Original Research Paper

Nursing

A STUDY TO ASSESS THE KNOWLEDGE ATTITUDE AND PRACTICE REGARDING PREVENTION OF RECURRENT STROKE AMONG STROKE SURVIVORS

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INTRODUCTION
Background of the problem
Non-communicable diseases (NCDs) have replaced communicable diseases as the most common causes of morbidity and premature mortality worldwide.[1] Of 56.4 million global deaths in 2015, 70% (39.5 million) were due to noncommunicable diseases (NCDs). In 2015, over three quarters of NCD deaths i.e., 30.7 million occurred in low and middle income countries with about 48% of deaths occurring before the age of 70 years in these countries. The leading causes of NCD deaths in 2015 were cardiovascular diseases (17.7 million deaths, or 45% of all NCD deaths), cancers (8.8 million, or 22% of all NCD deaths), and respiratory diseases, including asthma and chronic obstructive pulmonary diseases (3.9 million).[2] Deaths due to Non communicable diseases are projected to increase from 38 million in 2012 to 52 million by 2030.[1]

Noncommunicable diseases (NCDs) contribute to around 5.87 million deaths that account for 60% of all deaths in India. India shares more than two-third of the total deaths due to NCDs in the South-East Asia Region (SEAR).[3]

According to Global Burden of Disease Report, cardiovascular disease is the leading cause of death in India killing 1.7 million Indians in 2016. CVD includes coronary artery diseases, congestive cardiac failure, hypertensive heart diseases, inflammatory heart diseases andcerebrovascular diseases (stroke). Cardiovascular diseasesare the leading cause of mortality in Kerala contributing to as much as 40% of all deaths. The age adjusted death rate due tocardiovascular disease in the state is 490 per lakh for men and 231 per lakh for women every year.[1] Stroke is an event caused by the interruption of blood supply to the brain, usually because a blood vessel bursts or is blocked by a clot which cuts off the supply of oxygen and nutrients causing damage to the brain tissue. Ischemic stroke accounts for 50%–85% and hemorrhagic stroke accounts for 8%-34%of all strokes worldwide.[4]

Stroke is a global health problem. It is the second commonest cause of death and third leading cause of disability worldwide. Approximately 20 million people each year suffer from stroke and of these 5 million will not survive. In developed countries, stroke is the first leading cause for disability, second leading cause of dementia and third leading cause of death. Globally, 70% of stroke and 87% of both stroke-related deaths and disability-adjusted life years occur in low and middle income countries. Over the last four decades, the stroke incidence in low and middle income countries has morethan doubled.[5]

Stroke is one of the leading causes of death and disability in India. According to the latest WHO data published in 2017 stroke deaths in India reached 7.89% (694,258) of total deaths. The age adjusted death rate is 71.48 per 100,000 of population ranks India as 114th in the world.[6] The estimated age adjusted prevalence rate of stroke ranges from, 84-262/100,000 in rural and 334-424/ 100,000 in urban population. The incidence rate is 119-145/100,000 based on the recent population based studies.[7]

As per the recent report of SCTIMST, Trivandrum stroke occurred at a rate of 7.1/1000 among people above the age of 55years and the rate escalated to 13.3 for people above the age of 75years.[8]

Stroke recurrence is defined as a new neurological deficit including ischemic or hemorrhagic stroke which occurs any time after the initial stroke. In effect, the stroke recurrence is a new neurological deficit or a deterioration of an existing deficit. Serious complications can arise from one or more episodes of stroke recurrence thatresults in either mortality or increased disability[9] Globally (2013) there were nearly 25.7 million stroke survivors, 6.5 million deaths due to stroke, 113 million disability-adjusted life-years (DALYs) lost because of stroke and 10.3 million new cases of strokes.[10]

Patients with stroke have 15 times higher risk of recurrence of stroke than the general population and this risk are further increased in the presence of cerebrovascular risk factors. These risk factors include systemic arterial hypertension, myocardial infarction, atrialfibrillation, diabetes mellitus, high cholesterol levels, carotid artery disease, smoking and alcohol use. Thus neuro rehabilitation and secondary prevention of stroke remains the mainstay in the management of stroke.[11]

A study conducted among 500 patients to evaluate the risk factors, recurrent ischemic stroke characteristics and the sufficiency of secondary prevention regarding the most common modifiable risk factors reported that, 18% of patients with ischemic stroke had recurrent ischemic stroke. Prevalence of cerebrovascular risk factors were hypertension (88%), diabetes mellitus (43%), ischemic heart disease (36%), hyperlipidemia (30%), atrial fibrillation (11%), and smoking (14%)and 38% of patients had more than two risk factors. The study concluded that improvement of the patient's adherence to treatment is very important in addition to the optimal treatment and follow-up strategy for decreasing the incidence of recurrent ischemic stroke.[12]

The socioeconomic burden of stroke seems to become increasingly heavy in high income as well as low and middle income countries. The prevalence of stroke is likely to continue to raise leading to 60% direct costs such as health care and medications and 40% indirect costs such as lost productivity due to absenteeism from the workplace and mortality.[13]

The economic burden of stroke was estimated from a societal perspective with an incidence approach. Data were collected from clinical registries and 100 patients were included. In the cost calculations; both direct and indirect costs were estimated. Men (78%) consumed more acute care in hospitals than the women (22%). Younger patients (59%) brought a significantly higher burden on society compared with the older patients due to the loss of productivity and the increased use of resources in health care; 56% of patients have the hospital stay of 5-10 days and 52% are using 4-7 medicines per day. The study findings shows that the average direct medical costs, direct non-medical costs and indirect costs were found to be 2819, 705 and 754 rupees respectively. This study highlights the significance of prevention programs on

selected high-risk population to reduce the economic burden of stroke.[14]

Need and significance of the study
One of the greatest risks to a stroke survivor after an initial stroke episode is a secondary stroke. A secondary stroke also known as recurrent stroke is one which occurs 24 hours or more after a primary stroke which involves any vascular territory of the brain. It is also regarded as a sudden life-changing event with lifelong implications often with chronic disability, reduced independence, and increased need for medical, social and caregiver support. Secondary stroke is generally associated with increased mortality and worse functional outcomes compared with first-ever stroke. The phenomenon of secondary stroke has been linked to poor compliance with treatment and inadequate secondary stroke prevention measures.[15]

Stroke recurrence leads to prolonged hospital stay, disability and socioeconomic burden. A prospective study titled 'recurrence of ischemic stroke in first 90 days' conducted in Rajasthan reported 22 recurrent stroke events among 297 patients in the first 90 days after ischemic stroke resulting in a recurrence rate of 7.4%. There was a trend towards higher rate of early recurrence in those who discontinued antiplatelets. Among vascular risk factors a higher risk of recurrence was reported among patients with hypertension (hypertensive 7.92% vs. non hypertensive 6.10%), diabetes(diabetic 6.21% vs. non diabetic 4.94%) and smoking(smokers 8.64% vs. nonsmokers 5.44%).[16]

As the second leading cause of death and one of the leading contributors to adult disability worldwide, stroke poses a significant personal, social, and financial global burden. Stroke survivors experience long-term problems at different points in their recovery and these will affect their quality of life for up to 5 years poststroke and possibly longer. Stroke survivors may experience impairments such as memory loss, pain, spasticity, fatigue, urinary incontinence, cognitive impairment, communication disorders, disability and activity limitations such as social isolation, emotional changes, reduced physical functioning and impact on the relationship between stroke survivor and caregivers. The impact of these long term problems are significant and contributes to an overall decrease in quality of life among stroke survivors.[17]

A cross-sectional population based study was conducted in North Kerala to assess the quality of life among stroke survivors and the prevalence of depression among them. Forty stroke survivors were interviewed at home to assess the quality of life and depression status. QOL was assessed using the Medical Outcomes 36-Item Short-Form Health Survey (SF-36), functional status using the Modified Barthel Index (MBI), and depression using Beck's Depression Inventory (BDI).The mean depression score was 55.25±2.79 and the prevalence of unrecognized depression was 90%; 95% patients needed varying degrees of support for their activities of daily living. The SF-36 scores of the patients were considerably lower than that of the general population especially in the areas of role limitation and physical functioning. The findings of the study emphasize the importance of community-based rehabilitative approaches to improve the quality of life and to assist patients towards achieving independence in activities of daily living.[18]

Recurrent stroke is preventable. Without timely treatment and reduction of modifiable risk factors the 30-day risk for a recurrent stroke is 5–12%. Effective management of risk factors is essential for individuals who have suffered a stroke. Strategies such as acquisition of knowledge of risk factors and lifestyle modification are crucial for the successful prevention of recurrent stroke.[19]

A study titled 'effect of web based stroke education program among stroke patients and their primary caregivers' was conducted among 36 patients with clinical diagnosis of ischemic stroke within 12 months post-stroke and their primary caregivers. The participants were randomly assigned to either an experimental or a control group. The primary outcomes measured included blood chemistry, self-reported health behaviors, sense of control, and health motivation for stroke patients, and caregiver mastery for care. The researcher introduced the web based program to the experimental group. The experimental group tended to improve significantly more than the control group in terms of exercise, diet, sense of control and health motivation for the stroke patients and caregiver mastery for primary caregivers. The program which focused on the prevention of recurrent stroke in stroke patients has the potential to improve healthbehaviors.[19]

A quantitative descriptive design was used to assess the knowledge and practice of stroke survivors regarding secondary stroke prevention. Face-to-face structured interviews were conducted utilizing a structured questionnaire to collect data from a sample of 60 discharged stroke survivors. It was found that knowledge and practice on secondary stroke prevention among stroke survivors is very low despite the availability of information sources. The study also revealed that half of the stroke survivors were unable to name a single appropriate action taken to prevent secondary stroke. A significant proportion of stroke survivors also continue to smoke and consume alcohol contrary to expectations and recommendations. Only a relatively small percentage of stroke survivors comply with lifestyle changes prescribed to them such as diet modification and engaging in physical exercise.[15]

A study conducted to assess the knowledge of stroke among stroke survivors and their relatives reported that 62% of respondents recognized paralysis of one side as a warning symptom and 54% recognized hypertension as a risk factor for stroke. Higher education was associated with the knowledge of correct organ involvement in stroke, whereas younger age and higher education correlated with a better knowledge regarding warning symptoms of stroke. The study concluded that there is lack of awareness of major warning symptoms, risk factors, organ involvement and self-recognition of stroke among patients.[20]

Kerala Institute of Medical Sciences (KIMS) Hospital, Trivandrum is a six hundred bedded super specialty hospital with advanced medical and surgical facilities. About 500-600 patients are getting admitted yearly with primary and recurrent stroke.

The investigator has decided to undertake the study to assess the knowledge, attitude and practice of stroke survivors regarding prevention of recurrent stroke and to provide individualized teaching with pamphlet on risk reduction measures so as to enable them to modify their lifestyle practices.

Purpose
Purpose of the study is to assess the knowledge, attitude and practice regarding prevention of recurrent stroke among stroke survivors and to provide individualized teaching with pamphlet on risk reduction measures.

Statement of the problem
A study to assess the knowledge, attitude and practice regarding prevention of recurrent stroke among stroke survivors in a selected tertiary care hospital, Trivandrum

Objectives
1. To assess the knowledge, attitude and practice regarding prevention of recurrent stroke among the stroke survivors.

2. To determine the relationship between knowledge and practice regarding prevention of recurrent stroke.
3. To determine the association between knowledge, attitude and practice regarding prevention of recurrent stroke and selected socio personal variables.

Operational definitions
Knowledge
Refers to awareness of stroke survivors regarding risk factors of stroke and measures to prevent recurrent stroke as measured by structured knowledge questionnaire

Attitude
Refers to the beliefs, views and perceptions of stroke survivors about the risk factors of stroke, its impact on health and quality of life and preventing recurrent stroke by a modifying life style as measured by five point attitude scale

Practice
Refers to the activities and measures adopted by stroke survivors to prevent recurrent stroke as measured by self-reported practice rating scale

Stroke survivors
Stroke survivors are patients suffered from primary stroke attending the neurology outpatient clinics of KIMS hospital, Trivandrum for follow up.

Assumptions
1. Stroke survivors have inadequate knowledge regarding the risk factors of stroke.
2. Stroke survivors are unaware about their risk for recurrent stroke.
3. Stroke survivors are unaware about the significance of lifestyle modification to prevent stroke recurrence

Hypothesis
H1: There is significant relationship between knowledge and practice regarding prevention of recurrent stroke among stroke survivors.

H2: There is significant association between knowledge regarding prevention of recurrent stroke and selected socio personal variables.

H3: There is significant association between attitude towards prevention of recurrent stroke and selected socio personal variables.

H4: There is significant association between practice regarding prevention of recurrent stroke and selected socio personal variables.

Conceptual/theoretical framework
Conceptual framework is a set of interrelated concepts that represent and convey a mental image of a phenomenon.The theoretical frame work of the present study is based on Betty Neuman's systems model. Neuman's model affords a total person approach to client's problems by providing a multidimensional view of the person as an individual.

Major concepts of the model
Human being
Human being is viewed as an open system that interacts with internal and external forces or stressors. The human is in constant change moving toward a dynamic state of system stability or toward illness of varying degrees.

Environment
The environment is a vital arena that is germane to the system and its function; it includes internal, external, and created environment. The environment may be viewed as all factors that affect and are affected by the system. The internal environment exists within the client system. The external environment exists outside the client system.

Health
Health is defined as the condition or degree of system stability and is viewed as a continuum from wellness to illness. Stability occurs when all the system's parts and subparts are in balance or harmony so that the whole system is in balance. When system needs are met, optimal wellness exists. When the needs are not satisfied, illness exists. When energy needed to support life is not available, death occurs.

Open system
A system in which there is a continuous flow of input and process, output and feedback. It is a system of organized complexity, where all elements are in interaction.

Basic structure and energy sources
The basic structure or central core is made up of those basic survival factors common to the species. These factors include the system variables (physiological, psychological, sociocultural, developmental, and spiritual), genetic features, and strengths and weaknesses of the components of the system. In the present study, the central core is strokesurvivors currently attending the neurology OPD, KIMS hospital Trivandrum.

Client variables
Neuman views the individual client holistically and considers simultaneously and comprehensively. The physiological variables refers to the internal and external functions of the body, the psychological variables to mental process and relationships; the sociocultural variables to the system function that relate to social and cultural expectations, activities and influences, the developmental variable to those processes related to development over lifespan; and spiritual variable to influence of spiritual beliefs. In the ideal situation, these variables function in harmony and stability in relation to internal and external stressors.

Line of resistance
The lines of resistance protect the basic structure and become activated when the normal line of defense is invaded by environmental stressors. If lines of resistance are effective the system can reconstitute.

In the present study, among these patients line of resistance was invaded by stressors. Client's active involvement in prevention of risk factors strengthens the lines of resistance and helps to maintain the integrity of the system.

The normal line of defense
In terms of system stability, the normal line of defense represents stability overtime. It is considered to be the state of equilibrium or adaptation the individual has maintained overtime. It is the usual level of stability of the system or normal wellness state and is used as the baseline for determining deviation from wellness for the client system.

Flexible line of defense
It is the protective accordion-like mechanism that surrounds and protects the normal line of defense from invasion by stressors. It is important to strengthen the flexible line of defense to prevent the invasion of stressors in to the flexible line of defense. The flexible line of defense can be strengthened by undertaking preventive measures such as maintaining normal BMI, practicing regular exercises, quitting habits like smoking and alcoholism, effective control of hypertension, diabetes and dyslipidemia and by adopting stress reduction measures.

Sub concepts

Stressors-
A stressor is any phenomena that might penetrate both the flexible and normal lines of defense, resulting in either a positive or negative outcome. Stressors are intrapersonal stressors, interpersonal stressors and extra personal stressors.

Intra personal stressors are those that occur within the client system boundary and correlate with the internal environment. In the present study intrapersonal stressors are age, gender, family history, lifestyle practices and presence of risk factors such as hypertension, diabetes, hyperlipidemia, obesity, smoking, alcoholism and stress.

Inter personal stressors occur outside the client system boundary, are proximal to the system, and have an impact on the system. In the present study interpersonal stressors include marital status, family atmosphere, occupational stress and so on.

Extra personal stressors include those outside the system boundary and at a greater distance from the system. In the present study they can be occupation, education, financial status, religion, culture, societal factors and environmental factors and so on.

Degree of Reaction
Neuman describes the degree of reaction as the amount of system instability that occurs after exposure to a stressor. A person's reaction to a stressor is determined by natural and learned resistance, which is manifested by the strength of the lines of resistance and of the normal and flexible lines of defense. The degree of reaction is determined by the timing stressor, as well as by the person's basic core structure, experiences, available energy resource and perception of the stressor. The interrelation of variables (physiologic, psychological, socio cultural development and spiritual) also determines the nature and degree of person's reaction to the stressor.

In the present study degree of reaction is the patient's physiological and behavioral response to the stroke.

Stability
A state of balance or harmony requiring energy exchanges as the client adequately cope with the stressors to retain, attain or maintain an optimal level of health thus preserving system integrity. The amount of system instability is based on the nature and severity of the stressors invaded into the normal line of defense.

Prevention as intervention
Intervention is purposeful activities which help the client to retain or maintain system stability. Primary, secondary and tertiary interventions are used to retain, attain and maintain system balance.

Primary prevention as intervention occurs before the system reacts to a stressor; it includes health promotion and maintenance of wellness. Primary prevention focuses on strengthening the flexible line of defense through preventing the entry of stressors and reducing risk factors. This intervention occurs when a risk or hazard is identified but before reaction occurs. In the present study primary prevention is not applicable.

Secondary prevention occurs after the system reacts to a stressor and is provided in terms of existing symptoms. Secondary prevention focuses on strengthening the internal lines of resistance and thus, protects the basic structure through appropriate treatment of symptoms. The intent is to regain optimal system stability and to conserve energy. If secondary prevention is unsuccessful and reconstitution does not occur, the basic structure will be unable to support the system and its interventions and death will occur.

Tertiary prevention occurs after the system has been treated through secondary prevention strategies. Its purpose is to maintain wellness or protect the client system reconstitution through supporting existing strengths and continuing to preserve energy.

The present study focuses on tertiary prevention of recurrent stroke through eliminating risk factors. The investigator provides individualized teaching with pamphlet regarding preventive measures such as regular monitoring of blood sugar, cholesterol and blood pressure, medication, diet, exercise, importance of quitting smoking, alcoholism and stress reduction measures.
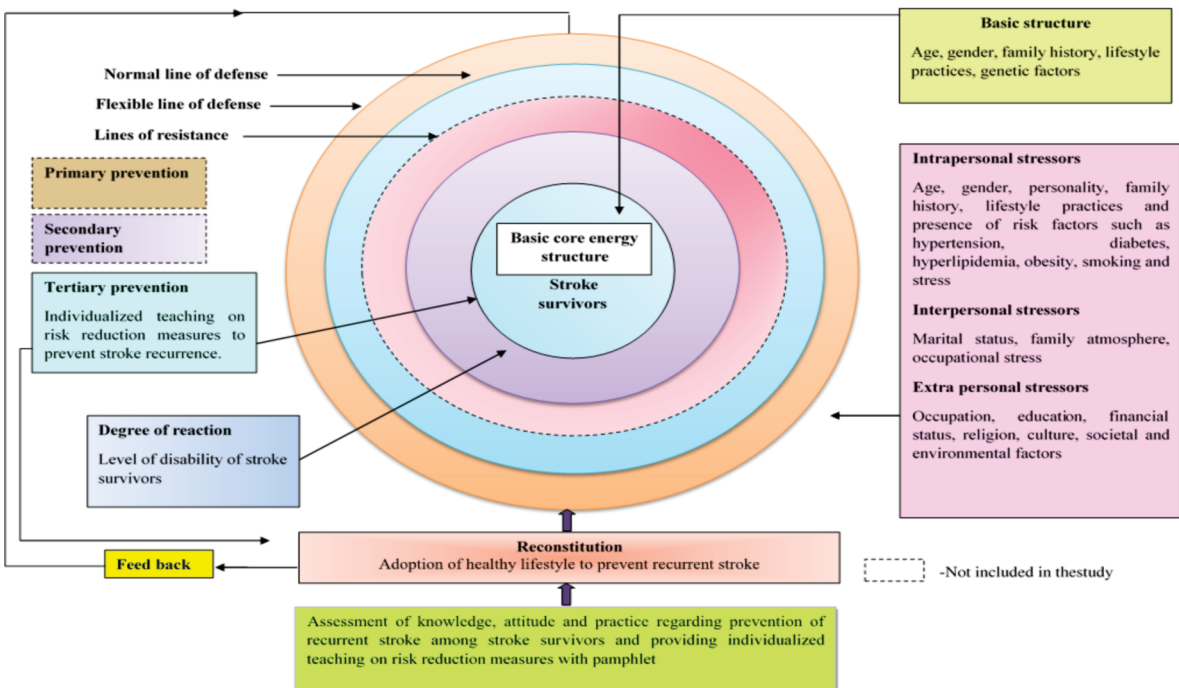

Figure 1: Conceptual Framework of the study based on Betty Neuman's System Model

Reconstitution

Reconstitution is the state of adaptation to stressors both in internal and external environment. It begins at any point following initiation of intervention or invasion of stressors. This is return to and maintenance of system stability.

