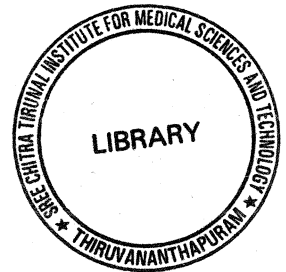


**A STUDY TO ASSESS CAREGIVERS'
KNOWLEDGE ABOUT RISK FACTORS AND
WARNING SIGNS OF STROKE**

Project Report



*Submitted in partial fulfillment of the requirements
For the Diploma in Neuro Nursing*

Submitted by

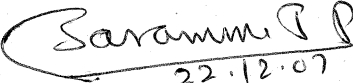
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OCTOBER 2007.**

CERTIFICATE FROM SUPERVISORY GUIDE

This is to certify that Mr. Don.T.K has completed the project work on "Knowledge assessment of caregivers about risk factors and warning signs of stroke" under my direct supervision and guidance for the partial fulfillment for the Diploma in "Neuro Nursing" in the University of Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum. It is also certified that no part of this report has been included in any other thesis for procuring any other degree by the candidate.


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CERTIFICATE FROM CANDIDATE

This is to certify that Mr.Don.T.K has completed the project work on “Knowledge assessment of caregivers’ about risk factors and warning signs of stroke” and it is a genuine work done by me at the Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum under the guidance of Mrs. Saramma P.P. It is also certified that this work has not been presented previously to any university for award of degree, diploma or other recognition.

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Approval sheet

This is to certify that Mr. Don.T.K. Bearing Roll No: 5662 has been admitted to the Diploma in Neuro Nursing in January 2007 and he has undertaken the project entitled "Knowledge assessment of caregivers' about risk factors and warning signs of stroke" which is approved for the Diploma in Neuro Nursing awarded by the Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum, as it is found satisfactory.

(Examiners)

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Don.T. K.

ABSTRACT

Knowledge assessment of caregivers' about risk factors and warning signs of stroke

Stroke is a major cause for the neurological admission in hospital all over the world. Stroke occurs when a part of the brain is deprived of oxygen and patients will have deficits corresponding to that area of brain. The study was conducted in Neuro Medical ward, Neuro Medical ICU and Out Patient department at SCTIMST, Trivandrum. A convenient sampling technique was used for selecting the sample. The sample size was 38 caregivers who were the immediate relatives of stroke patients. The investigator used a structured questionnaire regarding risk factors and warning signs of stroke. The major findings of the study were, caregivers had more knowledge of stroke risk factors than warning signs; those caregivers who were educated and employed \retired had more knowledge about risk factors and warning signs of stroke. Health professionals\friends were identified as the main source of health information.

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ABBREVIATIONS

CNS	-	Central Nervous system
CVA	-	Cerebro Vascular Accident
DM	-	Diabetes Mellitus
HTN	-	Hypertension
NMICU	-	Neuro Medical intensive care unit
NMWRD	-	Neuro Medical Ward
NSA	-	National Stroke Association
TIA	-	Transient Ischemic Attack

CHAPTER I

Introduction

A stroke or brain attack occurs when a blood clot blocks an artery or blood vessel breaks, interrupting blood flow to an area of brain. When either of these things happens, brain cells begin to die and brain damage occurs. When brain cells die during a stroke, abilities controlled by that area of the brain are lost. How a stroke patient is affected depends on where stroke occurs in the brain and how much brain is damaged [NSA 2006]

Stroke can happen to anyone at any time, regardless of race, sex or age. In US, stroke is the third leading cause of death, killing 160,000 people each year and leading cause of adult disability. Two million brain cells die every minute during stroke, increasing the risk of permanent brain damage, disability or death. Recognizing symptoms and acting fast to get medical attention can save a life and limit disabilities.

Although CVA is one of the leading causes for death and disability, parameters for predicting long-term outcome in such patients have not been clearly identified especially in the Indian context [panicker 2003].

1.1 Background of the study

Stroke is rapidly developing episode of focal and at times global loss of cerebral function with symptoms lasting more than 24 hours, or leading to death. It may be due to cerebral infarction, primary intracerebral hemorrhage or subarachnoid hemorrhage.

Thrombotic or embolic occlusion of an artery causes reduction in blood flow and ischemia in its territory of supply. In the brain, this results in impaired neuronal function, causing clinical deficit, which may be anything from mild and localized. The pattern of deficit depends on part of brain, which is ischemic. If the reduction is severe or prolonged, then some or all of the ischemic brain will infarct (Philip 1998).

Definite risk factors for stroke are hypertension, diabetes mellitus, cigarette smoking, hyperlipidemia, heart diseases and obesity. The main warning signs of stroke are numbness; weakness or paralysis of the body, sudden blurred or decreased vision in both eyes, difficulty in speaking, swallowing or understanding. A sudden severe headache, dizziness or loss of balance.

Stroke can be divided into many subtypes; they are cardiogenic embolic stroke, Ischemic stroke, atherosclerotic cerebrovascular disease stroke, hemorrhagic stroke, small penetrating artery stroke or lacunar stroke, cryptogenic stroke (Hickey2003).

Patients with acute stroke often have striking lack of knowledge of causes, warning signs, and risk factors. Lack of knowledge may lead to inappropriate secondary prevention behavior (Maasland 2007).

There are modifiable and non-modifiable stroke risks and proper management of some of these risks could significantly reduce the risk of stroke incidence. However, proper management of stroke risks requires public awareness of these risks and awareness of appropriate approaches to manage them. It is also important for the patients to be able to recognize stroke symptoms and get immediate emergency medical attention (Alkadry 2005}

Effective stroke intervention and risk reduction depend on general public's awareness and knowledge of stroke (Park 2003). Reduction in the risk of stroke and increase in the speed of hospital presentation after onset of stroke both depend on level of knowledge of stroke in general population. The aim of present study is to assess baseline knowledge regarding stroke risk factors and warning signs identified by the caregivers.

1.2 Need and significance of the study

Poor public knowledge of stroke warning signs and risk factors limits effective stroke intervention and prevention (scheider 2003). Awareness among general population about risk factors and warning signs of stroke is essential for preventive purposes and for immediate medical treatment.

Poor awareness of stroke contributes to a delay in the arrival of patients in hospital emergency department for immediate effective treatment. Reduction in the risk of stroke and increase in the speed of hospital presentation after onset of stroke both depend on level of knowledge of stroke in general population (Sug Yoon 2001)

Stroke and its long-term neurological disabilities can be prevented by management of risk factors and seeking medical care as early as possible following onset of stroke symptoms.

