

Case Report

The Impact of Lifestyle and Environmental Factors on Physical, Mental Health and Social Functioning: Case Study

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ABSTRACT

This case study was carried out to demonstrate a critical understanding of lifestyle and environmental impact on physical and mental health and social functioning and the evidence base for intervention. Mr X 68-year-old with a history of diabetes and hypertension was collapsed onto the floor. His wife called an ambulance and he was transported to the hospital. He underwent a CT stroke protocol, which showed signs of Cerebral Vascular Accident Infarct.

This case study was demonstrated a critical understanding of lifestyle and environmental impact on physical, psychological, and social functioning and the evidence base for intervention. Mr X's lifestyle, such as smoking, obesity and lacking of physical exercise had significant impact on him developing an ischaemic stroke. The rehabilitation program that he underwent had positive outcome, reflected on him being discharged.

Keywords: ischaemic stroke, physical, psychological, social functioning, CT stroke protocol, cerebral vascular accident infarct.

INTRODUCTION

This case study was carried out to demonstrate a critical understanding of lifestyle and environmental impact on physical and mental health and social functioning and the evidence base for intervention.

Mr X 68-year-old with a history of diabetes and hypertension was collapsed onto the floor. His wife called an ambulance and he was transported to the hospital. He underwent a CT stroke protocol, which showed signs of Cerebral Vascular Accident Infarct. He showed the following signs and symptoms:

- ♦ Paralysis of the left side of the body.
- ♦ Aphasia (or speaking difficulty). Aphasia is the loss of the ability to

Produce or understand language normally (Dorland's, 1995).

- ♦ Loss of sensation on the left side of the body.

A number of clinical investigations, such as blood pressure measurement, blood tests to check blood glucose, clotting and cholesterol levels showed that Mr X has ischaemic stroke. These clinical investigations were carried out to identify the causes of stroke or to help prevent further injury (NHS Direct, 2008). Diabetes is an independent risk factor for stroke and is strongly correlated with high blood pressure, diabetes and high blood pressure can facilitate the growing thrombus once it is lodged in the brain artery (Bloom, 2005). Blood tests were done to look for signs of inflammation that

can suggest inflamed arteries. Certain blood proteins that can increase the chance of stroke by thickening the blood are measure (Benjamin and William, 2008). If the blockage is a blood clot, another stroke is very likely unless the underlying disorder is corrected. For example, if blood clots result from an abnormal heart rhythm, treating that disorder can prevent new clots from forming and causing another stroke (Merck, 2008). High blood cholesterol or plaque build-up in the arteries can block normal blood flow to the brain and cause stroke (NHLBI, 2006). Ischaemic stroke occurs when a blood clot blocks an artery serving the brain, disrupting blood supply (Torbey and Selim 2007).

Mr X was referred to L ward to undergo intensive rehabilitation for approximately one hour a day.

Tests and investigations

Mr X underwent a CT stroke protocol ([Appendix 1](#)). According to Mr X, it was one of the scariest things that could ever happen to somebody. He was very anxious. Anxiety is a feeling of fearful and tense, it is a normal response to stressful situations (NHS Direct, 2008). The nurse tried to minimise Mr X's anxiety by explaining that this is a normal or routine procedure to investigate his situation. The nurse talked to Mr X, comforted and reassured him. Nurses are essential in providing quality patient care and saving patients lives during an emergency, they are a key role in alleviating the anxiety and fear of the patient during CT scan (Vijayakumar *et al*, 2007)

