| CHAPTER - I | INTRODUCTION |

1.1 Background

A neurological condition known as a stroke is characterized by blood vessel obstruction. Brain clots prevent blood from flowing properly, obstructing arteries and causing blood vessels to burst, which causes bleeding. The abrupt death of brain cells due to a lack of oxygen occurs when the arteries leading to the brain are ruptured during a stroke. Stroke can also result in dementia and depression (Kuriakose et al.,2020).

The researcher said that in clinical practice, clinical research, and public health, stroke is not generally defined. Clinically speaking, stroke is traditionally characterized by the sudden onset of focal neurological dysfunction symptoms that persist for more than 24 hours (or cause death earlier) and are brought on by an acute vascular injury to a specific area of the brain. The typical stroke presentation is sudden or quick onset loss of function in one or more specific bodily parts as a result of damage to a specific area of the brain, retina, or spinal cord. The following are examples of common focal, anatomically localizing neurologic symptoms: unilateral weakness (corticospinal tract), unilateral sensory loss (spinothalamic tract), monocular blindness (retina or optic nerve), hemianopic visual field loss (optic radiation), double vision (oculomotor pathways), speech disturbance (dominant hemisphere), visual-spatial-perceptual dysfunction (non-dominant hemisphere), clumsiness or ataxi (Hankey et al.,2015).

There are two categories of risk factors for stroke: those that cannot be changed and those that may be changed. With 59.8% of DALYs lost to stroke in high-income countries and 65.1% in LMICs, hypertension is the single most significant theoretically modifiable risk factor for stroke. The population-attributable risk of hypertension has increased by 59% in LMICs over the previous two decades while decreasing by 18% in high-income nations. Diets that are heavy in sodium and sugar-sweetened beverages but poor in fruits, vegetables, and whole grains are linked to an increased risk of stroke. A significant share of DALYs lost due to stroke are related with high body mass indices (>23 kg/m2) and high fasting plasma glucose concentrations (>5.4 mmol/L), both of which rise in LMICs (fasting plasma glucose rises by 60% and BMI rises by 69%). Psychosocial stress, which includes stress at home and at work, life events, and depression, is linked to a twofold increased risk of stroke and accounts for around 17%

of the population's overall risk of stroke. Poverty in LMICs may exacerbate the effects of poorly managed risk factors and raise the risk of stroke (Pandian et al., 2018).

The researcher said that stroke is the second leading cause of death and disability in the world. During the past several decades, the burden of stroke in the world has shifted from developed to developing countries. Although the prevalence of stroke has increased in developing nations, the level of medical care has not kept up. Lack of knowledge about stroke and its risk factors, a lack of financial resources and publicly funded, well-functioning healthcare systems for primary and secondary prevention, a lack of ambulance services, and a lack of facilities for acute stroke management are some of the difficulties in providing healthcare services for stroke in developing countries. There are two main methods for lowering the risk of cardiovascular illnesses (CVDs). The high risk approach is the first one, while the mass strategy is the second (Kalkonde et al 2018) .

One of the main global causes of the rise in morbidity, mortality, and disability is stroke. Around 10 million individuals worldwide experience a stroke for the first time each year, and 6.5 million people are thought to pass away from this neurological illness. Stroke continues to be the leading cause of adult disability in the United Kingdom, ranking third in terms of fatalities behind heart disease and cancer. Every year, strokes harm more than 100,000 people, one every five minutes. Despite advances in stroke therapy throughout the years, two thirds of stroke survivors still leave the hospital disabled. The most frequent residual disabilities following a stroke are cognitive impairment, issues with the lower limbs, and speech difficulties, with estimated frequencies of about 33%, 30%, and 27%, respectively. The World Health Organization defines a stroke as having "rapidly emerging clinical symptoms of focal disruption of brain function, lasting longer than 24 hours or resulting in death, with no other clear cause other than that of vascular origin." The main reason for strokes is when a clot forms and cuts off the blood supply to the brain. Blood vessel ruptures happen less frequently (Hussain et al., 2019).

Stroke is the third leading cause of death in Bangladesh. The World Health Organization ranks Bangladesh's mortality rate due to stroke as number 84 in the world. The reported prevalence of stroke in Bangladesh is 0·3%, although no data on stroke incidence have been recorded. Hospital-based studies conducted in past decades have indicated that hypertension is the main cause of ischaemic and haemorrhagic stroke in

Bangladesh. The high number of disability-adjusted life-years lost due to stroke (485 per 10 000 people) show that stroke severely impacts Bangladesh's economy. Although two non-governmental organizations, BRAC and the Centre for the Rehabilitation of the Paralysed, are actively involved in primary stroke prevention strategies, the Bangladeshi government needs to emphasize healthcare development to cope with the increasing population density and to reduce stroke occurrence (Islam et al., 2013).

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Stroke is a leading cause of mortality all over the world. It imposes a considerable burden on individuals, societies, and healthcare systems. It poses a similar health challenge in the South East Asia Region also. As in other South Asian populations, the Bangladeshi population has witnessed a dramatic change in life expectancies during the last few decades, exposing them to increased risk of chronic diseases including stroke. Major risk factors of stroke such as hypertension and diabetes have shown an increasing trend in Bangladesh. Other factors such as tobacco use and salt consumption are also known to be very high. Therefore, stroke prevalence is also considered to be high in Bangladesh. Anecdotal experience in hospitals indicates that stroke is one of the leading causes of death, which has been increasing over the years. However population-based data are not available. We have done this study in a village to determine stroke prevalence in order to develop an appropriate intervention for rural Bangladesh (Zaman et al., 2015).

1.2 Justification of the study

The purpose of my study is to show a comprehensive statistic of knowledge on prevention of stroke among the general people in Bangladesh. The world Health organization declared that around the world the morbidity rate due to stroke the ranks of Bangladesh is 84. Stroke is 3rd leading cause of death in Bangladesh. Among all stroke survive patient, only 65% get functional independence after 1 year following the stroke event. The newest available literature shows that the common complication is post stroke pain decrease range of motion, decrease functional activity, decrease activity of daily living. Stroke is the primary cause of complicated adult impairment, which negatively impacts a person's independence in daily living activities, participation in social and occupational roles, and leisure activities. Understanding the needs of stroke survivors requires taking into account the impact that the disease has on their daily life. As patient-centered evaluation tools, measures of perceived health status, social engagement, and health-related quality of life are increasingly used. Finding out the risk factors of stroke in common people and improve quality of life and modification of their life style. By this research I want to knowledge on prevention of stroke among people in Different part of Bangladesh so that the patient family, society, supporting agency and also Government can take proper steps for chronic patient quality of life and patient was beneficial by this research. That's the reason I do my research about this topic.

1.3 Research Question

What is the level of knowledge on prevention of stroke among general people in Bangladesh?