Various studies were undertaken on risk factors and warning signs identified by caregivers. Vuletic (2006) assessed the general public's knowledge of stroke risk factors and warning signs. A randomized sample of symptom free subjects were administered using a multiple-choice questionnaire to assess the knowledge of stroke risk factors and warning signs, planned response and source of information. He concluded that public knowledge about risk factors and warning signs were limited. Television was the most common source of information identified. Study results pointed inadequate public awareness of stroke risk factors and warning signs, which could be, improved through mass media campaigns.

Being alert to the signs of stroke is important because the longer the stroke continues without treatment, the greater the number of brain cells that will die.

In other words, says National stroke Association, "Time is Brain". The more the dead cells, greater the effect of stroke on the victim. These effects can include paralysis, problems with balance and coordination, numbness, diminished memory, thinking, attention, and learning abilities, impaired mental activities, difficulty in speaking or understanding speech, incontinence and depression.

Considering above-mentioned factors, the investigator felt that there is a need to assess the knowledge of caregivers about risk factors and warning

signs of stroke. SCTIMST is a leading center in the treatment of stroke and there is a stroke clinic being held on every Friday.

1.3 Statement of the problem

A study to assess the knowledge of caregivers about risk factors and warning signs of stroke, at SCTIMST Trivandrum.

1.4 Definition of terms

Knowledge: It refers to respondent's verbal responses to the test, which includes questions on risk factors and warning signs of stroke.

Caregivers: It refers to the persons who take care of patients in the hospital and at home.

Risk factors: In this study, it refers to factors, presence of which predisposes an individual to develop stroke. Risk factors include hypertension, smoking, diabetes mellitus, hyperlipidemia, cardiac abnormalities and obesity.

Warning signs: In this study, these are the signs, which are exhibited by stroke patients in the early stage of the disease.

Stroke: Stroke is the sudden death of a brain cells due to lack of oxygen. A stroke occurs when blood flow to the brain is damaged resulting in abnormal function of brain. It is caused by blockage or rupture of an artery in the brain.

1.5 Objectives of the study

1. To assess the knowledge of caregivers about the risk factors of stroke.
2. To assess the knowledge of caregivers about the warning signs of stroke.
3. Find out the relationship between caregivers' knowledge about risk factors and warning signs of stroke and selected variables.
4. To find out common type of stroke among the patients.

1.6 Delimitations

This study is limited to a sample size of fifty only.

This study is limited to those who speak and understand Malayalam.

Time taken for data collection is limited to two months.

The assessment of knowledge was also limited to the responses to the objective type test items.

1.7 Methodology

The methodology used in this study is survey approach. The data will be collected from fifty caregivers, whose relatives are admitted in Neuro Medical Intensive Care Unit or those who are attending stroke clinic. After obtaining informed consent from caregivers, the questions will be asked. The questions are related to risk factors and warning signs of stroke. It is to assess caregiver's knowledge about risk factors and warning signs of stroke. The validity of the tools are checked by experts of SCTIMST.

1.8 Study setting

The study will be conducted in the Neuro Medical Intensive Care Unit, Neuro medical Ward and Outpatient Department of SCTIMST Trivandrum.

1.9 Population

The populations for the study are caregivers, whose intimate relatives are admitted in Neuro Medical Intensive Care Unit, Neuro Medical Ward, or those who are attending stroke clinic.

1.10 Sampling techniques

A convenient sampling technique will be used to select samples for the study.

Five samples were selected for the pilot study.

1.11 Pilot study

The pilot study was conducted from twentieth to thirty-first August 2007. The purpose of pilot study was to test the tools. The investigator interviewed the caregivers of patients with stroke using a structured questionnaire. The time taken for pilot study varied from five to ten minutes. The pilot study gave information about the feasibility of the study.

CHAPTER II

REVIEW OF LITERATURE

Review of literature is an important aspect of any research project from beginning to end. It gives character insight into the problem and helps in selecting methodology, tool, and analyzing data. With these in view, an intensive review of literature has been done. Related literatures were reviewed and studied in depth, so as to broaden the understanding of selected problem.

The review of literature relevant to the study is presented in the following Sections.

2.1 Studies related to risk factors and warning signs of stroke done in different parts of world.

2.2 Studies related to risk factors and warning signs of stroke done in India

2.1 Studies related to risk factors and warning signs stroke done in different parts of the World.

Evici et al. (200) performed a study to determine the level of knowledge and awareness regarding risk factors and warning signs of stroke in a selected sample. Twenty trained students using face-to-face interview administered the questionnaire prepared by investigators. Two-thirds of participants knew the organ affected by stroke. The participants reported that stroke was consequence of occlusion, or bleeding in brain arteries. Paralysis\Weakness

of on one side of body, speech impairment and numbness of the body reported as three major stroke-warning signs. 64% of participants knew at least one of these risk factors. Their primary source of information was family and friends. The study showed great need for increasing awareness of risk factors and warning signs of stroke.

Kraywinkel et al. (2007) conducted a study among 1483 participants by using a mailed questionnaire. Stroke risk factor knowledge, perception of lifetime stroke risks and risk factor status were included in the questionnaire. Results showed that overall stroke risk factor knowledge was good with 67-96% of participants recognizing established risk factors. All major risk factors contributed significantly to the perception of being at high stroke risk, but effects of age, sex, and education were non-significant. They concluded that stroke risk factor knowledge was high in this study. The self-perception of an increased stroke risk was associated with established risk factors as well as low perception of general health.

Nicol et al. (2005) summarized the findings of fifteen studies about knowledge of stroke warning signs and risk factors in both high and low risk populations. In general, there appears to be low levels of knowledge of both risk factors and warning signs among communities studied. Using free recall, between 20% to 30% of respondents could not name a single risk factor. Respondents in older age group and lower levels of educational attainment tended to have less knowledge of risk factors and warning signs of stroke than those in younger age groups and with more education.

Pancioli et al. (1998) conducted a study to assess current public knowledge of stroke warning signs and risk factors. They concluded that considerable education is needed to increase the public awareness of warning signs and risk factors of stroke. The population at greatest risk for stroke, the very elderly were the least knowledgeable about stroke warning signs and risk factors.