Pathophysiology of ischaemic Stroke

Stroke can be classified into two main categories based on their underlying mechanism of injury: ischaemic and haemorrhagic. Ischaemic infarcts account for the vast majority of stroke, about 80%, while the remaining 20% are haemorrhagic. Ischaemic refers to a

reduction of blood flow to a particular region of the brain, leading to an infarction (Mills *et al*, 1998) (Jones *et al*, 1981). Reduced blood flow may be caused by an embolus, usually from the heart of the thrombosis of an artery, usually because of atherosclerosis of the carotid arteries, the large vessels that supply blood to the brain. If the reduction of blood flow is prolonged, a neurologic deficit will occur. Ischaemic stroke will produce deficits depending on the vascular territory that interrupted blood flow (Mills *et al* 1998). The effects of ischaemic are rapid, because of the rapid collapse of brain energy metabolism leading to immediate drop of tissue oxygen (PO₂), rapid drop of brain tissue glucose, the main energy substrate as well as the brain is incapable of anaerobic metabolism (Jones *et al*, 1981).

Mr X lifestyle

Mr X's lifestyle and other medical factors, such as diabetes and hypertension had positive impact on him developing an ischaemic stroke. According to his wife, Mr X was smoker, eating unhealthy food and has no diet line at all, using his car most the time and doing little exercise. Mr X body mass index (BMI) was 30, which considered obese. This means Mr X is well over the ideal weight for his height, and this had significant impact on him developing ischaemic stroke (NHS Direct, 2008). Several long-term prospective cohort studies have found a strong association between greater body mass index or relative weight and risk of ischaemic stroke (Lawlor *et al*, 2006).

Smoking and stroke: Mr X was smoking 10 to 15 cigarettes a day. Many epidemiological studies have established cigarette smoking as an important risk factor for stroke (Aldoori and Rahman, 1998). The relative risk of stroke in heavy smokers (>40 cigarettes/day) was twice that of light smokers (<10 cigarettes/day) (Aldoori and Rahman, 1998). Other study showed that the relationship between the amount of smoking and stroke risk was

strongest for ischemic stroke, caused when a blood clot blocks the circulation of blood to part of the brain (Science daily, 2008).

Healthy diet and stroke: A healthy diet is thought to reduce the risk of a number of diseases, such as diabetes and stroke. Recent studies indicate that high dietary intakes of fruit and vegetables are protective against stroke (Johnsen 2004). These studies recommended that public health policy should promote increased dietary intake of fruit and vegetables, as this may have a substantial positive effect on stroke prevention (Johnsen, 2004). It has been suggested that fruit and vegetables offer benefits through their antioxidant and antihypertensive properties (Thomas and Bishop, 2007).

Exercise Regularly: Regular physical activity reduces individual's risk of stroke. In an American Heart Association, scientific statement by Gordon *et al* stated that (*physical activity remains a cornerstone in the current armamentarium of risk-reduction therapies for the prevention and treatment of stroke*) (Gordon *et al*, 2004). 30 minutes of vigorous exercise a day, at least 5 times a week is recommended. The exercise should be strenuous enough to make the heart beating faster, and the person feels slightly out of breath, examples of vigorous exercise: brisk walk, or walking up hill (NHS Direct, 2008).

Other factors contributed to Mr X conditions: Mr X has type 2 diabetes and high blood pressure (BP), or hypertension. Diabetes increases the risk of having an ischaemic stroke (Byne and Wild, 2000). Insulin is the key to diabetes. People with type 1 diabetes do not produce insulin, the beta cells of the pancreas no longer make insulin, because the body's immune system has attacked and destroyed them (NIDDK, 2006). Type 2 begins with insulin resistance, in which fat, muscle, and liver cells do not use insulin properly. At first, the pancreas keeps up with the added demand by producing more insulin.

In time, however, it loses the ability to secrete enough insulin in response to meals (NIDDK, 2006). Uncontrolled diabetes causes damage to the blood vessels and the buildup of fatty deposits (plaque) in the arteries (CHSS, 2006). Keeping blood glucose levels within the target range-(4-6mmols/I before meals and <10mmols/I 2 hours after meals)-will help reduce plaque buildup and stroke risk (CHSS, 2006).