1.4 Objectives
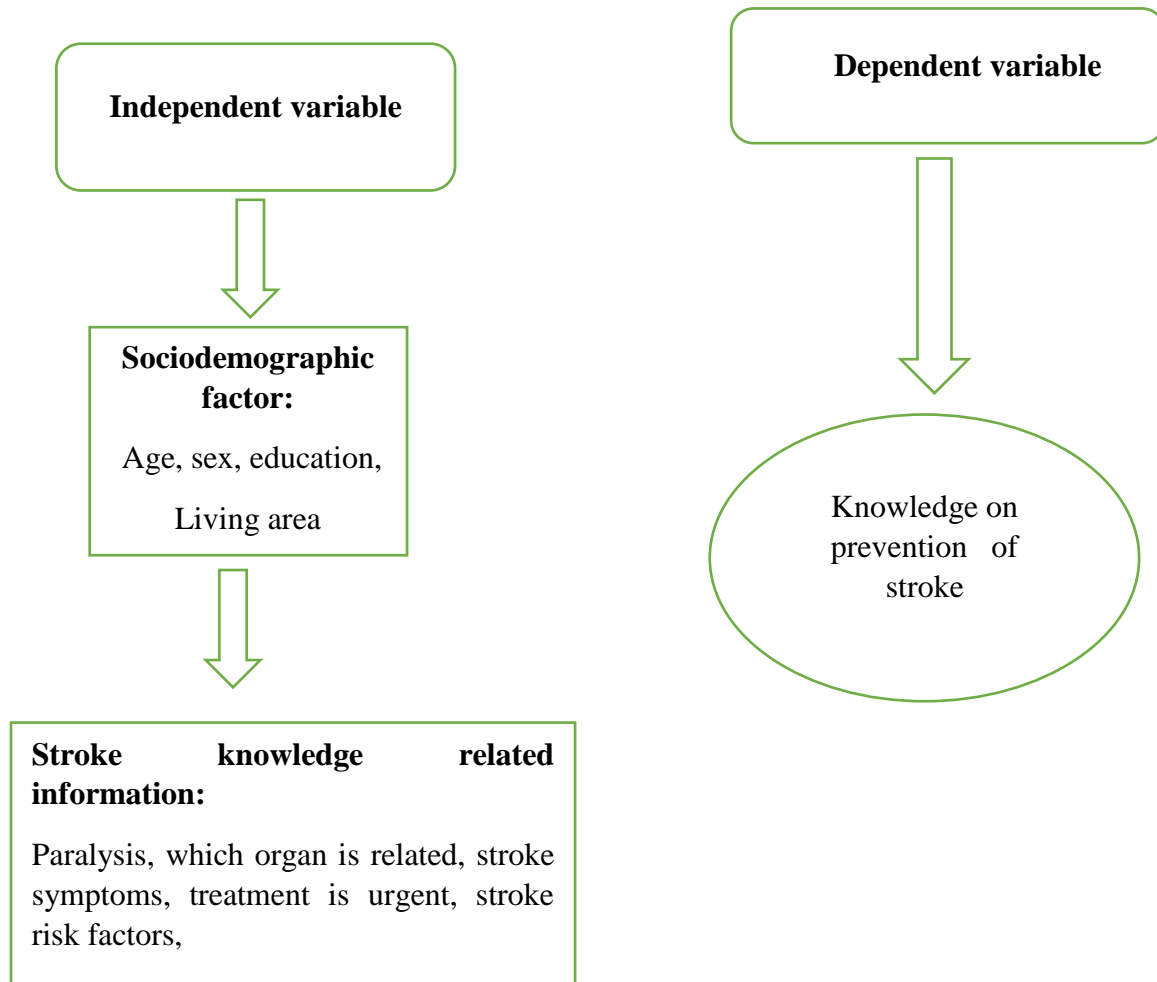
1.4.1 General objective

- ✓ To assess the level of knowledge on prevention of stroke among general people in Bangladesh.

1.4.2 Specific Objectives

- ➢ To determine the knowledge, type, and percentage of stroke.
- ➢ To calculate proportion about organ affected, complication of stroke.
- ➢ To determine the level knowledge about cause, sign symptom, treatment of stroke.
- ➢ To calculate the proportion of participants having adequate knowledge on prevention of stroke.

1.5 Conceptual Framework

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┌─────────────────────────┐                    ┌─────────────────────────┐
│                         │                    │   Dependent variable    │
│  Independent variable   │                    │                         │
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└───────────┬─────────────┘                                │
            │                                               │
            ▼                                               ▼
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│  Sociodemographic       │                     ╱                       ╲
│        factor:          │                    │   Knowledge on          │
│                         │                    │   prevention  of        │
│  Age, sex, education,   │                    │   stroke                │
│                         │                     ╲                       ╱
│      Living area        │                      ╲─────────────────────╱
└───────────┬─────────────┘
            │
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┌─────────────────────────┐
│ Stroke    knowledge    related │
│ information:            │
│                         │
│ Paralysis, which organ is related, stroke │
│ symptoms, treatment is urgent, stroke │
│ risk factors,           │
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7

1.6 Operational definition

Stroke

The world Health Organization the stroke as: A rapidly developed clinical sign of focal disturbance of cerebral function of presumed vascular origin and of more than 24 hours duration.

Knowledge

Knowledge is a form of awareness or familiarity. It is often understood as awareness of facts or as practical skills, and may also mean familiarity with objects or situations. Knowledge of facts, also called propositional knowledge, is often defined as true belief that is distinct from opinion or guesswork by virtue of justification. While there is wide agreement among philosophers that propositional knowledge is a form of true belief, many controversies in philosophy focus on justification. This includes questions like whether justification is needed at all, how to understand it, and whether something else besides it is needed. These controversies intensified due to a series of thought experiments by Edmund Gettier and have provoked various alternative definitions. Some of them deny that justification is necessary and suggest alternative criteria. Others accept that justification is an essential aspect and formulate additional requirements.

The researcher said that 'Rapidly developed clinical symptoms of focal (or worldwide) disruption of brain function, lasting longer than 24 hours or leading to death, with no evident cause other than of vascular origin,' according to the World Health Organization definition of stroke in 1970, was a stroke. The American Heart Association and American Stroke Association now consider the World Health Organization definition of stroke, which is still widely used but heavily relies on clinical symptoms, to be out of date because of "significant advances in the nature, timing, clinical recognition of stroke and its mimics, and imaging findings that require an updated definition." (Coupland et al., 2017).

The researcher said that A silent stroke, which is five times more frequent than a symptomatic stroke, has negative neurological and cognitive effects and increases the chance of another stroke. Even while post-mortem examination is still necessary, pathological confirmation has largely replaced it as the gold standard for identifying stroke and its underlying cause thanks to neuroimaging, which is now widely available. Modern multimodal neuroimaging enables confirmation of central nervous system infarction and/or hemorrhage, identifies the location and extent of the vascular lesion, rules out stroke mimics, and assesses the pertinent cerebrovascular anatomy (RTF,2014).   The researcher said that The brain is the organ that manages our bodily activities, retains our memories, and generates our ideas, feelings, and verbal expression. In addition, the brain regulates a variety of bodily processes, including respiration and digestion. You need oxygen for your brain to function correctly. All of the areas of your brain receive oxygen-rich blood from your arteries. Brain cells begin to die within minutes of a blockage in blood flow because they are unable to receive oxygen. The result is a stroke (Stroke,2022).

According to the researcher in China, which is home to a fifth of the world's population, stroke is the largest cause of death and the second greatest cause of death globally. Further study is needed to update our understanding of the disease burden, clinical course, outcomes, and patterns of care, according to a recent Review that summarized the data already available on the epidemiology, prevention, and management of stroke in China prior to 2007. Following this, there has been a

significant increase in stroke research over the past ten years in China, which has resulted in a better knowledge of its causes and advancements in stroke prevention and therapy. Notably, despite increased prevalence and incidence over the past ten years, evidence-based stroke care has been adopted into the national healthcare system, and in-hospital outcomes have improved with no rise in mortality (Wu et al., 2019).

The researcher said that there are numerous neurological conditions. The second most common cause of death after heart disease is thought to be a stroke. It harms the brain and inhibits its activities by severing a portion of the brain's blood supply. It occurs suddenly and has an impact on the body parts that are regulated by the brain area that is impacted (Robert and Zamzami, 2014).

According to the researcher Stroke, which has been ranked as the second biggest cause of mortality, is a major health issue that affects people all over the world. Each year, 15 million individuals get strokes, and 5 million of them die as a result. The stroke-related mortality rate in Saudi Arabia was 6.4%. The purpose of this study is to assess adult residents of Saudi Arabia's Eastern Region's awareness and perception of stroke. Information obtained from participants by means of an electronic self-structured questionnaire distribution. Between May 20 and May 31, 2020, a mobile application survey was conducted in Al-Ahsa, Saudi Arabia, to gather information on stroke knowledge. 1406 people made up the sample of the entire community (62.4% women and 37.6% men). Our findings indicated that the participants' general understanding of stroke was lacking in 76.6 percent of cases. Approximately (74%) of participants knew that the brain was the changed body organ. In the event of a stroke, about 53.3% would seek emergency medical attention. With rising mortality rates and disability rates from stroke in recent years, stroke is a global health concern. Our findings indicated that most participants had little general awareness regarding stroke. Nearly 50% of participants were unaware of the symptoms and signs of a stroke (Mousa et al., 2020). According to the researcher stroke was the disease in China that causes the biggest number of disability-adjusted life years lost, with over 2 million new cases reported each year. The burden is anticipated to rise even higher as a result of population aging, persistently high risk factor prevalence (such as hypertension), and insufficient management. The provision of specialized stroke care varies across the country, and is particularly uneven in rural areas, despite increased access to general health services. Reperfusion therapies and supportive care was more widely available, which has improved in-hospital results,

but long-term care and secondary prevention efforts are not being followed enough. Although thrombolysis and stroke units are widely regarded as standards of care throughout the world, including in China, organizational issues and worries about bleeding risk prevent their widespread implementation in that country. The availability of reperfusion therapies and supportive care has increased, which has improved in-hospital results, but long-term care and secondary prevention strategy adherence are not up to par. Worldwide, including in China, thrombolysis and stroke units are considered standards of care, but widespread adoption of these treatments is hampered by worries about bleeding risk and organizational difficulties (Wu et al., 2019).

