseline. Patient who has lost compensatory auto regulation would have increasing signs of neurological deficit sooner. Without blood flow, electrical

dysfunction occurs, which impairs neuronal function. Occlusion or hemorrhage causes most forms of decreased cerebral perfusion ***(Burke and Laramie, 2004).***

Thrombosis produces ischemia in the brain tissue, affected vessels and oedema in the surrounding areas. An area or infarction occurs in brain tissue not being perfused by the affected artery. A zone of hypo perfusion also exists around the infracted area. The size of this zone depends on the amount of collateral circulation present. The area of edema after thrombosis may lead to temporary neurological changes. Edema may subside in a few hours or sometimes in several days and the patient may regain some functions. Emboli causes sudden necrosis and edema. Most hemorrhages into the brain are caused by the rupture of arteriosclerotic and hypertensive vessels. Most intra cerebral hemorrhages are very large. Hemorrhage into the brain causes the most fatalities of all strokes ***(O'Neill, 2002).***

Aneurysms are weakened out poaching in a vessel wall. Although they are usually quite small in the brain, they can rupture. A stroke secondary to bleeding often produces spasms of cerebral vessels because the blood outside of the vessels acts as an irritant the tissues to ***Smeltzer and Bare (2000) & George-Gey and Chernecky (2002).***



A ruptured blood vessel will leak blood into the brain, eventually causing the brain to compress due to the added amount of fluid **(Adapted from: Mcmannes (2009) Available at:** www-trustyguides.com/Images/adhd_brain,jpg.

Etiology:

- **Ischemia**:

Ischemia means lack of blood supply perfusing the brain tissue. It occurs whenever blood supply is interrupted or totally obstructed. Ultimate survival of ischemic tissue is dependent on the length of time the brain is deprived of blood plus the degree of brain metabolism. Ischemia is commonly due to thrombosis or embolism ***(Saver, 2002).***

Thrombosis stimulus starts with damage to the lining of the vessel walls. Atherosclerosis causes fatty material and plaques on vessel walls. These plaques accumulate and after the usual flow of blood swirls around the plaques and platelets adhere to the plaque. Eventually, the vessel lumen becomes obstructed. Rarely, occlusion is due to inflammatory reactions in the vessel walls. Thrombosis may occur anywhere along a carotid artery or its branches. Thrombotic stroke is the most common stroke in diabetic patients ***(Bogousslavsky and Caplan, 2001).***

Cerebral embolism is the occlusion of a cerebral vessel by emboli. Arterial fibrillation, in particular, is associated with a high incidence of emboli stroke. Blood pools in the poorly emptying atria. Tiny clots form in the left atrium and move through the heart and into cerebral circulation. Artificial cardiac valve replacements, which have a rougher surface than the normal endocardium, also cause an increased risk of clots. Bacterial vegetations produced in endocarditis can break off and travel through the circulation. Other sources of emboli include tumor, fat, bacteria, and air. The embolus most often lodges at the bifurcation of the middle cerebral artery. The incidence of cerebral embolism increases after age 40 (***Haslett et al., 2002).***

- **Hemorrhage:**

Intra cerebral hemorrhage results from rupture of a cerebral vessel, which causes bleeding into brain tissue. Intra cerebral hemorrhage is most often secondary to hypertension.

Large hemorrhage usually comes from arteries. Small hemorrhage may come from veins and capillaries. Intra cerebral hemorrhage caused by arteriosclerosis and hypertension is most common after age 50 years. These hemorrhages usually produce extensive residual functional loss and have the slowest recovery of a11 types or stroke. Brain herniation causes a death in more than 50% of patients within the first 3 days after intra cerebral hemorrhage ***(Hegner and Needham, 2002).***

Bleeding may occur also from rupture of an aneurysm or a vascular malformation. The effects of these hemorrhages depend on the site and extent of the bleeding of stroke ***(Kumar and Clark, 2003).*** Other causes include cerebral arterial spasm, caused by irritation, which reduces blood flow to the area of the brain supplied by the constricted vessel. Spasm of short duration does not necessarily cause permanent brain damage. Compression of cerebral vessels may result from a tumor, large blood clot, swollen brain tissue, brain abscess, or other disorders. These causes are fairly rare ***(Ingall, 2004; Hershkovitz et al., 2004).***

Risk Factors and Warning Signs of Stroke:

