

**DEMOGRAPHIC PROFILE OF STROKE PATIENTS ATTENDED
AT CRP, BANGLADESH.**

Md. Moazzem Hossain

Bachelor of Science in Physiotherapy (B. Sc.PT)

Session: 2007-2008

BHPI, CRP, Savar, Dhaka



Bangladesh Health Professions Institute (BHPI)

Department of Physiotherapy

CRP, Savar, Dhaka-1343

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We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for the acceptance of this dissertation entitled

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AT CRP, BANGLADESH.**

Submitted by, **Md. MoazzemHossain**, for partial fulfillment of the requirements for the degree of Bachelor of Science in Physiotherapy (B. Sc PT).

.....
Mohammad Anwar Hossain

B. Sc. PT (Hons.), Dip. Ortho. Med, MPH
Associate Professor, Physiotherapy, BHPI &
Head of Department, PT
BHPI, CRP, Savar, Dhaka

.....
Nasirul Islam

B.Sc. PT (Hons.), MPH
Assistant Professor & Course Coordinator, M .Sc. in physiotherapy
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

.....
Muhammad Millat Hossain

B.Sc. PT (Hons.)
Lecturer
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

.....
Md. Shofiqul Islam

B.Sc. PT (Hons.), MPH
Assistant Professor
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

.....
Md. ObaidulHaque

B.Sc. PT (Hons.), Dip. Ortho. Med, MPH
Associate Professor & Head of the Department
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

Declaration

I declare that the work presented here is my own. All sources used have been cited appropriately. Any mistakes or inaccuracies are my own. I also declare that for any publication, presentation or dissemination of information of the study. I would be bound to take written consent of my supervisor.

Signature:

Date:

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Acronyms

AVM	Arterio Venous Malformation
BHPI	Bangladesh Health Professions Institute
CRP	Centre for the Rehabilitation of the Paralyzed
CT	Computed Tomography
CVA	Cerebro Vascular Accident
DVT	Deep Venous Thrombosis
EMG	Electro Myography
ESR	Erythrocytic Sedimentation Rate
MRI	Magnetic Resonance Imaging
NDT	Neurodevelopment technique
PNF	Proprioceptive neuromuscular facilitation
SPSS	Statistical Package for the Social Sciences
TIA	Transient Ischaemic Attack
US	United States
WHO	World Health Organization

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Abstract

Purpose: To find out the demographic profile of stroke patients attended at CRP, Bangladesh. *Objective:* The aim of this study was to find out the socio-demographic characteristics of stroke patients. *Methodology:* The study design was cross-sectional. Seventy samples were selected as purposive sampling from Physiotherapy Neurology outdoor patient at CRP. A mixed type of questionnaire was used to collect data. Data was collected by a standard questionnaire and it was analyzed by SPSS software version 16.0 and descriptive statistics by using table, pie chart and bar chart. *Results:* Highest prevalence of stroke was between the 5th and 6th decade (37.3%). More affected patients were male (71%). Patients came from both urban (47%) and rural (53%) areas and most of them belong to the low-income group (56%). In occupational category; service holder (20%) and businessman (26%) were the highest groups. Most of the study subjects were literate (91%) among them (26%) were primary, (23%) were S.S.C, (16%) were H.S.C and (27%) were bachelor or above. Data analysis indicated hypertension as major factor associate with stroke. Seventy nine percent of the patients had hypertension. The present study detected diabetes in 14% patients. Fifty seven percent of the study subjects were smoker, 31% patients had family history of stroke. Data analysis indicated that the prevalence of ischaemic stroke was 87% and hemorrhagic stroke 13%. *Conclusion:* This study found that hypertension, cigarette smoking and diabetes mellitus are the major factors associates with stroke in our community as well as other socio-demographic factor. While other risk factors demand further study.

1.1Background

Stroke is the second leading cause of death worldwide and the leading causes of long term disability (Murray et al., 1997). WHO has mentioned that in 2002 there were 15.3 million strokes worldwide, more than a third of which (5.5 million) resulted in death (WHO, 2002). Two-thirds of these deaths occurred in people living in developing countries and 40% of the subjects were aged less than 70 years. Additionally, cerebrovascular disease is the most leading cause of disability in adults and each every year millions of stroke patients have to adapt to a life with restrictions in activities of daily living as a consequence of cerebrovascular disease. Many surviving stroke patients will often depend on other people's continuous support to survive (Thomson et al., 2006).

Almost Strokes is the third leading cause of death and the leading cause of serious, long term disability in the United States behind heart diseases (with which it is closely linked) and cancer. About 750,000 new strokes occur in United States each year (Sudlow et al., 1999). Approximately one person every 45 seconds (Salbach et al., 2006) and of these, approximately 150,000 (25%) are fatal. About 600,000 of these are first attacks and 185,000 are recurrent attacks (Ferri et al., 2011). The incidence of stroke is higher in African Americans than Caucasians Americans (Sergeev, 2004).

Demography or epidemiology of a particular ailment is linked to social, environmental, cultural and biological issues and thus varies from region to region (Chhabra& Arora, 2012). In demographically developed countries, the average age at which stroke occurs is around 73 years reflecting the older age structure of these countries. The probability of a first stroke or first transitory ischemic attack is around 1.6 per 1,000 and 0.42 per 1,000, respectively (Bamford et al., 1988). In less developed regions, the average age of stroke will be 3 younger due to the different population age structure resulting from higher mortality rates and competing causes of death (Thomson et al., 2006).

Future demographic changes will increase the total number of stroke patients. If current treatment strategies are remain unchanged according to age (Christian et al., 2009). Although most researchand attention to prevention and intervention occurs inhigh-income countries, more than 85% of strokes occurin low-income and middle-income countries (Strong et al., 2007). A systematic review of population-based studies from 1970–2008 showed a 42% decrease in stroke incidence in high income countries and a greater than 100% increase in stroke incidence in low to middle income countries (Feigin et al., 2003).

Stroke occurs at an equal rate in men and women, but women are more likely to die. Stroke was an underlying cause in 63.6% of female deaths and 54.1% of male deaths from stroke in Australia (1977- 2002). Among adults age 20 and older, the prevalence of stroke in 2005 was 6,500,000 (about 2,600,000 males and 3,900,000 females) (Mensah,2007). Stroke accounted for about one of every 17 deaths in the United States in 2005. Stroke mortality for 2005 was 143,579 (56,586 males, 86,993 females). Every seven minutes, a Canadian dies of heart diseases or stroke. Europe averages approximately 650,000 stroke deaths each year (Braunwald et al., 2003). Bangladesh is a South Asian country and one of the most densely populated country in the world. Stroke is the 3rd leading cause of death in Bangladesh (Haque, 2003).

1.2 Rationale

Stroke is a common neurological condition, mostly seen in developing country. Day by day there is increasing the number of stroke patient, in different areas. As Bangladesh is a developing country and trying to develop health care system so it is important to know the study creates and overview about demography of stroke. Physiotherapy is a significant part of this multi-disciplinary team. As the physiotherapy profession is newly introduced in Bangladesh, many people are not aware of its purpose. But it is an important part of health care to prevent diseases as well as to improve or maximize independence in people with disabilities. Therefore, physiotherapy can play an absolute role in preventing stroke and aware the people about stroke which is essential to strengthen our profession.

It generates exact information considering detail about which causes, occupation, age, gender, diagnosis, and duration. It also help to raise awareness among the population and will help full to get information about stroke.

1.3 Research Question

What are the demographic profiles of stroke patients attended at CRP?