According to the researcher with approximately 13 million new occurrences each year, stroke is the second leading cause of death and disability worldwide. Between 1990 and 2016, stroke incidence rates dropped globally, partly as a result of better prevention and management of risk factors like cigarette use and blood pressure management. The younger age groups (those under 50 years old) are the only group that had a rise during this drop, and prevalence rates for this group have also increased dramatically since 2005. However, between 1990 to 2016, there was a nearly two-fold rise in the total number of persons who had a stroke, died from one, or suffered a stroke-related disability. Through membership, specific initiatives in low- and middle-income countries, and the vociferous voice of Stroke Support Organizations, the World Stroke Organization (WSO) leads several lobbying campaigns (SSOs). To lessen the long-term impact of stroke, governments, system leaders, healthcare providers, and the general public need to step up efforts to increase awareness, educate people and populations about their risk factors, implement efficient and widely accessible stroke risk prevention strategies (for instance, the free Stroke Riskometer app supported by the WSO and already translated into 12 languages), and ensure prompt acute treatments. To raise awareness of the severity of the condition and support for requests for immediate action at the global, regional, and national levels, advocacy initiatives need trustworthy and consistent stroke data (Lindsay et al., 2019).

The researcher said that for the primary prevention of stroke and prompt access to stroke treatments, especially acute reperfusion therapy, community knowledge and stroke awareness are essential. To gauge the extent of public awareness about stroke, we conducted a telephone poll across the country. 400 persons in New Zealand (NZ), stratified by the 4 major ethnic groups, were chosen at random to participate in the

study. Both prompted and unprompted (open-ended) questions were used to gauge participants' knowledge of stroke (using a list). Models of proportional odds logistic regression were performed to determine the variables related to stroke awareness (Krishnamurthi et al., 2019).

The researcher said that A stroke was only listed as a main cause of death by 1.5% of participants. Sudden speech problems (94%) and sudden one-sided weakness (92%) were the stroke signs and symptoms that were most frequently picked out of a list. 78% of participants properly identified at least one risk factor without any prompting, 62% correctly identified at least two, and 35% correctly identified three or more. Scores improved ten times more when the list was provided as a prompt as opposed to unprompted responses. Divergences between the four ethnic groups were seen, with Pacific peoples having the lowest level of awareness. Greater awareness was predicted by higher wealth, education level, and personal stroke experience (P .05.) Inferences: Stroke was not identified as a significant cause of death. Although prompting increased the identification of stroke risk factors, awareness was poor without prompting, especially among people with lower incomes and educational levels. To increase awareness of the risk factors for stroke, community recognition of stroke, and the proper course of action to be taken in situations of suspected stroke, nationwide, culturally appropriate public awareness campaigns are required (Krishnamurthi et al., 2019).

According to the researcher there is now a single, complete curriculum called Acute Stroke Management: Prehospital, Emergency Department, and Acute Inpatient Stroke Therapy that covers the most crucial facets of providing acute stroke care. The omission of two sections that dealt with the emergency care of intracerebral hemorrhage and subarachnoid hemorrhage is one of the more noticeable modifications. A brand-new, special module that will be released later this year covers these issues. Updates to the recommendations for neuroimaging, extending the endovascular thrombectomy treatment window to 24 hours, treating a highly-selected group of patients with strokes that have an unknown time of onset, and dual antiplatelet therapy for a short period of time after acute minor ischemic stroke and transient ischemic attack are the most significant. There is now a single, complete curriculum called Acute Stroke Management: Prehospital, Emergency Department, and Acute Inpatient Stroke Therapy that covers the most crucial facets of providing acute stroke care. The omission of two

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The researcher said that this module also emphasizes the importance of increasing public and healthcare provider awareness of the symptoms of stroke and the need for immediate action, the expanding role of paramedics and all emergency medical services personnel, prompt arrival at an emergency department equipped for stroke, and the implementation of local healthcare institution code stroke protocols. The suggestions for the triage and assessment of the risk of further stroke following transient ischemic attack/minor stroke, as well as the suggested urgency levels for investigations and the start of therapy methods, have all undergone revisions. By minimizing practice variances and closing the knowledge gap between current knowledge and clinical practice, this updated guideline seeks to improve stroke care across Canada.

According to researcher the 1995 and 2006 Helsingborg meetings, two prior pan-European consensus gatherings, were called to review the scientific literature and the state of existing services in order to establish research and development priorities and establish goals for the advancement of stroke care over the ensuing ten years. The European Stroke Organization (ESO) and the Stroke Alliance for Europe collaborated to create a European Stroke Action Plan (ESAP) for the years 2018 to 2030. (SAFE). Primary prevention, stroke services organization, acute stroke management, secondary prevention, rehabilitation, evaluation of stroke outcome and quality assessment, and life after stroke were the seven domains covered by the ESAP. Also recognized were the top areas for translational stroke research. A working group created documents that were available for public feedback. There were determined to be four major objectives for 2030: (1) to lower the overall number of strokes in Europe by 10%; (2) to treat 90% or more of all stroke patients in Europe in a specialized stroke unit as the first level of care; (3) to have national stroke plans that cover the entire chain of care; and (4) to fully implement national strategies for multisector public health interventions. For the seven

domains, a total of 30 targets and 72 research priorities were determined. The ESAP offers a fundamental road map and establishes goals for the implementation of evidence-based stroke prevention measures and services through 2030 (Norrving et al., 2018).

The researcher observed that questionnaire from a knowledge, attitude, and practice (KAP) research on stroke in Nepal used as the data gathering tool. The 15-question structured questionnaire was created by a team of medical experts (nurses and doctors trained by a neurologist) and pretested prior to data collection. The stroke awareness questionnaire asked about general stroke knowledge, family contact with a stroke patient, the afflicted organ, awareness of stroke symptoms, and urgency of stroke symptoms. In our population, stroke and paralysis have the same connotation. We conducted a test to see which of these two was more widely known. Even though "pouring water over the patient" is a customary and unscientific practice, we challenged it in the survey (Yildiz et al., 2020).

According to the researcher 15 prospective cohort studies totaling 250,294 participants, 139,276 cases, and follow-up intervals of 1 to 15 years made up the sample under study. The meta-analysis found a 1.59 (95% CI, 1.30–1.96) hazard ratio for post-stroke depression and all-cause mortality, but there has not been enough evidence to date to establish a link between post-stroke depression and stroke recurrence (Cai et al., 2022).

The author said that the second largest cause of death and a significant source of disability worldwide is stroke. Stroke is more common, with ischemic stroke being the most frequent kind, in developing nations. Our knowledge of the pathophysiology of stroke and the underlying mechanisms leading to ischemia insult has advanced significantly. The primary goals of stroke therapy are to cure neurological damage brought on by stroke and to improve blood flow to the brain. Recent clinical trial failures have prompted substantial animal model improvement, goal-driven study design, and utilization of new technology in stroke research. While post-stroke care has improved, it still has a significant impact on families, the healthcare system, and the economy. Preclinical and clinical care advancements are anticipated to be the foundation of effective stroke treatment, recovery, rehabilitation, and prevention. The pathogenesis of stroke, significant developments in the discovery of therapeutic targets, and current trends in stroke research are the main topics of this review (Kuriakose &

Xiao., 2020).

The author said that in addition to the previously recognized indications for endovascular therapy with mechanical thrombectomy for patients with large artery occlusion who can be treated within 6 hours of symptom onset and intravenous (IV) thrombolysis with recombinant tissue plasminogen activator (rtPA) within 4.5 hours of stroke symptom onset, In patients with wake-up stroke or delayed presentation, recent randomized controlled studies have now established additional indications for immediate reperfusion (up to 24 hours from last known well in the case of mechanical thrombectomy). Perfusion brain imaging or, in the case of IV thrombolysis for wake-up strokes, emergency brain MRI are required for screening in order to identify patients who might benefit from acute reperfusion therapy within this prolonged time window. The main factors affecting the outcome continue to be the collateral status and time to reperfusion.

According to the author 116 eligible stroke patients in total were enrolled in the trial. The patients' average age was 55.1 14.0 years, and 62.9% of them were men. WHO diagnostic criteria for stroke determined that 51.7% of patients had ischemic stroke while 48.3% had hemorrhagic stroke. Hypertension (75.9%) was the most frequent risk factor, followed by family history (33.6%), alcohol consumption (22.4%), smoking (17.2%), and heart failure (17.2%). The majority of patients (75.0%) reported having a headache, followed by 60.3% of them having aphasia and 53.4% having hemiparesis. The independent risk factor for hemorrhagic stroke was atrial fibrillation (AOR: 0.08, 95% CI: 0.01-0.68). In this setting, the clinical characteristics of stroke were comparable to those in other low- and middle-resource nations. A significant public health campaign should be started with the goal of educating the general population about the risk factors for stroke and the essential interventions because stroke is a chronic disease of high priority (Fekadu et al., 2019).