In the present study the investigator attempts to promote reconstitution of the client system by providing individualized teaching with pamphleton prevention of recurrent stroke and there by motivating them to adopt healthy practice in daily life. The investigator assessed the knowledge of stroke survivors using a structured questionnaire and the attitude of stroke survivors with five point attitude scale. The practice of the patients was assessed by using practice questionnaire. The investigator also provided individualized teaching with pamphlet to thepatientsinorder to undertake risk reduction measures for preventing the recurrent stroke and its complications.

Chapter 2
Review of Literature

A literature review helps to lay the foundation and provide context for a newstudy. By doing a thorough review, one can determine how best to make acontribution to the existing base of evidence, whether there are gaps orinconsistencies in a body of research, or whether a replication with a new studypopulation is the right next step. Reviewing the literature helps to identify relevantconceptual frame works or appropriate research methods. A literature review alsoplays a role at the end of the study as researchers try to make sense of their findings.

The literature reviewed in this study has been organized under the following headings:

2.1 Literature related to risk factors of stroke recurrence.
2.2 Literature related to quality of life of stroke survivors.
2.3 Literature on knowledge, attitude and practice regarding prevention of recurrent stroke among stroke survivors.

2.1 Literature related to risk factors of stroke recurrence.

Risk factors for recurrence stroke are non modifiable and modifiable risk factors.Identification of these risk factors is crucial to preventrecurrent stroke and could be predictors of early strokerecurrence.

A study was done to investigate theclinical profile of young and elderly stroke patients in GMERS Medical College and Hospital, Gandhinagar, Gujarat. The results showed that incidence of stroke in elderly (≥45 years) was more than young (<45 years) patients with male predominance in both the groups. Most common clinical presentation from both age groups was hemiplegia (75% in young vs. 72.1% in elderly). Common risk factors were hypertension and past history of cardiovascular disease (25%) and smoking (16.6%) in young and hypertension (37.1%), dyslipidemia and smoking (14.3%) in elderly. Most common type of stroke in both age groups was ischemic (83.3% in young vs. 73.2% in elderly), followed by hemorrhagic. The study concluded that cerebro vascular stroke was more in elderly with hypertension and smoking and was the most common risk factor in both age groups.21

A study conducted to evaluate the riskfactors, recurrent ischemic stroke characteristics and the sufficiency of secondary prevention regarding the most common modifiable risk factors reported that, ninety-one (18%) out of 500 patients with ischemic stroke had recurrent ischemic stroke. Prevalence of cerebrovascular risk factors were hypertension (88%), diabetes mellitus (43%), ischemic heart disease (36%), hyperlipidemia (30%), atrial fibrillation (11%), and smoking (14%). 38% of patients had more than two risk factors. 14% ofthe hypertensive patients did not use antihypertensive medications,antihypertensive treatment was insufficient in 39% of those who already used antihypertensive medications. Twenty-three percent of the patientsreceived no prophylactic agents. Sixty percent of the patients with ahistory of atrial fibrillation were on oral anticoagulant therapy (warfarin). The study concluded that improvement of the patient's adherence to treatment is very important in addition to the optimal treatment and follow-up strategy for decreasing the incidence of recurrent ischemic stroke.12

A retrospective study was conducted to assess the risk factors associated with recurrent strokes among 1017 patients (601 aged < 65 years, 416 aged ≥ 65 years) and also to identify whether the risk factors for recurrent stroke are same in young as in older patients. Among all patients, 258 patients had recurrent stroke; among them, 143 patients were aged < 65 years and 115 were aged ≥ 65 years. The independent risk factors of recurrent stroke in older men included previous history of myocardial infarction, ischemicstroke or transient ischemic attack, diabetes mellitus and coronary atherosclerotic disease. In young men, hypertension, coronary atherosclerotic heart disease, and previous history of ischemic stroke or transient ischemic attack were independent risk factors of recurrent strokes. Diabetes was not a strong risk factor among young men.22

A cross-sectional study was done to investigate the risk factors of stroke among 400 patients (200 cases and 200 controls) attending Regional Institute of Medical Sciences (RIMS), Manipur. The results showed that stroke cases occurred mostly in age above 60 years (49%) and the incidence increases with the increase in age. Smoking was more common among stroke cases (51%) than controls (41%). Stroke was more common in recent smoker than remote smokers.Hypertension was significantly more among stroke cases than the control group (66% vs. 20%). Untreated hypertension had higher chance of stroke than currently treated hypertension (57% vs. 9%). Diabetes mellitus was present in 19 % of stroke cases which is less than that of controls (21%). Among cases, 48% were ex and current alcohol drinker whereas in control it was 40%. Current drinker had increased chance of stroke than controls (15% vs. 0%). Those having history of AF had significantly increased chance of stroke than controls (5% vs. 0%). Heart disease was also common in stroke cases than controls (10% vs. 4%). History of migraine was not related to the occurrence of stroke.23

A scoping review onprevalence, risk factors and secondary prevention of stroke recurrence in eight countries from south, east and Southeast Asia from 2007 to 2017 was conducted. A total of 22 studies were selected from 585 studies screened from the electronic databases. The result shows that First-year stroke recurrence rates are in the range of 2.2% to 25.4%. Besides that, modifiable risk factors are significantly associated with pathophysiological factors (hypertension, ankle-brachial pressure index, atherogenic dyslipidemia, diabetes mellitus, metabolic syndrome, and atrial fibrillation) and lifestyle factors (obesity, smoking, physical inactivity, and high salt intake). Furthermore, age, previous history of cerebrovascular events, and stroke subtype are also significant risk factors for recurrence. A strategic secondary prevention method for recurrent stroke is health education along with managing risk factors through a combination of appropriate lifestyle intervention and pharmacological therapy.9

A study was conducted in Mumbai, to determine the prevalence of stroke and post stroke cognitive impairment among elderly aged 60 years and above.Participants comprised of 730 men and 996 women.The present study shows a crude stroke prevalence rate of3.82% (95% CI 3.01 to 4.84) and an age-standardized rate of 4.87% (95% CI 3.76 to 6.23). Prevalence rates increased with age and were higher in men than in women. Out of 27 stroke survivors evaluated for

cognitive dysfunction, 18(66.66%) had mini mental status examination scores of less than 24.24 A cross-sectional study was performed to investigate the epidemiologic patterns, risk factors, length of hospitalization and case fatality among 953 patients diagnosed with ischemic stroke. Among 953 patients, 48.9% were men and 51.1% were women. Hypertension was found in 64% of patients, followed by diabetes mellitus (36%), heart disease (34%), hypercholesterolemia (32%), and smoking (20%). The average length of stay was 7.7 days (95% confidence interval 7.2- 8.2). Women had a significantly longer length of stay compared to men (8.4 vs 7 days, P = .0075) and patients with heart disease had a significantly longer length of stay (9 days, 95% CI, P = .004). Overall 1-month fatality rate was 15.3%. 25 A study was conducted to identify the risk factors of stroke among 160 patients admitted in Manipal teaching hospital. The mean age of stroke patients was 65.9yrs +/- 10.69 with 126 (78.8%) patients belonging to the age group ≥ 60 years. Hypertension (61.2%), cigarette smoking (59.4%), alcohol use (26.9%), left ventricular hypertrophy (27.5%), atrial fibrillation (23%), elevated triglyceride (23%) and diabetes mellitus (9.3%) constituted major modifiable single risk factors. Multiple risk factors were seen in 122 cases.26

A population based study on was undertaken among 158 patients with stroke in Andhra Pradesh, to determine the prevalence and risk factor analysis of stroke. Among the subjects, 67% were males. The mean age was 58.4 years and most predominant age group was 61-70 years. Risk factors were smoking (60.7%), alcohol (55.6%), hypertension (37.9%), diabetes mellitus (13.2%) and family history (6.3%). The study concluded that there is poor public awareness regarding alcohol, smoking, and hypertension as the risk factors of stroke and there is a need to generate awareness to minimize morbidity and mortality among stroke patients.27

A prospective study was conducted to identify the risk factors for early recurrence after ischemic stroke among 297 patients hospitalized within 90 days of index stroke.The results showed that 22 recurrent events occurred in the first 90 days after the index stroke, resulting in an early stroke recurrencerate of 7.4%, and death occurred immediately after recurrence in 6 of the 22 patients. A higher rate of early recurrence was found in women compared with men. There was a higher rate of recurrence among patients with hypertension, consistent cigarette use, alcohol consumption and atrial fibrillation.28

A systematic review and meta-analysis was conducted to estimate the pooled cumulative risk of stroke recurrence among stroke survivors.Studies reporting cumulative risk of recurrence after first-ever strokes was identified using electronic databasesand by manually searching relevant journals and conference abstracts. Overall cumulative risks of stroke recurrence at30 days and 1, 5, and 10 years after first stroke were calculated.Sixteen studies were identified, of which 13 studies reported cumulative risk of stroke recurrence in 9115survivors.The pooled cumulative risk of stroke recurrence was: 3.1% (95% CI, 1.7– 4.4) at 30 days; 11.1% (95% CI, 9.0 –13.3) at 1 year; 26.4 %(95% CI, 20.1–32.8) at 5 years; and 39.2% (95%CI, 27.2–51.2) at 10 years after initial stroke. The study concluded that cumulative risk of recurrence varies greatly up to 10 year after first stroke.29

A study conducted to evaluate the attitudeof Polish people with first-ever or recurrent stroketo keeping under control the most important risk factorsfor ischemic stroke.1282 patients (705 men and 577 women) were categorized as individualswith first ever stroke (group I – 980 patients) and recurrent stroke (group II – 302 patients). The results showed that 63.1% of the patients included in group I and 74.8% of individuals of group IIwere diagnosed as having history of arterial hypertension before stroke incidence. The newly diagnosed arterial hypertensionin both group was6.9 and 8.4% respectively.

There was significantly higher percentage of patients with history of type 2 DM in group II (26.5% vs 19.4% of group I), while newly diagnosed DM occurred in similar ratio within both groups (13.7% vs 8.7%). Larger number of patients in group II had the history of chronic and paroxysmal AF (28.4% vs 14.3%in group I). The percentage of cases with newly diagnosed AF in acute phase of stroke was similar in both groups (4.2% vs. 4.5%).The number of patients with history of IHD was significantly larger in group II (30.8% vs. 44.4%) while newly diagnosed IHD occurred almost twice as frequent as in group I (6.2% vs. 2.9%, p < 0.05).There was no significant difference between number of heavy smokers (> 20 cigarettes/day) in group I and II (12.4% vs. 13.9%). Alcohol consumption as risk for stroke was found among comparable rate of stroke patients in both groups (53.6% and 56.6% respectively).The study concluded that after the first stroke the people are not aware about the change in habits, which lead to recurrent stroke.30

A retrospective study was conducted to assess risk factors and etiology of 741 patients with first-ever stroke and 96 patients with recurrent stroke patients aged 18–54 years. The result shows that, among first-time patients, men predominated in all age groups. The prevalence of well-documented risk factors in first-time stroke patients was 83% and in the recurrent group 91%.The most frequent risk factors were hypertension (53%), dyslipidemia (46%), and smoking (35%). Recurrent stroke patients had fewer less well-documented risk factors compared to first-time stroke patients (19.8 versus 30.0%, = 0.036). Atrial fibrillation was the most common cause of cardioembolic strokes (48%) and large-artery atherosclerosis (LAA) was the cause in 8% among those aged <35 years. Compared to first-time strokes, recurrent ones were more frequently caused by large artery atherosclerosis (14.3 versus 24.0%,= 0.01) and less often by other definite etiology (8.5 versus 1.0%, = 0.01). The study reported higher prevalence of vascular risk factors in patients with recurrent stroke than in patients with first time stroke.31

An epidemiology study was conducted to assess the vascular risk factors and their association with the type of recurrent stroke in 889 patients admitted to twenty-three Swedish stroke centers. The results showed that 805 (91%) had ischemic stroke, 78 (9%) had intracerebral hemorrhage and 6 (<1%) stroke of unknown origin. The most frequent vascular risk factors were hypertension (75%), hyperlipidemia (56%), (37%) IHD, (29%) atrial fibrillation and (24%) DM.21% were on anticoagulation treatment. The majority of the patients (75%) had their most recent previous stroke >12months before admission.Thirteen percentwere current smokers and 11% were classified as obese.Patients in the ischemic group had more risk factorscompared to the hemorrhagic group, with 51% ofthe patients in the ischemic group having three or morerisk factors compared to 33% in the hemorrhagic group. The study emphasizes the importance of long term treatment strategies for secondary prevention in high risk patients.32

A study was conducted to assess the relative contribution of on-treatment low-density lipoprotein (LDL) cholesterol and C-reactive protein (CRP) to the risk of recurrent stroke and transient ischemic attack (TIA) among 1095 patients with history of ischemic stroke in Japan. The results showed that patients with on treatment LDL cholesterol <120 mg/dL showed 29% reduction in recurrent stroke and TIA than those with LDL cholesterol ≥ 120 mg/dL. Patients with CRP <1 mg/L had 32% reduction compared with that of patients with CRP ≥ 1 mg/L. Although LDL cholesterol and CRP levels were not correlated in individual patients, those who achieved both LDL cholesterol <120 mg/dL and CRP <1 mg/L showed 51% reduction compared with that of patients with LDL cholesterol ≥ 120 mg/dL and CRP ≥1 mg/L. The study concluded that the control of both LDL cholesterol and CRP levels appears to be effective for preventing recurrent stroke and TIA in patients

with non-cardiogenic ischemic stroke.33

A prospective study was conducted to assess the risk factors, stroke type, etiology and disability-mortality rates in 631 patients with first ever and recurrent stroke. The results showed that 52.3% were female and 47.7% were males. The mean age was 67.6 years in females and 54.9years in males. 85.1% were ischemic type stroke and 19.9% were hemorrhagic type stroke. Frequencyof stroke was statistically high (p<0.001) in females over 70 years old. Hypertension was the most frequent and statistically significantly highest risk factor observed in the first and recurrent strokes (in both group p<0,001). The other risk factors were hyperlipidemia, DM, smoking cigarette and AF, respectively. The rate of disability-mortality was found high in stroke of undetermined and cardioembolicorigin.34

A cross-sectional study was conducted to assess the association dyslipidemia and stroke subtypes among 106 patients with acute stroke. The results shows that 61 (57.5%) were males. Sixty-five (61.3%) of the patients had Ischemic stroke, 38 (35.8%) hemorrhagic stroke, and 3 (2.9%) patients had subarachnoid hemorrhage. Dyslipidemia is the most frequent risk factor (85.9%), followed by hypertension (66.0%) and diabetes mellitus (15.1%). Prevalence of dyslipidemia was significantly higher in the ischemic stroke (92.3%) compared to hemorrhagic stroke (81.6%). Reduced HDL-cholesterol is the most prevalent fraction of lipid abnormalities (74.5%). The study concluded thatlow HDL cholesterol is the most frequent risk factor in patients with stroke.35

A cohort study was conducted to identify the predictors of 6 month mortality of first ever stroke patients and the factors contributing to it among 576 stroke survivors in Iran. The results showed that average age of ischemic and hemorrhagic stroke was 70.15 ± 13.0 and 67.79 ± 12.69, respectively. Case fatality rate (CFR) of stroke patients was 49.2 and 21.7% in hemorrhagic and ischemic stroke types, respectively. Factors contributing to stroke mortality events include the severity of stroke (NIHSS categories15–19 and ≥20), age over 65, being female, high body mass index and hyperlipidemia. The severity of stroke and age above 65 with hazard ratio 1.61 were the most important predictors of 6 month mortality.36

A study was conducted to explore whether hypertension contributes to the recurrence of certain subtypes of ischemic stroke among 11,560 patients with ischemic stroke. The results showed that 8409 (72.7%) had hypertension and 2050 (17.7%) experienced a recurrent stroke within 1 year. Patients with hypertension had an insignificantly higher stroke recurrence rate than those without (18.0% versus 17.0%; P=0.21). The study concluded that hypertension is specifically related to the recurrent strokes in patients with small-vesseldiseases.37

2.3 Literature related to quality of life of stroke survivors.
Adaptation to stroke requires complex, long-term change in stroke survivors' lives.Health-related QOL (HRQOL) usually reflects the patients' subjective and personal evaluation of their own health status. Therefore, HRQOL refers to the difference between idealized functions and the functions that emerged because of the disease.

A cross-sectional population based study was conducted in North Kerala to assess the quality of life among stroke survivors and the prevalence of depression among them. Forty stroke survivors were interviewed at home to assess the quality of life and depression status. QOL was assessed using the Medical Outcomes 36-Item Short-Form Health Survey (SF-36), functional status using the Modified Barthel Index (MBI), and depression using Beck's Depression Inventory (BDI). The mean modified barthel index score was 55.25±2.79 and the

prevalence of unrecognized depression was 90%; 95% patients needed varying degrees of support for their activities of daily living. The SF-36 scores of the patients were considerably lower than that of the general population especially in the areas of role limitation and physical functioning. The findings of the study emphasizes the importance of community-based rehabilitative approaches to improve the quality of life and to assist patients towards achieving independence in activities of daily living.18

A prospective study was conducted to identify psychosocial problems, quality of life and functional independence among 162 stroke survivors in Punjab. Patients were interviewed after 1 month post stroke. WHO quality of life – BREF was used to assess QOL. Anxiety and depression measures were recorded using the Hospital Anxiety Depression Scale, and functional independence was evaluated using the Functional Independence Measure. Demography, stroke severity (measured by the National Institute of Health Stroke Scale) and stroke outcome (measured by the modified ranking scale) were also documented. The result revealed that presence of anxiety; depression and functional dependence were associated with impaired Quality of life scale. Older age and stroke severity resulted in increased functional dependence.43

A prospective observational study was conducted to assess the quality of life of Nigerian stroke survivors during first 12 months post-stroke in Nigeria.Sixty-five (31 ischaemic and 34 haemorrhagic) patients with stroke were recruited, however, only 55 (28 male and 27 female) completed the study. QoL improved significantly from onset to 6 months but non significantly from 6 months to 12 months. Most (85.2%) stroke survivors had severe depression at 1 month. At 3 months, marital status and spousal support had a significant positive influence on QoL. At 6, 9 and 12 months, marital status, spousal support, educational qualification, and occupational status had a significant positive influence on QoL. Depression was a major determinant of QoL at 3, 6, 9 and 12 months. Findings suggest that QoL of Nigerian stroke survivors is low at stroke onset, increases steadily during the first 6 months and little between 6 months and 12 months post-stroke; is influenced positively by marital status, spousal support, educational qualification and occupational status; and negatively influenced by age and depression.38

A cross-sectional descriptive study was used to assess the factors associated with health related QoL of stroke survivors. 62 patients were interviewed 3 months post stroke in neurology out-patient clinic. The results showed that the mean age of patients was 54.4 ± 9.9 years. Mean duration of formal education was significantly higher in males than females (p value=0.007). About one third (29%) of the stroke survivors were depressed and more than half (54.8%) had good recovery. Functional status measured by modified Rankin Scale and depression were independent determinants of poor HRQoL. Functional status and depression were identified as independent factors affecting HRQoL of stroke survivors.39

A prospective study was conducted to determine the quality of life among 161(82 men and 79 women) patients after stroke. The Barthel Index was used to assess functional deficiency and Stroke-Specific Quality of Life questionnaire was used for self-evaluation of patients' physical and mental health. The first assessment was carried out in the acute phase of the disease and control assessments in 30, 90 and 180 days after the stroke. Mean Barthel Index score was higher at every successive measurement. All Barthel Index items were statistically significant (Friedman, p < 0.001) apart from dressing and bowel control. Barthel Index score indicated greater dependence in women in all assessments except for those taken 90 days after onset of symptoms (p = 0.111). Statistically significant difference was present in men both for

physical health (Friedman p = 0.009) and total Stroke specific quality of life scale (Friedman p = 0.014), while in women there was no statistically significant difference between the measurements (Friedman p = 0.719).The research showed that stroke had significant influence on basic and specific daily life activities and interferes with the quality of life of stroke patients.40

A prospective study was carried out to assess the factors associated with Health related Quality of Life among stroke survivors, 7 years after stroke. Health related quality of life was measured with the assessment of Quality of Life instrument. Overall, 1321 stroke cases were recruited. 7 years after stroke 413 were alive and 328 were assessed. Those assessed were less often current smokers pre-stroke than those not assessed (p<0.01). Seventy-six survivors (23%) had very poor Health related quality of life (range: -0.038 to 0.100). At 7 years post-stroke, 68.8% had died and a substantial proportion of survivors had poor health related quality of life.41