1.4 Objectives

a. General objective

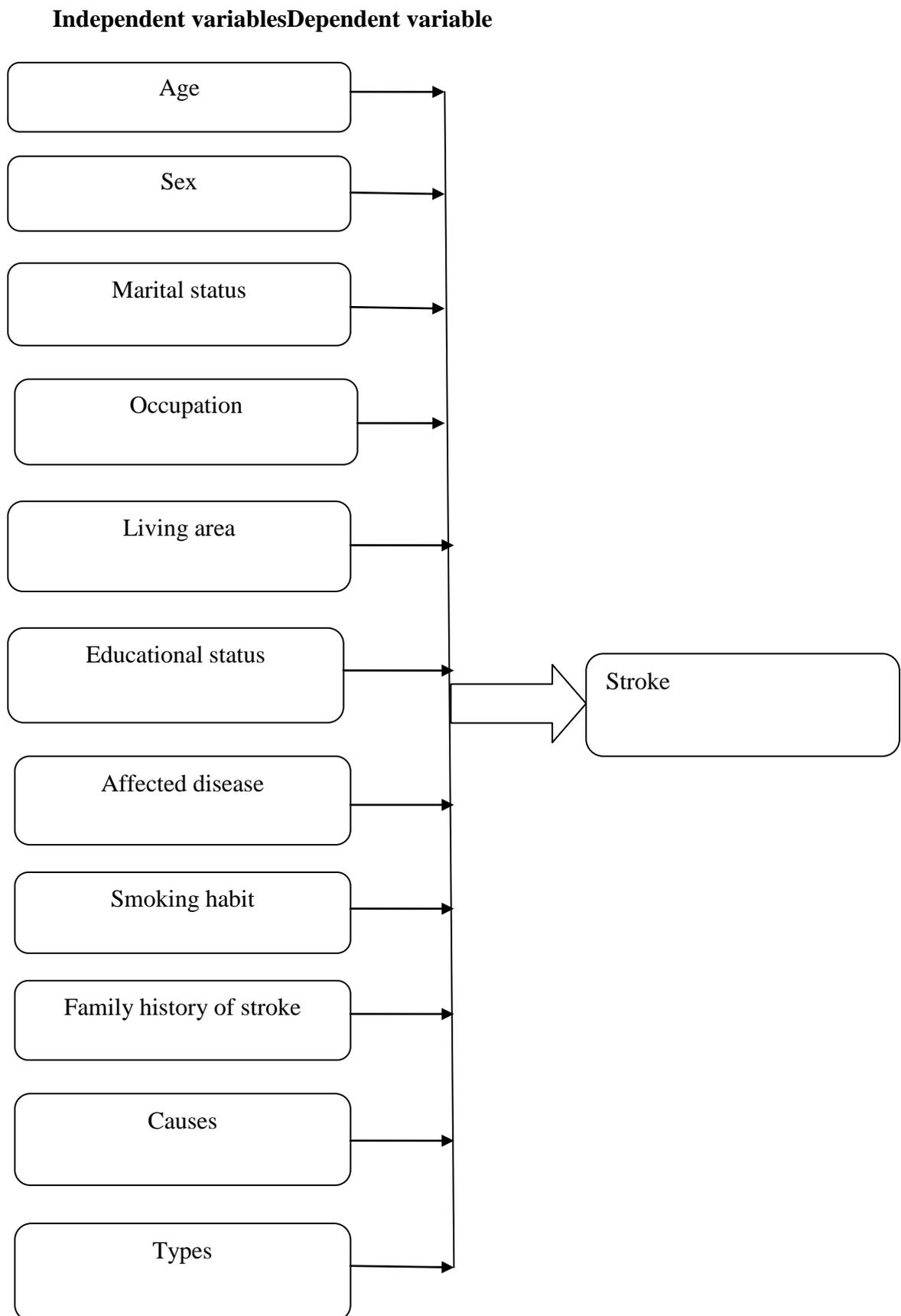
- To find out the Socio demographic profiles of stroke patients attended at CRP.

b. Specific objectives

- To explore which age group and gender are more vulnerable for the stroke.
- To identify the causes and the common type of stroke.
- To find out vulnerable occupation and common diagnosis of stroke.

1.5 List of variables

Conceptual frame work



1.6 Operational definitions

Stroke

Stroke, or a cerebral vascular accident, is the sudden death of brain cells due to inadequate blood flow. The WHO clinically defines stroke as the rapid development of clinical signs and symptoms of a focal neurological disturbance lasting more than 24 hours or leading to death with no apparent cause other than vascular origin.

Activities of daily living

Task that enable individual to meet basic needs in style.

Disable

Person, who is not able to perform normal body function.

Demography

The statistical & quantitative study of characteristics of human population on a national, regional or local basis in terms age, sex and other variables including patterns of migration and survival. It is used in public health medicine to help identify health needs and risk factors.

Each year at least 32 million individuals suffer with acute coronary and cerebral vascular event and at least half of these occur in people with established coronary heart disease (CHD) and cerebrovascular disease (Mendis et al., 2005). Stroke is synonymous with cerebrovascular accident (CVA) and is a clinical definition. The World Health Organization (WHO) definition of stroke is a rapidly developed clinical sign of focal disturbance of cerebral function of presumed vascular origin and of more than 24 hrs duration. This definition does not include `transient ischaemic attacks` (Correia et al., 2004). The incidence of stroke increases with age and affect many people in their golden years. It is third most common cause of death in developed countries (Hossain et al., 2011).

Transient Ischaemic Attacks (TIA) are episodes of stroke symptoms that last only briefly; the standard definition of duration is <24 hours, but most TIAs last <1 hours. The standard definition of TIA requires that all neurologic signs and symptoms resolve within 24 hours regardless of whether there is imaging evidence of new permanent brain injury; stroke has occurred if the neurologic signs and symptoms last for >24 hours (Braunwald et al., 2003). It is the most frequent clinical manifestation of diseases of the cerebral blood vessels (Boon et al., 1999). A stroke or cerebrovascular accident occur when the blood supply to part of the brain is suddenly interrupted or when a blood vessel in the brain bursts, spilling blood into the spaces surrounding brain cells. Brain cells die due to lack of oxygen and nutrients from the blood or there is sudden bleeding into or around the brain (National institute of neurological disorder and stroke, 2004).

Approximately 15 million people suffer stroke worldwide each year, according to the World Health Organization. Of these, 5 million die and another 5 million are permanently disabled (Engstrom et al., 2001). Strokes affect blacks more often than whites and are more likely to be fatal among blacks (Sergeev, 2004). Each year in United States, approximately 730,000 people have stroke and nearly 400,000 survive with some level of neurology impairment and disability (Kelly et al., 1998). Stroke occurs at an equal rate in men and women, but women are more likely to die. Stroke

was an underlying cause in 63.6% of female deaths and 54.1% of male deaths from stroke in Australia. Among adults age 20 and older, the prevalence of stroke in 2005 was 6,500,000 (about 2,600,000 males and 3,900,000 females) (Mensah,2008).

The pathological background for stroke may either be ischemic or hemorrhagic disturbances of the cerebral blood circulation.

Ischemic stroke (infarction): Thrombotic cerebral infarction results from the atherosclerotic obstruction of large cervical and cerebral arteries, with ischemia in all or part of the territory of the occluded artery. This can be due to occlusion at the site of the main atherosclerotic lesion or to embolism from this site to more distal cerebral arteries. Embolic cerebral infarction is due to embolism of a clot in the cerebral arteries coming from other parts of the arterial system (Thomas et al., 2006).

Ischemic stroke or cerebral infarct (80% of strokes) results from a blockage or a reduction of blood flow in artery that supplies brain. They are caused either by a clot (thrombus) which blocks the blood vessel or by the buildup of plaque often due to cholesterol within the arteries which narrows vessel resulting in a loss of blood flow (Braunwald et al., 2003).

Hemorrhagic stroke: Spontaneous intracerebral hemorrhages (as opposed to traumatic ones) are mainly due to arteriolar hypertensive disease, and more rarely due to coagulation disorders, vascular malformation within the brain, and diet (such as high alcohol consumption, low blood cholesterol concentration, high blood pressure, etc.). Cortical amyloid angiopathy (a consequence of hypertension) is a cause of cortical hemorrhages especially occurring in elderly people and it is becoming increasingly frequent as populations become older (Thomas et al., 2006). Stroke is a common medical emergency with an annual incidence of between 180 and 300 per 100000. The incidence rises steeply with age, and in many developing countries due to adopting of less healthy life style (Haslet et al., 1999).

