

Review article

Prevention of stroke among hypertensive patients: A recent update**Priyanka Sane**

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Abstract

The major predisposing risk factor to stroke is hypertension. Stroke is one of the important diseases that held responsible for mortality and morbidity all around the world. A perusal of literature revealed the prevalent practice of using teaching modules and knowledge resources on identifying stroke instigating practices and improving prevention practices in high risk individuals. In a recent study based on the assessment on the knowledge of hypertensive patients regarding prevention of stroke, in addition to the attitude practices of hypertensive patients to stroke prevention a Self-Instructional Module was developed to impact positively on the knowledge, attitude and practice of hypertensive patients to stroke prevention. This has been emphasized over decades by medical practitioners to inculcate efficient reaching and knowledge repositories for improving stroke prevention practices in high risk individuals. The results indicated during post assessments on knowledge, attitude and practices to stroke prevention a statistically significant increase in the post-test scores reflecting on the positive impact of the Self-Instructional Module on the knowledge, attitude and practice to stroke prevention among hypertensive patients. Thus, the introduction of intervention using Self Instructional Module helps in reducing incidences of stroke among hypertensive patients.

Keywords: Stroke, hypertension, nurse, patient, Self-Instructional Module.

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1. Introduction

High blood pressure, also termed as hypertension is a condition that afflicts almost 1 billion people worldwide and is a leading cause of mortality and morbidity. Therefore, this disease is often referred as a "Silent Killer." In most of the instances, this disease remains asymptomatic until severe to express as one of the following outcomes: stroke, myocardial infarction, renal dysfunction, visual problems and others. Thus, hypertension is affirmed as the major risk factor for stroke, coronary artery disease and myocardial infarction [1].

High blood pressure is one of the most common causes of stroke as it strains blood vessel walls causing them to thicken and deteriorate. Traditional risk factors of ischemic stroke in young adults include smoking, diabetes mellitus and hypertension. Studies from Asia showed ischemic

and haemorrhagic strokes had the same risk factors, especially a history of hypertension being the major predisposing risk factor [2]. The incidence of stroke among adults was less than 2 % in some developing countries in 1990, whereas there was stroke occur in 5% of Western European adults, 8 % of Americans and 13 % of Saudi Arabians. In Thailand, stroke was the fourth leading cause of death at 28.96 per 100,000 in 2009 and in India, death due to stroke for the year 1998 – 1999 was 36/100,000. A statistical analyses on gender influence on stroke showed that women always outnumbered men, except in the age group of 50- to 69 [3].

Hypertension, thus gains importance as a prominent medical and public health issue. Hypertension affects nearly 1 billion individuals worldwide and is responsible for approximately 7.1 million deaths per year. In India, 25-30 % of the urban population and 10 - 12 % of the rural areas

suffer from high BP and are thus hypertensive individuals prone to stroke risk. Furthermore, this was observed that 30 % are still unaware that they have hypertension, despite 59% of them are receiving treatment to hypertension [4]. The study conducted in Australia reported that within 12 months of stroke – approximately 37 % die and 10 % experience a recurrent stroke. Of those who survive stroke - approximately 51 % are disabled in one of the day-to-day activities and 50 % exhibit cognitive impairment or dementia [5]. Similarly, a survey in different parts of India showed prevalence of stroke to be approximately 200 per 100, 000 population. India thus faces an enormous socioeconomic burden to meet the cost of rehabilitation of stroke victims, as more people are now surviving the peak age (55-65 years) common for stroke occurrence [6].

However, stroke is a preventable disease and in the past two decades, research on stroke prevention changed the traditional perception that stroke is disease of the age that inevitably results in death or severe disability. Nevertheless, there are numerous researchers working on developing effective primary and secondary stroke prevention strategies soon on identifying the onset of symptoms that will also identify more precisely people at higher risk to stroke. There is an increased awareness towards understanding of the care process to stroke patients these days with a number of evidences to support interventions and care processes in stroke rehabilitation [7].