A study was conducted to determine the quality of life and its relationship with socio-demographic and medical factors in 70 patients with stroke. The mean score of global quality of life in patients measured by SF-36 was 37.08±17.03 and the mean score on Perceived Social Support from the Family Scale was 11.21±7.12. The mean score of global quality of life varied significantly according to age, gender, education, profession, place of residence, co morbidities, affected brain area, disease duration and educational level of the caregiver. These results showed a low mean quality of life score in patients with stroke. There is a positive and significant correlation between scores on thePerceived Social Support from the Family Scale and various aspects of quality of life, such as functional status, well-being, general health perception and global quality of life.42

A study was conducted to assess the life expectancies among individuals who have survived the acute phase (1 month) of a cerebrovascular disease (CVD). Life expectancy among CVD survivors increased with time (1983 versus 1994): 22.9% for men (95% CI 18.3% to 27.6%) and 12.9% for women (95% CI 9.1% to 16.6%). The life expectancy ratio in 1983 between CVD survivors and the general population was 0.571 (95% CI 0.533 to 0.590) for men and 0.578 (95% CI 0.562 to 0.592) for women. In 1994, the corresponding ratios were 0.641 (95% CI 0.629 to 0.654) and 0.611 (95% CI 0.601 to 0.622). The life expectancy ratios between female and male survivors were 1.28 (95% CI 1.23 to 1.34) in 1983 and 1.18 (95% CI 1.15 to 1.21) in 1994. The prognosis for survivors who experienced occlusion and stenosis of the precerebral arteries was better than that for survivors of an intracerebral hemorrhage or occlusion of cerebral arteries.44

A study conducted to determine the correlation between the activities of daily living and quality of lifeamong 68 patients with stroke. The study found that all the items encompassing 12 domains [social role, mobility, energy, language, self-care, mood, personality, thinking, upper extremity function, family role, vision and work/ productivity] and total score of the functional independence measures (FIM) showed a high correlation with the quality of life total score. The relationship between the activities of daily living and the total quality of life score showed a significant positive correlation. The study also found that among the FIM (Functional independence measures) items, mobility and social cognition had the largest effect (67%) on the total quality of life score.45

A prospective longitudinal study was conducted to measure the impact of stroke on quality of life. Stroke participants showed significant worsening than controls in all three Quality of life measures. Standardized effect sizes for stroke versus control participants after adjusting for covariates were similar across the three measures and ranged from 0.366 to 0.465 standard deviation units. Stroke survivors who lived alone were at greater risk for increases in depressive symptoms.46

A study was conducted to evaluate the perceived Quality of Life in 111 participants after a first-ever stroke, who were admitted in a rehabilitation center and completed a 2- month program. The two domains were correlated with the functional status at discharge namely the level of independence and the social relations. The study confirmed the strong correlation between the functional status at admission and at discharge. Other predictive parameters of outcome were age and depression. The functional improvement was highly significant (p < 0.0001). In conclusion, the perceived Quality of life should be considered by a stroke rehabilitative team.47

2.3 Literature on knowledge, attitude and practice regarding prevention of recurrent stroke among stroke survivors.

Survivors of stroke remain at highrisk of new vascular events. One of the reasonsfor unsatisfactory secondary prevention could bepatients' lack of knowledge about risk factors for sufferingfrom new events of stroke, which was suggested as a contributingfactor to the lack of compliance with medical advice and treatment.

A prospective study was conducted to assess the knowledge of stroke among patients with stroke and their relativesin Northwest India. Of the147 subjects interviewed, 102 (69%) were patients and 45 (31%) were relatives. Sixty-two percent of respondents recognized paralysis of one side as a warning symptom and 54% recognized hypertension as a risk factor for stroke. In the multivariable logistic regression analysis, higher education was associated with the knowledge of correct organ involvement in stroke, whereas younger age and higher education correlated with a better knowledge regarding warning symptoms of stroke.20

A cross-sectional questionnaire survey was conducted to assess the knowledge regarding stroke among stroke support group members. A total of 133 members took part in the study in which 54% of subjects were females, 72.8% were retired, and 69.8% were stroke patients. Of theparticipants, 80.3% had good symptom knowledge, 64.7% had good risk factor knowledge, and 79.7% had good actionknowledge. Stroke knowledge was excellent in 44.0% of subjects. Logistic regression analysis showed that age less than 70years and not having had a stroke were significant predictors for excellent stroke knowledge.48

A cross sectional questionnaire study was conducted to assess the knowledge of stroke risk factors among 240 primarycare patients with previous stroke or TIA. The result showed that Hypertension, hyperlipidemia and smoking were identified as risk factors by nearly 90% of patients, and atrialfibrillation and diabetes by less than 50%. Patients with a family history of cardiovascular disease, and patients diagnosed with carotid stenosis, atrial fibrillation ordiabetes, knew these were stroke or TIA risk factors to a greater extent than patients without these conditions. Atrialfibrillation or a family history of cardiovascular disease was associated with better knowledge about risk factors, andhigher age, cerebral haemorrhage and living alone with poorer knowledge. About half of the patients reported, anticoagulants and platelet aggregation inhibitors are intended for prevention.49

A cross sectional study was conducted to assess the knowledge of stroke risk factors among 69 stroke survivors at two physiotherapy facilities in Nigeria.Onlythirty-four (49.4%) participants had knowledge regarding stroke risk factors. Participants with tertiary education were significantly more

knowledgeable than those with lower educational qualification.51

A cross sectional, single-centre questionnaire survey was conducted to investigate the needs and rights awareness among 248 stroke survivors and 212 caregivers China. 95.6% stroke survivors and 92.5% caregivers agreed to each question in the questionnaire. The participants prioritized the needs for psychological support (99.4%), treatment and care (98.6%), social support (98%) and information (96.2%). The total score was negatively correlated with age (r=−0.255, p<0.01). Patients below 65 years old had higher scores than those 65 years or older (p<0.01), while male patients had higher scores than female patients (p<0.01).The needs for psychological and emotional support, individual treatment, social support and information about stroke were eagerly reported by most survivors.52

A cross-sectional questionnaire-based study was conducted among 140 patients with recurrent stroke or TIA in Thailandto assess the knowledgeof stroke risk factors and warning signs.Nearly onethirdof patients (31.4%) could not name any risk factors for stroke. The most commonly recognized risk factors were hypertension(35%), dyslipidemia (28.6%), and diabetes (22.9%). The most commonly recognized signswere sudden unilateral weakness (61.4%), sudden trouble with speaking (25.7%), and sudden trouble with walking, loss of balance,or dizziness (21.4%). Nineteen patients (13.6%) could not identify any warning signs. The results showed that knowledge of stroke in patientswith recurrent stroke or TIA is unsatisfactory. The lowlevel of knowledge found in this study clearly indicates thatthere is an urgent need to provide a national policy toimprove educational system to provide adequate structuredinformation to increase self-management in patients with recurrent stroke.53

A questionnaire survey was conducted to assess the risk awareness and knowledge of patient's withstroke. 164 Patients who were attending a stroke outpatient clinic for the first time after hospitaldischarge (3 months) for a first stroke were included in the study. Among the participants, 94(57%) patients did not recognize at least one cerebrovascular risk factor. Only 13.4% patients spontaneously mentioned one or more CVRF. Among the patients with a history of hypertension at the time of stroke, 74(67.9%) still had elevated values. These high values were correlated with poor awareness. Awareness was inversely correlated with older age and good recovery.54

A descriptive study was conducted to assess the knowledge and practice of stroke survivors regarding secondary stroke prevention. Face-to-face structured interviews were conducted utilizing a structured questionnaire to collect data from a sample of 60 discharged stroke survivors. It was found that knowledge and practice on secondary stroke prevention among stroke survivors is very low despite the availability of information sources. The study also revealed that half of the stroke survivors who participated in the study were unable to name a single appropriate action taken to prevent secondary stroke. A significant proportion of stroke survivors also continue to smoke and consume alcohol contrary to expectations and recommendations. Only a relatively small percentage of stroke survivors comply with lifestyle changes prescribed to them such as diet modification and engaging in physical exercise.15

A prospective study was conducted to determine the effect of nurse led intervention to improve the risk factor knowledge among 268(140 interventional group and 128 control group) patients with stroke or transient ischemic attack. In addition to usual care, the intervention group received an individualized management plan (IMP) and 3 nurse home education visits which consist of education on prevention and management of risk factors for stroke. At 24 months of assessment 34% of participants were unable to name any risk factor, 31% named ≥2 risk factors, 40% named ≥1medical factor, and 42% named ≥1 lifestyle factor.Stress was the most commonly identified risk factor (24%). The interventiongroup had better overall knowledge than control group (incidence risk ratio, 1.26; 95% confidence interval, 1.00–1.58). Greaterfunctional ability and polypharmacy were associated with better knowledge and older age and having more co morbidity were associated with poorer knowledge.55

A cross-sectional study was conducted to determine the level of stroke knowledge among 178 stroke patients in Malaysia.Stroke knowledge test scale with 20 items was used to evaluate knowledge on stroke disease. 45% of patients answered correctly on 9 items, 35% had misconception on 7 items (35%), while 20% wrongly answered on 4 items. This study highlighted that stroke patients had lack of knowledge towards stroke disease. Therefore, conducting stroke education session in routine prior to hospital discharge is important.56

A randomized clinical study was conducted to assess the effect of follow up intervention after discharge in reducing the readmission rate of stroke patients. This randomized study included 155 stroke patients with persistent impairment and disability who, after thecompletion of inpatient rehabilitation, were discharged to their homes. The patients were randomized to 1 of 2 follow-upinterventions provided in addition to standard care or to standard aftercare. Fifty-four received follow-up home visitsby a physician, 53 were provided instructions by a physiotherapist in their home, and 48received standard aftercare only (controls). Results showed that readmission rates within 6 months after discharge were significantly lower in the intervention group than in control group. Follow-up intervention after discharge seems tobe a way of preventing readmission, especially for patients with long inpatient rehabilitation.57

A study titled 'effect of web based stroke education program among stroke patients and their primary caregivers' was conducted among 36 patients with clinical diagnosis of ischemic stroke within 12 months post-stroke and their primary caregivers. The participants were randomly assigned to either an experimental or a control group. The primary outcomes measured included blood chemistry, self-reported health behaviors, sense of control, and health motivation for stroke patients, and caregiver mastery for care. The researcher introduced the web based program to the experimental group. The experimental group tended to improve significantly more than the control group in terms of exercise, diet, sense of control and health motivation for the stroke patients and caregiver mastery for primary caregivers. The program which focused on the prevention of recurrent stroke in stroke patients has the potential to improve health behaviors.19

A randomized trial was conducted among 372 stroke survivors to assess whether different attitudes toward stroke are associated with survival after stroke. A research psychologist visited each patient and administered mental adjustment to stroke scale, barthel index scale and hospital anxiety and depression scale. Patients were followed up to establish their survival. The result showed that Eighty-two patients (22%) died within 3 years. Fighting spirit was associated with increased survival, while helplessness/ hopelessness and fatalism were associated with decreased survival. Anxious preoccupation, denial/avoidance, and mood were not significantly associated with survival. The study concluded that patient's attitudes towards their illness seem to be associated with survival after stroke. 50

Summary

This chapter deals with published literature related to present problem under study. Review of literature was arranged in following three headings literature related to risk factors of stroke recurrence, literature related to quality of life of stroke survivors and literature on knowledge, attitude and practice regarding prevention of recurrent stroke among stroke survivors.

Based on this evidence the investigator established the need to carry out the study to assess the knowledge, attitude and practice regarding prevention of recurrent stroke among stroke survivors. It also enabled the investigator to have a deep insight into the problem of selected study

METHODOLOGY

Research methodology is concerned with the development, testing and evaluation of research instruments and methods. Research methodology involves the systematic process by which the researcher starts from the initial identification of the problem to its final conclusion.

This chapter deals with the research methodology adopted for the study and includes research approach, research design, variables, schematic representation of the study, setting of the study, population, sample and sampling technique, content validity, reliability of the tool, pilot study, data collection process and plan for data analysis. The purpose of the study is to assess the knowledge, attitude and practice regarding prevention of recurrent stroke among stroke survivors and to provide individualized teaching with pamphlet on risk reduction measures.

Research approach

The investigator selected quantitative research approach for the study.

Research Design

Non experimental descriptive survey design was used for the study.

Variables

Variables in the study were knowledge, attitude and practice regarding prevention of recurrent stroke.

Setting of the study

Study was conducted in the neurology outpatient clinics of KIMS hospital, Trivandrum.

Population

The population for the present study comprises of stroke survivors attending neurology outpatient clinics of KIMS hospital, Trivandrum.

Sample and Sample size

Sample consisted of stroke survivors attending neurology outpatient clinics of KIMS hospital, Trivandrum.

The minimum sample size required for this study is 70 (expected proportion- 0.50, absolute precision- 10%, and desired confidence level- 90%).

$$n = \frac{Z_{1-\frac{\alpha}{2}}^2 P(1-P)}{d^2}$$

Where, P: Expected proportion
d: Absolute precision
$1-\frac{\alpha}{2}$: Desired confidence level.

Sampling technique

The sampling technique used for the study was non probability purposive sampling technique.

Criteria for sample selection

Inclusion criteria

* Patients with diagnosis of ischemic stroke confirmed by radiological evidence.
* Stroke survivors attending the neurology outpatient clinics for the first follow up visit onwards.
* Patients who can understand English or Malayalam.

Exclusion criteria

* Patients with aphasia limiting comprehension.
* Patients with severe neurological deficits/ functional disability.

Tools/Instruments

Tool 1: Structured questionnaire which consisted of 2 sections
 Section A – Socio personal variables
 Section B – Clinical profile
Tool 2: Barthel index of activities of daily living
Tool 3: Structured knowledge questionnaire to assess the knowledge regarding prevention of recurrent stroke among stroke survivors
Tool 4: Five point attitude scale to assess the attitude towards prevention of recurrent stroke among stroke survivors.
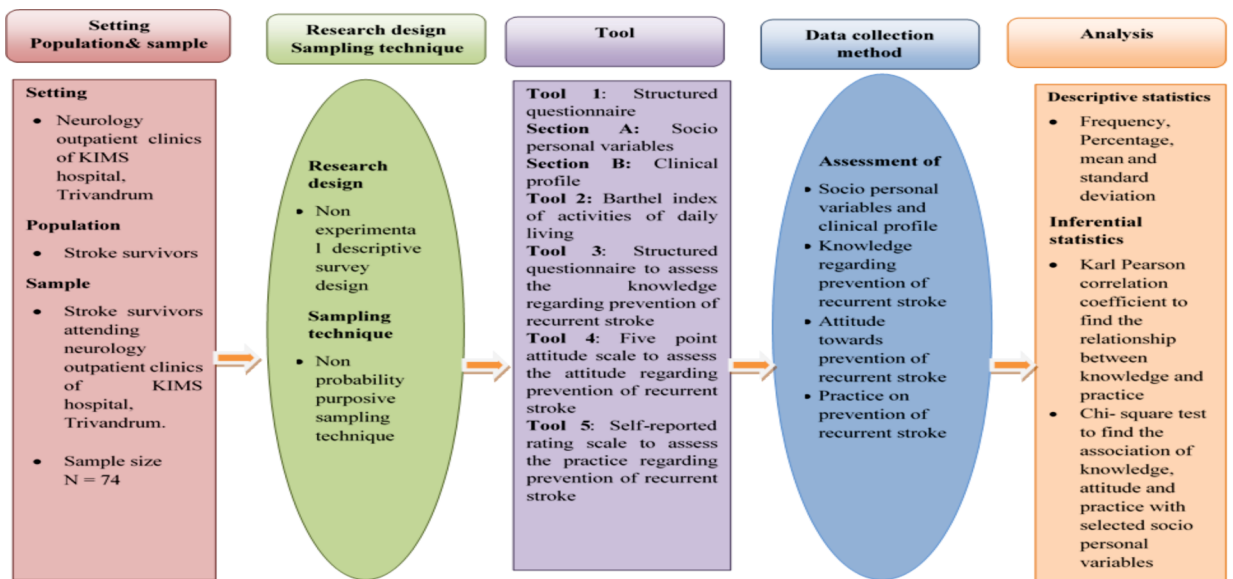Tool 5: Self reported rating scale to assess the practice on prevention of recurrent stroke among stroke survivors.

Figure 2: Schematic Representation of the study

Development/selection of the tool

The tools were prepared by the investigator, after an extensive review of literature related to secondary stroke prevention among stroke survivors. Blue print was developed first and scores were assigned to each item. The tools were validated by experts in the field of neurology and nursing. The tools were translated in to Malayalam by the investigator was validated by language expert. The tools were corrected and were approved by the concerned guide.

Description of tools

Tool 1: Structured questionnaire which consisted of 2 sections
    Section A – Socio personal variables which include age, gender, religion, marital status, type of family, area of residence, education, occupation, monthly income, family support, family history of stroke and source of information.
    Section B – Clinical profile which includes height, weight, BMI, blood pressure, blood sugar, lipid profile, history of present illness, dietary pattern, habits, Glasgow coma Scale, muscle strength, presence of bedsore and co-morbidity.

Tool 2: Modified barthel index of activities of daily living

Modified barthel index is used widely to assess the activities of daily living of stroke patients or patients with other disabling conditions. It measures what patients do in practice. Assessment is made by anyone who knows the patient well.

Sum the patient's scores for each item. Total possible scores range from 0 – 20, with lower scores indicating increased disability. If used to measure improvement after rehabilitation, changes of more than two points in the total score reflect a probable genuine change, and change on one item from fully dependent to independent is also likely to be reliable.

Less than 9 – severe disability
10 – 15 – moderate disability
16 – 20 - mild disability

Tool 3: Structured questionnaire to assess the knowledge regarding prevention of recurrent stroke among stroke survivors

It consists of 20 items related to stroke, risk factors of stroke, preventive aspects of recurrent stroke such as exercise, dietary modifications and control of risk factors. The correct response was given a score of 1 and 0 was given for incorrect response. The total knowledge score was 20.

Based on the total score, knowledge was graded as,
Poor knowledge: score 0- 9 (< 50%)
Average knowledge: score 10 - 15 (50- 75%)
Good knowledge: score 16-20 (76 - 100%)

Tool 4: Five point attitude scale to assess the attitude towards prevention of recurrent stroke among stroke survivors.

It consists of 15 items and among them 13was positively stated and 2 were negatively stated. Positive items were scored as strongly agree (5), agree (4), neutral (3), disagree (2), strongly disagree (1). The negative statements were scored in the reverse order. Total score was 75

Based on the scores, attitude was graded as:
Positive attitude: score 55-75 (80- 100%)
Negative attitude: score 15-54 (<80%)

Tool 5: Self reported rating scale to assess the practice on prevention of recurrent stroke among stroke survivors.

It consists of 20 statements related to the practice of patients to prevent recurrent stroke. The good practice was given a score of 3, satisfactory practice was given 2 and poor practice was given 1. Total score was 60.

The scores were interpreted as follows:
Poor practice: score 1- 29(< 50%)
Satisfactory practice: score 30-49 (50- 75%)
Good practice: score 50-60 (76- 100 %)

Content validity

Content of the tools and module was validated 2 neurologists, and two nursing specialists. Modifications were made based ontheir suggestions and tools were finalized for the pilot study.

Translation

Tools were translated from English to Malayalam with the help of a languageexpert.

Reliability of the tool

Reliability was ensured by doing cronbach's alpha method. The reliability of theknowledge, attitude and practice questionnaire were 0.782, 0.776 and 0.746 respectively.

Pilot study

The investigator obtained ethical clearance from the Institutional Review Board of KIMS college of Nursing and formal permission was taken from the HOD,KIMS neurology department for the conduct of the study. To check the feasibility of the study, pilot study was conducted from 10-12-2018 to 15-12-2018 among 10patients attending neurology outpatient clinics of KIMS hospital Trivandrum. Ten patients who satisfy the inclusion criteria were selected through purposive sampling technique. Detailed information about the study was given to the subjects using patient information sheet and informed consent was obtained. An Interview schedule was used to collect data regarding socio personal variables and structured questionnaire was used to assess knowledge regarding prevention of recurrent stroke. Five point attitude scale was used to assess the attitude of stroke survivors regarding prevention of recurrent stroke and practice regarding prevention of recurrent stroke was assessed by using self reported rating scale. Findings of the pilot study were presented before the research committee and few modifications were made in the sociopersonal profile and few questions were added and the tool was finalized for the main study. The study was found feasible.

Data Collection Process

Data collection process for the main study started from 5.02.2019 to13.04.2019. Seventy four samples who fulfilled the inclusion criteria were selected using purposive sampling technique. Detailed description about the data collection was given to the participants. After obtaining informed consent from the subjects, the tools were administered. The questions were read out to the subjects and they were given time to answer each question. It took around one hour to collect data from each patient. Data we recollected from 6-7 patients per day. After data collection, individualized teaching on prevention of recurrent stroke was administered followed bydistribution of pamphlet. The teaching mainly focused on measures to decrease the risk factors and required modifications in the lifestyle. After the teaching session, participants shared their experiences and doubts were cleared.