In Caucasian populations approximately 80% of all strokes are ischemic, 10%-15% intracerebral hemorrhage, 5 % subarachnoid hemorrhage, and the rest is due to other causes of stroke(Sudlow et al., 1997). Each year in China, about 1.5-2.0 million new stroke patients and it become a major public health problem in China. The

pathogenesis of ischemic stroke is different from that of hemorrhagic stroke; their clinical factors would not be the same. In east China a study showed that a total of 692 patients, 78% ischemic patients and 22% hemorrhagic patients. The incidence rate of ischemic stroke in this area was obviously higher than that of hemorrhagic stroke (Zhang et al., 2011).

A recent review study on stroke epidemiology data in Hong Kong, Taiwan, South Korea, Singapore, Malaysia, Thailand, Philippines and Indonesia, reported that the proportion of ischemic and hemorrhagic strokes varied from 17 % to 33 % (Thomas et al., 2006). There is no adequate data on incidence and mortality from stroke in Bangladesh. Among stroke, ischaemic infarction constitute 85% to 90% and 15% to 10% is caused by intracranial hemorrhages in the western world, while hemorrhages constitute a larger percentage in Asia (Hossain et al., 2011).

Risk factors of stroke can be divided into two factors. They are modifiable and non-modifiable factor. Non-modifiable factors are; age, gender (male > female, except in the very young and very old), race (Afro-Caribbean > Asian > European), heredity, previous vascular event, e.g. myocardial infarction, stroke or peripheral embolism, high fibrinogen and modifiable factors are; high blood pressure, heart disease (atrial fibrillation, heart failure, endocarditis), diabetes mellitus, hyperlipidaemia, smoking, excess alcohol consumption, polycythaemia, oral contraceptives, social deprivation (Boon et al., 1999).

There is a positive and negative association between obesity and strokes. While there are systematic differences in the risk factors for stroke subtypes and the proposed biological mediators (e.g. cholesterol, hypertension, and glucose) influencing the causal pathway between obesity and stroke may occur. In a study mentioned that BMI is associated with stroke but the direction and strength of association depend on stroke subtype. In Western populations with higher BMI levels, the reduced ischemic stroke risk of very low BMI level would not be elucidated. Increased risks for both ischemic stroke and hemorrhagic stroke among men with BMI above the reference range (22 to 23 kg/m²) (Song et al., 2004).

The socio-economic factor of stroke is considerable world-wide, both in industrialized and non-industrialized countries. Stroke is assuming an increasing impact in terms of media attention, patient and caregiver knowledge, service developments and research (Wolfe, 2000). A consequence of stroke differs depending on the part of the brain injured, the severity of the injury and the person's general health (Boon et al., 1999).

Hemiplegia is the paralysis of muscles on one side of the body, contra lateral to the side of the brain in which the CVA occurred (Braunwald et al., 2003). Spasticity, stiffness, painful muscle spasm, loss of sensation of one side of body, problem in balance and co-ordination, difficulties in activities of daily living (ADL) (Boon et al., 1999). Problem with language, including difficulty understanding speech or writing (aphasia) and knowing words but has difficulty to saying them clearly (dysarthria), problem with memory, thinking, attention or learning, possible inability to recognize object, recognize body parts of the body that is affected or understand instructions are the another major sign symptom of stroke (Edwards, 1996).

Chest infection, epileptic seizures, DVT (Deep Venous Thrombosis), pulmonary embolism, contracture (the development of soft tissue shortening and contractures due to disuse, immobility and spasticity will inevitably affect motor function), painful shoulder (shoulder pain is common in patients with stroke and has been reported to affect rehabilitation. A number of causes of shoulder pain in hemiplegia have been suggested and include trauma, altered muscle tone, glenohumeral subluxation, contracture of capsular structures and shoulder hand syndrome), pressure sore, urinary tract infection, constipation, depression and anxiety (the incidence of depression may be greater in stroke patients admitted to hospital than in those who remain at home. This difference may be a function of severity of stroke and reflect the greater likelihood of being admitted to hospital with a severe stroke. Some patients may have had episodes of depression prior to the stroke). Other psychological problems include: depression, unrealistic state, labile state and personality changes (Boon et al., 1999).

Stroke is a leading cause of serious long-term disability and can damage areas of cognitive, psychosocial and physical functioning. Cognitive impairments post-stroke are largely dependent on lesion localization, and can impair executive, language, visuo-spatial/perceptual, learning and memory domains. Depression is also common

and can further tax already vulnerable neuro-cognitive functions. Physically, post-stroke Hemiplegic may result in unilateral upper extremity weakness, reduced active range of movement and arm function, and consequently, diminished independence in performing activities of daily living (ADLs). The older adult population have the chance of permanent disability or dementia is increased if age-related cognitive decline is present pre-stroke (Rabin et al., 2012).

After stroke some degree of recovery can experience by most of the patient. Recovery from impairment and disability is difficult to completely compare. Improvement of motor function, sensation and language are representative of neurological recovery. Neurological recovery occurs within first 1 to 3 month following stroke. Further motor and sensory recovery may continue 6 month to 1 year later (Duncan, 1994).

Hemorrhagic and ischaemic stroke present with different patterns of initial recovery. Characteristically, ischaemic infarct lesions present suddenly and the full extent of the initial insult is apparent. In contrast, with haemorrhagic strokes the extent of impairment initially seems more extensive due to localized inflammation surrounding the site of the bleed. Some of the initial recovery in haemorrhagic stroke can be attributed to the resolution of inflammation (Boon et al., 1999). Some stroke patients fail to regain consciousness within the first 24 hours following the CVA and it is considered widely that the majority will not regain consciousness. In patients who regain consciousness within 24 hours, the first 3 months are a critical period when greatest recovery is thought to occur, although potential for improvement may exist for many months (Carr et al., 2003).

Hemiplegia as a most common physical consequence of stroke is considered to be a recovering neurological condition. Other sequelae of stroke could include cognitive, perceptual, sensory and communication problems. The neurological deficit is usually maximal at the outset and if not severe, the patient can be managed at home satisfactorily. In practice, many patients are admitted to hospital for a short period of treatment and investigation. Patients with more severe stroke will require admission to hospital (Edwards, 1996). Recovery is related to the site, extent and nature of the lesion, the integrity of the collateral circulation and the premorbid status of the patient (Braunwald et al., 2003).

Several prospective cohort studies mentioned that approximately 85% of patients who have had a stroke regain gait by 6 months post-stroke, approximately 20% of all stroke survivors show significant deterioration in mobility status between 1 and 3 years after stroke (Wevers et al., 2011). After stroke, between 52% and 85% of patients re-gain the capacity to walk. However, their gait usually remains different from that of healthy subjects (Pradon, 2013).

The physical management process aims to maximize functional ability and prevent secondary complications to enable the patient to resume all aspects of life in his or her own environment (Braunwald et al., 2003). The physiotherapist plays a major role in the physical management of stroke using skills acquired during education and professional development, to identify and manage problems of stroke using scientific principles (Carr et al., 2003). Operating as a clinical movement scientist, the physiotherapist is able to identify and measure the disorders of movement and to design, implement and evaluate appropriate therapeutic strategies. This process includes dealing with the social and psychological factors which affect the stroke patient (Edwards, 1996). Vliet et al. (2005) mentioned that physiotherapy improves physical abilities, over and above spontaneous recovery, as two meta-analyses have reported significant improvements in independence in activities of daily living and reduction in impairments for higher intensities of physiotherapy.

There are several different approaches to physiotherapy treatment after stroke. These can be divided into approaches that are based on neurophysiological, motor learning, or orthopaedic principles. Some physiotherapists provide their treatment on a single approach, whereas others use a mixture of components from a number of different approaches. At present, the Bobath Approach, based on neurophysiological principles, probably remains the most widely used approach in the Western world. Mixed approach is significantly more favorable than no treatment or a placebo control in the recovery of functional independence (Pollock et al., 2008). Approximately 80% of stroke patients achieve this goal though the quality of walking performance often limits endurance and quality of life. Both physiotherapists and patients spend a lot of time in rehabilitation aimed at restoring walking ability and functional independence (Obembe et al., 2012).