In this technical review, the recent progress on stroke prevention strategies that targets hypertension the main predisposing factor to stroke was discussed with special reference to the intervention method tested by the author using the Self-Instructional Module that was developed in his lab.

Hypertension treatment and interventions:

Despite a dearth in the understanding of hypertension and its treatment, research on hypertension treatments has not been extensive. However, a number of studies reported on finding alternate ways to manage lifestyle habits and practices to treat and change the hypertensive conditions in affected patients. Esposti LD,

Saragoni S, et al., (2011) conducted a study to evaluate the adherence to antihypertensive therapy (AHT) and the implications of adherence to AHT on mortality rate and cardiovascular (CV) morbidity in a large cohort of patients treated recently at a clinical practice. The results of the study implied that the risk to death, stroke disabilities or acute myocardial infarction significantly lowered in patients with good (HR = 0.69, $p < 0.001$) and excellent adherence (HR = 0.53, $p < 0.001$) to AHT. Thus the researchers concluded that the preliminary evidence underline the need to monitor and improve medication adherence in clinical practice for hypertension [8].

In another study by Doris S, Stefan G, et al. (2007) the relation between knowledge on hypertension and education in hospitalized patients with stroke in Vienna and on their blood pressure to curb hypertension in these patients was assessed They used a multi-centre hospital based stroke registry to record their assessments. The results indicated that 77 % of the patients had knowledge on hypertension being a risk factor to stroke with only 30 % felt an increased risk of stroke. Nevertheless, approximately half of the hypertensive patients were acquainted with alternative treatment options of physical activity (49 %), reduction of salt intake (54 %), reduction of caloric intake (48 %) and relaxation techniques (17 %). Educational level was significantly proportional directly to the knowledge of increased risk, possible consequences of hypertension and knowledge about alternative treatment options. The study thus concluded that the knowledge in population was insufficient requiring educational campaigns on hypertension to increase awareness [9].

Similarly, a cohort study conducted on estimating the probability of stroke in Korean hypertensive patients visiting tertiary hospitals showed that the proportion of patients who have uncontrolled hypertension despite use of antihypertensive tablets had approximately 2.4 times higher probability to stroke and was equally distributed between the genders [10, 11]. Kerry SM et al. (2007) conducted a study on control of blood pressure to reduce the risk of recurrent stroke with the help of a nurse led telephone support to patients with hypertension and a history of stroke. They were also given a blood pressure monitor and

brief training, besides telephone support for a period of 12 months that led ultimately to an observed fall in systolic blood pressure in uncontrolled blood pressure patients [12].

Furthermore, stroke research was directed towards research on developing techniques to identify individual based risk factor leading to hypertension to stroke. Owolabi MO and Agunloye AM (2012) conducted a research on assessing the major risk factors for stroke among hypertensive patients (Nigerian-Africans) using conventional techniques that suggested greater alcohol consumption, lesser physical activity and increased CIMT as the major risk factors to hypertension. The study thus concluded that besides BP control stroke prevention efforts should be targeted towards identified risk factors among hypertensive patients [13].

Moreover, a prospective study was conducted to assess the risk factors of stroke among Congolese black hypertensive diabetics that indicated age > or = 60 years, cigarette smoking, excessive alcohol intake, diabetic condition for 2 or more years, and pulse pressure > or = 60 mm Hg as the risk factors for stroke [14]. A questionnaire study on knowledge of stroke risk factors among primary care patients with previous stroke or TIA emphasized that hypertension, hyperlipidemia and smoking as risk factors in nearly 90 % of patients; and atrial fibrillation and diabetes in less than 50 % of the patients. Thus, the need to develop efficient teaching strategies for stroke patients with diabetes was stressed [15].

Contrarily, when Veghari G et al., (2012) conducted a study to assess the impact of literacy on prevalence and awareness of hypertension in Iran, illiterate people was surprisingly having a higher awareness to stroke and thus lower incidence. A multidimensional questionnaire along with blood pressure levels was noted for this assessment and the investigator concluded the need for awareness programs to prevent complications related to hypertension in illiterate subjects [16].