Schneider et al. (2003) conducted a study to examine temporal trends in public knowledge of stroke warning signs and risk factors. They concluded that public knowledge of stroke warning signs within greater Cincinnati region has significantly improved from 1995 to 2000. Although knowledge of stroke risk factors did not improve significantly during same time period. Public education efforts must continue and should focus on groups at highest risk for stroke.

Revees et al. (2002) conducted a study to assess the knowledge of stroke risk factors and assess the knowledge of stroke risk factors and warning signs in a representative statewide sample of Michigan adults. They concluded that knowledge of stroke risk factors and warning signs was moderate at best. One in five respondents was not aware of any stroke risk factors, and almost one in three was not aware of any stroke warning signs. Stroke knowledge was poorest among groups that have highest risk of stroke.

Wester et al. (1999) admitted that early admission to hospital followed by correct diagnosis with minimum delay is a prerequisite for successful intervention in acute stroke. His study aimed at clarifying in detail the factors

related to these delays. They concluded that increased public awareness of the need to seek medical or other attention promptly after stroke onset, to use an ambulance with direct transportation to the acute care hospital and to have more effective in-hospital organization for effective acute treatment options to be available to stroke patients.

Parahoo et al. (2003) conducted a population – based survey to determine baseline knowledge regarding the signs, symptoms and risk factors of stroke. Data were collected in Northern Ireland from 892 adults using a self-completed questionnaire. They concluded that respondents appeared knowledgeable about risk factors of stroke but their recognition of warning signs was poor.

Maasland et al. (2007) studied about patients with minor stroke or TIA who participated in controlled trial of effect of health education by an individual multimedia computer program. He concluded that vast majority of patients with TIA or stroke lack specific knowledge about their disease, but they do have a reasonable knowledge of general vascular risk factors and treatment. This suggests that counseling by neurologist of patient with TIA or stroke can be improved.

Greenland et al [2003] studied about the awareness general population have about need to call emergency department after acute stroke events. He concluded that public recognition of stroke major symptoms is low. Educational campaigns to increase awareness among general population and targeted messages to those at high risk persons and their families may help to improve treatment for adults suffering acute strokes.

Hux et al. (2000) studied about general public's knowledge about various aspects of stroke. They concluded that, moreover 90% respondents could name at least one stroke risk factor and one functional consequence of stroke. Most respondents reported acquiring information about stroke through personal acquaintances, popular media or general life experience rather than from professional or as part of formal schooling.

Ramsden et al. (1994) after assessing public people's knowledge about stroke, concluded that health educators are often faced with dilemma of developing materials or programs that begin at a level appropriate to the needs of individuals or population as a whole. Assessment of public knowledge can help in planning initiatives directed at prevention, early identification and appropriate referral.

Yoon et al. (2002) conducted a study to gain insight into people's thoughts on stroke and to inform development of educational strategies in the community. They concluded that symptoms of stroke are not easy to recognize because they vary so much. Presentation of information about stroke by hospital and community health services should be improved. Simple and understandable educational material should be developed and their effectiveness monitored.

Nedeltchev et al. (2007) studied about awareness of people about stroke in a Swiss urban community. The study brought to light relevant deficits of stroke knowledge in Swiss urban population. Only one third of the surveyed persons would seek immediate medical help in case of TIA. The information obtained will be used in the development of future educational campaigns.

Sug Yoon et al. (2001) studied about baseline knowledge regarding stroke risk factors, symptoms, treatment and information resources. They concluded that the level of knowledge in the community of established stroke risk factors, warning signs and treatment as indicated by this survey suggests that a community based education program to increase public knowledge of stroke may contribute to reduce risk of stroke and to increase the speed of hospital presentation after onset of stroke.

Stroke and its long –term neurological consequences can be prevented by management of risk factors and seeking medical care as early as possible following onset of stroke symptoms. Tanne et al (2004) conducted a study to assess the knowledge of stroke among Israeli population. They concluded that, a program is directed at raising the awareness and knowledge of stroke by the Israeli public is required for effective stroke prevention therapy.

Rapid identification and treatment of ischemic stroke can lead to improved patient outcomes. Public education campaigns in selected communities have helped to increase knowledge about stroke, but most data represent large metropolitan centers working with academic institutions. Blades et al. (2005) conducted a study to assess the knowledge of stroke warning signs and risk factors in a rural community. They concluded that residents of two rural communities were generally aware of stroke warning signs, but their knowledge of stroke risk factors were limited.

Stroke is a major cause of neurological admission in Nigeria. Its prevention has been reported to be depended on public knowledge of stroke warning

signs and risk factors. Ignorance of stroke risk factors and inability to control such risk factors may contribute to high prevalence of stroke among blacks. Aynniyi (2006) investigated knowledge and perception of stroke among adults living in Osogbo, Nigeria. They concluded that knowledge of stroke warning signs and risk factors was good among the respondents. However, their baseline knowledge about stroke was poor. Stroke survivors were perceived as being unable to return to pre-stroke's quality of social life. Development of educational strategies to enlighten the public about stroke is therefore recommended.

Community knowledge of stroke signs and risk factors in Germany is poor, while lacking knowledge is an important cause for delays in hospital admission. Rau R (2006) conducted a study to assess community knowledge of stroke symptoms and risk factors as well as self-reported prevalence of established risk factors, in addition, the role of information on stroke risk provided to patients by general practitioner was to be estimated. They concluded that there exists persistent lack of community knowledge about stroke; patients should be made aware of their stroke risks and ways of prevention.

Admission delay remains the main cause for stroke patients' exclusion from urgent therapeutic protocols. Public's lack of knowledge about stroke symptoms may result in delay in seeking medical care and late presentation at hospital. Lack of knowledge of risk factors for stroke may also hamper compliance with stroke prevention practices. Derex (2004) conducted a study to assess knowledge about stroke in patients admitted in French stroke unit.

They concluded in their studies that educational public programs are needed in France. Educational campaigns must stress the risk factors and symptoms of stroke and appropriate response in the hopes of reducing admission delay and improving stroke prevention.

To design and evaluate intervention for reducing the impact of stroke in Georgia, Rowe (2001) assessed knowledge of signs, risk factors and burden of stroke. Adults in Georgia were assessed on the basis of their knowledge of signs, risk factors and burden of stroke. They were studied using a random digit dial telephone survey. They concluded that Georgia adults have low awareness of stroke warning signs. Their findings underscore the importance of conducting effective educational campaigns. Furthermore, a need exists for questions on stroke awareness that approximate more closely the situation in which a person must identify a potential stroke.