To rehabilitate stroke patients and to improve their gait, physiotherapists apply different treatment techniques, including a functionally oriented traditional approach and other techniques based on neurophysiologic models, such as the Bobath neurodevelopment technique (NDT) and the Brunnstroem, Rood, and proprioceptive neuromuscular facilitation (PNF) concepts. Gait outcome studies have focused on the walking ability of acute stroke patients admitted to a general hospital and its predictors. Little has been done to evaluate the gait outcome and prognostic factors of a comprehensive stroke rehabilitation of ambulatory patients in a later stage of recovery. The purpose of this investigation was to study gait outcome in a large group of mildly affected stroke patients, defined as those who were ambulatory and competent for the most part in the basic activities of daily living (Hesse et al., 1994).

Physiotherapy intervention was focused on restoring reduced motor control of the affected limb as well as postural control. However recently, evidence was found on improved walking ability not being associated with improved motor control of the paretic lower limb but rather with the development of compensation movement strategies and improved coping with loss of function in enhancing the ability to maintain balance over the non-paretic lower limb. Repetitive training of tasks results in improvement in lower limb function. A high dose of repetitions are effective for improving gait-related activities (Outermans et al., 2010).

Demo means human beings; graph means to draw a chart or a picture. So demography is the scientific study of human population (Reza, 2006). Hossain et al. (2011) mentioned that demography as “The statistical & quantitative study of characteristics of human population on a national, regional or local basis in terms age, sex and other variables including patterns of migration and survival. It is used in public health medicine to help identify health needs and risk factors.” Demographic data refers to selected population characteristics, its structure and change. Demography focuses on population structure, process and dynamics.

Geographical variation is very much responsible for increasing of stroke. Stroke incidence, prevalence and mortality rates show modest geographical variations, with the exception of Ukraine, Russia, and Japan, where incidence rates are highest, and Italy and the UK where prevalence rates are highest (Feigin et al., 2003).

There is no cure in management of stroke but prevention is possible by early detection and reducing the modifiable risk factor. It is very important to know about our country where medical facilities and resources are limited and most of the people lives below poverty level (Hossain et al., 2011).

3.1 Study design

A cross sectional study design was selected to carry out the research. The cross sectional study was conduct to find out the objectives. This design involves identifying group of people and then collecting the information that requires when they use the particular service. All the measurements on each person are made at one point in time. The data was collect all at the same time or within a short time frame. A cross-sectional design provides a snapshot of the variables included in the study, at one particular point in time.

3.2 Study site

The study was conducted at the Centre for the Rehabilitation of the Paralyzed (CRP), Savar, Dhaka.

3.3 Study area

This study selected the Neurology Unit of Physiotherapy department at CRP, Savar for data collection. The investigator thought that this place was easy to obtain desire data for his study.

3.4 Study population

All Stroke patients in Bangladesh were the study population and the sample will be selected by using purposive sampling.

3.5 Sample size

The equation of sample size calculation are given below-

$$n = \left\{ \frac{Z(1 - \frac{\alpha}{2})}{d} \right\}^2 \times pq$$

Here,

$$Z(1 - \frac{\alpha}{2}) = 1.96$$

$$P = 0.3$$

$$\begin{aligned}q &= 1-p \\ &= 1-0.3 \\ &= 0.7 \\ d &= 0.05\end{aligned}$$

According to this equation the sample should be more than 323 people but due to lack of opportunity the study sample was 70 patients with stroke who had come to CRP for physiotherapy treatment.

3.6 Sampling technique

Purposive sampling technique was used for sample selection. Purposive sampling starts with a purpose in mind and the sample is thus selected to include people of interest and exclude those who do not suit the purpose. Usually, the population is too large for the study to attempt to survey all of its members. A small, but carefully chosen sample can be used to represent the population. The sample reflects the characteristics of the population from which it is drawn.

3.7 Inclusion criteria

- All patients attending at Savar, CRP Neurology Department with stroke was selected to explore the socio demographic profile of these patients.
- Both male and female patients with any age group were selected.

3.8 Exclusion criteria

- Medically unstable-patient who had recent major accident or surgery or other type of neurological disorder.
- Subject who had psychological problem who may give irrelevant information which will not helpful for the study.
- Subject who was not diagnosed either stroke or other neurological disorder.

3.9 Data collection tools

Data was collected by using Papers, Pen, Pencil, Diary, Computer and pen drive, file.

3.10 Data management and analysis plan

In this study descriptive data was collected. Graph technique are used for analyzing data, calculated as percentages, and presented this using bar and pie charts by SPSS (Statistical Package of Social Science) software version 16.0. SPSS is a comprehensive and flexible statistical analysis and data management solution. SPSS can take data from almost any type of file and use them to generate tabulated reports, charts, and plots of distributions and trends, descriptive statistics, and conduct complex statistical analyses.

3.11 Ethical consideration

Permission was taken initially from the supervisor of the research project and from the course coordinator before conducting the study. The necessary information has been approved by the ethical committee of CRP and permitted to do this research. Also the necessary permission was taken from the in-charge of the rehabilitation division of CRP. The participants were explained about the purpose and goal of the study before collecting data from the participants. Pseudonyms were used in the notes, transcripts and throughout the study. It was ensured to the participants that the entire field notes, transcripts and all the necessary information will be kept in a locker to maintain confidentiality and all information will be destroyed after completion of the study. The participants were also assured that their comments will not affect them about any bad thing.

3.12 Limitations

Absolute accuracy is not possible in any research so that some limitation may exist. Regarding this study, there were some limitations or barriers to consider the result of the study. These are this study was complete with small sample size. Another major limitation was time. The time period was very limited to conduct the research project on this topic. It was taken only one year. As the study period was short so the adequate number of sample could not arrange for the study. And this study was conducted at Centre for the Rehabilitation of the paralyzed (CRP) which may not represent the whole country.

This was a cross sectional study. The main objective of the study was to explore the demographic profile of stroke patients attended at CRP. Purposive sampling was done to select samples. Total 70 data were collected from the neurology unit of CRP, Savar, Dhaka. Data were numerically coded and captured in Microsoft Excel, using an SPSS 16.0 version software program. The investigator collected the descriptive data and calculated as percentages and presented by using bar charts.

Age group

A total of 70 stroke patients were participants. The mean age of the respondents (N=70) was 56.41 years (SD:±12.31). In here highest age of the participants was 80 and lowest age was 23. Most vulnerable age group was 51-60 years (37.3%).

Age group	Number	Percentage (%)
21-30	2	2.8
31-40	6	8.6
41-50	15	21.3
51-60	26	37.3
61-70	12	17.2
71-80	9	12.9
Total	70	100

Table - 1:Age of the respondents

Age and gender cross tabulation

In this study 70 patients were participants. Among them less than 50 years were 23 participants and more than 50 years were 47 participants. Most vulnerable age was more than 50 years.

Age of the participants	Gender		Total
	Male	Female	
<50 Years	18	5	23
>50 Years	32	15	47
Total	50	20	70

Table - 2: Age-gender cross tabulation

Gender

The study was conducted on 70 participants among them 71% (50) were male and 29% (20) were female.

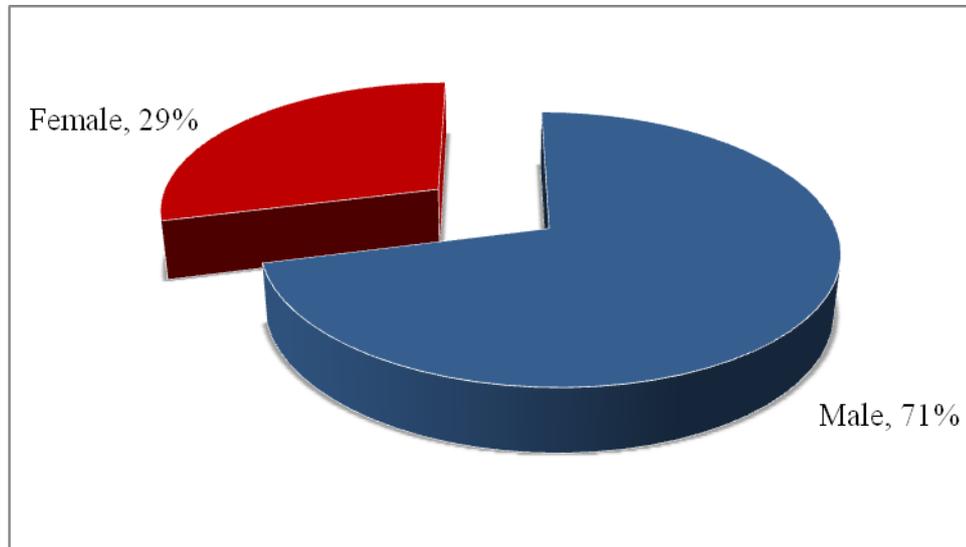


Figure - 1: Gender of the respondents.