Nevertheless, Beena T, et al assessed the effectiveness of an awareness program on primary prevention of stroke using a self-administered

stroke assessment questionnaire followed by blood pressure, height, and weight measurements. The results of the study noted that majority of the participants 73.9 % were gaining health information through television, despite which they were often unable to identify their health condition as risk factor to stroke. Thus, they also affirmed that risk perception through mass education on primary prevention of stroke will help to control modify risk factors [17].

Self-Instructional Module on Hypertension to Stroke Prevention – Knowledge and Practices:

I felt in the end that there is a need to impart adequate knowledge about prevention of stroke and control of hypertension and identify the attitude and practices of the hypertensive patients. For this purpose I designed and developed a Self-Instructional Module that will impact to reduce the complications of hypertension and the global burden of stroke in turn.

Conceptual framework

The conceptualization of this study was based on The Neumann's system model theory. "The Neumann's system model is based on stress and the reaction/ potential reaction to stress developed on a philosophical basis in wholeness, wellness, client perception, motivation, energy and environmental interaction. The key components are the client/ client system composed of the physiological, psychological, socio cultural, developmental and spiritual variables that interact with the internal and external environments and the three prevention-as-intervention levels (primary, secondary and tertiary) with purpose of achieving optimal wellness" [18].

The present study thus aimed at assessing the effect of Self-Instructional Module on knowledge, attitude and practice to stroke prevention. I focused on the primary prevention of stroke in hypertensive patients and the stressors that I identified and categorised into physiological, psychological, socio cultural, developmental and spiritual components contribute to risk for stroke in hypertensive patients. Based on this the conceptual framework system model was developed for the module as follows:

Basic idea – Adequate knowledge, attitude and practice ensure prevention of stroke, improves functional capacity, restores optimum level of recovery and improves quality of life.

Stressors: Stressors are the stimuli that cause tension and have the potential for causing system instability [19].

In this study, I identified the stressors and stimuli that causes tension or increases the risk of hypertensive patients to stroke. Stressors are classified as:

- Non-modifiable factors (age, gender, hereditary), and
- Modifiable factors (high blood pressure, lifestyle factors, exercise and stress).

Prevention as interventions

Provide Self-Instructional Module on prevention of stroke among hypertensive subjects to develop an attitude regarding prevention of stroke. Hence, this study will require approval by the ethical committee of the institution as well as the Maharashtra University of Health Science, Nasik and written permission from the Medical Director of the selected hospital. The nature of the study, aim and objectives were explained to the subjects and written consent was obtained from subjects after assuring them their information would be kept confidential and used for research purpose only.

1. The study was conducted on the assumptions that: Hypertensive subjects may develop complications like stroke.
2. The Self-Instructional Module helps hypertensive patients to gain adequate knowledge regarding prevention of stroke; will develop attitude and will take measures to prevent complications of hypertension that is stroke.

Furthermore, I evaluated the efficiency of this module on hypertensive patients over a period of one month using questionnaire and assessed based on the performance during pre-test and post-test after intervention. The impact on the

knowledge, attitude and practices to stroke prevention was measured.

Conclusion

In the end, this study concluded that the majority of the hypertensive subjects falling within the set criteria are from the age group of 40-49 years, was male and married, has completed secondary education and was unemployed. These subjects preferred non-vegetarian food with good exercise and had no signs of other illnesses. Nevertheless, the evaluation of Self Instructional Module on stroke prevention after the pre-test improved the scores of the hypertensive patients in the post-test thus reflecting on the gained knowledge, changed attitude and practices to stroke prevention. Thus, this study supported the previous reports and addressed the needs assessed in those reports as in the form of the Self-instructional module thus developed for encouraging stroke prevention strategies.

Recommendations

Keeping in view of the outcomes of this study the following recommendations were made for further research in stroke prevention interventions: A similar study on a large number of subjects for wider generalizations and standardizing the efficiency of the developed module at various instances.

A comparative study to compare the knowledge, attitude and practices to stroke prevention by patients from urban and rural background.