2.2 Studies related to risk factors and warning signs, done in India.

Community-based longitudinal study on stroke is rare in India. It has been predicted that the stroke incidence will be higher in developing countries than developed countries. Hence, a five years prospective study was planned by Bhattacharya S (2005). It was carried out in rural Bengal, India based on WHO protocol to determine the incidence rate, risk factors, morbidity and mortality profile of stroke. Twelve villages were surveyed by house-to-house method and screened cases were examined by a team of neurologists including post stroke surveillance for one year. The study has shown that hypertension, heart diseases and smoking are significant risk factors. This

study indicated a higher age adjusted incidence rate of stroke in India as compared to that of developed country.

Das K (2007) conducted a study to assess the awareness among the general population and stroke survivors of the risk factors and warning signs of stroke in West Bengal, India. 4000 people from the general population who accompanied the patients were interviewed, using three sets of questionnaire on risk factors and warning symptoms of stroke. Poor knowledge or the awareness of risk factors and warning symptoms of stroke was found in both the groups. Both groups suggested educational programs for stroke using printed information, audiovisual programs and community survey programs using simple and understandable information for the prevention and immediate effective treatment of stroke.

Pandian et al. (2005) in their study assessed public awareness of warning symptoms, risk factors and treatment of stroke in Ludhiana, Punjab and North West India. A hospital -based survey was conducted between February 2002 and September 2002. The study subjects were relatives of patients without history of stroke attending outpatient department of the hospital. Trained medical students, interns and nurse interviewed subjects. This hospital-based survey reveals a better awareness of stroke warning signs and risk factors. However knowledge regarding the organ involved, etiology and treatment of stroke is lacking. Considerable education is needed to increase public awareness in modern concepts of stroke treatment.

Limited information is available from India and other developing countries regarding the various factors that contribute to a delay in hospital admission

after stroke. Pandian JD (2006) prospectively studied the various factors contributing to delay in hospital admission during a 15-month period ending September 2003. Patients or their relatives were interviewed within 48 hours of admission using a structured questionnaire. They found a considerable delay in the early arrival of patients to their stroke department. They concluded that the local physicians and the public should be educated about the importance of an early referrals and presentations to the stroke centers.

The premise of brain attack concept is that early intervention may salvage ischemic neurons. Early intervention depends on adequate knowledge of stroke so that patients seek urgent medical attention. Chaturvedi (1997) conducted a study to assess knowledge of stroke risk factors and warning signs in an urban, Indian community. A 20- item questionnaire was administered to two patient groups. Group one had a diagnosis of first ever stroke or TIA. Group two was without history of cerebral ischemia. Thirty patients in-group one answered 57% of the questions correctly. Patients showed misperceptions regarding warning signs of stroke and were unfamiliar with concept of TIA. They concluded that results from our urban medical center suggest that knowledge of stroke is deficient among high-risk individuals who developed cerebral ischemia. This would mean that opportunities for effective prevention and treatment of stroke are being missed in minority patients. Recruitment of patients for acute stroke trials will also face impediments in urban communities unless a massive educational effort is undertaken.

Key words	Number of articles
Risk factors and warning signs of stroke	74
Caregivers' knowledge about stroke	60
Stroke in India	214
Public perception of stroke	36
Stroke risk factors and warning signs identified	13
Risk factors and warning signs	284

CHAPTER III

Methodology

Third chapter deals with research approach, the sample and sampling technique, tools, description of the tool pilot study, data collection procedure, data management and plan of analysis. This chapter provides a brief description of different steps taken to conduct this study.

3.1 Research approach

Survey approach was used for this study by using questionnaires.

3.2 Objectives

To assess the knowledge of caregivers about risk factors of stroke.

To assess the knowledge of caregivers about warning signs of stroke.

To find out the relationship between caregivers' knowledge about risk factors, and warning signs of stroke, and selected variables.

To find out the common type of stroke among the patients.

3.3 Settings

The study was conducted in the Sree Chitra Institute for Medical Sciences and technology, Trivandrum; it is an institute of national importance. The rationale behind selecting SCTIMST for study was that the investigator was familiar with this institute. There is also a stroke clinic being held on every Friday from 9am to 1pm.

3.4 Sample and sampling techniques

The sample was selected from the caregivers who take care of patients intimately. The size was fifty.

Sampling technique refers to process of selecting caregivers. The caregivers were selected conveniently from neuro medical ward, neuro medical intensive care unit and out patient department who attend stroke clinic.

3.5 Development of data collection tool.

An extensive review and study of literature helped in preparing items for the tool. Experts of SCTIMST tested the tool and content validity. A questionnaire was prepared based on literature and it was interviewed with caregivers.

3.6 Description of the tool

Part – 1

It included socio-demographic questions such as name of the patient, caregiver's relationship with patient, education of the caregiver, and occupation of the caregiver.

Part -2

It consisted of five questions including multiple-choice questions. It includes questions about type of stroke, signs and symptoms exhibited by the patient, multiple choice questions about risk factors and warning signs of stroke. Last question is about the source of health education.

Options for multiple-choice questions for risk factors are smoking, hypertension, alcoholism, diabetes mellitus, fatty food, edema whole over the body or any other. For warning signs options are numbness and weakness of

upper limb and lower limb, pain on the leg, difficulty in swallowing food, difficulty in speaking, nausea and vomiting, unsteadiness while walking, vertigo or any other (see Appendix A).

3.7 Pilot study

Pilot study was conducted among caregivers in August 2007. The purpose of the study was to test the feasibility of original tool. It included five samples. The pilot study gave more information about the research study. The samples collected for pilot study were excluded from main study.

3.8 Data collection

Formal permission was obtained from authorities before data collection. The total period of data collection was from September to October 2007. The investigator first introduced himself and explained the need and purpose of the study. Caregivers were interviewed using a structured tool. The time taken for the study varied from five to ten minutes.

3.9 Plan of analysis

The data obtained from caregivers will be analyzed using descriptive statistics and present them in the form of tables and bar diagram.

3.10 Summary

This chapter presented the research approach used for the study, design of the study, setting of the study, sample and sampling techniques, development of data collection tool, description of tool, pilot study, data collection procedure and plan for data analysis.

