

Epidemiology of stroke

Epidemiology 1

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Topics that will be covered are:



introduction



Public Health Significance and
magnitude of the problem



**Descriptive epidemiology of the
stroke**



risk factors



**Prevention and control of the
disease**



Introduction

Stroke is known as one of the biggest causes of death in around the world. It can happen when the brain needs nutrients and oxygen to work normally which is causing death of the brain cells.

This problem can lead to inability to talk and move or even control the bladder and till now there isn't any evidence to what stroke cause.(1)

The WHO defines stroke as:

"rapidly evolving clinical signs of focal disorder (or global) of cerebral function, with symptoms lasting 24 hours or more or leading to death without a clear cause other than the origin of blood vessels", stroke accounts for about 10% of deaths in industrialized countries, and treatment when stroke occurs is largely focused on care and recovery.

A stroke occurs when a blood vessel that carries oxygen and nutrients to the brain is either blocked by a clot or bursts (or ruptures). When that happens, part of the brain cannot get the blood (and oxygen) it needs, so it and brain cells die. (1)

Descriptive epidemiology of the stroke



Consultant of Neurology and Stroke and President of the Saudi Stroke Association, Dr. Adel Al-Hazani, said that "the rate of stroke incidence in the Kingdom of Saudi Arabia is 60 people per 100,000 people, while the frequency of stroke includes the overall rate of 80 per 100,000 people."

It is noteworthy that there are about 25,000 cases of stroke annually in the Kingdom, where research indicates that this disease will continue to rise between 50%-60% in the next few years. (2)

The main reasons for the high incidence of stroke

- Malnutrition.
- diabetic
- Irregular high blood pressure.
- Lack of physical activity.

Risk factors:

Risk factors for stroke can be categorized as **modifiable** and **nonmodifiable**. Age, sex, and Race/ethnicity are nonmodifiable risk factors for both ischemic and hemorrhagic stroke, while hypertension, Smoking, diet, and physical inactivity are among some of the more commonly reported modifiable risk factors. More recently described risk factors and triggers of stroke include inflammatory disorders, infection, pollution, and cardiac atrial disorders independent of atrial fibrillation.(4)

Nonmodifiable Stroke Risk Factors

Nonmodifiable risk factors (also called risk markers) for stroke include age, sex, race-ethnicity, and genetics. In general, stroke is a disease of aging. The incidence of stroke increases with age, with the incidence doubling for each decade after 55 years of age.

The relationship of sex to stroke risk depends on age.

women have as high or higher risk of stroke as men because of the longer life span of women compared with men,

Genetic factors are also known to be nonmodifiable risk factors for stroke with parental history and family history increasing the risk of stroke. (4)

Modifiable Risk Factors

The modifiable risk factors are of utmost importance, as intervention strategies aimed at reducing these factors can subsequently reduce the risk of stroke. Early identification and modification of risk factors is imperative. Modifiable risk factors can be further divided into medical conditions and behavioral risk factors. The role of many traditional risk factors in causing stroke, such as hypertension, diabetes mellitus, hyperlipidemia, and smoking are well established. (4)

Modifiable Risk Factors (cont.)

1-Hypertension

Hypertension is the most important modifiable risk factor for stroke, with a strong, direct, linear, and continuous relationship between blood pressure and stroke risk. (4)

2-Diabetes mellitus

Diabetes mellitus is an independent risk factor for stroke with a 2-fold increased risk in stroke for diabetic patients, and stroke accounts for $\approx 20\%$ of deaths in diabetics. Prediabetics are also at increased risk of stroke.). Diabetic patients who have a stroke tend to be younger, are more likely to be black, and have a higher prevalence of other stroke risk factors.. (4)

Modifiable Risk Factors (cont.)

3-AF and Atrial Cardiopathy

AF has long been recognized to be a major risk factor for stroke, and this has only increased with the aging of the US population. Incident stroke related to AF has nearly tripled in the past 3 decades. The association between AF and stroke has long been assumed to be because of stasis of blood in the fibrillating left atrium causing thrombus formation and embolization to the brain (4)

4-Dyslipidemia

The relationship between dyslipidemia and stroke risk is complex, with an increased risk for ischemic stroke with increased total cholesterol and a decreased risk for ischemic stroke with elevated high-density lipoprotein cholesterol. (4)

Modifiable Risk Factors (cont.)

5-Sedentary Behavior, Diet/Nutrition, Obesity, and Metabolic Syndrome

Physical inactivity is associated with many poor health effects, including stroke. People who are physically active have a lower risk of stroke and stroke mortality than those who are inactive.

The relationship between physical activity and stroke may be because of the associated decrease in blood pressure, reduction in diabetes mellitus, and reduction in excess body weight.

A Mediterranean diet, or a diet high in fruits and vegetables, reduces the risk of stroke.