People with hypertension have a risk for stroke that is four to six times higher than the risk for those without hypertension (NINDS, 2008). A systolic pressure of 120mmHg over 80mmHg diastolic pressure is generally considered normal. Persistently high blood pressure greater than 140mmHg over 90mmHg leads to the diagnosis of the disease (hypertension) (NINDS, 2008)

Nursing intervention

On admission to Stroke Unit for rehabilitation, Mr X underwent nursing assessment to identify his needs to overcome or learn to overcome any brain damage that stroke has caused, so that he can regain as much independence as possible and live as normal a life as he is able to. Nursing assessment also helped to liaise with multidisciplinary team (MDT) involved in Mr X rehabilitation process. The aim of rehabilitation is the active promotion and restoration of independence as well as preventing further deterioration and occurrence of complications (Lindsay and Bone, 2004). On stroke unit, the nurse acts as a facilitator in the rehabilitation process continuing with encouraging the patient to work towards their goals set on a 24 hour basis.

Because of Mr X's speaking difficulty, his wife answered the questions that related to any allergies, medication and previous medical history. On admission, Mr X underwent nursing assessment. ([Appendix 2](#))

All these assessment information was filed in Mr X's notes and formed part

of the nursing documentation. This information was accessed by MDT. The information was elicited from this assessment is used to develop a care plan for Mr X.

Mr X was continent and had no symptoms of constipation, but he received assistance with toileting, washing and dressing. His BP was monitored three times a day, in the morning before taking his BP tablet, afternoon and evening. His blood glucose was also monitored twice a day. Mr X continued to receive his medication for stroke (dipyridamole and aspirin), BP (atenolol) and diabetes (metformin) every day.

Mr X was positioned lying and sitting, to minimise the risk of complications, such as aspiration, respiratory complications, shoulder pain, contractures and pressure sores.

Care pathways

Mr X physical weakness and speech problem affected him psychologically, and was very anxious and distressed. Stroke unit incorporated care pathways as a way of treating Mr X. Care plans organise the different services Mr X receives, to make sure that he gets the treatment he needs. There was a daily written plan, which tells the nurses, doctors, physiotherapists (PTs), speech and language therapist (SALT) and occupational therapists (OTs) the treatment and tests Mr X has for that day. One day at 10 am, Mr X had physiotherapy, 1pm occupational therapy, 3pm speech therapy and 5 pm doctor reviewed his medication. The rehabilitation program had significant outcome reflected on him being discharged.

The psychological effects of stroke on Mr X

Mr X showed signs of mood swings. He was anxious and distressed. He had difficulty accepting outside help. He was independent person. Because of his speech problems, sometimes he gets

frustrated when he cannot continue to communicate. Psychological distress, particularly in the form of depression, has a number of side effects in stroke patients. It impairs social functioning and quality of life and interferes with the recovery of motor and language functions. MDT paid attention to Mr X mood swings; they joint him with the breakfast club (Carney and Fredland, 2002).

L ward has breakfast club, which designed for particular patients who have made real progress towards recovery, and ready to be discharged. The breakfast club makes stroke patients more confident that they will be able to do the tasks around the kitchen when they go home. It also gives them opportunity to socialise with each other. I could not find evidence from textbooks or journals for this approach. However, the evidence I have had from the clinical area (L ward).

Case Conference

The case conference was arranged for Mr X, and his wife was informed with the date and time. The case conference was opportunity to discuss how well Mr X can cope at home and what sort of help is available. (Fawcus, 1999) (South Devonshire Health Care, 2004). The case conference attended by Mr X's wife and MDT who were responsible for Mr X's care. MDT provided her with care package that she can cope with him at home. The case conference was very effective, because Mr X might need help from several different staff groups, such as district nurse, PTs, SALT and GP either for advice or to continue some treatment.