CHAPTER IV

Analysis and interpretation of data

This chapter analyses and interprets the data obtained from caregivers of patients with stroke at Sree Chitra Institute for Medical Sciences and Technology, Trivandrum. Thirty-eight caregivers were conveniently selected for assessing their knowledge about risk factors and warning signs of stroke. Questions in the structured questionnaire were asked to the caregivers directly. Four caregivers did not understand the questions, so questionnaire was handed over to them, later they were asked the questions. Investigator had planned to collect fifty samples, but due to lack of time, investigator could collect data from only 38 caregivers.

Analysis is a process of organizing and looking into details of the data obtained. The main objective of analysis is to organize structure and elicit answers after assessment.

Interpretation is the process of making sense of the result and examining results and findings within a broader content.

The findings of the study were analyzed and arranged under the following sections.

Section 4.1: Distribution of sample according to demographic variables.

Section 4.2: Type of stroke among the patients whose caregivers were selected for the study.

Section 4.3: Percentage of knowledge about risk factors and warning signs of stroke

Section 4.4: Distribution of sample according to source of health education.

Section 4.5: Relationship of caregivers' knowledge about risk factors and warning signs and selected variables.

4.1 Distribution of sample according to the demographic variables.

Twenty-four caregivers were females, rest fourteen caregivers were males.

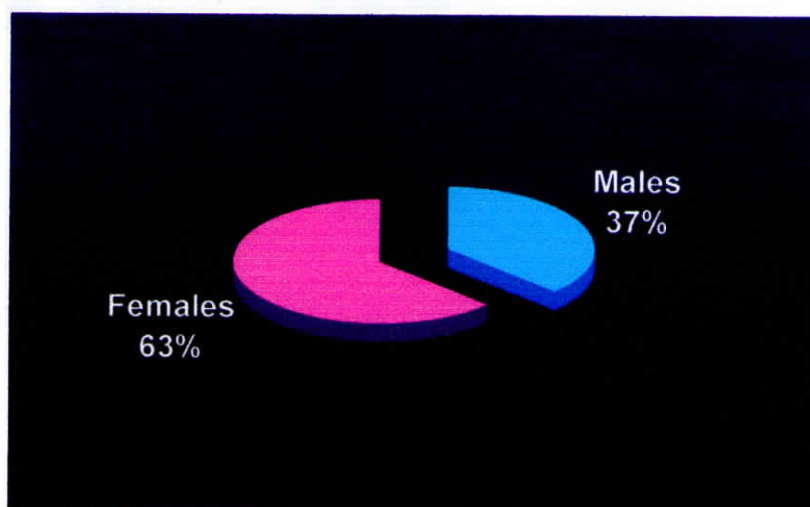
Though most of the patients were also having male caregivers, but the immediate caregivers were females and they were interviewed.

Table 4.1 Distribution of sample according to the sex of the caregiver.

Sex	Frequency	Percentage
Male	14	36.8%
Female	24	63.2%
Total	38	100%

The same findings are presented in Figure 4.1 as pie diagram representing distribution of sample according to the sex.

Figure 4.1



The pie diagram shows distribution of sample by sex. Majority samples were females.

Distribution of sample according to the education of the caregiver.

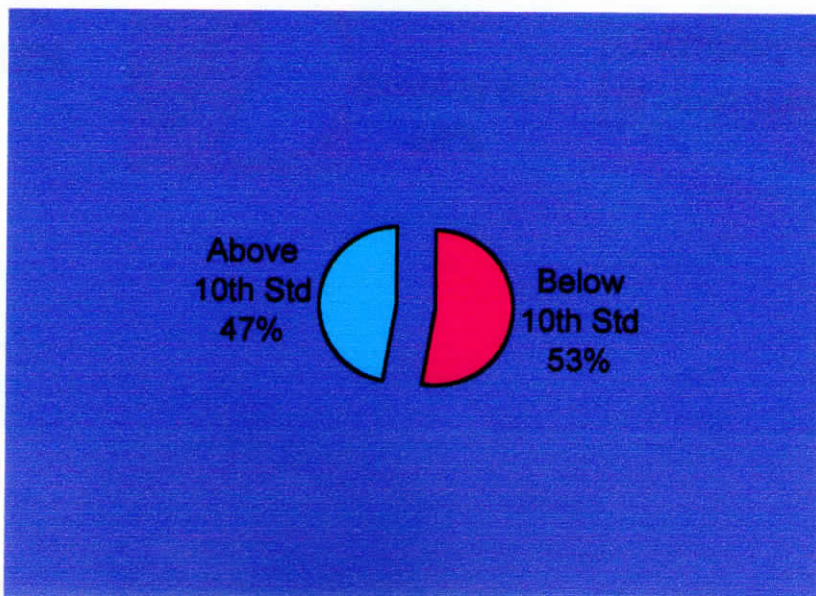
Samples were divided into two groups according to their educational status; below tenth standard and above tenth standard.

Table 4.2

Education	Frequency	Percentage
<i>Below tenth std</i>	20	52.6
Above tenth std	18	47.3%
Total	38	99.9

Majority of the caregivers were having only school education, below tenth standard. 47.3% caregivers had education above tenth standard.

The same findings are exhibited in figure 4.2



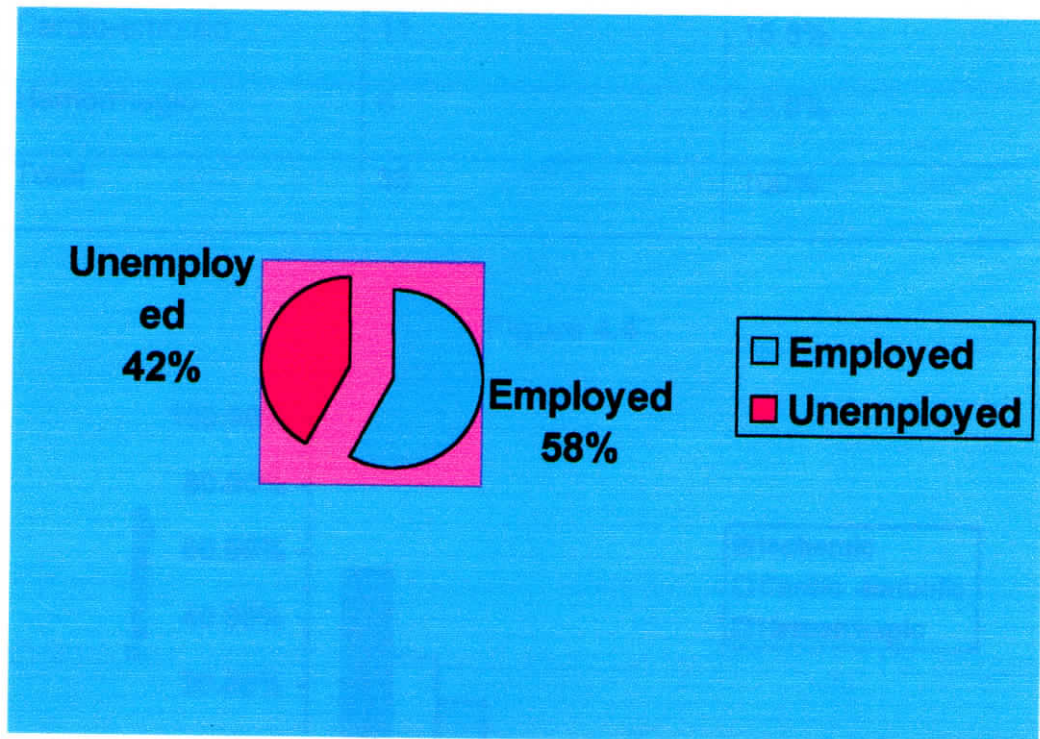
Distribution of sample according to occupation of caregiver.