Body weight and obesity are risk factors for stroke, although the specific ways in which they increase stroke risk continue to be debated.

Obesity is related to stroke risk factors such as hypertension and diabetes mellitus. (4)

Modifiable Risk Factors (cont.)

6-Inflammation and Infection

Levels of inflammatory biomarkers have been associated with increased risk of stroke, just as they have been associated with risk of other cardiovascular diseases and all cause mortality. C-reactive protein, measured using a high-sensitivity assay (hsCRP), is one marker that has been particularly well studied. hsCRP has become the inflammatory marker of choice in the clinical setting because of its consistent association with cardiovascular events, long half-life, and stability when stored frozen for prolonged periods of time. (4)

Modifiable Risk Factors (cont.)

7-Alcohol Consumption:

The relationship of alcohol consumption to stroke risk depends on stroke type. There is evidence of a relationship between alcohol consumption and risk of ischemic stroke, with light-to-moderate alcohol consumption (≤ 2 drinks per day in men and ≤ 1 drink per day in women) being protective against stroke and heavy drinking associated with an increased risk of ischemic stroke. (4)

Modifiable Risk Factors (cont.)

8-Substance Abuse, and Smoking

Abuse of illicit substances, including cocaine, heroin, amphetamines, and ecstasy, is associated with an increased risk of ischemic and hemorrhagic subtypes of strokes. Cigarette smoking remains a major risk factor for stroke, nearly doubling the risk with a dose response relationship between pack-years and stroke risk. It is estimated that smoking contributes to $\approx 15\%$ of all stroke deaths per year. Smoking cessation rapidly reduces the risk of stroke, with excess risk nearly disappearing 2 to 4 years after smoking cessation. (4)



COMPLICATIONS OF STROKE

Complications of Stroke

1-Post-stroke seizures Seizures occur in 5%–9% of all stroke survivors. Most seizures occur within the first year of stroke. It is unusual to develop seizures more than two years after stroke onset. Seizures are more common in haemorrhagic stroke, total anterior circulation stroke and stroke involving the cortex.(4)

2-Urinary incontinence Following stroke, patients often experience variable degrees of urinary frequency, urgency or incontinence due to neurogenic bladder, leading to incomplete bladder emptying. (4)

Complications of Stroke

3-Bowel incontinence New-onset faecal incontinence after stroke is very common, occurring at an incidence of 56% acutely, 30% at 7–10 days and 11% at three months.(21) Older patients, women and those with severe strokes are most at risk. (4)

4-Cognitive impairment Cerebrovascular disease is increasingly recognised as a common cause of cognitive impairment and dementia in later life. Vascular dementia is the second most common cause of dementia after Alzheimer's disease (4)

Complications of Stroke

5-Spasticity and hypertonicity Symptoms relating to spasticity are present in up to 60% of stroke patients. Spasticity is excessive, inappropriate and involuntary muscle activity resulting in stiffness, loss of movement and pain. At worst, it produces a fixed deformity known as a contracture and can lead to development of pressure sores. (4)

6-Wrist and hand flexion Wrist and hand flexion contractures develop in the hemiplegic wrist and hand. A fixed flexion contracture of the hand interferes with restoration of hand function. (4)

Complications of Stroke

7-Psychosocial complications of debilitating stroke, which are very common, almost inevitably have a profound impact on the patient as well as their immediate circle of family and friends. (4)



PREVENTION AND CONTROL

Pre-stroke which is like an alarm it happen when there's a leak of blood flow to a part of the brain with symptoms lasting at most to 24 hours without permanent disability. It like a warning system and should not be ignored.

To prevent a stroke we need to follow some steps that developed (3) by Saudi Ministry of Health which Is:



knowing signs and symptoms to insure the medical assistance



control health problems such as high blood pressure. high cholesterol and diabetes



Maintaining a healthy lifestyle.



exercises regularly.



No smoking or using tobacco products.

stroke control:

Tobacco control:

it was ranked the first between the top five priority interventions for non-communicable diseases and this can happen through advice and advertisements, but the most effective way is through the taxation of tobacco.

High blood pressure control:

it's one of the most effective factors of stroke some countries have already started their programs to combat high blood pressure through surveillance and treatment programs and spreading awareness about these diseases and ways to prevent them.

Reduction of sodium intake:

it was ranked the second after tobacco control among the top five priority interventions for non-communicable disease its till now hard to reduce sodium intake among people. (5)

Surveillance

in fact not all countries have the same ability to establish surveillance so there are three main stepwise stroke surveillance according to WHO:

1-number of fatal strokes events in the community

2-estimated number of non fatal strokes in the community

3-a study shows that stroke surveillance is possible and feasible in low resources settings. (5)

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*Thank you for listening
Any Questions?*