Marital status

In this study 70 patients were participants. Among them 97% (68) were married and 3% (2) were unmarried.

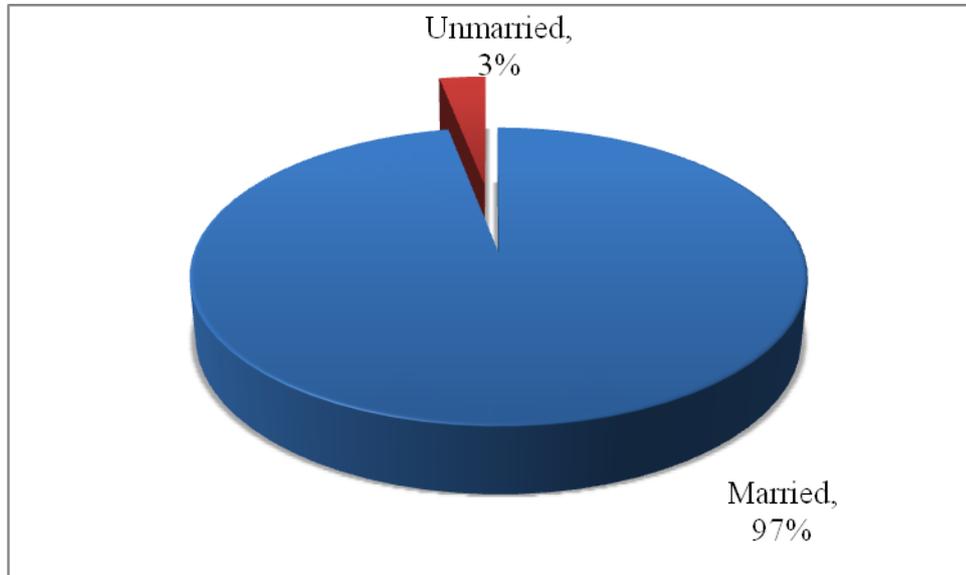


Figure - 2: Marital status of the participants.

Educational status

In this study showed that among the 70 participants 27% were passed bachelor or above, 26% were passed primary education, 23% were complete S.S.C, 16% were complete H.S.C, 9% were never attended school .

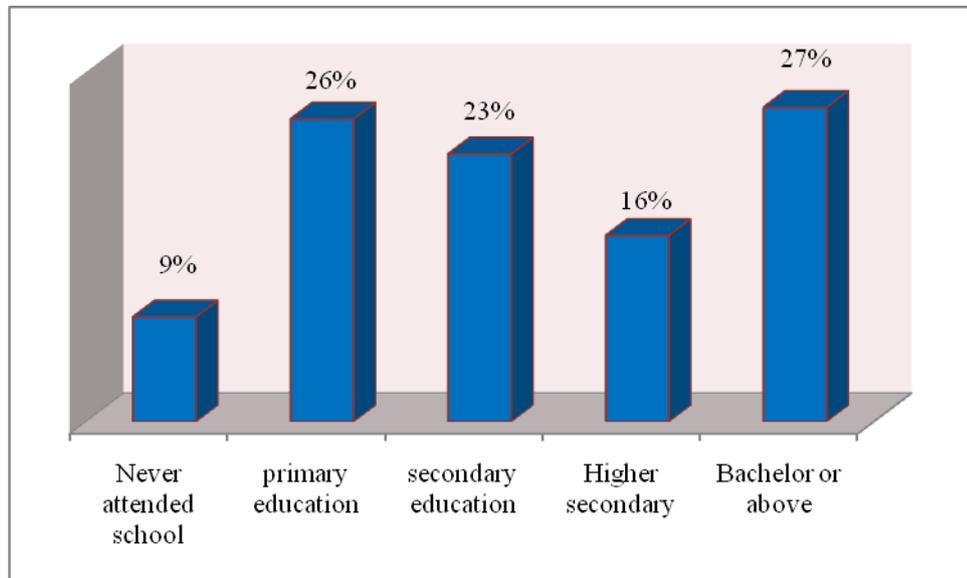


Figure - 3: Educational status of the participants.

Professions

In this study showed that 26% of the participants were businessman, 20% were service holder, 17% were housewife, 13% were farmer, 13% were teacher, 3% were driver, 3% were day laborer, 1% was student and 4% were other professional status.

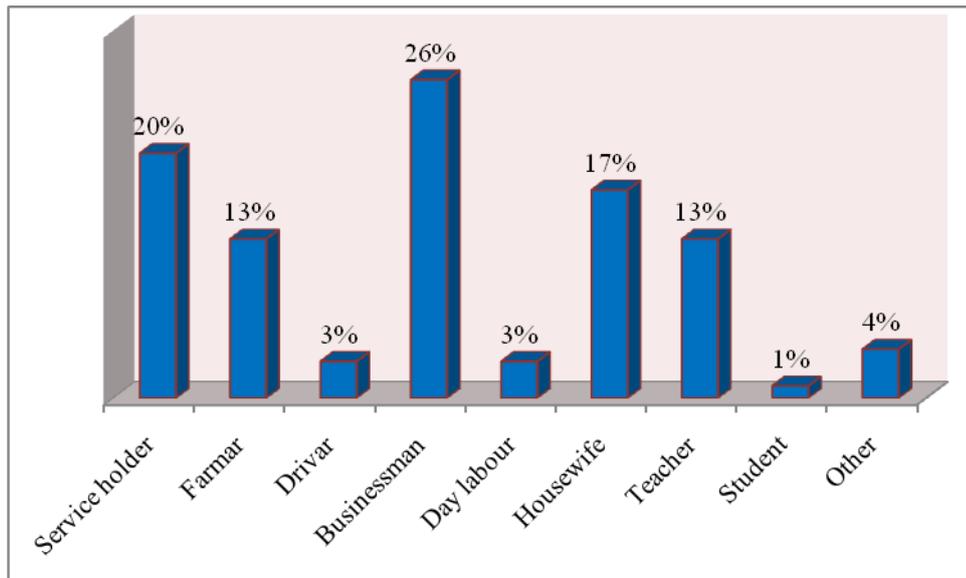


Figure - 4: Professions of the participants.

Living area

In this study 70 patients were participants. Among them 53% were living in rural area and 47% were living in urban.

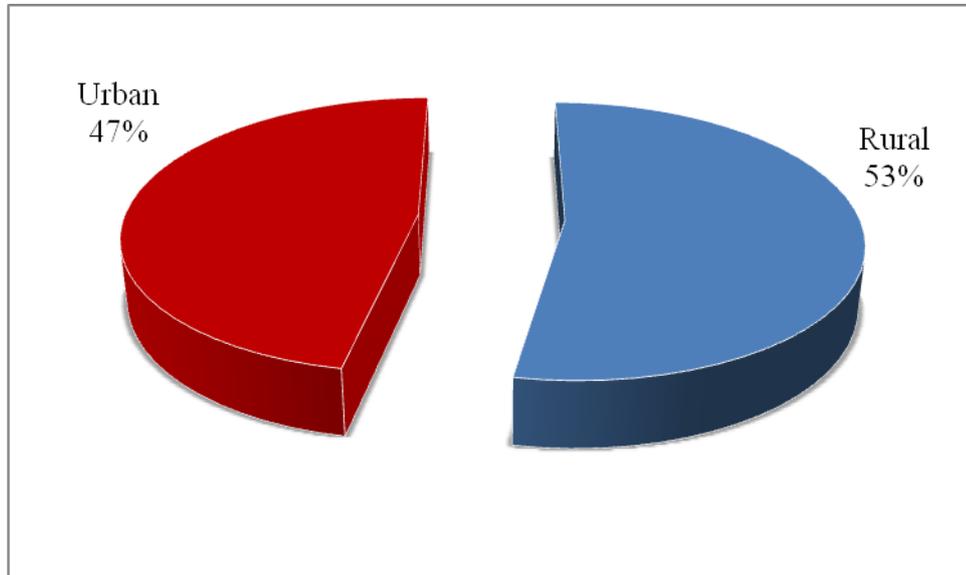


Figure - 5: Living area of the participants.