To evaluate comprehensively the distribution of established risk factors of stroke among Bangladeshi patients. This is an observational study. It involved 8400 stroke patients from different hospitals in Bangladesh over a period of sixteen years. Common established risk factors of stroke e.g. age, sex, family history, hypertension, diabetes, ischemic heart disease, smoking, obesity, dyslipidaemia, alcoholism, use of oral contraceptive pill, lack of fresh fruit consumption etc. were evaluated in these patients through a preformed questionnaire and data were analyzed. Majority of the

stroke events occurred after the age of forty (82.3%) and the ischemic stroke (72%) is the most common. Apart from non modifiable risk factors (advancing age, sex, Family history of stroke) hypertension was the most common modifiable risk factor found in stroke patients (57.6%) followed by smoking (44.6%), tobacco use (24.3%), OCP use in female (40% of female stroke), diabetes (23%), ischemic heart disease (17.1%), obesity (10.6%) and dyslipidaemia (5.3%). Lack of fresh fruit consumption and alcoholism were found in some of the patients. Stroke is common after the age of forty. Ischemic events are commonest type of stroke. Hypertension, smoking, tobacco use, diabetes and ischemic heart disease were five most common risk factors of stroke. Outlining the common stroke risk factors in our settings, may help the physicians and care givers in managing this disabling disease properly (Mohammad et al., 2014).

Stroke is the leading cause of death and disability in Bangladesh. Rehabilitation services have not yet been integrated into the Bangladesh health system. Only a few non-governmental organisations provide rehabilitation for stroke patients. The demographic profle of these patients has not yet been established. The aim of this study was to identify and evaluate the socio-demographic data, risk factors, place of primary management and cost of stroke for those who attended rehabilitation at the Centre for the Rehabilitation of the Paralysed (CRP), Bangladesh. A cross-sectional survey was carried out among 103 conveniently selected stroke patients who attended CRP between December 2015 and May 2016. The mean age of the participants was 49 years. The majority (68%) originated from urban areas. About 85% of the patients had a history of hypertension prior to their stroke. Following the stroke, most patients received their initial treatment in a general clinic or hospital by registered physicians. Only 22% of the patients were advised to pursue follow-up rehabilitation services by their physicians. All patients interviewed in the survey received unpaid full-time care from their family members. The reported cost of rehabilitation was approximately US $328 per month per patient (Ariful et al., 2016).

A voluntary health center, Ekhlaspur Centre of Health has been working in that village for promotion of health since 1999. The field execution of the survey was done mid-2007 by the health assistants and doctors of Ekhlaspur Centre of Health. Therefore the survey team had a high degree of access and rapport with the villagers. Before beginning the survey, a meeting with the investigators with the formal and informal community leaders was held to inform the community about the purposes of the survey.

Community consent was obtained first; then verbal consent was cobtained at the individual level prior to the interview. A list of households (1,088 total as of the 2005 demographic update) and their inhabitants was already available. People aged 30 years were targeted for this household level survey. A questionnaire adapted from stroke surveillance instrument of the World Health Organization was used to identify probable stroke cases by visiting households by health assistants. Thereafter, the probable cases were examined by the doctor for confirmation of diagnosis. Some of the stroke cases were actually already registered in the stroke registry of Ekhaspur Centre of Health. Age at occurrence of stroke was recorded (Zaman et al., 2015).

To assess the prevalence of depression and its associated factors among patients with stroke in Bangladesh. We conducted a cross-sectional study among 164 post-stroke patients attending two hospitals in Dhaka city between January and June 2011. Depression was measured using the Hamilton Depression Rating Scale. Factors associated with depression were analyzed using multivariate logistic regression. Results: The prevalence of depression was 70 and 32 % had severe depression. The mean $\pm$ sd age of the participants was 58.91 ± 7.03 years. Multivariate regression analysis revealed that factors significantly associated with depression were living in a joint family (OR = 13.5, 95 % CI = 1.3–145.7, p = 0.032), those unable to perform daily activities by themselves (OR = 14.9, 95 % CI = 2.0–108.1, p = 0.008) and those with comorbid dysphasia (OR = 9.5, 95 % CI = 1.0– 86.9, p = 0.046) and hypertension (OR = 5.2, 95 % CI = 2.3–15.4, p = 0.012). Depression is a significant health problem among post-stroke patients in Bangladesh. This leads to careful management of depression for social support to achieve better patient outcome (Mohammad et al., 2014).

CHAPTER - III	METHODOLOGY

3.1 Study design

It was a descriptive type of cross-sectional study.

3.2 Site

Area of Savar, Agargaon, Rajshahi, Ashugonj in Bangladesh.

3.3 Study period

The duration of the study was 1 year.

3.4 Sample size

n $= \frac{z^2pq}{d^2}$

Here,

Z = 1.96 [Considering 95% Confidence Level]

P = Prevalence = 80.5% (Dar et al., 2019)

   =0.805

q = 1-P

d = 5% Margin of Error = 0.05

According to standard formula, sample size will be,

 $[(1.96)^2 \times 0.805 \times 0.195] \div (0.5)^2 = 241$

So, the initial sample size is 241.But due to time limitation of this research, total 151 samples were collected to conduct this study.

3.5 Study population

The study population was consist of male and female in Bangladesh.

3.6 Sampling Technique

Sample was selected purposively to interview the study population considering the inclusion and exclusion criteria.

3.7 Data Collection Procedure

Data collection procedure was face to face interview of common people with help of an interviewer using a structured questionnaire.

3.8 Data Analysis

The data were analyzed with the Microsoft Office Excel 2019 with SPSS 25 version software program.

3.9 Inclusion criteria

- ➢ Consists of in different part of Bangladesh with the age of 18-85years.

- ➢ Both male and female patients would include

3.10 Exclusion criteria

- ➢ The subject who was not willing to participant in the study.

- ➢ Patients who would medically unstable.

- ➢ Participants who had speaking problem.

- ➢ Patients who were not able to communicate.

3.11 Ethical consideration

The ethical review board of SCMST had if permitted the researcher then to collect data Verbal consent was taken from cerebral palsy patient`s mother or career.

3.12 Rigor

It was always aimed to avoid introducing personal viewpoints, values, and biases during the data collecting and processing. No judgements were made, and no leading questions were asked. When conducting the study, the researcher was taken help from the supervisor when needed. Researcher always tried not to influence the process by his own value and biases. No leading question were asked or no important question is avoided. The participant's information was coded accurately and checked by the research supervisor to eliminate any possible errors. The entire information was

handled with confidentiality. In the result section researcher was not find influenced about outcome by showing any personal interpretation during conduct the study every section of the study is checked by the research supervisor.

3.13: Limitation of the study

The following limitations should be considered for this study:

As I am student & I had to bear all the expenses from my own pocket, that's why I had faced fund limitations. As I am a student, so I could not go to the remote areas for collecting data. As I could not take calculated data for time limitations that's why this study might not show the actual view of the current scenario. Since it was a new topic for me and I had no experience about collecting data and had not any statistical expertise hence it might not show accurate result but few researchers from other countries had done some 19 related research on this topic before that's why there was some evidence to support the outcome of this study. If this study could have some extra time to conduct this study, then it could be considered more valid & applicable

CHAPTER: IV	RESULTS

The study aimed to assess the level of knowledge on prevention of stroke among general people in of Bangladesh. The data was collected by the researcher himself. Structured questions were used with both open-ended and close-ended questions in the questionnaire. The data were analyzed with the Microsoft Office Excel 2019 with SPSS 25 version software program. In this study researcher use bar, Colum, Figure, Pie chart so show the result of the body.

4.1: Socio-demographic condition:

4.1.1: Age of participant

This study's participant means and standard deviation of participant age where are Mean ± SD= 42.52±14.465; here 18-38years 44.4% (67), 39-59 years 39.1% (59) and >59 years 16.6% (25) of the participant.