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Conflict of interest

None

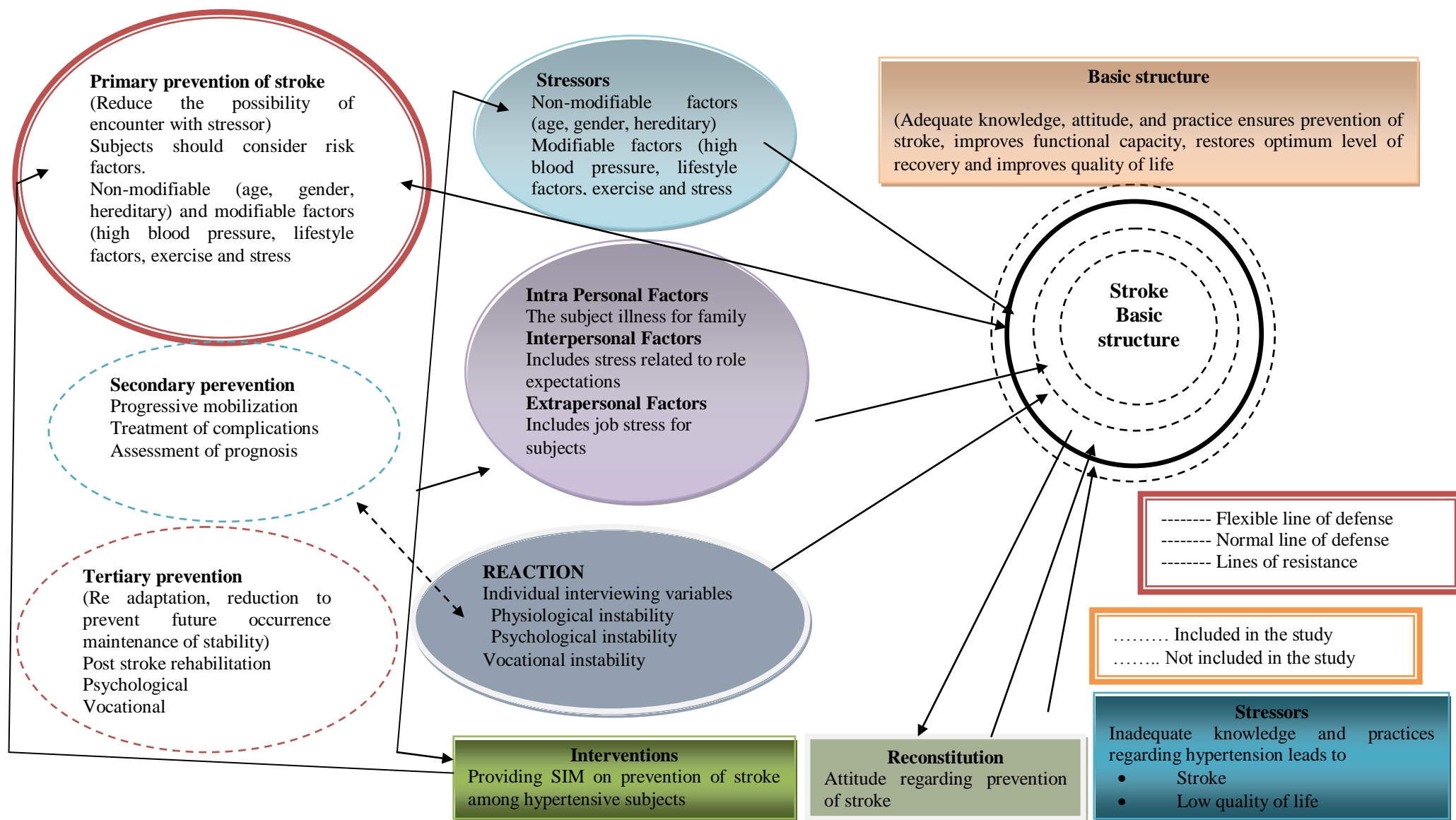


Figure 1: Modified Conceptual Framework Based On Betty Neumann's System Model

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