

Time is Brain

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Affecting roughly 13.7 million people and killing 5.5 million people worldwide annually, strokes are the second leading cause of death in the world (Kuriakose & Xiao, 2020). A stroke occurs when there is a sudden infarction to the brain caused by a sudden absence or impairment of blood flow. Divided into two categories due to causation, strokes can be classified as ischemic or hemorrhagic. Although the onset of strokes is sudden and can cause lifelong effects, there are many preventative measures one can take to decrease their chances of developing a stroke. In addition to these preventative measures, the effects of strokes can be managed through medical intervention and rehabilitation therapy. As the understanding of stroke pathophysiology and medical technology advances, it is of the utmost importance to educate healthcare professionals and the public about stroke prevention and recognition.

Statement of the Problem

Ischemic strokes are caused by a thrombus or embolus, which causes impaired blood circulation to the brain. This impaired circulation leads to cellular hypoxia causing neurons to die, and changes in membrane permeability producing edema (Lippincott Advisor, 2023). Ischemic strokes are more common, representing 87% of all strokes, and are responsible for 85% of stroke mortality (Kuriakose & Xiao, 2020). A hemorrhagic stroke occurs due to the sudden rupture of a blood vessel in the brain, causing blood to leak into the surrounding brain tissue. This creates edema, leading to impaired cerebral perfusion caused by the compression of brain tissue, causing sudden infarction (Lippincott Advisor, 2023). Hemorrhagic strokes can be further classified into intracerebral hemorrhage and subarachnoid hemorrhage. An intracerebral hemorrhage occurs due to the abnormal collection of blood within the brain, whereas a subarachnoid hemorrhage is caused due to the abnormal collection of blood within the

subarachnoid space (Kuriakose & Xiao, 2020). Strokes may manifest as a variety of signs and symptoms in patients. These findings will be seen on the opposite side of the body that the stroke occurred within the brain's hemispheres. Strokes occurring in the left hemisphere of the brain will have symptoms on the right side of the body and vice versa. Acute symptoms of a stroke include a change in the patient's level of consciousness, sudden facial droop, loss of voluntary muscle control, blurred vision that may affect only one eye, slurred speech, and sudden mobility deficits (Lippincott Advisor, 2023). If observed in clinical practice or within the community, findings should be reported immediately in the hope of preserving brain function.

Increasing in incidence, the significance of strokes is increasing as well. In the United States strokes are the fifth leading cause of death and affect an estimated 800,000 people in the United States each year (Mendelson & Prabhakaran, 2021). These statistics are alarming, as strokes not only have a large prevalence but have a high mortality rate. Overall, the incidence of stroke increases with age. However, we are seeing an increased incidence in the younger populations. This is seen in an article published by the *American Journal of Preventative Cardiology*, in which “the incidence of stroke for adults aged 20-44 was shown to increase from 17 per 100,000 US adults in 1993 to 28 per 100,000 US adults in 2015” (Yahya, et al., 2020). Following a stroke, victims are left with lifelong disabilities. Due to these debilitating effects and increasing incidence, there will be an increased need from the nursing community in terms of patient care. Patients may require assistance with urinary elimination, turning and repositioning, and with ADLs including eating and ambulation. Within the realm of patient care, the nursing community will also be responsible for aiding in the rehabilitation aspect of treatment and management. In a study review done by Richards and Cramer, it was found that stroke patients do not receive adequate rehabilitation therapy, both in inpatient and outpatient settings (2023).

As the prevalence of strokes is increasing, this lack of necessary rehabilitation therapy will only continue to get worse. Due to this, greater responsibilities will fall on the nursing community in general to aid the patient in their health management following a stroke.