Samples were divided into two groups. Those who were employed \ retired and those who were unemployed. There were 22 caregivers who were employed \ retired, rest 16 caregivers were unemployed.

Table 4.3

Occupation	Frequency	Percentage
Employed \ Retired	22	57.9%
Unemployed	16	42.1%
Total	38	100%

The same findings are shown in figure 4.3



Section 4.4: Distribution of sample according to source of health education.

Section 4.5: Relationship of caregivers' knowledge about risk factors and warning signs and selected variables.

4.1 Distribution of sample according to the demographic variables.

Twenty-four caregivers were females, rest fourteen caregivers were males.

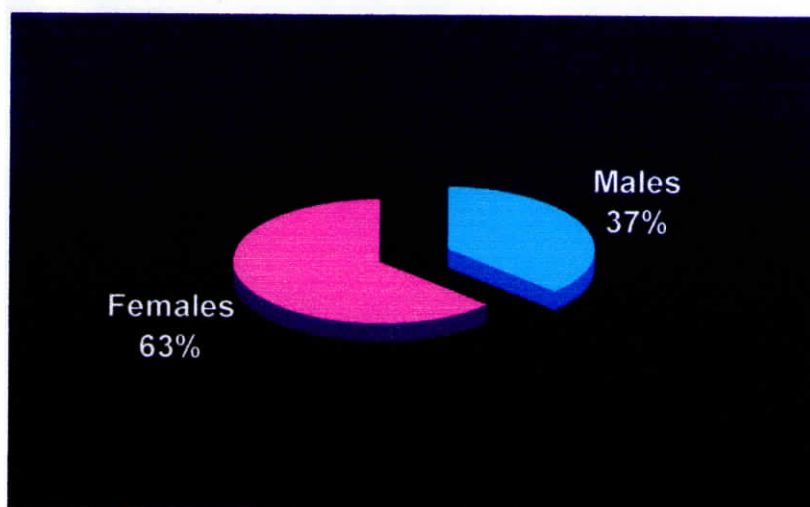
Though most of the patients were also having male caregivers, but the immediate caregivers were females and they were interviewed.

Table 4.1 Distribution of sample according to the sex of the caregiver.

Sex	Frequency	Percentage
Male	14	36.8%
Female	24	63.2%
Total	38	100%

The same findings are presented in Figure 4.1 as pie diagram representing distribution of sample according to the sex.

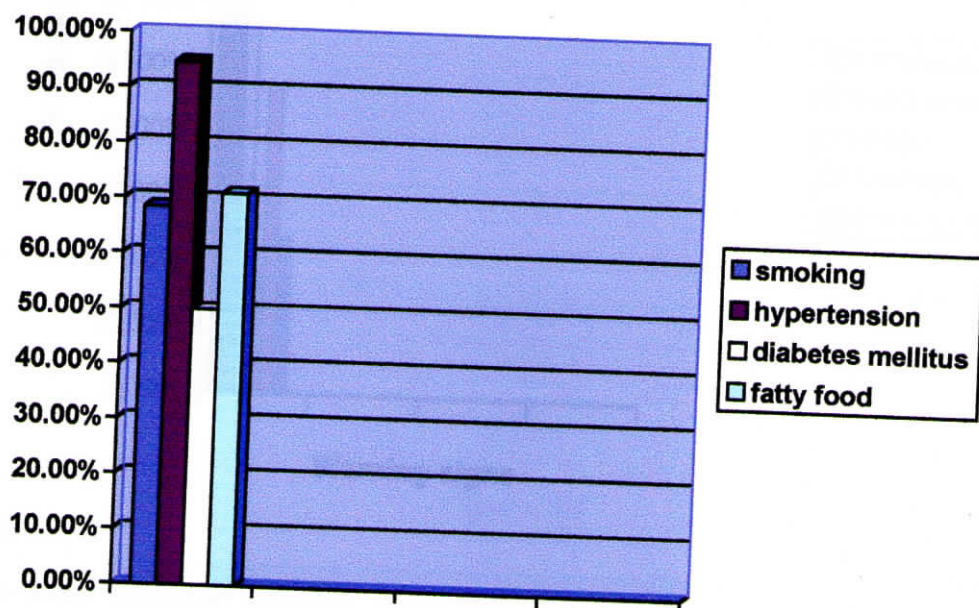
Figure 4.1



4.3 Percentage of knowledge about risk factors and warning signs of stroke.

Definite risk factors of stroke included in the study were smoking, hypertension, diabetes mellitus, and fatty food. The caregivers were asked to identify the risk factors of stroke from a group of six risk factors. There were two distracters such as edema all over the body and alcoholism.