Age Group	Percentage	Frequency	Mean ±SD
18-38	44.4	67	
39-59	39.1	59	42.52±14.465
>59	16.6	25	
Total	100	151	

Table-1: Age of participant

4.1.2: Gender of participant

In this study among the total 75.6% participant were male and 24.4% participant were female.
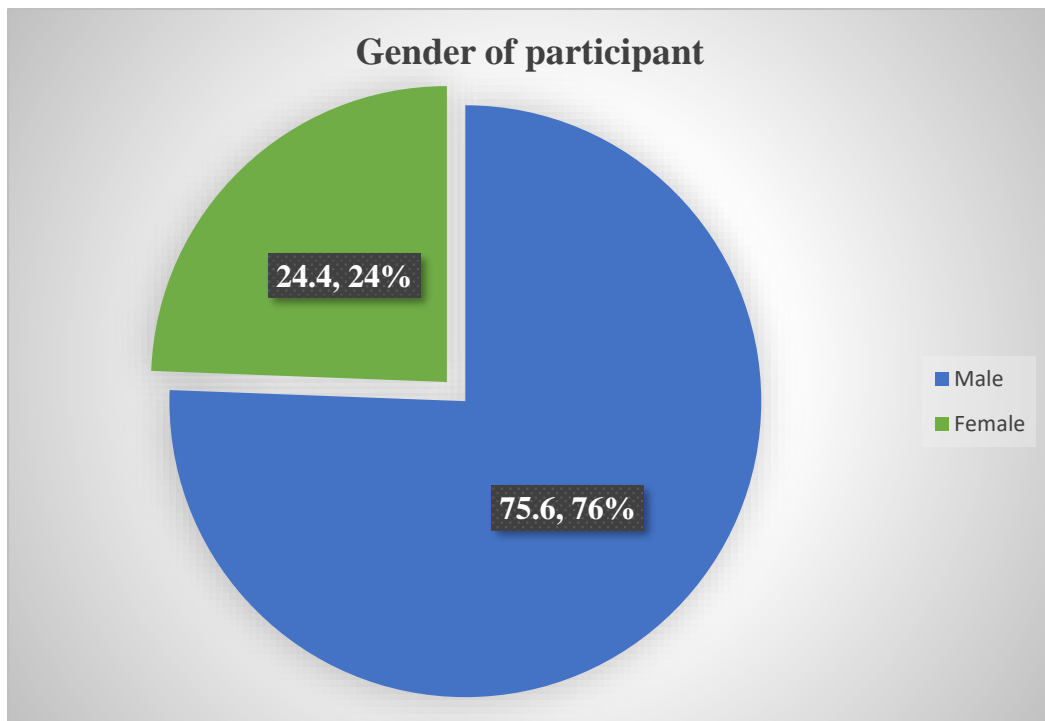
Figure-1: Gender of participant

4.1.3: Living area of the participant

In this study among the total 68.9% participant were living in rural, 6.0% participant were living in semi urban and 25.2% participant were living in urban.

Living area of the Participant

Living area	Value
Rural	68.9
Semi urban	6.0
Urban	25.2
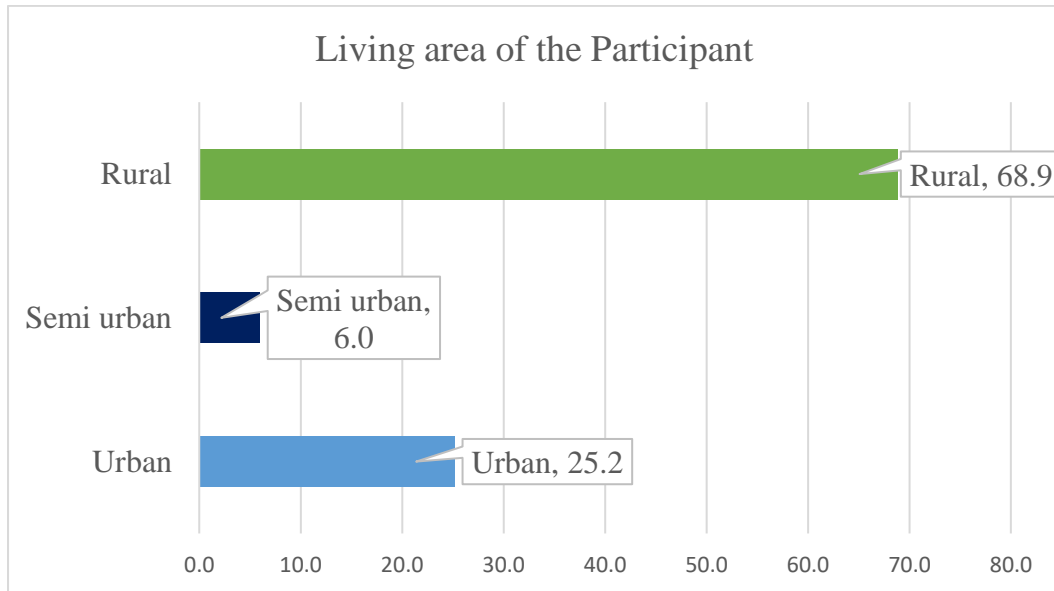
Figure-2: Living area of the participant

4.1.4: Education level of the Participant

In this study among the total participant 37.7% were SSC, 17.2% were HSC, 17.2% were graduation and 7.3% were others.

Education level of the Participant

SSC, 37.7

HSC, 17.2   Graduate, 17.2

Other, 7.3

SSC   HSC   Graduate   Other
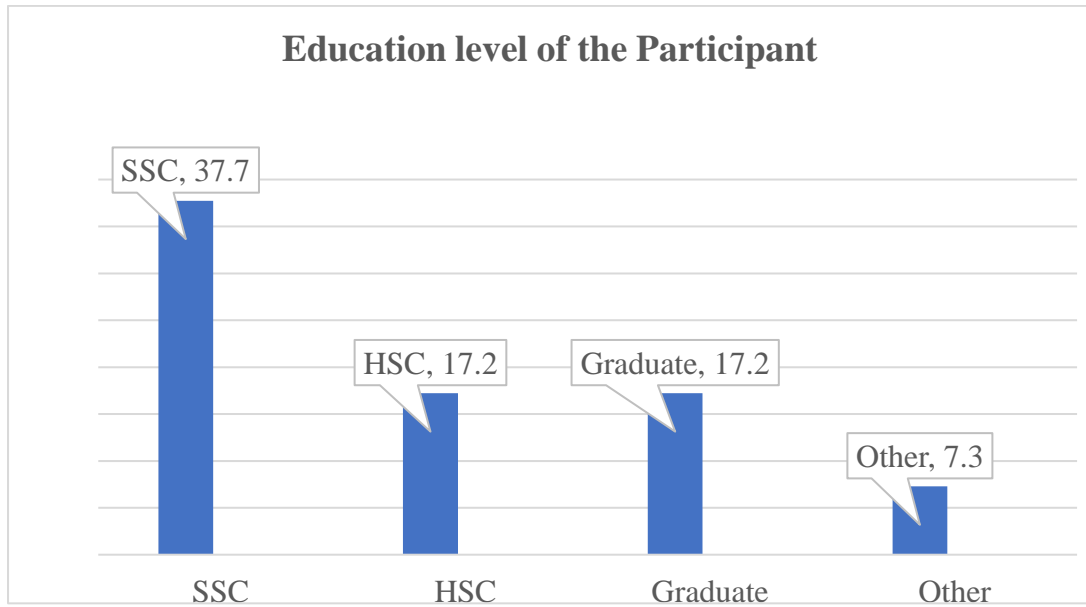
Fig-3: Education level of the Participant

4.1.5: Types of family of the participant

In this study among the total participants 64% were nuclear and extended were 33% and others 3%.
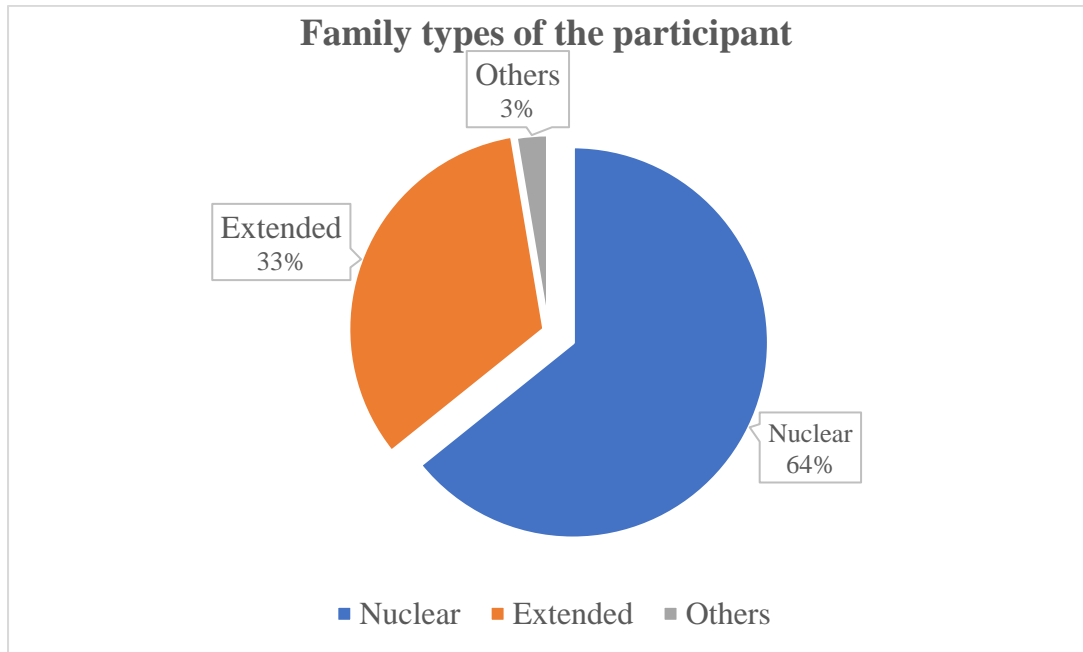
Figure-4: Types of family of the participant