Monthly income

In this study showed that among the 70 participants 56% patient's monthly income was less than 10000 Taka, 23% was less than 15000 Taka, 10% were between 16000-20000Taka and 11% were above 21000 Taka.

Monthly income	Number	Percentage
5000-10000 Taka	39	56%
11000-15000 Taka	16	23%
16000-20000 Taka	7	10%
21000-above Taka	8	11%

Table - 3: Monthly income of the participants.

Earning person

Seventy subjects were used for this survey. Among them 64% (45) were earning himself and 36% (25) were depended by other.

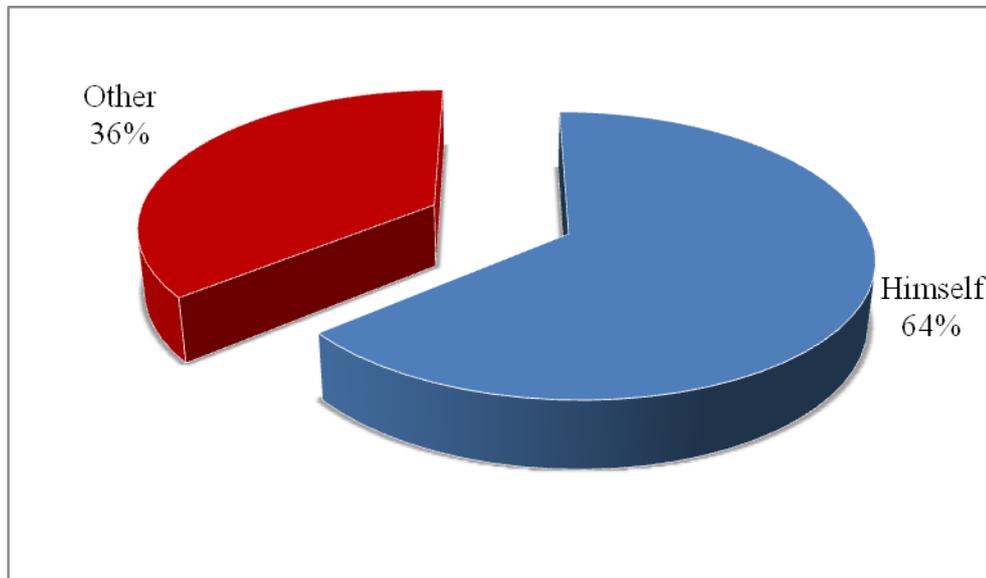


Figure - 6: Earning person of the participants

Family type

A total of 70 stroke patients were participants. Among them 73 % (51) were living with nuclear family and 27% (19) were living with extended family.

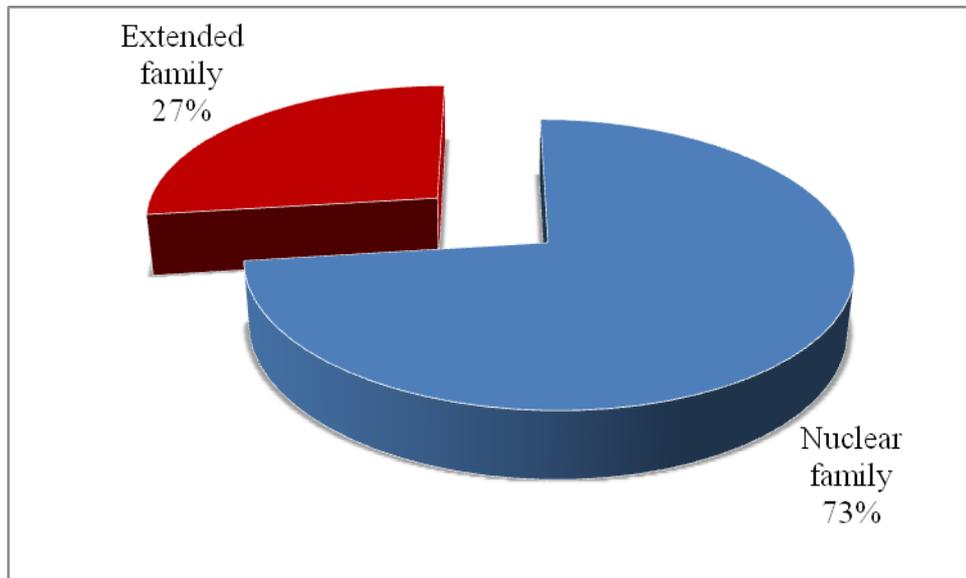


Figure - 7: Family type of the participants.

Family history of stroke

A total of 70 stroke patients were participants. Among them 22 participants has family history of stroke and 48 has no family history. So the percentages were 31% and 69%.

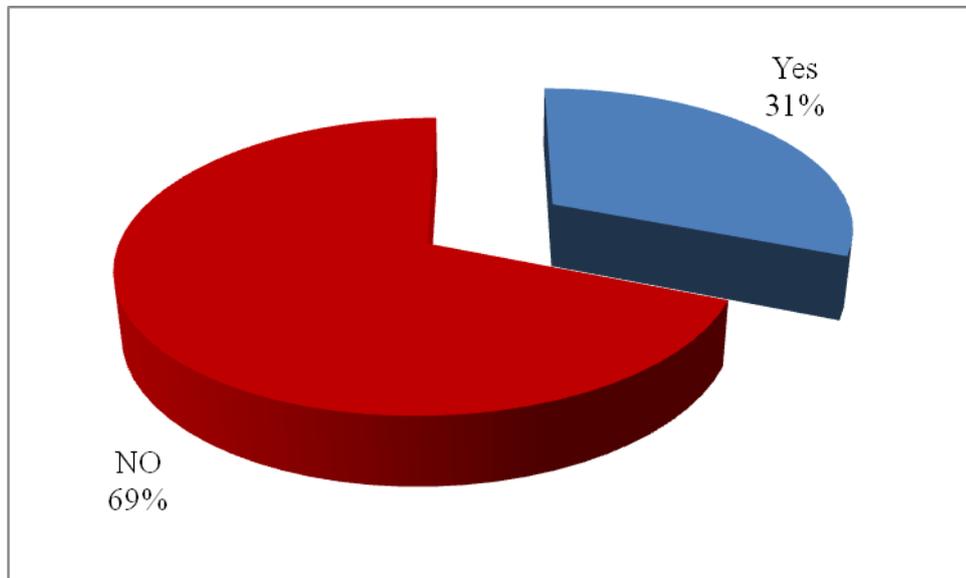


Figure - 8: Family history of stroke of the participants.

Affected disease

Among 70 participants 79% (55) patients were affected by HTN, 14% (10) patients were affected by diabetes, 4% (3) were affected by cardiovascular disease, 1.4% (1) was affected by lung disease and 1.4% (1) was affected by other.