Figure4.5

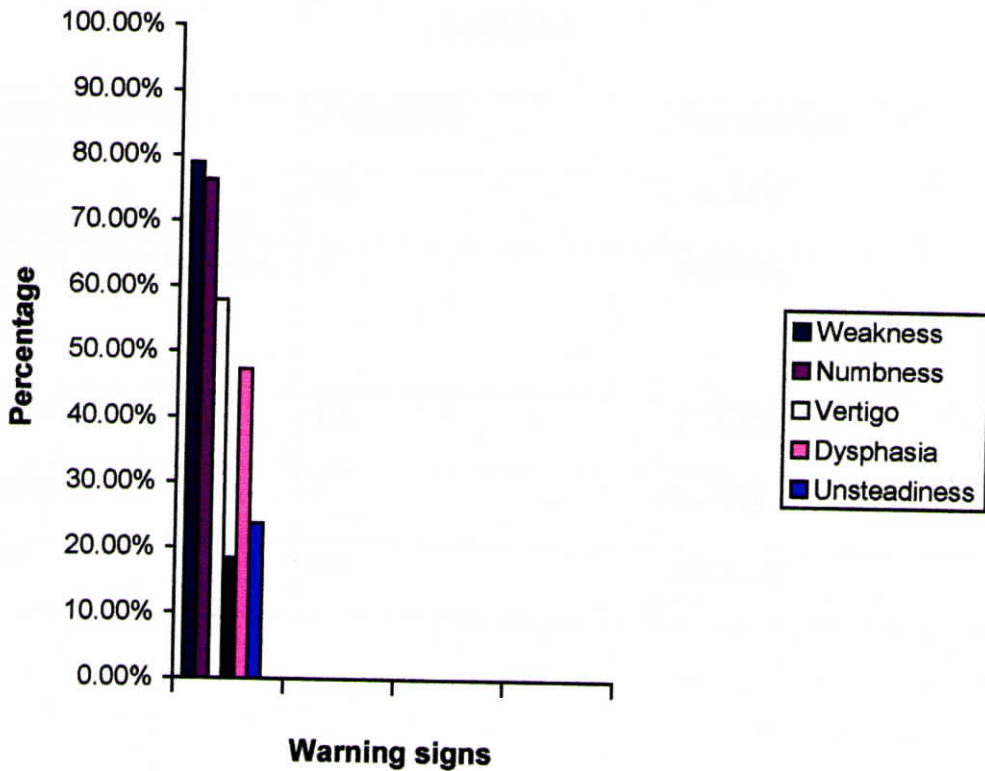


Hypertension was the most frequently identified risk factor. Smoking and fatty food as risk factors of stroke was identified by 68% and 71% respectively. Though diabetes mellitus was a major cause of stroke, it was identified only by 50% of caregivers.

Percentage of knowledge about the warning signs of stroke.

The major warning signs of stroke included in the study were limb weakness, limb numbness, vertigo, dysphagia, dysphasia and unsteadiness. There were three distracters such as fever, pain on leg and nausea and vomiting.

Figure 4.6



The most identified warning signs were limb weakness and limb numbness. Vertigo and dysphasia were identified by 57% and 47% of caregivers respectively. Dysphagia and unsteadiness were the least identified warning signs. The distracters troubled six caregivers.

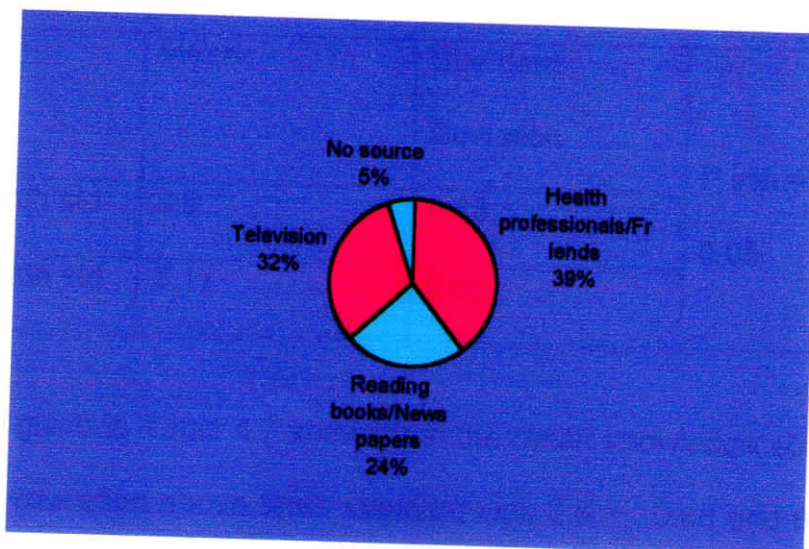
4.4 Distribution of samples according to source of health Education.

The main source of health education was divided into three groups. They were Health professionals/friends, reading books/new paper and television.

Table 4.5

Source of health education	Frequency	Percentage
Health professionals/Friends	15	39.47%
Reading books/ News papers	9	23.68%
Television	12	31.57%
No source	2	5.26%
Total	38	99.98%

Figure 4.7



4.5 Relationship of caregivers' knowledge about risk factors and warning signs and selected variables.

Mean, Standard deviation, and P value of risk factors' knowledge by sex.

Table 4.6

Sex	Mean	Standard Deviation	P value
Male	2.71	1.20	
Female	2.96	0.69	

The data given in Table 4.6 shows that the Mean knowledge score of male caregivers was 2.71 ± 1.2 and that of females was 2.96 ± 0.69 . A 't' test showed that there was no statistically significant difference between male and female caregivers about their knowledge of risk factors of stroke.

Mean, Standard Deviation and P value of knowledge of risk factors by education

Table 4.7

Education	Mean	Standard Deviation	P value
Below tenth std	2.6	0.88	
Above tenth std	3.17	0.86	

The data given in Table 4.7 shows that the mean knowledge score of those who had education above tenth standard was 2.6 ± 0.88 and that of those

who had education below tenth standard was 3.17 ± 0.86 . A 't' test showed that there was a statistically significant difference between the mean knowledge about risk factors among caregivers with below tenth standard education and those with above tenth standard education.

Mean, Standard Deviation and P value of knowledge of risk factors by occupation.

Table 4.8

Occupation	Mean	Standard Deviation	P Value
Unemployed	2.5	.97	
Employed	3.14	.77	

The data given in Table 4.8 shows that the Mean knowledge score of those Unemployed was $2.5 \pm .97$ and that of those employed was $3.14 \pm .77$. A 't' test showed that there is a statistically significant difference between the mean knowledge about risk factors of stroke among caregivers who were employed/retired and those who were unemployed.

Mean, Standard Deviation, and P value of knowledge of warning signs of stroke by sex.