Data analysis

Data were analyzed using descriptive and inferential statistics.
• Frequency, Percentage, mean and standard deviation were used to describe demographic variables, Barthel index of activities of daily living, knowledge, attitude and practice regarding prevention of recurrent stroke among

stroke survivors.

- Karl Pearson correlation coefficient was used to find the relationship between knowledge and practice regarding prevention of recurrent stroke among stroke survivors.

Chi- square test was used to find the association of knowledge, attitude and practice with selected socio personal variables such as age, gender, religion, marital status, type of family, area of residence, education, occupation, monthly income and family history of stroke.

Chapter 4
Analysis And Interpretation

Data analysis is the process of organizing and synthesizing the data so as to answer research questions and test hypothesis. The purpose of analyzing the data collected in a study is to describe the data in meaningful terms as the data collected does not answer the research questions or test research hypothesis.

This section deals with the analysis and interpretation of data collected to determine the knowledge, attitude and practice regarding prevention of recurrent stroke among stroke survivors at KIMS hospital Trivandrum. The data were analyzed using descriptive and inferential statisticsand presented under the following headings:

- Section 1: Distribution of stroke survivors based on socio personal variables and clinical data.
- Section 2: Distribution of stroke survivors based on knowledge, attitude and practice regarding prevention of recurrent stroke.
- Section 3: Relationship between knowledge and practice regarding prevention of recurrent stroke among stroke survivors.
- Section 4: Association between knowledge, attitude and practice regarding prevention of recurrent stroke with selected socio personal variables

Section 1: Distribution of patients with stroke based on socio personal variables and clinical data.

This section describes the distribution of patients based on socio personal variables such as age, gender, religion, marital status, type of family, area of residence, education, occupation, monthly income, family support, family history of stroke, source of information, BMI, blood pressure, dietary pattern, habits, problems in speech, presence of bed sore and co morbidity.

Table 1 Frequency Distribution And Percentage Of Stroke Survivors Based On Age And Gender (n=74)

Sample Characteristics	f	%
Age in years		
41 – 50	12	16.2
51 -60	21	28.4
61 -70	27	36.5
71 – 80	14	18.9
Gender		
Male	56	75.7
Female	18	24.3

Table 1 shows that 55.4% of the stroke survivors were above the age of 60 years and 75.7% were males.
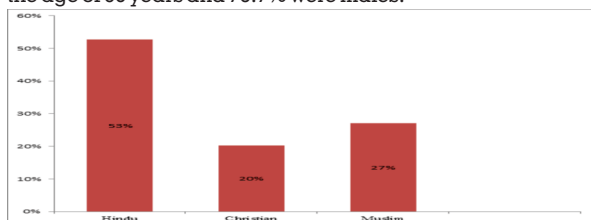
Figure 3: Bar diagram showing percentage distribution of

stroke survivors based on religion.

Figure 3 shows that 53% of stroke survivors were Hindus.

Table 2 Frequency Distribution And Percentage Of Stroke Survivors Based On Marital Status, Type Of Family And Area Of Residence (n=74)

Sample Characteristics	f	%
Marital status		
Married	71	95.9
Unmarried	1	1.4
Widow/ widower	2	2.7
Type of family		
Nuclear	66	89.2
Joint	8	10.8
Area of residence		
Urban	34	45.9
Rural	40	54.1

Table 2 shows that 95.9% stroke survivors were married, 89.2% belonged to nuclear family and 54.1% from rural area.

Table 3 Frequency Distribution And Percentage Of Stroke Survivors Based On Education, Occupation And Monthly Income (n=74)

Sample Characteristics	f	%
Education		
Primary	10	13.5
High school	32	43.2
Higher secondary	18	24.3
Graduate	10	13.5
Post graduate	4	5.5
Occupation		
Government	5	6.8
Private employee	7	9.5
Business	12	16.2
Agriculture	10	13.5
Retired	12	16.2
Unemployed	13	17.5
House wife	15	20.3
Monthly income		
Less than Rs.10000	37	50
Rs.10000-20000	29	39.2
Rs.20000-30000	8	10.8

Table 3 shows that 43.2% of stroke survivors had high school education,20.3% of patients were housewives and 50% of patients had monthly income less than Rs.10000.

Table 4 Frequency Distribution And Percentage Of Stroke Survivors Based On Family Support, Family History Of Stroke And Source Of Information (n=74)

Sample Characteristics	f	%
Family support		
Yes	73	98.6
No	1	1.4
Family history of stroke		
Yes	14	18.9
No	60	81.1
Source of information		
Health professionals	74	100
Printed sources	18	24.3
Electronic sources	22	29.7
Relatives	2	2.7

Table 4 shows that 98.6% stroke survivors had good family support, 18.9% had family history of stroke and all stroke survivors received health information related to stroke from health professionals.

Table 5 Frequency distribution and percentage of stroke

survivors based on BMI and blood pressure (n=74)

Sample Characteristics	f	%
BMI		
Normal	34	45.9
Over weight	29	39.2
Obese	11	14.9
Blood pressure (mm Hg)		
>140/90 mmHg	7	9.5
<140/90 mmHg	67	90.5

Table 5 shows that 39.2% of stroke survivors were overweight and 14.9% were obese, 9.5% had blood pressure greater than 140/90mmHg.

Table 6 Frequency Distribution And Percentage Of Stroke Survivors Based On Blood Pressure, Treated And Non Treated (n=74)

Sample characteristics	Treated		Non treated	
	f	%	f	%
Blood pressure(mmHg)				
<140/90 mmHg	37	50	30	40.5
>140/90 mmHg	6	8.1	1	1.35

Table 6 shows that 8.1% of stroke survivors had blood pressure greater than 140/90 mmHg even after treatment, 1.35% had blood pressure greater than 140/90 mmHg without taking any treatment.

Table 7 Frequency Distribution And Percentage Of Stroke Survivors Based On Dietary Pattern And Habits (n=74)

Sample Characteristics	f	%
Dietary pattern		
Vegetarian	10	13.5
Nonvegetarian	64	86.5
Habits		
Smoking		
Non smokers	49	66.2
Ex smokers	20	27
Current smokers	5	6.8
Pan chewing		
Non pan chewers	72	97.3
Ex pan chewers	1	1.35
Current pan chewers	1	1.35
Alcoholism		
Non alcoholics	60	81.1
Ex alcoholics	10	13.5
Current alcoholics	4	5.4

Table 7 shows that 86.5% of stroke survivors were non vegetarians, 6.8% werecurrent smokers, 1.35% was current pan chewers and 5.4% were current alcoholics.

Table 8 Frequency Distribution And Percentage Of Stroke Survivors With Problems In Speech And Presence Of Bedsore (n=74)

Sample Characteristics	f	%
Problems in speech		
Yes	13	17.6
No	61	82.4
Presence of bedsore		
Yes	1	1.4
No	73	98.6

Table 8 shows that 17.6% had problems in speech and 1.4%had bedsore.

Table 9 Frequency Distribution And Percentage Of Stroke Survivors Based On Risk Factors (n=74)

Risk factors		f	%
Diabetes mellitus			
Yes		55	74.3
No		19	25.7
Hypertension			
Yes		43	58.1
No		31	41.9
Hypercholesterolemia			
Yes		29	39.2
No		45	60.8
CAD			
Yes		11	14.9
No		63	85.1
Atrial fibrillation			
Yes		2	2.7
No		72	97.3

Table 9 shows that 74.3% of stroke survivors had DM, 58.1% had hypertension, and 39.2% had hypercholesterolemia. 14.9% of stroke survivors had CAD and were taking antiplatelets and 2.7% stroke survivors had atrial fibrillation and were on oral anticoagulants (warfarin and acitrom).

Table 10 Frequency distribution and percentage of stroke survivors based on risk factors: controlled and uncontrolled (n=74)

Risk factors	f	%
Diabetes mellitus		
Controlled	9	16.6
Uncontrolled	46	83.4
Hypercholesterolemia		
Controlled	25	86.2
Uncontrolled	4	13.8

Table 10 shows that 83.4% of stroke survivors had uncontrolled diabetes mellitus and 13.8% had uncontrolled hypercholesterolemia even after treatment.

Table 11 Frequency Distribution And Percentage Of Stroke Survivors Based On Presence Of Multiple Risk Factors (n=74)

Sample Characteristics	f	%
Risk factors		
No risk factors	8	10.8
Diabetes	8	10.8
Hypertension	4	5.4
Hypercholesterolemia	2	2.7
Diabetes & hypertension	18	24.3
Diabetes & hypercholesterolemia	7	9.5
Hypertension & hypercholesterolemia	3	4.1
Diabetes &CAD	2	2.7
Hypertension & CAD	1	1.3
Hypercholesterolemia& CAD	1	1.3
Diabetes, hypertension& CAD	2	2.7
Diabetes, hypertension & hypercholesterolemia	12	16.2
Diabetes, hypercholesterolemia& CAD	2	2.7
Diabetes, hypertension &AF	1	1.4
Diabetes, CAD& AF	1	1.4
Diabetes, hypertension, hypercholesterolemia & CAD	2	2.7

Table 11 shows that 10.8% had no risk factors, 19% had one risk factor, 43.2% had two risk factors, 24.3% had threerisk factorsand 2.7% had fourrisk factors.

Table 12 Frequency Distribution And Percentage Of Stroke Survivors Based On Disability As Measured By Barthel Index Of Activities Of Daily Living. (n=74)

Barthel index scoring	f	%
Severe disability	5	6.8
Moderate disability	10	13.5
Mild disability	59	79.7

Table 12 shows that 79.7% of the stroke survivors had mild

disability, 13.5% of the stroke survivors had moderate disability and 6.8% had severe disabilityas measured by Barthel index of activities of daily living.

Section 2: Distribution of stroke survivors based on knowledge, attitude and practice regarding prevention of recurrent stroke

This section deals with the distribution of stroke survivors based on knowledge, attitude and practices regarding prevention of recurrent stroke.

Table 13 Frequency Distribution And Percentage Of Stroke Survivors Based On Knowledge Regarding Prevention Of Recurrent Stroke (n=74)

Knowledge	f	%
Poor	2	2.7
Average	28	37.8
Good	44	59.5

Table 13 shows that 59.5% ofstroke survivors had good knowledge, 37.8% had average knowledge and 2.7% had poor knowledge regarding prevention of recurrent stroke.

Table 14 Frequency Distribution And Percentage Of Stroke Survivors Based On Knowledge On Various Aspects Of Prevention Of Recurrent Stroke (n=74)

Knowledge on various aspects of prevention of recurrent stroke	Poor		Satisfactory		Good	
	f	%	f	%	f	%
Disease aspect	7	10.5	0	0	67	90.5
Riskfactors in general	3	4.05	16	21.63	55	74.32
Hypertension	4	5.40	58	78.38	12	16.22
Diabetes mellitus	2	2.72	21	28.37	51	68.91
Obesity	8	10.82	36	48.64	30	40.54
Hypercholesterolemia	2	2.71	34	45.94	38	51.35
Smoking	13	17.56	0	0	61	82.44
Symptoms	0	0	0	0	74	100
Diet	0	0	47	63.52	27	36.48
Exercise	0	0	10	13.52	64	86.48
Stroke in general	0	0	22	29.73	52	70.27

Table 14 shows that all stroke survivors (100%) had good knowledge regarding symptoms of stroke, 90.5% had good knowledge regarding disease aspect, 78.37% had satisfactory knowledge regarding hypertension as a risk factor of stroke, and 17.56% had poor knowledge regarding smoking as a risk factor.

Table 15 Frequency Distribution And Percentage Of Stroke Survivors Based On Attitude Regarding Prevention Of Recurrent Stroke (n=74)

Attitude	f	%
Positive	73	98.6
Negative	1	1.4

Table 15 shows that 98.6% of stroke survivors had positive attituderegarding prevention of recurrent stroke.

Table 16 Frequency Distribution And Percentage Of Stroke Survivors Based On Practice Regarding Prevention Of Recurrent Stroke (n=74)

Practice	f	%
Poor	0	0
Average	43	58.1
Good	31	41.9

Table 16 shows that 58.1% stroke survivors had average practice and 41.9% had good practice regarding prevention of recurrent stroke.

Table 17 Mean And Standard Deviation Of Knowledge, Attitude And Practice Regarding Prevention Of Recurrent Stroke Among Stroke Survivors (n=74)

Variables	Mean	Standard deviation
Knowledge	15.6	2.5
Attitude	67.3	4.4
Practice	47.9	3.7

Table 17 shows that the mean knowledge score was 15.6 ± 2.5, the mean attitude score was 67.3 ± 4.4 and mean practice score was 47.9 ± 3.7.

Section 3: Relationship between knowledge and practice regarding prevention of recurrent stroke among stroke survivors.

This section describes the relationship between knowledge and practice regarding prevention of recurrent stroke among stroke survivors which is computed by KarlPearson correlation coefficient. The null hypothesis was stated as given below:

H01: There is no significant relationship between knowledge and practice regarding prevention of recurrent stroke among stroke survivors.

Table 18 Relationship Between Knowledge And Practice regarding Prevention Of Recurrent Stroke Among Stroke Survivors (n=74)

Variables	KarlPearsoncorrelationcoefficient (r)	
Knowledge	0.250*	
Practice		

*significant at 0.05 level

Table 18 shows that there is statistically significant positive correlation between knowledge and practice regarding prevention of recurrent stroke among stroke survivors $(p<0.05)$.Hencenull hypothesis H01 was rejected.

Figure 4: Scatter plot diagram showing the relationship between knowledge and practice. There was a positive correlation between Knowledge score and practice score($r=0.250p <0.05$). Subjects with high knowledge score had high practice score.

Section 4: Association of knowledge, attitude and practice with selected socio personal variables such as age, gender, religion, marital status, type of family, area of residence, education, occupation, monthly income, family support andfamily history of stroke.

This section intends to find out the association of knowledge, attitude and practice with selected socio personal variables. Association of the variables was computed using Chi square test. The null hypotheses were stated as given below.

H02: There is no significant association between knowledge regarding prevention of recurrent stroke among stroke survivors with selected sociopersonal variables such as age, gender, religion, marital status, type of family, area of residence, education, occupation, monthly income, family support and family history of stroke.

H03: There is no significant association between attitude

regarding prevention of recurrent stroke among stroke survivors with selected sociopersonal variables such as age, gender, religion, marital status, type of family, area of residence, education, occupation, monthly income, family support and family history of stroke.

H04: There isno significant association between practice regarding prevention of recurrent stroke among stroke survivors with selected sociopersonal variables such as age, gender,religion, marital status, type of family, area of residence, education, occupation, monthly income, family support and family history of stroke.

Table 19 Chi square value showing association between knowledge regarding prevention of recurrent stroke with age and gender (n=74)

Socio personal Variables	knowledge						df	χ^2
	Poor		Average		Good			
	f	%	f	%	f	%		
Age							6	6.687
41 – 50	0	0	3	25	9	75		
51 – 60	2	9.5	8	38.1	11	52.4		
61 – 70	0	0	12	44.4	15	55.6		
71 – 80	0	0	5	35.7	9	64.3		
Gender								
Male	2	3.6	19	33.9	35	62.5	2	1.931
Female	0	0	9	50	9	50		

Table 19 shows that there is statistically no significant association between knowledge regarding prevention of recurrent stroke with age and gender (p >0.05).Hence nullhypothesis H02(a) and H02(b) were accepted.

Table 20 Chi Square Value Showing Association Between Knowledge Regarding Prevention Of Recurrent Stroke With Religion, Marital Status And Type Of Family   (n=74)

Socio personal Variable	Knowledge						df	χ^2
	Poor		Average		Good			
	f	%	f	%	f	%		
Religion							4	2.846
Hindu	1	2.6	13	33.3	25	64.1		
Muslim	0	0	5	33.3	10	66.7		
Christian	1	5	10	50	9	45		
Marital status								
Married	2	2.8	28	39.5	41	57.7		
Unmarried	0	0	0	0	1	100	4	2.132
Widow/ widower	0	0	0	0	2	100		
Type of family								
Nuclear	2	3	26	39.4	38	57.6		
Joint	0	0	2	25	6	75	2	0.997

Table 20 shows that there is statistically no significant association between knowledge regarding prevention of recurrent stroke with religion, marital status and type of family (p >0.05).Hence nullhypothesis H02(c),H02(d) and H02(e) were accepted.

Table 21 Chi Square Value Showing Association Between Knowledge Regarding Prevention Of Recurrent Stroke With Area Of Residence And Education   (n=74)

Socio personal Variable	Knowledge						df	χ^2
	Poor		Average		Good			
	f	%	f	%	f	%		
Area of residence							2	7.302*
Urban	2	5.9	17	50	15	44.1		
Rural	0	0	11	27.5	29	72.5		
Education								
Primary	0	0	3	30	7	70		
High school	1	3.1	13	40.6	18	56.3		
Higher secondary	1	5.6	8	44.4	9	50	8	2.847
Graduate	0	0	3	30	7	70		
Post graduate	0	0	1	25	3	75		

Table 21 shows that there is statistically significant association between knowledge regarding prevention of recurrent stroke with area of residence (p<0.05), hence null hypothesis H02(f)is rejected and there is statistically no significant association between knowledge regarding prevention of recurrent stroke with education (p>0.05). Hence nullhypothesis H02(g) was accepted.

Table 22 Chi Square Value Showing Association Between Knowledge Regarding Prevention Of Recurrent Stroke With Occupation   (n=74)

Socio personal Variable	Knowledge						df	χ^2
	Poor		Average		Good			
	f	%	f	%	f	%		
Occupation							12	13.79
Govt. Employee	0	0	1	20	4	80		
Private employee	0	0	2	28.6	5	71.4		
Business	1	8.3	5	41.7	6	50		
Agriculture	1	10	0	0	9	90		
Retired	0	0	6	50	6	50		
Unemployed	0	0	7	53.8	6	46.2		
House wife	0	0	7	46.7	8	53.3		

Table 22 shows that there is statistically no significant association between knowledge regarding prevention of recurrent stroke with occupation (p >0.05).Hence nullhypothesis H02(h) was accepted.

Table 23 Chi Square Value Showing Association Between Knowledge Regarding Prevention Of Recurrent Stroke With Monthly Income, Family Support And Family History Of Stroke   (n=74)

Socio personal Variables	Knowledge						df	χ^2
	Poor		Average		Good			
	f	%	f	%	f	%		
Monthly income								
Rs.<10000	2	5.4	19	51.4	16	43.2		
Rs.10000-20000	0	0	7	24.1	22	75.9	4	8.846
Rs.20000-30000	0	0	2	25	6	75		
Family support								
Yes	2	2.7	27	37	44	60.3		
No	0	0	1	100	0	0	2	1.665
Family history of stroke								
Yes	0	0	8	57.1	6	42.9		
No	2	3.4	20	33.3	38	63.3	2	2.968

Table 23 shows that there is statistically no significant association between knowledge regarding prevention of recurrent stroke with monthly income, family support and family history of stroke (p > 0.05).Hence null hypothesis H02(i), H02(j) and H02(k) were accepted.

Association of attitude with selected socio personal variables such as age, gender, religion,marital status, type of family, area of residence, education, occupation, monthly income, family support and family history of stroke.

Among 74 stroke survivors, 73 had positive attitude regarding prevention of recurrent stroke, only one person had negative attitude. So the association between attitude and socio personal variables is not relevant, so it was not computed.

Table 24 Chi square value showing association between practice regarding prevention of recurrent stroke with age and gender (n=47)

Socio personal Variables	Practice				df	χ^2
	Satisfactory		Good			
	f	%	f	%		
Age					3	0.447
41 – 50	8	66.7	4	33.3		
51 – 60	12	57.1	9	42.9		

61 – 70	15	55.6	12	44.4		
71 – 80	8	57.1	6	42.9		
Gender						
Male	31	55.4	25	44.6	1	0.716
Female	12	66.7	6	33.3		

Table 25 Chi Square Value Showing Association Between Practice Regarding Prevention Of Recurrent Stroke With Religion, Marital Status And Type Of Family (n=74)

Socio personal Variable	Practice				df	χ2
	Satisfactory		Good			
	f	%	f	%		
Religion					2	2.052
Hindu	24	61.5	15	38.5		
Muslim	10	66.7	5	33.3		
Christian	9	45	11	55		
Marital status						
Married	40	56.3	31	43.7		
Unmarried	1	100	0	0	2	2.254
Widow/widower	2	100	0	0		
Type of family						
Nuclear	38	57.6	28	42.4		
Joint	5	62.5	3	37.5	1	0.071

Table 25 shows that there is statistically no significant association between practice regarding prevention of recurrent stroke with religion, marital status and type of family (p >0.05).Hence nullhypothesis H04 (c), H04 (d)andH04 (e) were accepted.