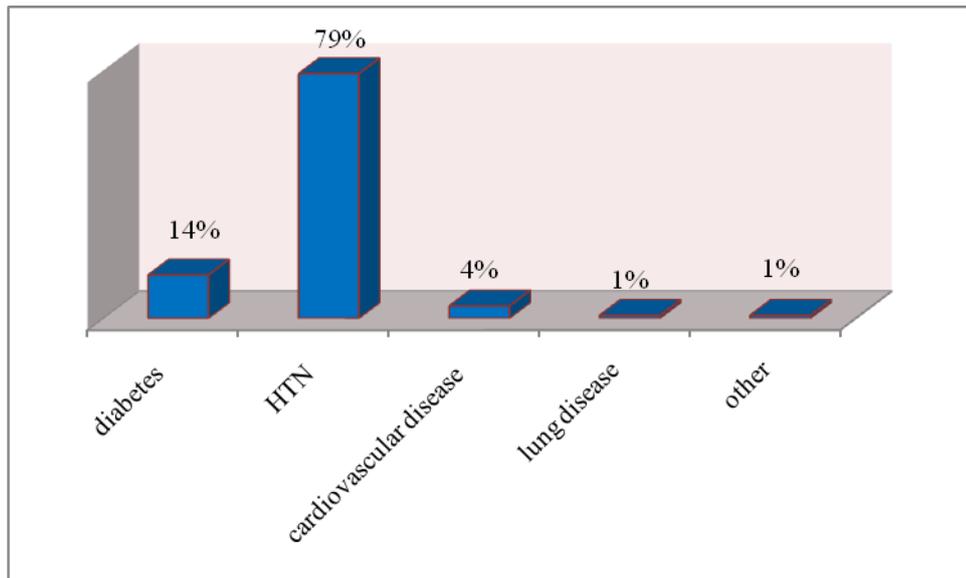


Figure - 9: Affected disease of the participants.

Alcohol consumption

Among 70 participants no one drinking alcohol daily but among them 21% (15) were drinker, but not daily. And others 79% (55) were not drinker.

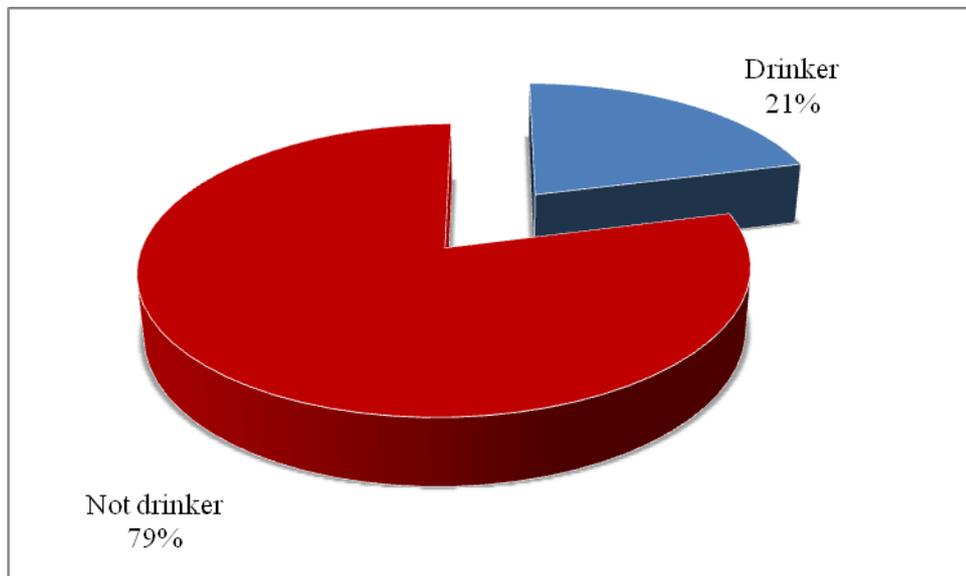


Figure - 10: Alcohol consumption of the participants.

Smoking history

A total of 70 stroke patients were participants. Among them 58% (40) participants were smoker and 42% (30) participants were non smoker.

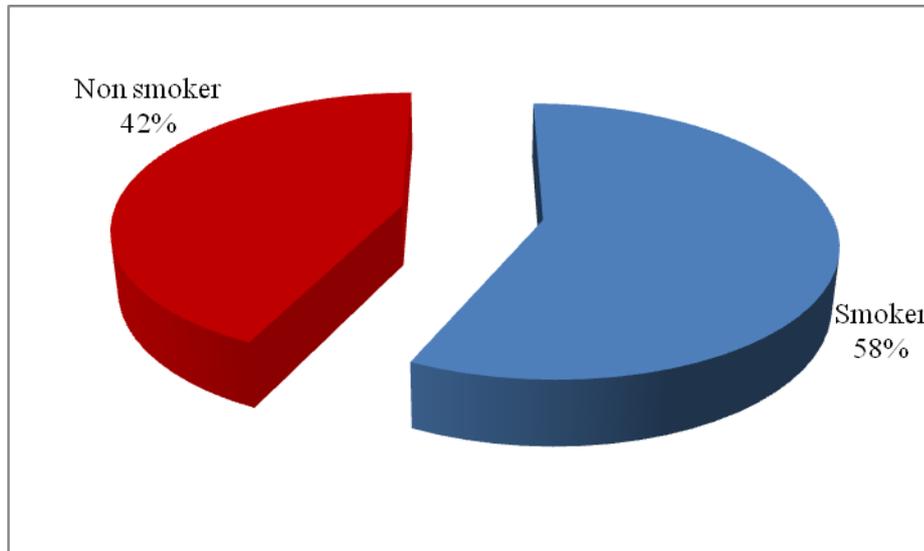


Figure-11: Smoking history of the participants.

Number of cigarettes par day

In this study showed that among 70 participants 41 patients were smoker and 65.8% (27) patients were smoking 10-20 cigarettes per day.

Amount cigarettes per day	Number	Parentage (%)
<10	13	31.7
10-20	27	65.8
>20	1	2.4
Total	41	100

Table - 4: Number of cigarettes par day.

Type and affected site of stroke

A total of 70 stroke patients were participants. Among them 87% (61) participants were attacked by ischemic stroke and 13% (9) participants were attacked by hemorrhagic stroke. And 53% (37) were right sided hemiplegic and 47% (33) were left sided hemiplegic

Type of stroke	Affected side		Total
	Right	Left	
Ischemic stroke	32	29	61
Hemorrhagic	5	4	9
Total	37	33	70

Table - 5: Type and affected site of stroke

The objectives of the study were to find out the demographic profile of the stroke patients attended at CRP, Bangladesh. In this study almost 35.71% of the participants were age group 55-62 years. The mean age of the respondents was 56.41 years. In here height age of the participants was 80 and lowest age was 23. Among these participants below 55 years was 38.57 % and more than 55 years was 62.43%. In Germany, a study by Foerch et al.(2009) found that mean age was 74 years and 20% of the participants were below 64 years and 73% were more than 74 years. In a study by Hossain et al.(2011) in Bangladesh found that peak incidence was between 51 to 70 years (69%).

In this Analysis almost 71% of the participants were male and 29% were female. Another study by Mondol et al. (2012) in Bangladesh stated that male were 73.4% and female were 26.6%.

In this study we found 9% were never attended school, 26% were primary, 23% were S.S.C, 16% were H.S.C and 27% were bachelor or above among the participants educational status. Salbach et al.(2006) found in America 29% were none primary, secondary 37% and college-university 34%. In a study by Hossain et al.(2011) in Bangladesh found that 31% patients received schooling, 19% patients received college education, only 13% went to university or similar institution and only 37% were never attended school.

Analysis stated that almost 26% of the patients were businessman, 20% were service holder, 17% were housewife, 13% were farmer, 13% were teacher, 3% were day laborer 1% were student and 4% were other profession. In a study by Hossain et al. (2011) in Bangladesh found that 17% patients were businessman, 16% were housewife and his study showed that 79% affected person were working force of our society which indicate a serious impact on the families of the sufferers.

The study showed that 47% the participants came from urban area and 53% were from rural area. In northern Portugal a study by Correia et al.(2000) found that most urban people are affected rather than rural people.

Considering socio economic status, 56% of the patients were come from poor socioeconomic condition. So in this study showed that majority were come from poor economic condition. Hossain et al.(2011) found almost same result in his study and that was 47% patients monthly income >5000. In another study Johnston et al. (2009) found that stroke and mortality is more common in low income country than high income country. This result correlated with the study by Hart et al. (2000) which concluded that poor socioeconomic circumstances were associated with greater risk of stroke.