Table 4.9

Sex	Mean	Standard Deviation	P Value
Male	3.07	1.69	
Female	3.21	1.06	

The data given in Table 4.9 show that the Mean knowledge score of male caregivers was 3.07 ± 1.69 and that of females was 3.21 ± 1.06 . A 't' test showed that there was no statistically significant difference between the knowledge about warning signs of stroke among male and female caregivers. Mean, Standard Deviation and P value of knowledge of warning signs by education.

Table 4.10

Education	Mean	Standard Deviation	P Value
Below Tenth std	2.5	.95	
Above Tenth std	3.89	1.28	

The data given in table 4.10 shows that the Mean knowledge score of those who had education below tenth standard was $2.5 \pm .95$ and that of those who had education above tenth standard was 3.89 ± 1.28 . A 't' test showed

that there is a statistically significant difference between Mean knowledge of warning signs of stroke among caregivers who had education below tenth standard and those who had education above tenth standard.

Mean, Standard Deviation and P Value of knowledge of warning signs by occupation.

Table 4.11

Occupation	Mean	Standard Deviation	P Value
Unemployed	2.63	0.96	0.03
Employed	3.55	1.41	

The data given in table 4.11 shows that the mean knowledge score of those who were employed \ retired was 2.63 ± 0.96 and that of those unemployed was 3.55 ± 1.41 . A 't' test showed that there exists a statistically significant difference between Mean knowledge of warning signs of stroke among caregivers who were employed\retired and those who were unemployed.

CHAPTER V

SUMMARY, CONCLUSIONS, DISCUSSION AND RECOMMENDATIONS

This chapter gives a brief account of the present study including conclusions drawn from the findings and possible application of the results. Recommendations for the future research and suggestions for improving present study are also included.

5.1 Summary

This study was undertaken to assess the knowledge about risk factors and warning signs of stroke among caregivers whose patients were admitted in Neuro Medical Ward, Neuro medical ICU or those attending stroke clinic at SCTIMST, Trivandrum.

The specific objectives of the study were,

1. To assess the knowledge of caregivers about risk factors of stroke.
2. To assess the knowledge of caregivers about the warning signs of stroke.
3. To find out the relationship between caregivers' knowledge about risk factors and warning signs of stroke and selected variables.
4. To find out the common type of stroke among the patients.

Many studies undertaken in India as well as abroad revealed that there exists a lack of knowledge about risk factors and warning signs of stroke. This ignorance was seen among general public as well as among caregivers of stroke. Need of the present was that the careful attention to risk factors and warning signs can lead to an appreciable reduction in long term morbidity

and mortality rate. So the study was conducted to assess the knowledge of caregivers of stroke about stroke risk factors and warning signs. This study even puts light into caregivers' knowledge of stroke after encountering an episode of stroke. This assessment of baseline knowledge is the first step in any successful education program.

A structured questionnaire was used to assess the knowledge of caregivers about risk factors and warning signs of stroke. After the assessment the investigator explained and cleared doubts, about stroke risk factors and warning signs to those who had queries about stroke.

The study was conducted in the Sree Chitra Institute for Medical Sciences and Technology Trivandrum, Kerala, during the period of August to October 2007. Investigator had planned to collect sample from fifty caregivers, but due to lack of time, data collection was limited to 38 samples. Questions in the questionnaire were asked to care givers. Four caregivers did not understand the questions, so questionnaire was handed over to them for better understanding and later they were asked questions. On analysis it was found that caregivers had more knowledge about risk factors than warning signs.

5.2 Major findings of the study

This study indicated that the knowledge about risk factors and warning signs of stroke was almost same for both sex.

Those who had higher education and those who were employed \retired outperformed those who hadn't enough education and unemployed, in their knowledge about stroke risk factors and warning signs.

Ischemic stroke was the most frequently identified stroke in this study.

Caregivers had relatively better knowledge of risk factors than warning signs.

Health professionals\friends were identified as the main source health information. Television and reading books \news papers were other source of health information.

5.3 Limitations

The study was limited to caregivers whose patients were admitted in Neuro Medical Ward, Neuro Medical ICU or those who were attending the stroke clinic

5.4 Conclusions

Based on the findings of the study following conclusions were drawn,

Knowledge about risk factors and warning signs of stroke was almost same for male and female caregivers.

Those who had education and occupied relatively had better knowledge about stroke risk factors and warning signs.

Caregivers had relatively better knowledge of risk factors than warning signs.

Ischemic stroke was the most common type of stroke.

Health professionals\friends was identified as the main source of health information.

5.5 Discussion

There were many studies undertaken to assess caregivers' knowledge about risk factors and warning signs of stroke, those questionnaires were reviewed for making a structured questionnaire. The risk factors and warning signs, which could be identified, were the main focus in the questionnaire.

In this study, options for risk factors included smoking, hypertension, diabetes mellitus and fatty food. There were two distracters – smoking and edema all over the body. These were not considered as risk factors by any of the caregivers.

Options for warning signs of stroke included limb weakness, limb numbness, vertigo, dysphagia, dysphasia and unsteadiness. There were three distracters and six caregivers identified distracters as warning signs.

Investigator found very difficult to explain the questionnaire to caregivers. When questions were asked about risk factors and warning signs, they had a tendency to relate risk factors and warning signs, which their patients had. Investigator had to insist on caregivers to think in a wider context of stroke rather than sticking on to risk factors and warning signs their patients had.

5.6 Recommendations

Special interactive sessions for caregivers of stroke to clear their doubts.

Special attention to those who had low-level education and no occupation.

Health professionals\friends should educate the public on food habits, as they are the main source of health information.

Short descriptions about stroke on television while patients are waiting for their review appointment at outpatient department.

Pamphlets on stroke distribute to those who take care of stroke patients.

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Appendix A

1. Name of the patient?
2. Relationship of patient with caregiver?
3. Sex of the caregiver?
 - (a) Male
 - (b) Female
4. Education of the caregiver?
 - a. School education (b) Higher secondary (c) Graduation
 - (d) Post Graduation
5. Occupation of the caregiver?
6. What were the signs and symptoms patient had?
7. Which type of stroke patient had?
8. In the given below risk factors which are all the risk factors of stroke?
 - (a).Smoking (b) hypertension (c) alcoholism (d) diabetes mellitus
 - (e) fatty food (f) edema all over the body (g) any other
9. In the given below warning signs which are all the warning signs of stroke?
 - (a) Pain on leg (b) limb weakness (c) limb numbness (d) dysphasia
 - (e) dysphasia (f) fever (g) nausea vomiting (h) unsteadiness (i) vertigo (j) any other