Table 26 Chi Square Value Showing Association Between Practice Regarding Prevention Of Recurrent Stroke With Area Of Residence And Education (n=74)

Socio personal Variable	Practice				df	χ2
	Satisfactory		Good			
	f	%	f	%		
Area of residence					1	0.013
Urban	20	58.8	14	41.2		
Rural	23	57.5	17	42.5		
Education						
Primary	9	90	1	10		
High school	16	50	16	50		
Higher secondary	12	66.7	6	33.3	4	7.655
Graduate	5	50	5	50		
Post graduate	1	25	3	75		

Table 26 shows that there isstatistically no significant association between practice regarding prevention of recurrent stroke with area of residenceand education (p >0.05).Hence nullhypothesis H04 (f) and H04 (g) were accepted.

Table 27 Chi square value showing association between practice regarding prevention of recurrent stroke with occupation (n=74)

Socio personal Variable	Practice				df	χ2
	Satisfactory		Good			
	f	%	f	%		
Occupation					6	2.83
Govt. Employee	2	40	3	60		
Private employee	4	57.1	3	42.9		
Business	6	50	6	50		
Agriculture	6	60	4	40		
Retired	6	50	6	50		
Unemployed	8	61.5	5	38.5		
House wife	11	73.3	4	26.7		

Table 27 shows that there is statistically no significant association between practice regarding prevention of recurrent stroke with occupation (p>0.05).Hence

nullhypothesis H04(h) was accepted.

Table 28 Chi Square Value Showing Association Between Practice Regarding Prevention Of Recurrent Stroke With Monthly Income, Family Support And Family History Of Stroke (n=74)

Socio personal Variables	Practice				df	χ2
	Satisfactory		Good			
	f	%	f	%		
Monthly income						
Rs.<10000	21	56.8	16	43.2	2	0.431
Rs.10000-20000	18	62.1	11	37.9		
Rs.20000-30000	4	50	4	50		
Family support						
Yes	42	57.5	31	42.5	1	0.731
No	1	100	0	0		
Family history of stroke						
Yes	5	35.7	9	64.3	1	3.557
No	38	63.3	22	36.7		

Table 28 shows that there is statistically no significant association between practice regarding prevention of recurrent stroke with monthly income, family support and family history of stroke (p >0.05).Hence null hypothesis H04 (i), H04 (j) and H04 (k) were accepted.

Summary of the analysis
The study findings showed that 59.5% of stroke survivors had good knowledge, 37.8% had average knowledge and 2.7% had poor knowledge. 98.6% of stroke survivors had positive attitude, 58.1% stroke survivors had satisfactory practice and 41.9% had good practice regarding prevention of recurrent stroke. There is statistically positive correlation between knowledge and practice regarding prevention of recurrent stroke among stroke survivors. The obtained 'r' value is 0.250. Subjects with high knowledge score had high practice score.

Chapter 5
RESULTS
The chapter presents the major findings of the study. The aim of the present study wasto assess the knowledge, attitude and practice regarding prevention of recurrent stroke among stroke survivors and to provide individualized teaching with pamphlet on risk reduction measures. The chapter is organized under three headings – objectives, hypothesis and major results of the study.

Objectives
• To assess the knowledge, attitude and practice regarding prevention of recurrent stroke among the stroke survivors.
• To determine the relationship between knowledge and practice regarding prevention of recurrent stroke.
• To determine the association between knowledge, attitude and practice regarding prevention of recurrent stroke and selected socio personal variables.

Hypothesis
H1: There is significant relationship between knowledge and practice regarding prevention of recurrent stroke among stroke survivors.

H2: There is significant association between knowledge regarding prevention of recurrent stroke and selected socio personal variables.

H3: There is significant association between attitude towards prevention of recurrent stroke and selected socio personal variables.

H4: There is significant association between practice regarding prevention of recurrent stroke and selected socio personal variables.

Results of the study

The results of the study were presented under the following headings:

Section 1: Sample characteristics based on socio personal variables and clinical data.

Section 2: Knowledge, attitude and practice regarding prevention of recurrent stroke among stroke survivors.

Section 3: Relationship between knowledge and practice regarding prevention of recurrent stroke among stroke survivors.

Section 4: Association between knowledge, attitude and practice regarding prevention of recurrent stroke with selected socio personal variables such as age, gender, religion, marital status, type of family, area of residence, education, occupation, monthly income, family support and family history of stroke.

Section 1: Sample characteristics based on socio personal variables and clinical data.

The characteristics of the study subjects were as follows:
- Majority of stroke survivors (55.4%) were above the age of 60 years, 75.7% were males and 53% were Hindus.
- Majority of stroke survivors (95.9%) were married, 89.2% belonged to nuclear family and 54.1% from rural area.
- Among the stroke survivors 43.2% had high school education, 20.3% of patients were housewives and 50% of patients had monthly income of less than Rs.10000.
- Among the stroke survivors 98.6% had good family support, 18.9% had family history of stroke and all received health information related to stroke from health professionals.
- Among the stroke survivors 39.2% were overweight and 14.9% were obese, 9.5% had blood pressure greater than140/90mmHg.
- Among the 43 stroke survivors treated for hypertension, 37 patients were maintaining normal blood pressure and one patient (1.35%) had blood pressure greater than 140/90 mmHg and was not treated for hypertension.
- Among the stroke survivors 86.5% were non vegetarians, 6.8% were current smokers, 1.35% were current pan chewers and 5.4% were current alcoholics.
- Among the stroke survivors 17.6% had problems in speech and 1.4% had bedsore.
- With regard to the risk factors of recurrent stroke, 74.3% of stroke survivors had DM, 58.1% had hypertension, 39.2% had hypercholesterolemia, 14.9% of stroke survivors had CAD and were taking antiplatelets and 2.7% stroke survivors had atrial fibrillation and were on oral anticoagulants (warfarin and acitrom).
- Majority of stroke survivors (83.4%) had uncontrolled diabetes mellitus and 13.8% had uncontrolled hypercholesterolemia even after treatment.
- With regard to the multiple risk factors 10.8% had no risk factors, 19% had one risk factor, 43.2% had two risk factors, 24.3% had three risk factors and 2.7% had four risk factors.
- With regard to Barthel index of activities of daily living 79.7% of stroke survivors had mild disability, 13.5% of the stroke survivors had moderate disability and 6.8% had severe disability.

Section 2: Knowledge, attitude and practice regarding prevention of recurrent stroke among stroke survivors.
- Present study findings shows that 59.5% of stroke survivors had good knowledge, 37.8% had average knowledge and 2.7% had poor knowledge regarding prevention of recurrent stroke.
- Based on the knowledge on various aspects of prevention of recurrent stroke all stroke survivors (100%) had good knowledge regarding symptoms of stroke, 90.5% had good knowledge regarding disease aspect, 78.37% had satisfactory knowledge regarding hypertension as a risk factor of stroke, and 17.56% had poor knowledge regarding smoking as a risk factor.
- Majority of stroke survivors (98.6%) had positive attitude regarding prevention of recurrent stroke.
- With regard to practice of stroke survivors 58.1% had satisfactory practice and 41.9% had good practice regarding prevention of recurrent stroke.
- The mean knowledge score was 15.6±2.5; the mean attitude score was 67.3±4.4 and mean practice score was 47.9±3.7.

Section 3: Relationship between knowledge and practice regarding prevention of recurrent stroke among stroke survivors.
- The relationship between knowledge and practice regarding prevention of recurrent stroke among stroke survivors was computed by Karl Pearson correlation coefficient. The obtained 'r' value is 0.250. So there is statistically significant positive correlation between knowledge and practice regarding prevention of recurrent stroke among stroke survivors (p<0.05). Subjects with high knowledge score had high practice score.

Section 4: Association between knowledge, attitude and practice regarding prevention of recurrent stroke with selected socio personal variables such as age, gender, religion, marital status, type of family, area of residence, education, occupation, monthly income, family support and family history of stroke.
- There was statistically significant association between knowledge regarding prevention of recurrent stroke with area of residence (27.302, p<0.05).
- Among 74 stroke survivors, 73 had positive attitude regarding prevention of recurrent stroke, only one person had negative attitude. So the association between attitude and socio personal variables is not relevant, so it was not computed.
- There was statistically no significant association between practice regarding prevention of recurrent stroke with age, gender, religion, marital status, type of family, area of residence, education, occupation, monthly income, family support and family history of stroke.

The study findings suggest that majority of stroke survivors have good knowledge and positive attitude regarding prevention of recurrent stroke. But majority of them had average practice regarding prevention of recurrent stroke.

CHAPTER 6
DISCUSSION, SUMMARY AND CONCLUSION
This chapter deals with the discussion of the study findings based on objectives and available literature and includes summary, conclusions, nursing implications, limitations and recommendations for further research.

DISCUSSION
The aim of the study is to assess the knowledge, attitude and practice regarding prevention of recurrent stroke among stroke survivors and to provide individualized teaching on risk reduction measures by using pamphlet. The findings of the study have been discussed in terms of objectives, theoretical base and hypotheses. In the present study data were collected from 74 stroke survivors attending the neurology outpatient clinics.

The findings of the present study shows that 55.4% of the stroke survivors were above the age of 60 years, 75.7% were males; 74.3% of stroke survivors had diabetes mellitus; among them 83.4% had uncontrolled diabetes mellitus even with treatment; 58.1% had hypertension; among them 8.1% were

not maintaining normal blood pressure even after treatment and 1.35% did not use any antihypertensive medications. Among 74 patients 39.2% had hypercholesterolemia and 13.8% had uncontrolled hypercholesterolemia even after treatment, 14.9% of stroke survivors had CAD and were taking antiplatelets and 2.7% ofstroke survivors had atrial fibrillation were on oral anticoagulant therapy (warfarin and acitrom).

With regard to risk factors 10.8% had no risk factors, 19% had one risk factor, 43.2% had two risk factors, and 27% had more than two risk factors. Among the stroke survivors 18.9% had family history of stroke, 6.8% were current smokers; 1.35% were current pan chewers and 5.4% were current alcoholics; 17.6% had problems in speech.

The findings are consistent with the findings of a study done in Turkey toevaluate the risk factors and recurrent ischemic stroke characteristics among 500 patients with ischemic stroke. Among them 18% of patient had recurrent ischemic stroke; 55% were males and 45% were females. The risk factor of patients with stroke revealed that 88% had hypertension,14% ofthe hypertensive patients did not use antihypertensive medications,antihypertensive treatment was insufficient in 39% of those who already used antihypertensive medications; 43% had diabetes mellitus and 55% of the diabetic patients had insufficient medication; 30% had hyperlipidemia and among them 52% were using antihyperlipidemic medication; 36% had ischemic heart disease; 11% had atrial fibrillationand among them 60% were on oral anticoagulant therapy (warfarin); 14% had smoking and 38% of patients had more than two risk factors.The study concluded that improvement of patient'sadherence to the treatment is also very important in addition to theoptimal treatment and follow-up strategy for decreasing the incidence of recurrent ischemic stroke.[12]

A population based study to determine the prevalence and risk factor analysis of stroke among 158 stroke survivors reported that,the mean age was 58.4 years and most predominant age group was 61-70 years with male predominance (67%). Slurring of speech was present in 55.6% cases. Risk factors were smoking (60.7%), alcohol (55.6%), hypertension (37.9%), diabetes mellitus (13.2%) and family history (6.3%). 12% of patients had two risk factors.[27]

The first objective of the study was to assess the knowledge, attitude and practice regarding prevention of recurrent stroke among the stroke survivors. In the present study59.5% of stroke survivors had good knowledge, 37.8% had average knowledge and 2.7% had poor knowledge.All stroke survivors (100%) had good knowledge regarding symptoms of stroke, 90.5% had good knowledge regarding disease aspect, 78.37% had satisfactory knowledge regarding hypertension as a risk factor of stroke, and 17.56% had poor knowledge regarding smoking as a risk factor. Among the stroke survivors 98.6% had positive attitude and only 1.4% had negative attitude, 58.1% had satisfactory practice and 41.9% had good practice.

The present study findings are similar to the findings of a cross-sectional study conducted among 140 patients with recurrent stroke in Thailand. Nearly onethirdof patients (31.4%) could not name any risk factors for stroke. The most commonly recognized risk factors were hypertension(35%), dyslipidemia (28.6%), and diabetes (22.9%). The most commonly recognized warning signswere sudden unilateral weakness (61.4%), sudden trouble with speaking (25.7%), and sudden trouble with walking, loss of balance, or dizziness (21.4%);13.6% could not identify any warning signs. The results showed that knowledge of stroke in patientswith recurrent stroke is unsatisfactory.[53]

The present study finding are consistent with the findings of a study done among 372 stroke survivors to assess whether

different attitudes toward stroke are associated with survival after stroke. The findings showed that fighting spirit was associated with increased survival, while helplessness/ hopelessness and fatalism were associated with decreased survival. The study concluded that patient's attitudes towards their illness seem to be associated with survival after stroke. [50]

The second objective of the study was to analyze the relationship between knowledge and practice regarding prevention of recurrent stroke.The present study shows thatthere is statistically positive correlation between knowledge and practice regarding prevention of recurrent stroke among stroke survivors. The obtained 'r' value is 0.250.Subjects with high knowledge score had high practice score.

The present study findings are similar to the findings of a study conducted to assess the knowledge and practice of stroke survivors regarding secondary stroke prevention in Namibia. It was found that knowledge and practice on secondary stroke prevention among stroke survivors is very low despite the availability of information sources. A significant proportion of stroke survivors also continue to smoke and consume alcohol contrary to expectations and recommendations. Only a relatively small percentage of stroke survivors comply with lifestyle changes prescribed to them such as diet modification and engaging in physical exercise.[15]

The third objective of the study is to find the association of knowledge, attitude and practice regarding prevention of recurrent stroke and selected socio personal variables. It shows that there was statistically significant association between knowledge regarding prevention of recurrent stroke with area of residence ($\chi^2 = 7.302$, p<0.05). Among 74 stroke survivors, 73 had positive attitude regarding prevention of recurrent stroke, only one person had negative attitude. So the association between attitude and socio personal variables is not relevant, so it was not computed.

There was statistically no significant association between practice regarding prevention of recurrent stroke with age, gender, religion, marital status, type of family, area of residence, education, occupation, monthly income, family support and family history of stroke.

The study findings were consistent with the findings of a study done among 140 patients with recurrent stroke in Thailandto assess the knowledgeof stroke risk factors and warning signs. The findings showed that there was statistically no significant difference in knowledge in terms of age, gender, and education.[53]

Summary

The present study was conducted to assessthe knowledge, attitude and practice regarding prevention of recurrent stroke among stroke survivors. The research design adopted for the study was non experimental descriptive survey design. Seventy four stroke survivors attending the neurology outpatient clinics were selected by purposive sampling technique.Structured Interview schedule was used to collect data regarding socio personal and clinical variables, structured questionnaire to assess the knowledge, five point attitude scale to assess the attitude and self reported rating scale to assess the practice regarding prevention of recurrent stroke among stroke survivors.After data collection, individualized teaching with pamphlet on risk reduction measures was given to the subjects. Data were analyzed using descriptive and inferential statistics.Thestudy findings showed that 59.5% of stroke survivors had good knowledge, 37.8% had average knowledge and 2.7% had poor knowledge. 98.6% of stroke survivors had positive attitude, 58.1% stroke survivors had satisfactory practice and 41.9%

had good practice regarding prevention of recurrent stroke.There is statistically positive correlation between knowledge and practice regarding prevention of recurrent stroke among stroke survivors.The obtained 'r' value is 0.250.Subjects with high knowledge score had high practice score.

CONCLUSION

Recurrent stroke and its debilitating consequences can and should be prevented. The findings of the study suggest that 59.5% of the stroke survivors had good knowledge, 98.6% had positive attitude and 41.9% had good practice regarding prevention of recurrent stroke. There is statistically positive correlation between knowledge and practice regarding prevention of recurrent stroke among stroke survivors.It is necessary to develop individual teaching strategies and programmes towards providing information on, and improving awareness regarding prevention of recurrent stroke.

Implications Of The Study

The findings of the present study have several implications in the field of nursing practice, nursing education, nursing administration and nursing research.

Nursing Practice
• The findings of the study provide an insight into stroke survivor's knowledge, attitude and practice regarding prevention of recurrent stroke.
• As nurses play key role in coordinating patient care with interdisciplinary team and develop a plan of care for individual patient, they must keep abreast with the latest research findings in order to incorporate those evidences into clinical practice.
• Being a primary care provider, the nurse plays a vital role in patient care. Health education is an integral nursing responsibility to improve knowledge and to adopt measures for risk reduction.
• It is essential to have adequate number of qualified and skilled nurses to render quality care and education for stroke survivors.

Nursing Education:
• The knowledge regarding measures to prevent recurrent stroke help the nurse educators and students to identify the areas in need for patient education.
• Regular in-service education programmes can be conducted to influence the staff nurses in updating knowledge on stroke rehabilitation.
• Nurses should be equipped with current knowledge by conducting journal clubs and educational programmes.
• Student nurses should be well exposed to various aspects of stroke prevention and rehabilitation during their clinical posting.
• Student nurses can conduct health education sessions in the community settings regarding various aspects of stroke prevention and regular follow up of stroke survivors.

Nursing Administration:
• Nurse administrators can take initiative in imparting health information through online data base education system regarding prevention of recurrent stroke among stroke survivors.
• Nurse administrators should formulate protocols, guidelines and system of care in collaboration with multidisciplinary team.
• Nurse administrators should provide necessary support and adequate infrastructure facilities for giving health education for stroke survivors.
• The nurse administrators can take initiative in organizing professional conferences which will be a forum where nurse researchers can communicate and disseminate the research findings to the practicing nurses.

• Administrative support and encouragement should be provided to professional nurses to undertake research activities.
• Student nurses should be motivated to provide incidental and planned health teaching programs as an individual or group basis
• Nursing administrators should take up leadership roles in training and organizing regular health teaching sessions to patients with stroke.
• Professional interaction between nurses and the public will improve the professional status and image of nursing profession.

Nursing Research:
• Nurse researchers can replicate this study with large samples to get better results.
• Follow up study can be conducted to evaluate the effectiveness of teaching session.
• This study will motivate the budding nurse researchers to conduct the similar studies with different variables in a different setting.
• Nurse researchers can encourage students to develop a positive attitude towards research and to foster a spirit of inquiry through reviewing research articles.
• Nurses have to disseminate the research findings through journals and magazines.
• Nurse practitioners should take efforts to conduct interactive sessions with stroke survivors for promoting their health and also to disseminate the findings of researches on recurrent stroke prevention.

Limitations
• The study was confined tostroke survivors attending neurology outpatient clinics of KIMS hospital, Trivandrum.

Recommendations
• A comparative study can be done among ischemic and hemorrhagic stroke survivors to compare the knowledge, attitude and practice regarding prevention of recurrent stroke.
• A study can be conducted among the stroke survivors to evaluate the risk reduction measures.
• Similar study can be conducted in community settings.
• A quasi experimental study can be conducted to assess the effect of structured teaching program on knowledge, attitude and practice among stroke survivors.

APPENDIX A

APPENDIX B

30th November 2018

Dr.Syamlal.S
Academic Coordinator & Sr. Consultant
Department of Neurology
KIMS Hospital
Anayara
Thiruvananthapuram

Respected Sir,

Sub: Seeking permission to conduct research study in KIMS Hospital- reg

This is to inform your goodoffice that our II year MSc Nursing student, Ms.Krishna T S, is conducting a research study on "**Knowledge, attitude and practice regarding prevention of recurrent stroke among stroke survivors**" as part of curriculum. As per the schedule the pilot study and the main study will be conducted in the month of December 2018 and January/February/March 2019 respectively.

I humbly request your goodself to grant permission to conduct the study in the Neurology OPD of KIMS Hospital.

Thanking you,

Yours Truly,

Prof. Dr.Susan Jose
Principal

CC: Dr.Suresh Chandran, Chief Coordinator & Senior Consultant -Neurology
Dr.Manorama Devi K Rajan , HOD & Senior Consultant - Neurology
Dr .Ashok V P, Consultant - Neurology

Approved

Dr. SYAMLAL. S
MBBS, MD(Med), DM (Neurology)
DNB (Neurology), MNAMS
Senior Consultant Neurologist, KIMS
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Email: relations@kimsglobal.com, Web: www.kimsglobal.com, CIN: U85110KL1995PLC009336

APPENDIX C
List of experts who have given content validity
1. Dr. Manorama Devi K Rajan
Senior Consultant, neurology, KIMS, Trivandrm.

2. Dr. Ashok V P
Consultant, KIMS hospital, Trivandrum.

3. Mrs. Jyothi
Associate Professor, CSI College of Nursing, Karakonam.

4. Mrs. Sherlin
Associate Professor, CSI College of Nursing, Karakonam.

APPENDIX D
Test Of Normality

	Shapiro-Wilk		
	Statistic	df	p
Knowledge	.917	74	<0.001
Attitude	.889	74	<0.001
Practice	.975	74	.154

APPENDIX E
PATIENT INFORMATION SHEET
I **Krishna T S** first year MSc nursing student is planning to do a study titled "**Knowledge Attitude and Practice regarding prevention of recurrent stroke among stroke survivors**".