4.1.6: Occupation of the participant

In this study among the total participants 23.8% were job, 24.5% were Business and 51.7% others.
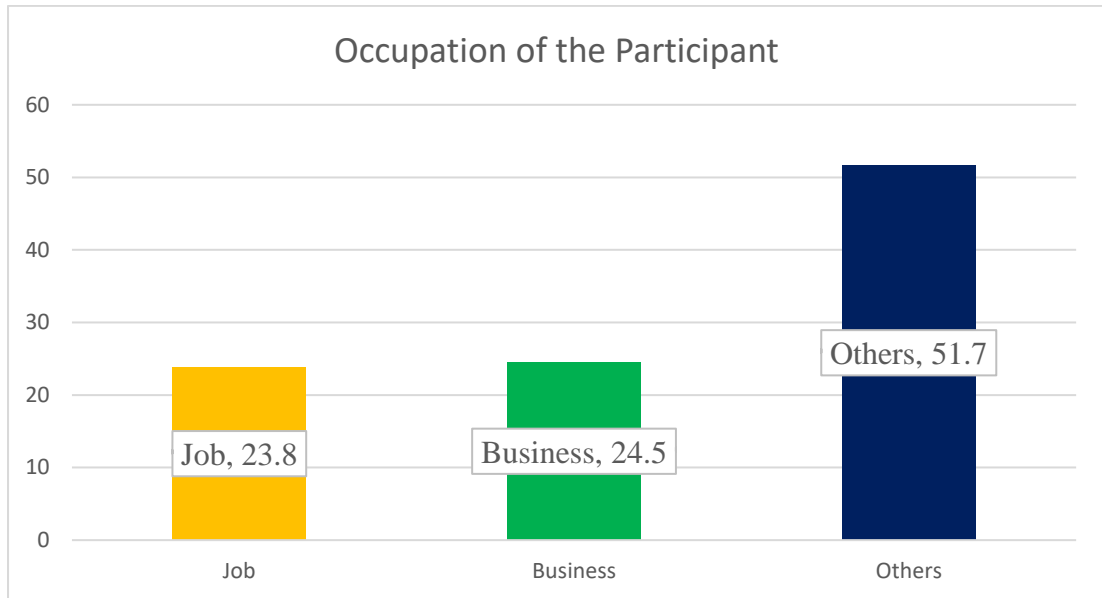
Figure-5: Occupation of the participant

4.1.7: Income of the participant

This study's participant means and standard deviation of participant income was Mean ± SD= 14112.58±11874.086; here 0-10000 taka 83.4% (126), >22000 taka 16.6% (25 of the participant.

Amount	Percentage	Frequency	Mean ±SD
0-10000	83.4	126	14112.58±11874.086
>22000	16.6	25	
Total	100	151	

Table-2: Income of the participant

4.1.8: Religion of the participant

In this study among the total participants 97% were muslim and 3% were hindhu.
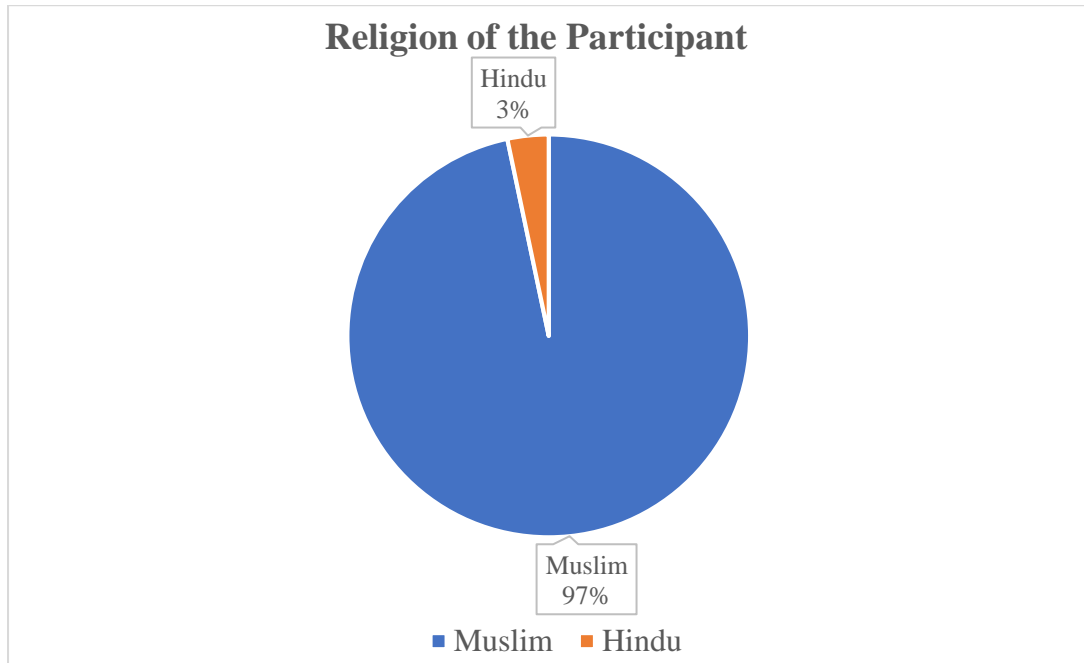
Figure-6: Religion of the participant

4.1.9: Martial status of the participant

In this study among the total participants 82.8% were married and 16.6% were unmarried, others 0.7
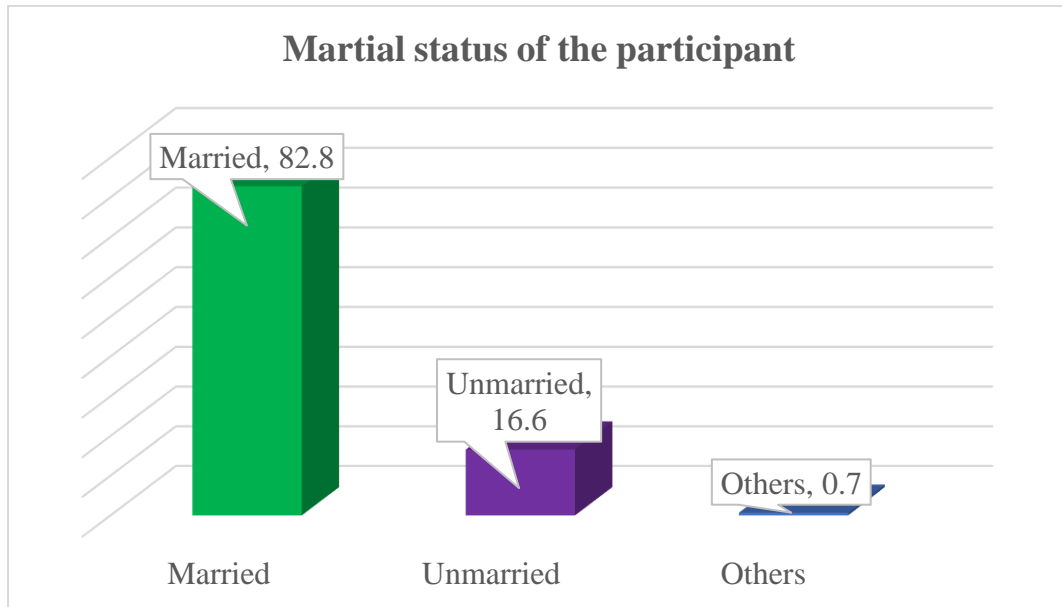
Figure-7: Martial status of the participant

4.2: Stroke awareness related information

4.2.1: Participant know about stroke

In this study among the total participants know about stroke 54% yes and 40% no, 6% had no idea.