Analysis showed that the percentages of affected disease were diabetes 14%, HTN 79%, cardiovascular disease 4%, lung disease 1% and other 1%. In here we found that HTN is more common than other disease. In another study Hossain et al.(2011) mentioned that 63% HTN, 21% were diabetics and 12% were serum cholesterol problem. Another study by Mondol et al.(2012) found that 56.7% were affected by hypertension, diabetics was the next common entry 23%, ischemic heart disease was 17.7%, dyslipidaemia was 5.1% , rheumatologic condition 6.6%, respiratory disease 3.6% chronic kidney disease 2.4%, electric imbalance 1.2%, dementia 1.2% and malignancy 0.2%. The high percentage of irregularly treated patients in all the studies seems to be due to lack of adequate knowledge or motivation for continuous treatment of hypertension.

In this study we found 57% of the participant is smoker which is another causes of stroke. A study by Nayeem et al.(2010) in Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka found that 44% patients have smoking habit.

These study shows 87% were ischaemic and 13% were haemorrhagic stroke among participant. Other study Hossain et al.(2011) stated that 61% were ischaemic and 39% were haemorrhagic stroke at Faridpur medical college, Bangladesh. And also mentioned that higher rate of haemorrhagic stroke is also found in number of hospitals in Asian countries such as Singapore, Malaysia (33%) Thailand (30%),

Korea (31%), Taiwan (31%). One of the cause of highincidence of haemorrhagic stroke in this hospital may be due to the acute admission is morerelated to haemorrhagic stroke.

This study provides information which gives insight into demographics of stroke from our country. It would be worthwhile to have information from the whole region as well. It would also be useful to study the pre-hospital care and survival rate.

6.1 Conclusion

In the world, stroke is considered as the 3rd leading cause of death and it is becoming a major threat of Neurological disability in population of Bangladesh. Bangladesh is a developing country with low socio-economic condition where people are not enough concerned about health. Health services are not sufficient in the Government and non-government sector. It is crystal clear that, this devastating condition not only affects the patient but also their family. The objective of this hospital-based study was to identify the important risk factors for stroke prevalent in our society both among the urban and rural population. This study may have not reflected the exact situation but gives an utmost picture of the disease. There are many risk factors for stroke, some are modifiable and some are not. In this study a number of modifiable risk factors were identified, of which hypertension remains the most important factor. Next were smoking, diabetes mellitus and ischaemic heart disease. Stroke is more preventable than to cure. In an under developing country like ours the best policy for combating stroke is primary prevention. This study reveals that the major risk factor hypertension needs maximum attention for the prevention of stroke. By controlling hypertension we can significantly reduce the incidence of stroke. For this we need increase awareness among people regarding hypertension and its complication.

6.2 Recommendations

The aim of the study was to find out the demography of the stroke patients in Bangladesh. Researcher found from the study has fulfilled the aim of the study. The researcher recommended the following things:

- Should take more samples for generating the result and try to make more valid and reliable.
- Research method should be changed from cross sectional to case control for establishing a hypothesis.
- This is an undergraduate study and doing the same study at graduate level will give more accurate output. There was some limitation of the study mentioned at relevant section. It is recommended to overcome those limitations during further study.

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APPENDIX

Permission Letter

Date: 28 March, 2013

To

The Head of the Department,

Physiotherapy Department,

Center for the Rehabilitation of the Paralyzed (CRP)

Savar, Dhaka-1343

Subject: Permission to collect data to conduct a research study.

Sir,

I respectfully to state that I am a student of 4th year B.Sc in physiotherapy at Bangladesh Health Professions Institute(B.H.P.I). In 4th year we have to do a research project and I have chosen a title that is "Demographic profile of stroke patient attended in CRP" and my supervisor is Mohammad Anwar Hossain, Associate professor, department of Physiotherapy. I would like to collect data form physiotherapy neurology unit of CRP in Saver. Data will be collected within 8.00 a.m. to 5.00 p.m.

I therefore pray and hope that you would be kind enough to give me permission to do this study successfully in your department.

Yours faithfully

Md. Moazzem Hossain

Md. Moazzem Hossain

Bachelor of Science in Physiotherapy (B.Sc PT)

CRP, Savar,Dhaka

Farjana Sharmin
CPT
30-03-13
FARJANA SHARMIN (RUMANA)
Clinical Physiotherapist
Neurology Unit, PT Dept.
CRP, Savar, Dhaka.

Sohrab Hossain
Md. Sohrab Hossain
BPT, DU, D' Orthopaedics Cyriax (Belgium) MPT
PGT-UK, AUS, CA
Associate Professor Physiotherapy, BHP
Head of the Physiotherapy Department

VERBAL CONSENT STATEMENT

(Please read out to the participants)

Assalamualaikum, my name is Md. Moazzem Hossain, I am conducting this study for a B.sc in Physiotherapy project study dissertation titled “Demographic study of stroke patient attended at CRP, Bangladesh.” under Bangladesh Health Professions Institute (BHPI), University of Dhaka. I would like to know about some personal and other related information regarding Stroke. You will perform some tasks which are mention in this form. This will take approximately 20-30 minutes.

I would like to inform you that this is a purely academic study and will not be used for any other purpose. The researcher is not directly related with this stroke area, so your participation in the research will have no impact on your present or future treatment in this area (Neurology unit). All information provided by you will be treated as confidential and in the event of any report or publication it will be ensured that the source of information remains anonymous and also all information will be destroyed after completion of the study. Your participation in this study is voluntary and you may withdraw yourself at any time during this study without any negative consequences. You also have the right not to answer a particular question that you don't like or do not want to answer during interview

If you have any query about the study or your right as a participant, you may contact with me and/or, Mohammad Anwar Hossain, Associate Professor, CRP, Savar, Dhaka.

Do you have any questions before I start?

So, may I have your consent to proceed with the interview or work?

Yes

No

Signature of the Participant _____

Signature of the Interviewer _____

Questionnaire

**Title: Demographic profile of stroke patient attended at CRP,
Bangladesh.**

1. Patient information

1.1	Identification number:
1.2	Name of respondents:
1.3	Address:
1.4	Phone number:
1.5	Date of interview :
1.6	Consent taken: Yes: <input type="checkbox"/> No : <input type="checkbox"/>

2. Patients socio-demographic information

	Question and filters	Response
2.1	Age	Years
2.2	Sex	1= Male 2=Female
2.3	Marital status	1=Married 2=Unmarried 3=Divorced 4=Separated
2.4	Religion	1=Islam 2=Hinduism 3=Christian 4=Buddha
2.5	Educational status	1=Never attended school 2=Primary education 3=Secondary education 4=Higher secondary 5=Bachelor or above 6=Other (specify)
2.6	Profession	1=Rickshaw puller 2=Service holder 3=Farmer 4=Driver 5=Businessman 6=Day laborer 7=Housewife 8=Teacher 9=Student 10=Doctor 11=Other(specify)

2.7	Living area	1=Rural 2=Urban
2.8	If urban	1=Residential area 2=Industrial area
2.9	Average monthly income	Taka
2.10	Earning person	1=Himself 2=Other (specify)
2.11	Family type	1=Nuclear family 2=Extended family
2.12	Family member	1=<4 2=5-7 3=8-10 4=>10
2.13	Family history of stroke	1=Yes 2=No
2.14	If yes, who	1=Father 2=Mother 3=Grandfather 4=Grandmother 5=Other
2.15	Affected disease	1=Diabetes 2=HTN 3=Cardiovascular disease 4=Lung disease 5=Other (specify)
2.16	Alcohol consumption	1= Daily drinker 2=Not daily drinker 3=Not drinking
2.17	Smoking	1=No 2=Yes
2.18	If yes, number of cigarette per day	1=< 5 2=6-10

		3=11-15 4=16-20 5=>20
2.29	Sleeping hours per day	1=<4 hours 2=5-7 hours 3=8-10hours 4=>10 hours
2.20	Taking sleeping pill	1=Yes 2=No

3. Condition related information

3.1	Type of stroke	1=Ischemic 2=Hemorrhagic
3.2	Affected side	1=Right 2=Left
3.3	History of previous stroke	1=Yes 2=No