Background Information And Objectives
Stroke is a global health problem. It is the second commonest cause of death and fourth leading cause of disability worldwide. Patients with stroke have 15 times higher risk of recurrence of stroke than the general population. Hypertension, diabetes mellitus, ischemic heart disease, hyperlipidemia, atrial fibrillation, and smoking are the most common causes of recurrent stroke.

Objectives
1. To assess the knowledge, attitude and practice regarding the prevention of recurrent stroke among the stroke survivors.
2. To determine the relationship between knowledge and practice regarding prevention of recurrent stroke.
3. To determine the association between knowledge, attitude and practice regarding prevention of recurrent stroke and selected socio personal variables.

Setting Of The Study
Study will be conducted in the neurology outpatient clinics of KIMS hospital, Trivandrum.

Why you have been chosen for this study?
The study is being done among Stroke survivors between the age group 40-80 years, attending the neurology outpatient clinics of KIMS hospital, Trivandrum. Since you meet the criteria you are eligible candidate for this study.

How many participants are in this study?
70 Stroke survivors between the age group 40-80 years, attending the neurology outpatient clinics of KIMS hospital, Trivandrum.

Data Collection Procedure
Ethical clearance will be obtained from the Institutional Review Boardand formal permission from HOD of neurology department KIMS hospital, Trivandrum. Purpose of the study will be explained using patient information sheet and informed consent will be obtained from the participants of the study. Data will be collected from 70 stroke survivors who satisfy theinclusion criteria. Knowledge, attitude, practice regarding prevention of recurrent stroke is assessed by structured questionnaire, attitude scale and self reported rating scale respectively. After the data collection, an individualized teaching with pamphlet on prevention of recurrent stroke will be provided to the participants.

Duration of the study
The duration of the study is 2 months.

Expected risk for the patient?
There is no risk or harm is expected for participants from this study.

Expected benefit for the participants?
The participants will gain knowledge regarding prevention of recurrent stroke among stroke survivors, maintain a positive attitude towards it and apply this knowledge in practice.

Agreement of compensation or further protocol in case of injury
No risk for injury.

Any monetary benefit for participating in the study?
No monetary benefit for participating in the study.

Can the participants withdraw from the study at any time?
Participants can withdraw from the study at any time without being denied of their privilege or care giving any reason.

If any new findings or information will be informed?
All new findings or information will be informed.

Whom do I contact for any further information?
Subjects can contact researcher for clarifying any doubts regarding this study.

Name and address: Krishna T S, 2nd year Msc nursing, KIMS college of Nursing, TVM.

Contact no: 0471 3081020

Place:

Date:

Signature of participant:

Signature of investigator:

PARTICIPANTS CONSENT FORM

I have been informed about the study **"Knowledge, Attitude, and Practice regarding prevention of recurrent stroke among stroke survivors"**. Method of data collection, assessment of clinical variables, risks and benefits have been clearly explained. I confirm that I understand the details and had been given opportunity to clear all my doubts.

I understand that the participation in the study is voluntary and that I am free to withdraw from the study at anytime without giving any reason. I agree not to restrict the use of data or results that arise from this study for any scientific purpose maintaining the confidentiality. I fully give written consent to take part in the study "Knowledge, Attitude, and Practice regarding prevention of recurrent stroke among stroke survivors "attending neurology outpatient clinics in a selected tertiary care hospital, Trivandrum.

Serial no:

Name of participant:

Address:

Contact no:

Witness name and signature:
Place:

Date:

Signature of participant:

APPENDIX F
TOOL 1
SECTION A
SOCIODEMOGRAPHIC DATA
Instruction
Please read the following questions carefully and answer each question by putting tick (√) mark for the most appropriate answer.
1. Name :

2. MRD NO :

3. Address with phone no. :

4. Age in years :

5. Gender
a) Male ☐
b) female ☐

6. Marital status
a) Married ☐
b) unmarried ☐
c) Widow/widower ☐
d) divorced ☐
e) Separated ☐

7. Religion
a) Hindu ☐
b) Christian ☐
c) Muslim ☐
d) others ☐

8. Type of family
a) Nuclear family ☐
b) Joint family ☐
c) Extended family ☐

9. Area of residence
a) Urban ☐
b) rural ☐

10. Education
a) primary school ☐
b) High school ☐
c) Higher secondary ☐
d) Graduate ☐
e) postgraduate ☐

11. Occupation
a) Government employee ☐
b) private employee ☐
c) Business ☐
d) agriculture ☐
e) Retired ☐
f) unemployed ☐
g) House wife ☐

12. Monthly income
a) Below Rs.10000 ☐
b) Rs 10000- Rs.20000 ☐
c) Rs.20000- Rs.30000 ☐
d) Above Rs.30000 ☐

13. Availability of family support
a) Yes ☐
b) No ☐

14. Family history of stroke
a) Yes ☐
b) No ☐
If yes, specify relationship with the patient…………

15. Have you received any information regarding stroke rehabilitation?
a) Yes ☐
b) No ☐
If yes, source of information …………….

SECTION B
CLINICAL DATA
1. Height in cm :

2. Weight in kg :

3. BMI in kg/m2 :

4. Blood pressure(in mmHg) :

5. Blood sugar estimation
   a) FBS / RBS :
   b) HbA1C :

6. Blood cholesterol level
a) Total cholesterol :
b) HDL :
c) LDL :
d) Triglycerides :

7. History of illness and duration
I. Date of primary stroke :
II. Presenting symptoms :
III. Artery involved :
IV. Immediate management :

8. Dietary pattern
a) Vegetarian ☐
b) Non vegetarian ☐

9. Habits

I smoking
a) Non smoker ☐
b) Ex smoker ☐
c) Current smoker ☐

If current smoker, duration and number of cigarettes per day……

If stopped, since when …… years

II pan chewing or other forms of tobacco use
a) Yes ☐
b) No ☐

If yes, duration, type and amount……..

If stopped, since when …… years

III History of alcoholism
a) Yes ☐
b) No ☐

If yes, duration and amount of intake per day……..

If stopped, since when …… years

10. GCS :

11. Muscle power

POWER	UPPER LIMB		LOWER LIMB	
	RIGHT	LEFT	RIGHT	LEFT

12. Any problem in speech
a) Yes ☐
b) No ☐
If yes, specify……………

13. Presence of bedsore
a) Yes ☐
b) No ☐
If yes specify the stage………………

14. Any risk factors
I. Diabetes mellitus
a) Yes ☐
b) No ☐
If yes, duration of the disease and medication taken……………

II. Hypertension
a) Yes ☐
b) No ☐
If yes, duration of the disease and medication taken ………….

III. Dyslipidemia
a) Yes ☐
b) No ☐
If yes, duration of disease and medication taken……………

IV. CAD
a) Yes ☐
b) No ☐
If yes, duration of the disease and medication taken……………

V. Atrial fibrillation
a) Yes ☐
b) No ☐
If yes, the duration of the disease and medication taken…………...

VI. Any others (specify) …………………………..

Instructions:
Choose the scoring point for the statement that most closely corresponds to the patient's current level of ability for each of the following 10 items.

1) Bowels
0 = incontinent (or needs to be given enemata)
1 = occasional accident (once/week)
2 = continent

Patient's Score:

2) Bladder
0 = incontinent, or catheterized and unable to manage
1 = occasional accident (max. once per 24 hours)
2 = continent (for over 7 days)
Patient's Score:

3) Grooming
0 = needs help with personal care
1 = independent face/hair/teeth/shaving (implements provided)
Patient's Score:

4) Toilet use
0 = dependent
1 = needs some help, but can do something alone
2 = independent (on and off, dressing, wiping)
Patient's Score:

5) Feeding
0 = unable
1 = needs help cutting, spreading butter, etc.
2 = independent (food provided within reach)
Patient's Score:

6) Transfer
0 = unable – no sitting balance
1 = major help (one or two people, physical), can sit
2 = minor help (verbal or physical)
3 = independent
Patient's Score:

7) Mobility
0 = immobile
1 = wheelchair independent, including corners, etc.
2 = walks with help of one person (verbal or physical)
3 = independent (but may use any aid, e.g., stick)
Patient's Score:

8) Dressing
0 = dependent
1 = needs help, but can do about half unaided
2 = independent (including buttons, zips, laces, etc.)
Patient's Score:

9) Stairs
0 = unable
1 = needs help (verbal, physical, carrying aid)
2 = independent up and down
Patient's Score:

10) Bathing
0 = dependent
1 = independent (or in shower)
Patient's Score:

Total Score: 20

TOOL 2
Barthel Index of Activities of Daily Living

TOOL 3 STRUCTURED QUESTIONNAIRE TO ASSESS THE KNOWLEDGE REGARDING PREVENTION OF RECURRENT

STROKE AMONG STROKE SURVIVORS

Instructions: please read the following questions and answer each question by putting tick [√] for the correct response.

1. What is stroke?
a) Decreased blood supply to an area of brain ☐
b) Dilation of blood vessels in the brain ☐
c) Tumor in the brain ☐
d) Infection of the brain ☐

2. What is the main cause of decreased blood flow to the brain?
a) Deposition of fatty plaque in the blood vessels of brain ☐
b) Dilation of blood vessels ☐
c) Injury to head ☐
d) Infection in brain ☐

3. Which among the following is not a risk factor of stroke?
a) Hypertension ☐
b) Diabetes ☐
c) Obesity ☐
d) Dehydration ☐

4. Why does hypertension known as 'silent killer'?
a)Though a person with hypertension remains free of symptoms; it causes fatal complications. ☐
b) A person with hypertension can have many symptoms. ☐
c) Hypertension always leads to death. ☐
d) Hypertension cannot be controlled or prevented. ☐

5. How does hypertension cause ischemic stroke?
a) Hypertension increases the blood flow to the brain. ☐
b) Hypertension causes blood vessel injury which enhances deposition of fatty plaque in the blood vessels. ☐
c) Hypertension causes stress. ☐
d) Hypertension increases the viscosity of blood. ☐

6. How physical inactivity does increases the risk for stroke?
a) Physical inactivity increases blood cholesterol that promotes deposition of fat in the blood vessel. ☐
b) Physical inactivity increases metabolism. ☐
c) Physical inactivity decreases the blood supply to the brain. ☐
d) Physical inactivity increases the amount of blood flow to the brain. ☐

7. How does smoking leads to stroke?
a) smoking increases blood supply to brain ☐
b) Smoke causes injury to the vessel wall and deposition of fat in the blood vessel ☐
c) Smoking causes dilatation of blood vessel ☐
d) Smoking hardening of blood vessel ☐

8. How does obesity cause stroke?
a) Increases blood flow and oxygen and nutrients supply to the brain. ☐
b) Increases body metabolism. ☐
c) Increases blood cholesterol ☐
d) Increases the surface area of the brain. ☐

9. Why do patients with diabetes are at high risk for stroke?
a) Elevated blood sugar level promotes clot formation and fat deposition in blood vessels. ☐
b) Causes increased glucose metabolism in the body. ☐
c) Results in increased supply of glucose to brain cells. ☐
d) None of the above. ☐

10. Which among the following are the initial symptoms of stroke?
a) Deviation of face, slurred speech, weakness of one side of the body, unconsciousness ☐
b) fever, cough, breathing difficulty ☐

c) Chest pain and palpitation ☐
d) bleeding from mouth and nose ☐

11. What is the level of blood pressure to be maintained among stroke survivors?
a) Below 100/60 mmHg ☐
b) Above 150/90 mmHg ☐
c) Below 140/90 mmHg ☐
d) Below 160/100 mmHg ☐

12. What is the normal fasting blood sugar level?
a) 70-100 mg/dl ☐
b) 110-120 mg/dl ☐
c) 130-140 mg/dl ☐
d) 140-160 mg/dl ☐

13. What is the normal blood cholesterol level?
a) Less than 100mg/dl ☐
b) Less than 200mg/dl ☐
c) 200-250mg/dl ☐
d) 250-300mg/dl ☐

14. What is the recommended sodium intake for a stroke patient?
a) ≤1.5 gm/day ☐
b) >2 gm/day ☐
c) upto 4-6 gm/day ☐
d) <3 gm/day ☐

15. What are the measures to control blood pressure?
a) low calorie diet, high sodium diet and medication ☐
b) weight control, low sodium diet, regular exercise and medication ☐
c) high protein intake, high fat diet and medication ☐
d) Physical inactivity, high fat diet and medication ☐

16. Which among the following dietary modification the stroke survivors should adopt?
a) Take more saturated fat and low fibre diet ☐
b) 4-5 servings of fruits and vegetables, low fat, low sodium diet. ☐
c) high carbohydrate diet with increased salt ☐
d) High carbohydrate diet, high fat diet. ☐

17. Which among the following helps to increase the good cholesterol level in the blood?
a) Increases consumption of fatty foods ☐
b) Increases the consumption of oils ☐
c) Medication use ☐
d) Regular exercise ☐

18.What is the recommended exercise pattern for stroke survivors?
a) Household activities ☐
b) trekking and climbing ☐
c) weight lifting and gym ☐
d) 30 – 45 minutes brisk walking for 5-6 days in a week ☐

19. What are the benefits of exercise in a stroke survivor?
a) Decreases the body's metabolic rate ☐
b)Decreases bad cholesterol(LDL), increases good cholesterol(HDL) ☐
c) Decreases the blood supply to the muscles. ☐
d) None of the above ☐

20. Within how much time the person should be treated after occurring the presenting symptom?
a) Within 30 min. ☐
b) Within 1 hours ☐
c) Within 3 hours ☐
d) Within 6 hours ☐

Total Score:

20

TOOL 4
FIVE POINT ATTITUDE SCALE TO ASSESS THE ATTITUDE REGARDING PREVENTION OF RECURRENT STROKE

Instruction
Read the following statement carefully. After each statement, indicate how you feel: strongly agree, agree, uncertain, disagree, or strongly disagree.

S.L no.	Items	Strongly agree	Agree	uncertain	disagree	strongly disagree
1	Health is the most precious thing in one's life; people should strive hard to remain healthy.	5	4	3	2	1
2	Each individual is responsible for maintaining his or her health.	5	4	3	2	1
3	Balanced life, optimistic attitude and effective stress management enables a person to lead a happy and healthy life.	5	4	3	2	1
4	I don't believe in lifestyle modification; as long as one lives, eat well and enjoy life.	1	2	3	4	5
5	Maintaining ideal body weight is cumbersome in the modern world.	1	2	3	4	5
6	I am aware that obesity is a major risk factor for many diseases.	5	4	3	2	1
7	Smoking cessation is essential to prevent recurrence of stroke among stroke survivors.	5	4	3	2	1
8	Strong will and determination is essential to follow dietary and lifestyle modification.	5	4	3	2	1
9	Regular physical exercise keeps a person fit and healthy.	5	4	3	2	1
10	Stroke survivors are highly vulnerable to recurrent stroke.	5	4	3	2	1
11	Awareness about the risk factors of stroke empowers a stroke patient for self-management of the disease condition.	5	4	3	2	1
12	With prompt treatment and proper care, the functional ability of stroke patients gradually improves.	5	4	3	2	1
13	I am aware that for preventing recurrent stroke, stroke survivors has to take the medication that prescribed by the doctor.	5	4	3	2	1
14	I will encourage my family members to modify their unhealthy lifestyle practices.	5	4	3	2	1
15	I am confident that, I can lead a productive and healthy life after the stroke also.	5	4	3	2	1

Total Score :

75

TOOL 5
SELF REPORTED RATING SCALE TO ASSESS THE PRACTICE REGARDING PREVENTION OF RECURRENT STROKE AMONG STROKE SURVIVORS

Instructions: please read the following statement and answer each question by putting tick (√) for the correct response.

1. How often do you check your weight?
a) Once in 3 months ☐
b) once in 6 months ☐
c) Very rarely ☐

2. How often do you check your blood pressure?
a) Occasionally once in 3 months ☐
b) Sometimes once in a year ☐
c) Regularly every month/ as per medical advice ☐

3. How often do you check your serum cholesterol?
a) Once in 6 months/ as per medical advice ☐
b) Once in every year ☐
c) Rarely/ Never ☐

4. What measures do you adopt to maintain normal blood sugar?
a) Adherence to medication, monitoring blood sugar during medical review. ☐
b) Maintain normal body weight, regular exercise, diet control, periodic glucose monitoring and adherence to medication. ☐
c) Least bothered about blood sugar, body weight and no exercise, leads sedentary life. ☐

5.
A. Being a diabetic patient how often do you check your blood sugar?
a) Regularly with the use of glucometer by home itself ☐
b) When there is any discomfort/as per medical advise ☐
c) Occasionally ☐

B. Being not a diabetic patient how often do you check your blood sugar?
a) Every 6 months ☐
b) Regularly as per medical advice and when there is any discomfort ☐
c) Occasionally ☐

6. If you have to cover a distance less than 1 k.m, which method would you choose?
a) By walking ☐
b) By bus ☐
c) By taxi/private vehicle ☐

7. How often do you exercise in a week?
a) Regularly 5-6 days in a week ☐
b) Occasionally 2-3 days in a week ☐
c) Very rarely/ Never ☐

8. What type of exercise do you engage daily?
a) Walking /swimming/ cycling ☐
b) House hold activities and moderate physical activity ☐
c) Don't do any exercise as such / sedentary behavior ☐

9. How often do you take fast foods in a week?
a) Daily ☐
b) Once or twice weekly Daily ☐
c) Rarely / Never ☐

10. How often do you take red meat in your diet in a week?
a) Once or twice weekly ☐
b) Very rarely/very much restricted ☐
c) Daily ☐

11. How many servings of vegetables do you take in a day?
a) 4-5 servings (3 cup/450g) ☐
b) 2 -3 servings (2 cup/300g) ☐
c) 1 serving only (1 cup/150g) ☐

12. How many servings of fruits do you take daily?
a) 3-5 servings ☐
b) 1-2 servings ☐
c) Not daily ☐

13. How much amount of salt do you take daily?
a) 1 teaspoon /restricted use ☐
b) 2 teaspoon ☐
c) No restriction in salt intake ☐

14. How much oil /ghee/butter do you take daily?
a) Very much restricted ☐
b) Moderate amounts ☐
c) No restriction/Liberal use ☐

15. How often do you take medications as prescribed by your doctor?
a) Regularly ☐
b) Occasionally ☐
c) Sometimes /very irregular ☐

16. How much alcohol do you consume in a week?
a) Do not take alcohol ☐
b) very much restricted/1 peg, 1-2 times weekly ☐
c) Daily 60- 100 ml ☐

17. How many packets of cigarettes do you smoke in a day?
a) No habit of smoking / Quitted smoking ☐
b) Sometimes only ☐
c) More than 1 packet ☐

18. How often do you visit your physician?
a) Regularly as per doctors' advice ☐
b) Occasionally ☐
c) When there is any discomfort ☐

19. How often you practice relaxation techniques?
a) Regularly everyday ☐
b) When there is stress ☐
c) Very rarely ☐

20. How do you relax yourself during stress situations?
a) Through prayer, meditation, yoga, deep breathing exercise, listening to music, gardening, sharing feelings with others ☐
b) By sleeping to overcome tension, trying to understand the situation realistically ☐
c)Withdraw from others, feel weary & exhausted, depressive, worried, anxious and sleepless. ☐

Total Score: ☐
60

MEASURES TO PREVENT RECURRENT STROKE AMONG STROKE SURVIVORS

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KIMS COLLEGE OF NURSING

tcmKniv]T¯nsâ hnhcWw \ÂIp¶ tcJ

_ncpZm\´c _ncpZ \gvknwKv hnZymÀ°n\nbmb IrjvW än.Fkv F¶ Rm³ Fsâ]T¯nsâ `mKambn "akvXnjvImLmX tcmKnIfnÂ hopw akvXnjvImLmXw hcmsX {]Xntcm[n¡p¶p thnbpÅ tcmKnbpsS Adnhpw at\m`mhpw {]hÀ¯\Ifpw" F¶Xns\¸än KthjWw \S¯m³ Xocpam\n¨ncn¡p¶p.

]Ým¯ehpw Dt±iy§fpw

akvXnjvImLmXw BtKmf hym]Iamb Hcp BtcmKy{]iv\amWv. temI¯n Gähpw IqSpXÂ BfpIÄ acWs¸Sm\pÅ cmas¯ ImcWhpw, imcocnI sshIey§Ä kw`hn¡p¶Xnsâ \memas¯ ImcWhpw akvXnjvImLmX LmXamWv. akvXnjvImLmX _n[nXcmbn XpSscbp¶ akvXnjvImLmX¯n\p\Å km[yX km[mcW P\§fnÂ At]£n¨v 15 aS§v IqSpXemWv. càmXnk½À±w, {]talw,]rt{ZmKw, sImfkvt{SmÄ, lrZbanSn¸nepÅ hyXnbm\w\§Ä,]pIhen ap]Xembmw akvXnjvImLmXw h¶hcnÂ hopw akvXnjvImLmXw hcp¶Xn\pÅ km[yX Iq«p¶Xv.