Risk factors for stroke have been identified by ***Ingall (2004)*** as modifiable, non-modifiable, and other factors. The non-modifiable factors include age, gender, race, earlier stroke or transient ischemic attack, asymptomatic carotid artery stenosis and heredity (stroke appears to run in some families who may either have a genetic mutation that predisposes them to stroke, or share a lifestyle that contributes to stroke risk

factors. The modifiable factors include hypertension, diabetes mellitus, cardiac diseases, abnormal serum lipid levels, cigarette smoking, excessive alcoholic intake, and drug abuse. Other factors include obesity, migraines, oral contraceptive and hyper coagulability states. Controlling these risk factors can decrease the likelihood of stroke ***(Warlow, 2001 and Malseed, 2004)***.

The control of hypertension, weight reduction, treatment of cardiac arrhythmias (especially arterial fibrillation in the elderly), lowering of blood cholesterol levels, prophylactic anticoagulant therapy (including daily aspirine) in selected people, and proper treatment of medical disorders, such as diabetes mellitus and cardiovascular disease, may prevent a stroke ***(Rao, 1999; Gubitz et al., 2000).***

The signs of a stroke depend on the side of the brain and the part of the brain affected, and how severely the brain is injured ***(Stegmayr and Asplund, 2003).*** They include sudden weakness of the face, arm or leg, most often on one side of the body. In addition, there are other warning signs such as sudden numbness of the arm, or leg, especially on one side of the body, sudden confusion, trouble speaking or understanding speech, sudden trouble seeing in one or both eyes, sudden trouble walking, dizziness, loss of balance or coordination, and sudden severe headache with no known cause. Therefore, each person may have different stroke warning signs. Stroke may be associated with headache, or may be completely painless ***(Kalra et al., 2004).***

Assessment and Diagnostic Findings:

Any patient with neurological deficits needs a careful history; a complete physical and neurological examination. Initial assessment will focus on the patient's ability to maintain a patent airway (due to loss of gag or cough reflexes and altered respiratory pattern), cardiovascular status including blood pressure, cardiac rhythm and rate, carotid bruit and gross neurological losses ***(Hashem, 1999).*** Initial diagnostic tests include cerebral angiography, and echocardiography ***(Parsons, 2002).***

Table (1): Diagnostic findings:

- *Blood Test*
- *CT scan (CAT Scan, Computed axial tomography)*
- *MRI scan (Magnetic resonance imaging, MR)*
- *Carotid doppler (Carotid duplex, Carotid ultrasound)*
- *Transcranial doppler (TCD)*
- *MRA (Magnetic resonance angiogram)*
- *Cerebral arteriogram (Cerebral angiogram, Digital subtraction angiography, [DSA])*
- *Electrocardiogram (EKG, ECG)*
- *Echocardiogram (2-d echo, Cardiac echo, TTE, TEE)*
- *Chest X-ray (CXR)*
- *Urinalysis (UA)*
- *Pulse oximetry (Blood oxygen)*
- *Electroencephalogram (EEG)*
- *Lumbar puncture (LP, spinal tap)*
- *Electromyogram / Nerve conduction test (EMG / NCV)*

Adopted from (Mant et al., 2000; Legg and Langhorne, 2004).

Clinical Manifestation:

The types and degrees of disability that follows a stroke depend upon which area of the brain is damaged. Generally, stroke can cause five types of disabilities: paralysis or problems controlling movement; sensory disturbances including pain; problems with language; problems with thinking and memory; and emotional disturbance ***(Ingall, 2004; Hershkovitz et al., 2004).***

Paralysis or problems controlling movement (motor control):

Paralysis is one of the most common disabilities resulting from stroke. The paralysis is usually on the side of the body opposite the side of the brain damaged by stroke, and may affect the face, an arm, a leg or the entire side of the body. This one-sided paralysis is called hemiplegia (one-sided weakness is called hemiparesis). Stroke patients with hemiparesis or hemiplegia may have difficulty with everyday activities such as walking or grasping objects. Some stroke patients have problems with swallowing, called dysphagia; due to damage to the part of the brain that controls the muscles for swallowing. Damage to a lower part of the brain, the cerebellum, can affect the body's ability to coordinate movement, a disability called ataxia, leading to problems with body posture, walking, and balance ***(National Stroke Association, 2008).***

Sensory disturbances:

Stroke patients may lose the ability to feel touch, pain, temperature, or position. Sensory deficits may also hinder the