Participant know about stroke
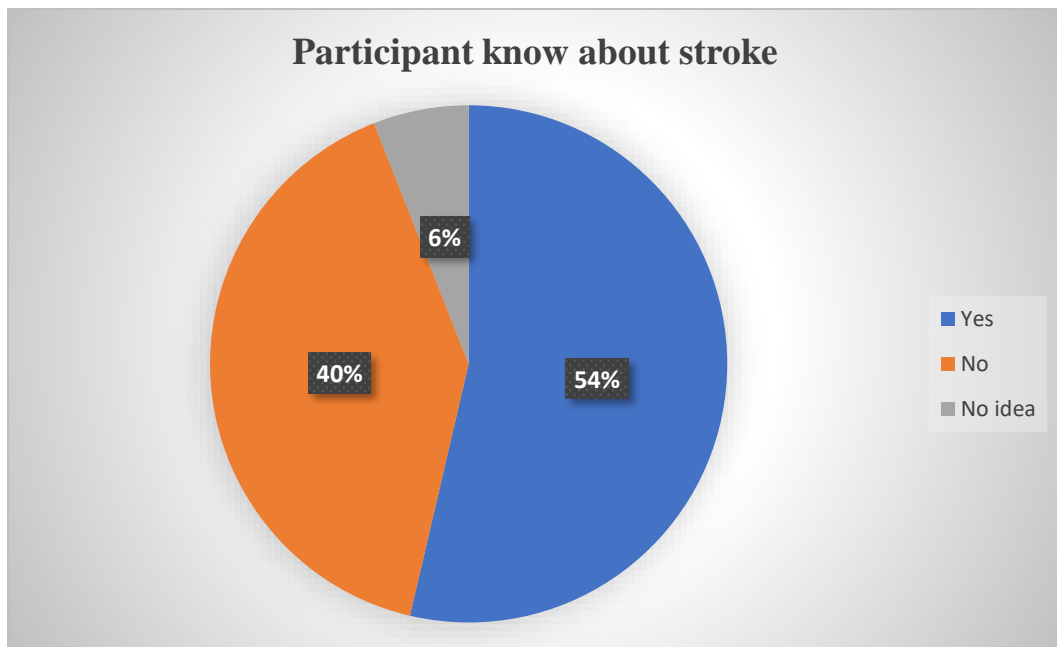
Figure-8: Participant know about stroke

4.2.2: Participant know types of stroke

In this study among the total participants had know type of stroke 13% yes and 87% no.
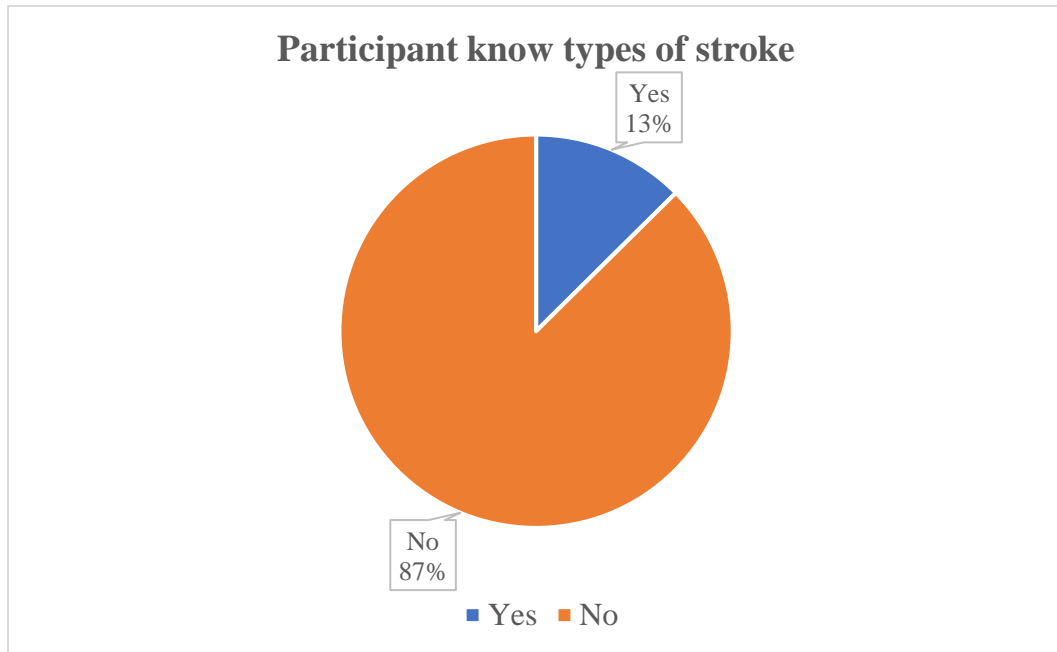
Figure-9: Participant know types of stroke

4.2.3: Ever had stroke of the Participant

In this study among the total participants ever had stroke 31.8% yes and 68.2% no.
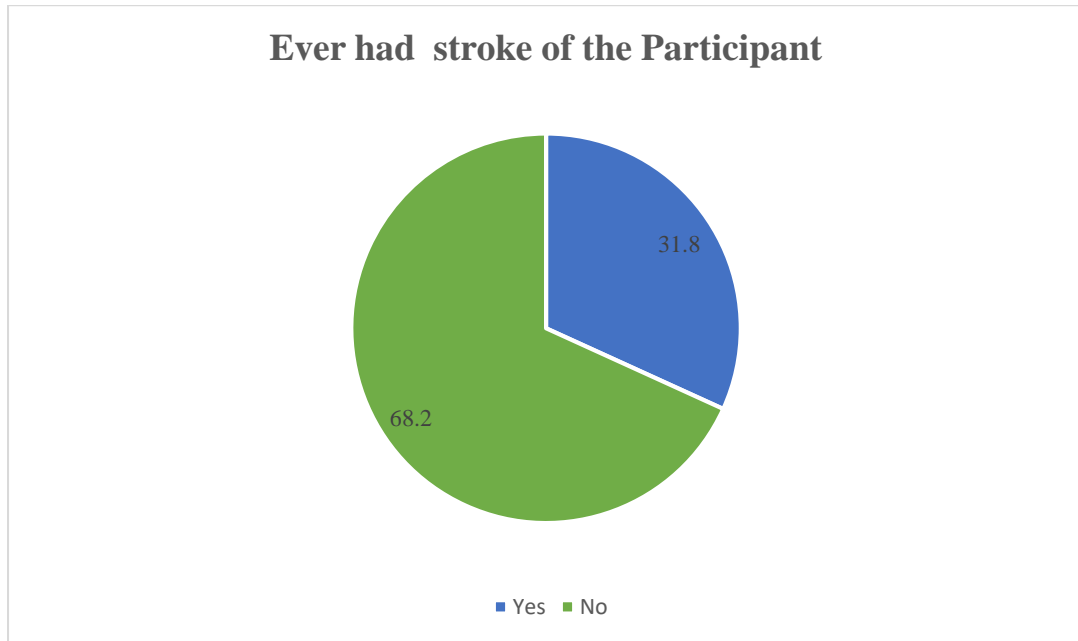
Figure-10: Ever had stroke of the Participant

4.2.4: Ever had stroke of the Participant

In this study among the total participants ever had stroke 31.8% (18) yes and 68.2% (27) no. Here Hemorrhagic 13.9% (21), Ischemic 15.3% (23) and Transient ischemic attack (TIA) 4.0% (6) of the participant.

Variables	Percentage	Frequency
Ever had stroke		
Yes	31.8	48
No	68.2	103
If yes please specify		
Hemorrhagic	13.9	21
Ischemic	15.3	23
Transient ischemic attack (TIA)	4.0	6
Total	33.2	50

Table-3: Ever had stroke of the Participant

4.2.5: Any family history of stroke of the Participant

In this study among the total participants any family history of stroke 42.4% yes and 57.6% no.
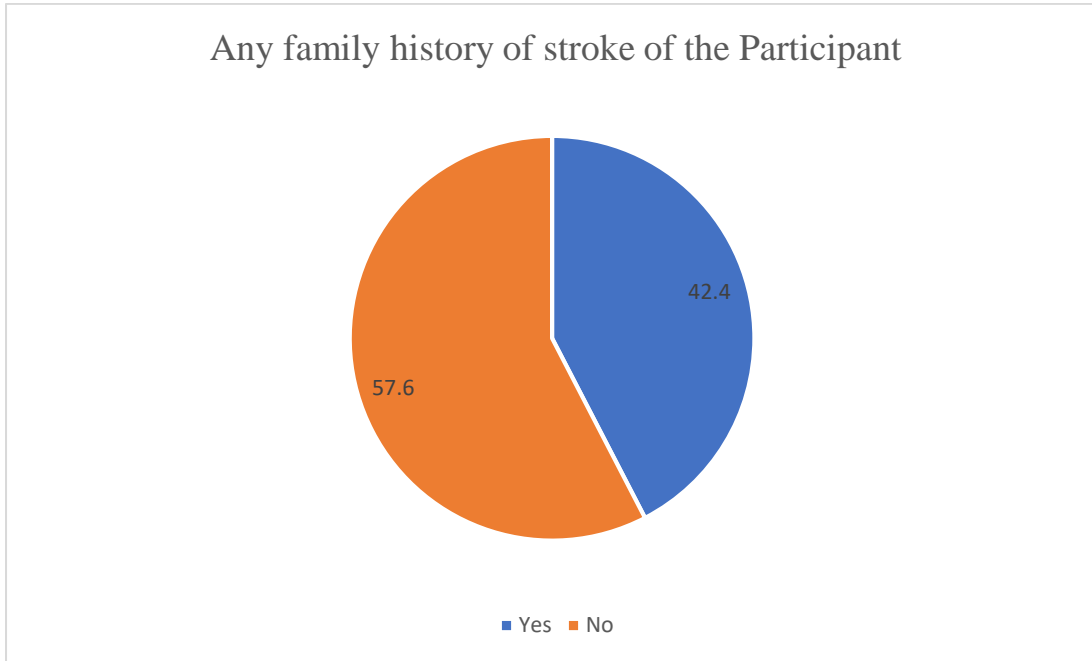