]T¯nsâ Dt±iy§Ä

1. akvXnjvImLmX tcmKnIfnÂ hopw akvXnjvImLmXw hcmsX {]Xntcm[n¡p¶v thnbpÅ Adnhpw at\m`mhpw {]hÀ¯n coXnbpw]cntim[n¡pI.

2. akvXnjvImLmX tcmKnIfnÂ hopw akvXnjvImLmXw hcmsX {]Xntcm[n¡p¶v thnbpÅ {]hÀ¯n coXnbpw X½nepÅ _Ôw]cntim[n¡pI.

3. akvXnjvImLmX tcmKnIfnÂ hopw akvXnjvImLmXw hcmsX {]Xntcm[n[p¶v thnbpÅ Adnhpw at\m`mhpw {]hÀ¯n coXnbpw Nne kmqlnI ASnØm\ hnhc§fpw X½nepÅ _Ôw]cntim[n¡pI

]T\ \S¯p¶ Øew

Inwkv Bip]{Xnbnse \mUotcmK hn`mKw H.]n.Un

\n§fpsS F´´psImWvv Cu]T\n\v Xncs°SpÀXv?

Cu]T\w 40 þ 80 hbÊphscbpÅ Inwkv Bip]{XnbnÂ \mUotcmKhn`mKw H.]n.Un bnÂ hcp¶ akvXnjvImLmX tcmKnIfnemWv \S¡p¶Xv. Xm¦Ä Cu \n_Ô\IfnÂ DÄs¸Sp¶ hyàn BbXn\memWv Cu KthjW¯n\pthn Xncs°SpÀXv.

Cu]T\¯nÂ F{X t]sc DÄs¸Sp¯p¶p?

40 þ 80 hbÊphsc {]mbapÅ 100 akvXnjvImLmX tcmKnIsf BWv DÄs¸Sp¯nbncnip¶Xv.

hnhctiJcW {]{Inb

KthjW I½½nän (sF.BÀ._n), \mUotcmKhn`mKw tα[mhn, Inwkv Bip]{Xn F¶nhcnÂ \n¶pw KthjW A\paXn hm§nbXn\ptijw KthjW¯nsâ {]m[m\ys¯ipdn¨]¦mfnItfmSv KthjI hyàamipIbpw AhcpsS k½Xw hm§pIbpw sN¿p¶p. 100 akvXnjvImLmX _m[nXcnÂ \n¶pw (KthjIpsS \n_Ô\IfnÂ DÄs¸Sp¶hsc am{Xw) hnhc§Ä tiJcnip¶p. αkvXnjvImLmX tcmKnIfnÂ hopw αkvXnjvImLmXw hcmsX {]Xntcm[nip¶Xn\v thnbpÅ Adnhpw αt\m`hhpw {]hÀ¯coXnIfpw F¶ hnjbs¯ipdn¨v KthjI X¿mdminb tNmZymhen D]tbmKn¨v hnhc§Ä tiJcnip¶p. AXn\ptijw tcmKniv hopw αkvXnjvImLmXw hcmsX {]Xntcm[nip¶¶ amÀ§sf Ipdn¨v]Tn¸nipIbpw eLpteJ \ÅpIbpw sN¿p¶p.

]T\¯nsâ Imebfhv

cv αmkw

]T\wsImv tcmKniv Fs´¦nepw hn]¯v DmIm\nSbptm?

Cu]T\wsImv Hcp hn]¯pw DmIp¶nÃ

Cu]T\w sImv tcmKniv DmIp¶ t\«w F´v?

Cu]T\¯nÂ]s¦Sp¶ αkvXnjvImLmX tcmKnIÄiv hopw αkvXnjvImLmXw hcmsX {]Xntcm[nip¶Xn\påÅ amÀ§sf Ipdn¨vv Adnhv e`nipIbpw, A\pIqeamb αt\m`mht¯msS PohnXssienbnÂ thXmb amä§Ä {]mhÀ¯nIamin BtcmKyIcamb PohnXw \bnip¶Xn\v klmbnip¶p.

]T\¯nsâ CSbviv tcmKniv Fs´¦nepw A]IShpw kw`hn¨mÂ \jvS]cnlmc¯nPå IcmÂ

Cu]T\¯nÂ]s¦Sp¶Xv aqew tcmKniv bmsXmcp A]IShpw kw`hnnÃ.

]T\¯nÂ]s¦Sp¶hÀiv Fs´¦nepw km¼¯nI em`w Dtm?

αäp km¼¯nI em`§Ä H¶panÃ.

Cu]T\¯nÂ]s¦Sp¶hÀiv Ft¸mÄ thWsα¦nepw]n³amdm³ A\phmZw Dtm?

Ct¸mÄ e`nip¶ AhIms§fm ip{iqjtfm \jvSSamImsX Xs¶ Ft¸mÄ thWsα¦nepw Cu]T\¯nÂ \n¶v]n³amdm³ AhImiw Dv.

Fs´¦nepw]pXnb Ip]nSp¯§tfm hnhc§tfm e¨n¯mÂ]T\¯nÂ]s¦Sp¯hsc Adnbnnptm?

XoÀ¨bmbpw Adnbnip¶XmWv.

Cu]T\s¯ipdn¨påÅ Adnhp e`n¨ Rm³ BcpambmWv _Ôs¸tSS-Xv?

KthjIbpambn _Ôs¸Smhp¶XmWv.

KthjIpsS t]cpw taÂhnemkhpw

IrjvW än.Fkv,
cmw hÀj _ncpZm\´c _ncpZ \gvknwKv hnZymÀ°n\n,
Inwkv tImtfPv Hm ^ v \gvknwKv, Xncph\´]cw
_ÔsÌS \w: 0471 3081020
Øew
XobXn

]T\¯nÂ]s¦Sip¶bmfnsâ H¸v
KthjIpsS H¸v

k½X]{Xw

Inwkv \gvknwKv tImtffnse cmw hÀj \gvknwKv _ncpZm\´c _ncpZ hnZymÀ°n\nbmb IrjvW än.Fkv. taÂ\«m\««w hlnip¶ αkvXnjvImLmX tcmKnIfnÂ hopw αkvXnjvImLmXw hcmsX {]Xntcm[nip¶Xn\på tcmKnbpsS Adnhv, αt\m`hw, {]hÀ¯coXnIfpw F¶]T\s¯ipdn¨v F\niv hniZoIcn¨p X¶n«pv.]T\¯nsâ hnhctiJcW amÀ§§Ä, BtcmKyhnhc§Ä, KpWtZmjmZn hi§Ä F¶nhsbipdn¨v F\niv hnhcn¨p X¶n«pv.]T\s¯ipdn¨på Fsâ kwib§Ä ZpcoIcn¨Xmbpw F\niv Bhiyapw hnhc§Ä \ÂInbXmbpw Rm³ ØncoIcnip¶p. KthjIbpsS bmsXmcp \nÀÔhpw IqSmsX

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kzα\Êmsebmbpw Cu KthjW¯nÂ Rm³]¦mfnbmbn¶Xv. Ct¸,αÄ e`yamIp¶ NnInÕ¯bm ip{iqjtbm \jvSmaImsX Xs¶ Ft¸,αÄ thWsα¦nepw Cu ]T\¯nÂ \n¶pw ]n³amdm³ F\niv AhImiapv. Fsâ hyàn]camb hnhc§Ä ]pd¯v]pdt¯iv Cu k½Xw. Rm³ shfns¸Sp¶ hnhc§Ä clkyambn kq£nipw F¶ Dd¸pw F\niv e`n¨n«pv.

t]cv   :
hnemkw   :
t^m¬ \w   :
km£nbpsS t]cpw H¸pw   :
Øew   :
XobXn   :
]T\¯nÂ]s¦Sip¶ Bfnsâ H¸v   :

]T\D]IcWw þ H¶v

hn`mKw þ F

kmaqlnI hyànKX hnhc§Ä \nÀt±i§Ä

Xmsg sImSp¯ncnip¶ tNmZy§Ä hmbn¨v Gähpw A\ptbmPyamb D¯c¯n\v icn NnÓw () \ÂpI.

1. t]cv   :
2. Fw.BÀ.Un.\w   :
3. taÂhnemkw   :   (t^m¬ \¼À DÄs¸sS)
4. {]mbw (hÀj Iwin)   :

5. enwKw
α)]cpj³ ☐
b) kv{Xo ☐

6. αXw
α) lnμp ☐
b) {InkvXy³ ☐
c) απÉow ☐
d) αäπÅh ☐

7. sshhmlnI ØnXn
α) hnhmlnX³/hnhmlnX ☐
b) AhnhmlnX³/AhnhmlnX ☐
c) hn[h/hn`mcy³ ☐
d) hnhmltamN\w t\SnbXv ☐
e)]ncnαp Xmaknip¶p ☐

8. IpSpw_w
α) AWpIpSpw_w ☐
b) Iq«pIpSpw_w ☐
c) hnime IpSpw_w ☐

9. hmkØew
α) \Kcw ☐
b) {Kmaw ☐

10. hnZym`ymkw
α) ss{]adn kvIqÄ ☐
b) sslkvIqÄ ☐
c) {]oUn{Kn/¹kvSp ☐
d) _ncpZw ☐
e) _ncpZm\´c _ncpZw ☐

11. sXmgnÂ
α) kÀimÀ DtZymKw ☐
b) kzImcy DtZymKw ☐
c) I¨hSw ☐
d) Irjn ☐
e) DtZymK¯nÂ \n¶v hncan¨ hyàn ☐
f) sXmgnÂ clnX³ ☐
g) ho«ptPmen ☐

12. {]Xnamk hcpam\w
α) 10000 cq]bnÂ Xmsg ☐
b) 10000 ¯n\pw 20000 ¯n\pw CSbviv ☐
c) 20000 ¯n\pw 30000 ¯n\pw CSbviv ☐
d) 30000 ¯n\v αpIfnÂ ☐

13. IpSpw_¯nsâ]n³XpW
α) Dv
b) CÃ ☐ ☐

14.]mc¼cyambn IpSpw_¯nÂ BÀsi¦nepw αkvXnjvImLmXw D-mbn«pTm?
α) Dv
b) CÃ ☐ ☐
Ds¦nÂ tcmKnbpambpÅ _Ôw hyàamipI

15. αkvXnjvImLmX]p\c[nhmks¯ipdn¨v \n§Äiv Fs´¦nepw hnhc§Ä e`n¨n««ptm?
α) Dv
b) CÃ ☐ ☐
Ds¦inÂ e`nip¶t{kmXXÊpIÄ

hn`mKw þ_n
BtcmKy hnhc§Ä
1. s]miw (skân aoädnÂ) :

2. `mcw (Intem {KmanÂ) :

3. t_mUn amkw C³UIvkv (BMI) :

4. càk½À±w (mmHg)   :

5. cà¯nse]©kmcbpsS Afhv
α) ^ mÌnwKv /BÀ._n.FÊv
b) F¨v.Un.Fh¬.kn

6. cà¯nse sImgp¸nsâ Afhv
α) sam¯w sImgp¸nsâ Afhvv..............mg/dl
b) F¨v.Un.FÂ ....mg/dl
c) FÂ.Un.FÂ .... mg/dl
d) ss{S¥nkssdUv .... mg/dl

7. tcmK¯nsâ Ncn{Xhpw Imebfhpw
α) BZyamóm αkvXnjvImLmXw h¶ Znhkw
b) tcmKeÈW§Ä
c) _minbpÅ A]cym]vXXIÄ
d) αkvXnjvImLmXw _m[n¨ [α\
e) ASnØ´c NnInÕ
f) Ct_mÄ D]tbmKn¨psImcnip¶ acp¶pIÄ

8. Blmc ioew
α) kky`piv
b) amwk`piv ☐ ☐

9. ioe§Ä
1.]pIhen
α)]pIhenim¯ BÄ
b)]pIhen \nÀ¯nb BÄ
c)]pIhenip¶ BÄ ☐ ☐ ☐

]pIhenip¶ BÄ BsW¦nÂ ImessZÀLyhpw ({]XnZn\w henip¶ knKcäpIfpsS F®hpw

Dmbn«p \nÀ¬nsb¦nÂ F{X Imeambn ....

2. αpdpipIbm aäpXc¯nepÅ]pIbne DÂ]¶§Ä D]tbmKnipIbm sN¿p¶ ioew
α) Dv
b) CÃ ☐ ☐

Dv F¦inÂ Ime ssZÀLyhpw αpdpip¶ hkvXphpw hyàamipI
Dmbn«p \nÀ¬nsb¦inÂ F{XImeambn ....

3. αZy]m\ ioew
α) Dv
b) CÃ ☐ ☐
Dv F¦inÂ ImessZÀLyhpw, {]XnZn\w Ignip¶ αZy¯nsâ Afhpw
Dmbn«p \nÀ¬insb¦inÂ F{XImeambn

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10. ¥mkvtIm tIImam kvsIbnÂ kvtImÀ :

11. t]in_ew

	ssIIÄ		ImepIÄ	
	heXv	CSXv	heXv	CSXv
_ew				

12. kwkmcniphm³ _p²nap«p«v
α) Dv
b) CÃ ☐ ☐
Dv F¦inÂ F§s\bpÅ _p²nap«v

13. InSi_p®nsâ e£W§Ä Fs´¦inepw ?
α) Dv
b) CÃ ☐ ☐
Dv F¦inÂ GXpw L«w ………….

14. GsX¦inepw A\p_Ô tcmK§Ä
{]talw
α) Dv
b) CÃ ☐ ☐

Dv F¦inÂ tcmK¯nsâ Imebfhpw D]tbmKnip¶ acp¶pIfpw càmXnk½À±w
α) Dv
b) CÃ ☐ ☐

Dv F¦inÂ tcmK¯nsâ Imebfhpw D]tbmKnip¶ acp¶pIfpw sImfkvt{SmÄ
α) Dv
b) CÃ ☐

Dv F¦inÂ tcmK¯nsâ Imebfhpw D]tbmKnip¶ acp¶pIfpw lrZb[α\okw_ÔambtcmKw
α) Dv
b) CÃ ☐ ☐
Dv F¦inÂ tcmK¯nsâ Imebfhpw D]tbmKnip¶ acp¶pIfpw

lrZbanSn¸nsâ Xmf{nepw hyXnbm\w (G{SnbÂ ^n{_ntej³)
α) Dv
b) CÃ ☐ ☐

Dv F¦inÂ tcmK¯nsâ Imebfhpw D]tbmKnip¶ acp¶pIfpw αtäsX¦inepw tcmK§Ä (hyàamipI)

]T\D]IcWw þ cv_mÀ¯Â C³UIvkv þ ssZ\wZn\ {]hr¯nIÄ α\Ênemip¶Xn\v
\nÀt±i§Ä
Xmsg sImSp¯ncnip¶ 10 tNmZy§Äipw tcmKnbpsS ssZ\wZn\ {]hÀ¯n\w kam\amb hnhcW¯nsâ kvtIamÄ Xncsªspip.
1) αehnkÀÖ\w
0 þ \b{´WanÃm¯ AhØ (AsÃ¦inÂ F\abpsS klmbt¯msS)
1 þ Nnet_mä (HcniÂ/BgvNbnÂ)
2 þ IrXyambn t]mIp¶p

tcmKnbpsS kvtamÀ :
2) aq{XhnkÀÖ\w
0 þ \b{´WanÃmsX XpSscbpÅ aq{Xw Hgn_v (äyq_nsâ klmbt¯msS AsÃ¦inÂ]nSn¨p \nÀ¯m³ km[nip¶nÂ)
1 þ Nnet_mä (24 αWniqdnÂ HcniÂ)
2 þ IrXyambn t]mIp¶p (7 Znhk¯nÂ IqSpXembn

tcmKnbpsS kvtamÀ :
3) ssZ\wZn\ NcyIÄ \ndthäp¶Xn\pÅ Ignhv
0 þ kz¿w Imcyw sN¿m³ aäpÅhcpsS klmbw thn¶p
1 þ apJw /apSn/]Ãv/£ucw F¶nh Øncambn kwc£nip¶p

tcmKnbpsS kvtamÀ :
4) iuNmeb D]tbmKw
0 þ aäpÅhcpsS klmbw am{Xw
1 þ aäpÅhcpsS klmbw Ipd¨v thWw, F¦inepw kz´ambn Nne Imcy§Ä sN¿m³ Ignbp¶p.
2 þ FÃmw kz´ambn sN¿m³ Ignbp¶p. (Ccnip¶I, FWoip¶, hkv{Xw

amdpI, IgpIpI, XpSbvipI F¶nh)

tcmKnbpsS kvtImÀ :
5) Blmcw
0 þ kz´ambn Ignim³ km[ninÃ
1 þ apdnipI, _«À tXbvipI, apXebmhbviv aäpÅhcpsS klmbw Ipd¨v Bhiyambn hcp¶p
2 þ FÃmw kz´ambn sN¿m³ Ignbp¶p (Blmcw kao]¯v \ÅInbmÀ)

tcmKnbpsS kvtImÀ :
6) Øm\amäw
0 þ kz´ambn km[ninÃ, Ccnip½mÄ kaXpenXmhØ CÃ
1 þ henb klmbt¯msS (Ht¶m ctm BÃimcpsS klmbt¯msS) Ccnimw.
2 þ sNdnb klmbt¯msS (\nÅt±i§fpsStbm imcocnI klmbt¯msStbm)
3 þ FÃmw kz´ambn sN¿m³ Ignbp¶p

tcmKnbpsS kvtImÀ:
7) Ne\tijn
0 þ Ne\tijn CÃ
1 þ (N{IItkcbpsS) klmbt¯msS k©nip¶p
2 þ HcmfpsS klmbt¯msS \Sip¶p (\nÅt±i§fpsStbm imcocnI klmbt¯msS
3 þ kz´ambn \Sim³ Ignbp¶p (hSntbm AXpt]msebpÅ D]IcW¯nsâ klmbt¯msS

tcmKnbpsS kvtImÀ :
8) hkv{X[mcWw
0 þ aäpÅhcpsS klmbt¯msS am{Xw
1 þ klmbw BhiyamWv,]t£ (Ipsdsbmsi) kz´ambn sN¿m³ Ignbp¶p.

2 þ FÃmw kz´ambn sN¿m³ Ignbp¶p. (_«¬, kn¸v, tekv apXembh CSpI)
tcmKnbpsS kvtImÀ :
9) tImWn¸Sn (Ibdp¶Xv)
0 þ km[yaÃ
1 þ aäpÅhcpsS klmbt¯msS Ignbp¶p (\nÅt±i§fpsStbm imcocn klmbt¯msStbm D]IcW§fpsS klmbt¯msS)
2 þ kz´ambn Ibdm]\pw Cd§m]\pw km[nip¶p

tcmKnbpsS kvtImÀ :
10) Ipfnip¶Xv
0 þ aäpÅhcpsS klmbt¯msS am{Xw
1 þ kz´ambn (jhÀ D]tbmKn¨v) Ipfnim³ km[nip¶p

tcmKnbpsS kvtImÀ :

BsI kvtImÀ: `20`

]T\D]IcWw þ aq¶v
akvXjvhImLmXtcmKKn[nfnÂ hopw akvXjvhImLmXw hcmsX {]Xntcm[nip¶Xn\v thnbpÅ Adnhv F{Xt¯mfaps¶v \Ã®bnip¶Xn\pÅ tNmZymhen

\nÅt±i§Ä
Xmsg sImSp¯ncnip¶ tNmZy§Äiv Gähpw A\ptbmPyamb D¯c¯n\v t\scicn NnÓw \ÅIpI.
1) akvXjvhImLmXw F¶mÃ F´v?
a) Xet¨mdnneipÅ càc{]hmhw XSÊs¸Sp¶ AhØ
b) Xet¨mdnse càipgepIÄ hnIknip¶ AhØ
c) Xet¨mdn apgpÅ DmIp¶ AhØ
d) Xet¨mdn ÀWp¸m[DmIp¶ AhØ

2) Xet¨mdnneipÅ càc{]hmhw Ipdbp¶Xnsâ {][m\ ImcWw F´v?
a) Xet¨mdnse càipgepIfnÀ sImgp¸v ASnbp¶Xv
b) càipgepIÄ hnIknip¶Xv
c) Xebviv GÅip¶ BLmXw
d) Xet¨mdnse AWp¸m[

3) Xmsgsim³Sp¯ncnip¶hbnÂ akvXjvhImLmX¯nsâ tcmKKkm[yXmLSIw AÃm¯Xv GXv?
a) càmXnk½À±w
b) {]talw
c) s]m®¯Sn
d) \nÄÖeoIcWw

4) F´p sImmWv càmXnk½À±¯ "\ni_vZ sImebmfn F¶p hnfnip¶Xv?
a) càmXnk½À±w {]Xy£amb tcmKe£W§Ä ImWnimsXXs¶ KpcpXcamb k¦oÀ®XIfntebviv \bnip¶p.
b) càmXnk½À±apÅ Hcp hyànbnÂ [mcmfw tcmKe£W§Ä ImWs¸Sp¶p.
c) càmXnk½À±w Ft¨mgpw acW¯ntebviv \bnip¶p.
d) càmXnk½À±w \b{´nimt\m XSbphmt\m Ignbp¶nÃ.