CONCLUSION

This case study was demonstrated a critical understanding of lifestyle and environmental impact on physical, psychological, and social functioning and the evidence base for intervention. Mr X's lifestyle, such as smoking, obesity and lacking of physical exercise had significant impact on him developing an ischaemic

stroke. The rehabilitation program that he underwent had positive outcome, reflected on him being discharged.

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Appendix 1

CT stroke protocol:

Implementation of this protocol as the routine imaging protocol for suspected stroke will likely reduce the use of additional imaging studies and may provide a powerful tool to identify patients at high risk for further stroke (Smith *et al*, 2003). By combining non-contrast-enhanced CT (NECT), perfusion CT (PCT) and CT angiography (CTA), the entire

cerebrovascular axis can be imaged during acute stroke. This CT protocol is safe and feasible (Smith *et al*, 2003). NECT is usually the first radiologic examination in acute stroke, the additional information supplied by PCT and CTA can be rapidly obtained without removing the patient from the scanner table. This additional contrast imaging is only associated with a minimal delay in treatment. Such multiparametric CT protocols allow a comprehensive diagnosis of emergency stroke patients within less than 15 minutes by combining NECT, PCT and CTA (Schramm, 2003).

Appendix 2

The assessment that Mr X underwent:

- ♦ His risk of aspiration, using validated 50 ml water swallow screening tool, administered by trained nurse. This screening test is to identify if Mr X at risk of aspiration, and is to minimise unnecessary restriction of oral intake (Smith *et al* 2000)
- ♦ His ability to perform the activities of daily living, by using Barthel Index tool. ([Appendix 3](#))
- ♦ Fecal incontinence and constipation, urinary incontinence and retention.
- ♦ His needs in relation to moving and handling.
- ♦ His risk of developing pressure sores
- ♦ Nutritional status, using malnutrition universal screening tool (MUST) to obtain BMI
- ♦ His clinical measurement, such as BP, pulse, temperature, oxygen saturation and blood glucose was monitored and recorded.
- ♦ His BP was very high (145/92mmHg)
- ♦ His BMI score was 30
- ♦ He was referred to dietician to give advice on healthy diet to reduce his weight
- ♦ He should be weighed every Tuesday

Appendix 3

The Barthel Index consists of 10 items that measure a person's daily functioning, particularly the activities of daily living and mobility. The assessment can be used to determine a baseline level of functioning and can be used to monitor improvement in

activities of daily living over time (Mahoney and Barthel 1965) (van der Putten et al 1999).

Example form:

Patient Name: _____	Rater: _____	Date: / / : _____
Activity	Score	
Feeding 0 = unable 5 = needs help cutting, spreading butter, etc., or requires modified diet 10 = independent	0 5 10	
Bathing 0 = dependent 5 = independent (or in shower)	0 5	
Grooming 0 = needs to help with personal care 5 = independent face/hair/teeth/shaving (implements provided)	0 5	
Dressing 0 = dependent 5 = needs help but can do about half unaided 10 = independent (including buttons, zips, laces, etc.)	0 5 10	
Bowels 0 = incontinent (or needs to be given enemas) 5 = occasional accident 10 = continent	0 5 10	
Bladder 0 = incontinent, or catheterized and unable to manage alone 5 = occasional accident 10 = continent	0 5 10	
Toilet Use 0 = dependent 5 = needs some help, but can do something alone 10 = independent (on and off, dressing, wiping)	0 5 10	
Transfers (bed to chair and back) 0 = unable, no sitting balance 5 = major help (one or two people, physical), can sit 10 = minor help (verbal or physical) 15 = independent	0 5 10 15	
Mobility (on level surfaces) 0 = immobile or < 50 yards 5 = wheelchair independent, including corners, > 50 yards 10 = walks with help of one person (verbal or physical) > 50 yards 15 = independent (but may use any aid; for example, stick) > 50 yards	0 5 10 15	
Stairs 0 = unable 5 = needs help (verbal, physical, carrying aid) 10 = independent	0 5 10	
TOTAL (0 - 100)	_____	

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