Risk Reduction/Treatment of the Problem

Stroke screening can include objective assessment findings and diagnostic imaging. The acronym BE-FAST is the preferred screening tool to identify strokes. Standing for balance, eyes, face, arm, speech, and time, the BE-FAST screening method has been adopted by many hospitals. In a study conducted by *The Official Journal of National Stroke Association*, it was found that the BE-FAST screening had a sensitivity of 85% in the inpatient setting and a sensitivity of 94% in the community-onset stroke alerts (El Ammar, et al., 2020). Regarding diagnostic screening, computed tomography (CT) is the preferred method of diagnosing strokes. However, as time progresses, CT studies become less reliable (Mendelson & Prabhakaran, 2021). Due to this, magnetic resonance imaging (MRI) is the preferred diagnostic test for detecting an acute infarction. MRI testing can detect an acute infarction within minutes of onset, with an “88% sensitivity within 24 hours” (Mendelson & Prabhakaran, 2021). Once a stroke has been identified, immediate treatment is necessary to preserve brain function. Early antiplatelet therapy is the preferred treatment for acute ischemic strokes. In a clinical review conducted by Mendelson and Prabhakaran, dual-antiplatelet therapy beginning in the first 24 hours was shown to reduce stroke risk at 90 days compared to single-platelet therapy following a stroke (2021). Additional treatment for ischemic strokes includes intravenous thrombolysis and mechanical thrombectomy (Mendelson & Prabhakaran, 2021). Although many clinical trials have been performed, an evidence-based standard of treatment for hemorrhagic strokes has not been identified. Rather, controlling hypertension is the first-line intervention performed. In a study

reviewed by *Circulation Research*, it was found that hypertension defined as a systolic reading of 140-159 mm Hg increased the risk of intracranial hemorrhage by 2.20, increasing further as blood pressure increases (Magid-Bernstein, et al., 2022). Despite these current treatment options, the number one treatment option for strokes is prevention.

The prevention of strokes begins with the identification of risk factors. In a study conducted by the *American Journal of Preventative Cardiology*, it was found that 90% of risk factors for strokes are modifiable (Yahya, et al., 2020). Primary preventative measures include the management of hypertension and hyperlipidemia. To achieve the goal of a blood pressure less than 130/80 mm Hg, the targeted therapy includes antihypertensive medications and lifestyle changes. Positive lifestyle changes include maintaining a healthy weight, smoking cessation, limited alcohol intake, and regular exercise (Yahya, et al., 2020). The management of hyperlipidemia focuses on statin therapy and changes in diet. When evaluating your diet and eating habits to manage hyperlipidemia, it is important to limit foods high in cholesterol and triglycerides. Excessive intake of red meats, salts, refined sugars, and saturated fats should be avoided. Instead, vegetables, fruits, nuts, and unrefined cereals should be added to the diet (Yahya, et al., 2020). It is the healthcare community's responsibility to educate and provide care to the public, however, it is the public's responsibility to take accountability in the early prevention of strokes.

Planning of Teaching Content

At the end of my teaching, learners will be able to describe three risk factors of strokes and lifestyle changes they can make to prevent or manage these risk factors. In addition, by the end of my teaching, learners will be able to describe the signs and symptoms of a stroke using the BE FAST acronym. During my presentation, I plan on compiling generic questions to guide

the organization of my research and data. After asking these questions to the crowd, I will assess what the learners already know about the topics. Once the learner's baseline knowledge of strokes is established, I will then guide my teaching to expand on their previous understanding and introduce new information that are critical key points when understanding strokes. To enhance these teaching methods, I plan to use a variety of teaching tools to appeal to different learning styles. At the center of my teaching, I will use a tri-fold poster. In this poster, I plan to use the same non-specific questions listed above to organize my research and data, using brighter colors and bolded text to emphasize importance. I would also like to compile a variety of pamphlets that the learners can take with them, including pamphlets from different stroke foundations and ones that my group has created. At the end of my presentation, I plan to play a trivia game with the learners. During this reassessment of understanding, I will use a spinning wheel, where each triangle asks a different specific question pertaining to the goals of my teaching. Each of these methods described will assess and aid the learner in succeeding in my outlined goals of teaching.

Conclusion

Identified as either ischemic or hemorrhagic, the incidence of strokes is increasing. Due to their severity and debilitating effects, early diagnosis and prevention is essential. The BE-FAST acronym is something that should be known by everyone, within and outside the healthcare field. Lifestyle changes including smoking cessation, hypertension, and hyperlipidemia management are crucial in the prevention and education of strokes. Teaching of these topics will be done through visual and auditory presentations. Time is brain, and it is our job as healthcare professionals to educate the community in the prospect of improving the public's health.

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