5) càmXnk½À±w F§s\bmWv akvXjvhImLmX¯n\v ImcWambnXocp¶Xv?
a) càmXnk½À±w Xet¨mdnteipÅ càc{]hmhs¯ hÀ²n¸nip¶p
b) càmXnk½À±w càipgensâ £XtaÀ¸n¨v sImgp¸v v ASnbp¶Xn\v XzcnXs¸Sp¯p¶p
c) càmXnk½À±w am\knIncnapdpiw Dmip¶p
d) càmXnk½À±w cà³nsâ I«nIqp¶p

6) imcocnI A[zm\amibva F§s\bmWv akvXjvhImLmX¯nsâ tcmKKkm[yX Xsb Ip«ip¶Xv?
a) hymbmamanÃmbva cà³nse sImgp¸ns\ Ip«pIbpw AXv càipgenÂ ASnbpIbpw sN¿p¶p
b) hymbmamanÃmbva icoc¯nse cmk{]hÀ¯nfpsS thKX Iq«p¶p
c) hymbmamanÃmbva Xet¨mdnteipÅ càtbmhs¯ Ipdbvip¶p
d) hymbmamanÃmbva Xet¨mdnteipÅ càtbmhs¯ Iq«p¶p

7)]pIhen F§s\bmWv akvXjvhImLmX¯nteivviv \bnip¶Xv ?
a)]pIhen Xet¨mdnteipÅ càtbmhs¨w Iq«p¶p
b)]pI cà IpgepIfpsS `n¯nbnÂ £Xw GÂ¸n¨v AhnsS sImgp¸v v ASnbp¶Xn\v XzcnXs¸Sp¯p¶p.
c)]pIhen càipgepIfpsS hnImk¯n\v ImcWamIp¶p
d)]pIhen càipgepIfpsS `n¯nIsf IqSpXÀ I«nbmÅimip¶p

8) s]m®¯Sn F§s\bmWv akvXjvhImLmX¯n\v ImcWamIp¶Xv?
a) Xet¨mdnteipÅ càtbmh«w, HmhIknP\pw aäp t]mjILSI§fpsS hnXcWhpw Ip«p¶p
b) icoc¯nse cmk{]hÀ¯nfpsS thKX Iq«p¶p
c) cà³nse sImgp¸n nsâ Afhns\ Iq«p¶p
d) Xet¨mdnsâ hnkvXocvv®w Iq«p¶p

9) F´psImmWv {]taltcmKnIfnÂ IqSpXembn akvXjvhImLmXw ImWs¸Sp¶Xv?
a) A\nb{´nXamb {]taltcmKw càipgepIfnÂ càw I«nSnip¶Xn\pw sImgp¸v v ASnbp¶Xn\pw ImcWamIp¶p
b) {]taltcmKnIfnÂ ¥qtimknsâ cmk{]hÀ¯w Iq«p¶p
c) Xet¨mdnteipÅ ¥qtimknsâ hnImcWw Iq«p¶p
d) Chsbm¶paÃ

10) Xmsg¸dbp¶hbnÂ akvXjvhImLmXtcmKKn[nÂ BZyw {]ISamIp¶ tcmKe£W§ Fs´ÃmamWv v?
a) apJ¯nsâ Hcp hit¸ipÅ tIm««¸w, Akv{]jvSamb kwkmchpw, icoc¯nsâ Hcp `mK¯n\v XfÀÀ¨, At_m[mhØ
b)]\n, Npd, izmkw apäÀ
c) s\©v thZ\, s\©pSn\p v
d) hmbneqsSbpw aqinneqsSbpw DÅ cà{kmhw

11) akvXjvhImLmX tcmKKn[nÂ \ne\nÀ¯càk½À±sâ Afhv ?
a) 100/60 mmHg Â Xmsg
b) 150/90 mmHg \v apIfnÂ
c) 140/90 mmHg Â Xmsg
d) 160/100 mmHg Â Xmsg

12) {]`mX`£W¯n\v ap³v cà³nse ¥qtimknsâ {Iahbm\ne (normal value) F{X?
a) 70 – 100 mg/dl

b) 110 – 120 mg/dl ☐
c) 130 – 140 mg/dl ☐
d) 140 – 160 mg/dl ☐

13) cà¯nse sImgp¸nsâ {Ia\ne (normal value) F{X?
a) 100 mg/dl Â Xmsg ☐
b) 200 mg/dl Â Xmsg ☐
c) 200 – 250 mg/dl ☐
d) 250 - 300 mg/dl ☐

14) akvXnjvImLmXw h¶ tcmKnIÄiv Hcp Znhkw D]tbmKnimhp¶ D¸nsâ Afhv?
a) Znhtk\ 1.5 {Kmtam AXnÂ Ipdthm ☐
b) 2 {Kman\v apIfnÂ ☐
c) 4-þ6 {Kmw hsc ☐
d) 3 {KmanÂ Xmsg ☐

15) càk½À±w XSbp¶Xn\på amÀ€§Ä GsXmsi
a) DuÀÖw Ipdª Blmcw, D¸v IqSnb Blmcw, acp¶pIfpsS D]tbmKw ☐
b) `mcw IpdbviÂ, D¸v Ipdª Blmcw, Znhtk\bpÅ hymbmaw, acp¶nsâ D]tbmKw ☐
c) amwkyw, sImgp¸v F¶nh IqSpXÂ AS§nb Blmcw acp¶nsâ D]tbmKw ☐
d) hymbmaanÃmambva, sImgp¸v IqSnb Blmcw, acp¶nsâ D]tbmKw ☐

16) XmsgsImSp¯ncnip¶hbnÂ akvXnjvImLmXw h¶hÀ]menti Blmc{Iaw GXmWv ?
a)]qcnX sImgp¸v AS§nb Blmcw, \mcpIÄ Ipdª Blmcw ☐
b) 4 þ 5 XhW]g§fpw]¯idnIfpw, sImgp¸pw D¸pw Ipdª Blmcw ☐
c) IqSpXÂ A¶Pw AS§nb `£Ww, D¸v IqSnb Blmcw ☐
d) A¶Phpw sImgp¸pw IqSpXÂ AS§nb `£W§Ä ☐

17) cà¯nÂ \Ã (HDL) sImgp¸nsâ Afhns\ Iq«p¶Xn\på amÀ€sa´v?
a) sImgp¸v AS§nb `£Ww IqSpXÂ IgnipI ☐
b) F® IqSpXÂ D]tbmKnipI ☐
c) acp¶pIfpsS D]tbmKw ☐
d) {Iaamb hymbmaw ☐

18) akvXnjvImLmXw h¶hÀiv \Àt±inip¶ hymbma{Iaw GXmWv?
a) ho«p tPmenIÄ sN¿p¶Xv ☐
b) ZoÀLZqcw \SipIbpw Ibw IbdpIbpw sN¿p¶Xv ☐
c) `mcw DbÀ¯p¶Xpw Pn½nÂ]s¦Spip¶Xpw ☐
d) BgvNbnÂ 5 þ 6 Znhkw 30 þ 45 an\näv thK¯nepÅ \S¯w ☐

19) akvXnjvImLmXw h¶ tcmKnIfnÂ hymbmaw sImpff {]tbmP\§Ä Fs´Ämw?
a) icoc¯nse cmk{]hÀ¯\¯ Ipdbvip¶p ☐
b) No¯ sImgp¸v (LDL) Ipdbvip¶p, \Ã sImgp¸nsâ (HDL) Afhv Iq«p¶p ☐
c) t]inIfnteipff càtbm«w Ipdbvip¶p ☐
d) Chsbm¶paÃ ☐

20) akvXnjvImLmX e£W§Ä {]ISambn F{X kab¯n\pffnÂ NnInÕ e`yamiWw?
a) 12 aWniqdn\pÅÂ ☐
b) 24 aWniqdn\pÅÂ ☐
c) 3 aWniqdn\pÅÂ ☐
d) 6 aWniqdn\pÅÂ ☐

BsI kvtImÀ :

☐☐
20

]T\D]IcWw þ 4
akvXnjvImLmXtcmKnIfnÂ hopw akvXnjvImLmXw hcmsX {]Xntcm[n ip¶Xns\ kw_Ôn¨på at\m`mhw Afim\på am\ZWvUw

\Àt±i§Ä
XmsgsimSp¯ncnip¶ {]kvXmh\IÄ {i²m]qÀÆw hmbniI. Hmtcm {]kvXmh\bvpw tijhpw \n§Äiv F´v tXm¶p¶psh¶v kqNn¸nipI

iàambn tbmPnip¶p, tbmPnip¶p, XoÀ¨bnÃ, hntbmPnip¶p, iàambn hntbmPnip¶p)

{Ia\w	{]kvXmh\\	iàambn A\pIqenip¶p	A\pIqqenip¶p	XoÀ¨bnÃÃ	hntbmPnip¶p	iàambn hntbmPnip¶p
1.	BtcmKyw HcmfpsS PohnX¯nse Gähw hnes¸« ImcyambXn\m Â BtcmKyhw\mbncnim³ Hm tcmcp¯cpw ITn\ambn]cn{i aniWw.	1	2	3	4	5
2.	AhchcpsS BtcmKyw \ne\nÀ¯p¶Xv Hmtcm hyànbpsSbpw D¯chmZnXzamWv.	1	2	3	4	5
3.	k´penXamb PohnXw, ip`m]vXn hnizmkw, am\knIk½À±w ^e {]Zambn ssIImcyw sN¿pI F¶nh Hcp hyànsb kt´mjI chpw BtcmKyIchpamb PohnXw \bnm³ klmbnip¶p	1	2	3	4	5
4.	PohnXssien {IaoIcW¯nm Rm³ hnizknip¶nÃ, Pohnip ¶nSt¯mfw Imew \¶mbn `£Ww Ign¨v BkzZn¨v PohniI	5	4	3	2	1
5.	icoc`mcw \b{´nip¶Xv B [p\nI temI¯ _p²nap««dnb ImcyamWv	5	4	3	2	1
6.	s]m®¯Sn]e tcmK§fnteipw \bnip¶Xn\v Hcp {][m\ ImcWamW¶v Rm³ a\Ênemip¶p	1	2	3	4	5
7.	akvXnjvImLmXw h¶ tcmKnIfnÂ hopw akvXnjvImLmXw hcp¶Xv XSbp¶Xn\v]pIhen]qÀ®ambn \nÀ¯Xv A\nhmcyamWv.	1	2	3	4	5
8.	BlmccoXnbpw PohnX ssien]cnjvIcWhpw]n´pScp¶Xn\v iàamb CÑmianbpw \nÝbZmÀVyhpw A\nhmcyamWv	1	2	3	4	5
9.	{Iaamb hymbmaw Hcp a\pjys\ BtcmKyhm\mip¶p	1	2	3	4	5
10.	Hcp XhW akvXnjvImLmXw h¶hÀiv hopw akvXnjvImLmXw hcm\på km[yX IqSpXemWv	1	2	3	4	5
11.	akvXnjvImLmX¯nsâ ImcWWLSI§sf¸änbpÅ Adnhv hopw tcmKw hcp¶Xv XSbm³ tcmKnsb {]m]vXv\mip¶p	1	2	3	4	5
12.	IrXyamb NnInÕbpw icnbmb]cnNcWhpw akvXnjvImLmX tcmKnbpsS {]hÀ¯\£aXb {ItaW sa¨sa¸Sp¯¶p.	1	2	3	4	5

13.	BhÀ¯n¨pÅ αkvXnjvImLm Xw XSbm³ tUmIvSdpsS \nÀt± im\pkcWw αcp¶pIÄ IrXyam bn Ignip¶Xns\ Jän Rm³ t_m{hm\mWv	1	2	3	4	5
14.	Rm³ Fsâ IpSpw_mwK§sf AhcpsS A\mtcmKyIcamb PohnXssien]cnjvicnip¶Xn\v t{]mÔmln‿nipw	1	2	3	4	5
15.	αkvXnjvImLm Xw h¶Xn\v tijhpw BtcmKyIchpw Imcy£ahpamb PohnXw \bnm\mIpsa¶v Dd‿pv	1	2	3	4	5

BsI kvtImÀ : 75

]T\D]IcWw þ 5
αkvXnjvImLmXtcmKnIfn hopw αkvXnjvImLmXw hcmsX {]Xntcm[n\mbn\mbntcmKn kzoIcni¶ {]hÀ¯nIÄ kzbw shfns‿Sp¯p¶ Afhv tImÀ \nÀt±i§Ä

Xmsg sImSp¯ncnip¶ tNmZy§Àiv Gähpw A\ptbmPyamb D¯c¯n\v t\sc icn NnOw() sImSpipI

1) F{X\mÄ IqSpt¼mgmWv \n§Ä icoc`mcw]cntim[ip¶Xv
α) 3 αmk¯nsemcniÀ
b) 6 αmk¯nsemcniÀ
c) hÀt‿mgpw ☐

2) F{XImew CShn«mWv \n§Ä càk½À±w]cntim[ip¶Xv?
α) hÀt‿mgpw 3 αmk¯nsemcniÀ
b) Nnet‿mÄ Hcp hÀj¯n\Sbviv
c) IrXyambn Hmtcm αmk¯nepw AsÀ¦n tUmIvSdpsS \nÀt±i{]Imcw ☐

3) F{XImew CShn«mWv \n§Ä cànse sImfkvt{SmÄ]cntim[ip¶Xv?
α) 6 αmk¯nsemcniÀ AsÀ¦n tUmIvSdpsS \nÀt±i{]Imcw ☐
b) hÀj¯nsemcniÀ ☐
c) Hcniepan/Nnet‿mÄ ☐

4) cànse ¥qtimkv icnbmb AfhnÀ \ne\À¯¯m³ \n§Ä Fs´mw αp³IcpXepIfmWv kzoIcnimdpÀiXv ?
α) αcp¶nsâ IrXyamb D]tbmKw, tUmIvSdsS ImW¯³ hcpt¼mÄ cànse]©mkcbpsS Afhv t‿miÀ ☐
b) icoc`mc`nsâ \nb{´Ww, {Iaamb hymbmaw, `£W\nb{´Ww, CSbvnSbvnpÀ cànse]©mkcbpsS Afhv t‿miÀ, αcp¶nsâ IrXyamb D]tbmKw ☐
c) cànse]©mkcbpsS Afhns\nip¶v icoc`mc`nb{´Ww s¯‿ânbpw hymbmas¯‿ânbpw Xosc {i²n³bnÀ, DZmko\amb PohnXcoXn \bnip¶p. ☐

5)
(A) Hcp {]taltcmKnbmb \n§Ä Ft‿msgÃmw càk¯nse]©mkcbpsS Afhv t\mimdpv ?
α) ¥qtimaoädnsâ klmt¯msS {Iaamb CSthfIÄ ho«nÀ Xs¶ t\mimdpv ☐
b) Fs´‖nepw AkZØX DmIpt¼mgpw /tUmIvSdsS ImWpt¼mgpw ☐
c) hÀt‿mgpw am{Xw ☐

(B) {]taltcmKw CÃm¯ \n§Ä Ft‿msgÃmw càk¯nse]©mkcbpsS Afhv t\mimdpv?
α) FÃm 6 αmkw IqSpt¼mgpw ☐
b) IrXyambn tUmIvSdns¶ \nÀt±i{]Imchpw Fs´‖nepw AkZØX DmIpt¼mgpw ☐
c) hÀt‿mgpw ☐

6) \n§Àiv Hcp Intemαoädn Ipdhv Zqcw k©cniXmbn hcpt¼mÀ GXp αmÀ¤amWv \n§Ä Xncs³Spnip¶Xv?

α) \S¯w ☐
b) _kv bm{X ☐
c) S̄mIvkn/ kzImcy hml\w ☐

7) BgvNbnÂ F{X\mhiyw \n§Ä hymbmaw sN¿mdpv?
α) BgvNbnÂ 5 þ 6 Znhkw αpS§msX ☐
b) BgvNbnÂ 2 þ 3 Znhkw CSbvinsS ☐
c) hfsc hncfambn /H«pmnÀ ☐

8) GXpXc¯nepÅ hymbmaÀnemWv \n§Ä Znhkhpw GÀs‿SmdpÅXv?
α) \S¯w /\o´Â/ssk¢nwKv ☐
b) ho«pt¯menIfpw anXamb imcocnI A[zm\§fpw ☐
c) Hcp hymbmahpw sN¿p¶nÀ ☐

9) BgvNbnÂ F{X\mhiyw \n§Ä ^ m v̀ ^ pUv Ignimdpv?
α) Znhkhpw ☐
b) BgvNbnÂ Ht¶m ctm Znhkw ☐
c) hfsc hncfambn/H«pmnÀ ☐

10) BgvNbnÂ F{X\mhiyw \n§Ä Npα¶ amwkw \n§fpsS Blmc¯nÀ DÀs‿Sp¯mdpv?
α) BgvNbnÂ Ht¶m ctm Znhkw ☐
b) hfsc hncfambn /H«pmnÀ ☐
c) Znhkhpw ☐

11) Hcp Znhkw F{X \mhiyw]¨idnIÄ \n§Ä Blmc¯nÀ DÀs‿Sp¯mdpv?
α) 4 þ 5 XhW (3 I‿v /450 {Kmw) ☐
b) 2 þ 3 XhW (2 I‿v /300 {Kmw) ☐
c) 1 XhW am{Xw (1 I‿v / 150 {Kmw) ☐

12) Hcp Znhkw F{X \hiyw]g§Ä \n§Ä Blmc¯nÀ DÀs‿Sp¯mdpv?
α) 3- 5XhW ☐
b) 1- þ2 XhW ☐
c) Znhktà IgnimdnÀ ☐

13) Hcp Znhkw \n§Ä F{X AfhnÀ D‿v D]tbmKnipw?
α) 1 Sokvq¬ /\nb{´nXamb D]tbmKw ☐
b) 2 Sokvq¬ ☐
c) \nb{´WwCÃ ☐

14) \n§Ä Znhktà F{Xam{Xw F®/s¿v/sh® Blmc¯nÀ DÀs‿Sp¯mdpv ?
α) hfsc \nb{´nXambn ☐
b) αXmbn AfhnÀ ☐
c) \nb{´WanÃmmsX ☐

15) tUmIvsÀ \nÀt±inip¶ αcp¶pIÄ \n§Ä Ft‿msgÃmw Ignimdpv?
α) αpS§msX Ignip¶p ☐
b) Nnet‿msgmsi ☐
c) hÀt‿mgpw/ Nn«bnÃmsX ☐

16) Hcp BgvNbnÂ \n§Ä F{Xt¯mfw αZyw D]tbmKnimdpv ?
α) D]tbmKniÀnÃ ☐
b) hfsc \nb{´nXambn /1s½v, 1 þ 2 XhW BgvNbnÂ ☐
c) Znhkhpw 60 - 100 ml ☐

17) Znhktà F{X\mbviäv knKcäv \n§Ä D]tbmKnimdpv?
α) D]tbmKniÀnÃ/knKcäv hen Dt]£n¨p ☐
b) hÀt‿mgpw ☐
c) Hcp]mbviänÀ IqSpXÀ ☐

18) Ft‿msgmsibmWv \n§Ä tUmIvSdsS ImWmdpÀXv?
α) hfsc IrXyambn ☐
b) hÀt‿mgpw ☐
c) Fs´‖nepw AkZØX A\p`hs‿Spt¼mÄ ☐

19) Ft‿msgÃmw \n§Ä hn{iα hnt\mZ§fnÀ GÀs‿Smdpv ?
α) Znhktà IrXyambn ☐
b) am/knI]ncncnapdpiv Dmipt¼mÄ ☐
c) hÀt‿mgpw ☐

20) Fs´¦nepw am\ÊnIk½À±w DmIpIbmsW¦nÀ \n§Ä AXp Ipdbvim³F´psN¿pw?

a) {]mÀ°\, tbmK, ZoÀLizmk hymbma§Ä,]m«v tIÄ¡pI,]qt´m«¯p\½½nipI, aäpÅhcpambn hnImc§Ä]¦phbv¡pI ☐

b) am\knI k½À±w Ipdbvim\mbn Dd§pI, kz´ambn kmlNcy§sf ssIImcyw sN¿m³ {ianipI ☐

c) aäpÅhcnÀ \n¶v DÄhenbpI ☐

BsI kvtImÀ : | 60 |

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