Fig-11: Any family history of stroke of the Participant

4.2.6: Personally know someone with stroke of stroke of the Participant

In this study among the total participants personally know someone with stroke 90% were yes and 10% were no.
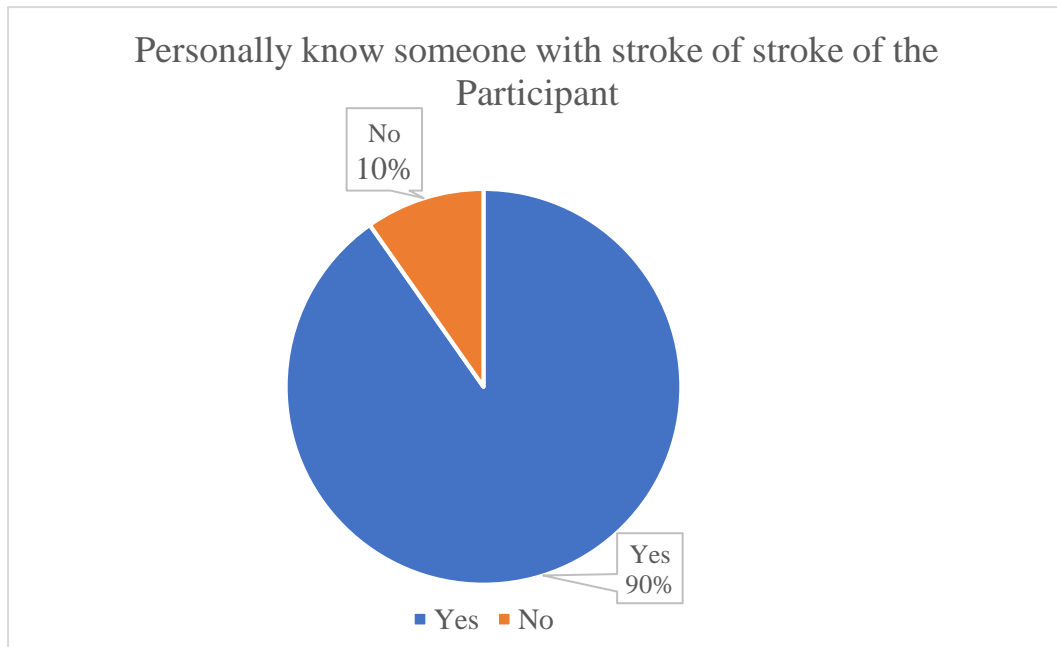

Fig-12: Personally know someone with stroke of the Participant

4.2.7: Participant thinks stroke is contagious

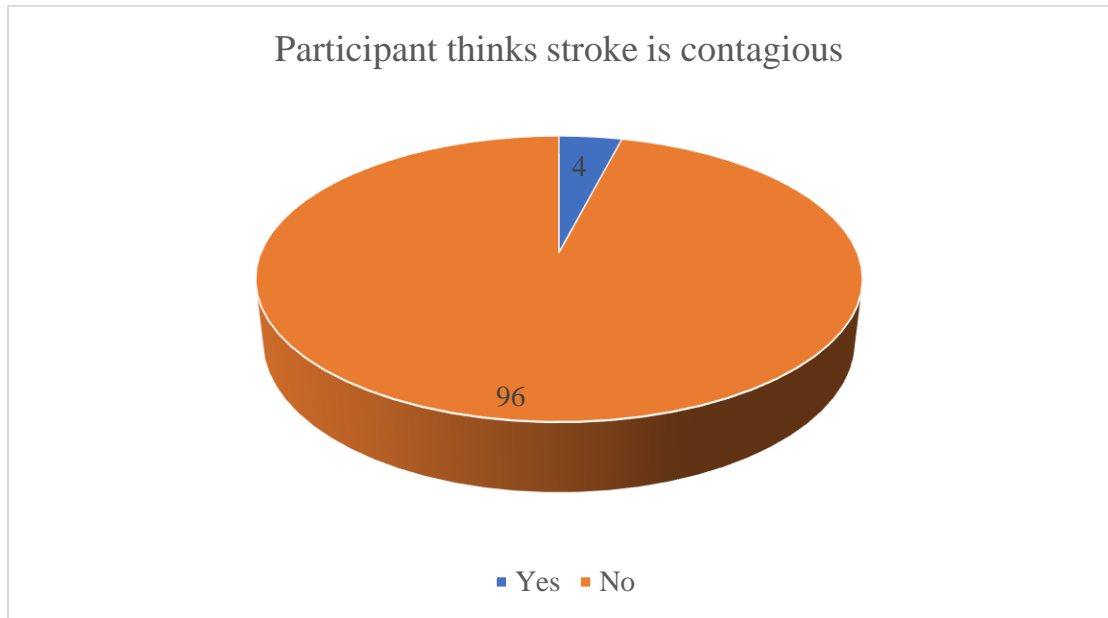In this study among the total participants thinks stroke is contagious 96% were yes and 4% were no.

Participant thinks stroke is contagious

4

96

■ Yes ■ No

Fig-12: Participant thinks stroke is contagious

4.2.8: Participant thinks stroke can be prevented

In this study among the total participants thinks stroke can be prevented 86.1% were yes and 13.9% were no.
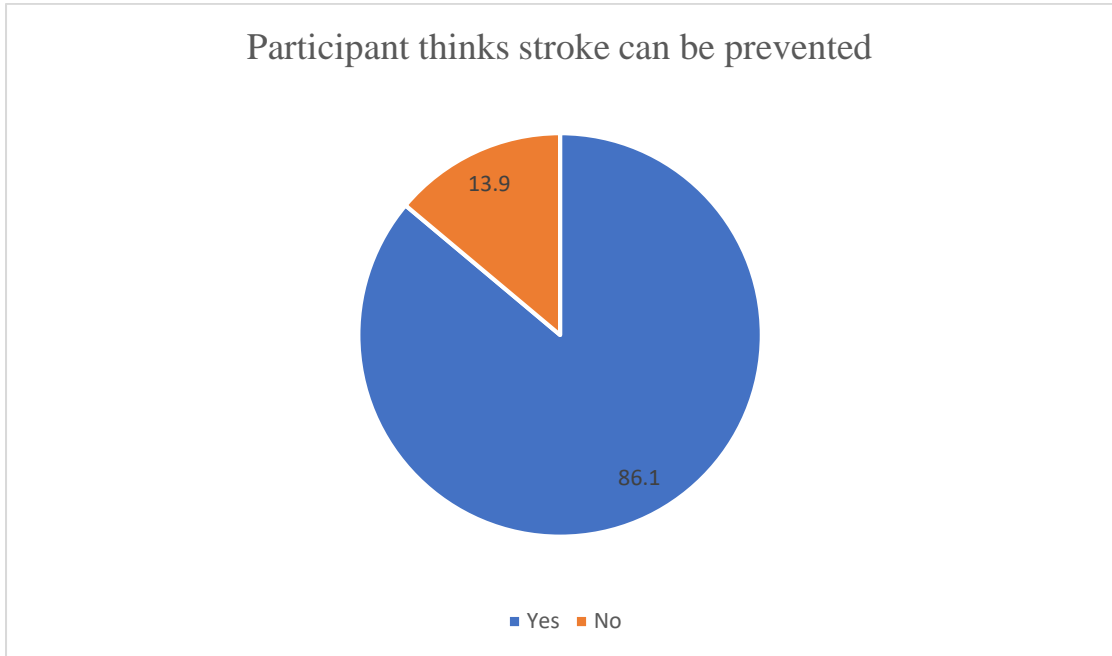

Fig- 13: Participant thinks stroke can be prevented

4.2.9: Participant know is stroke a hereditary disease

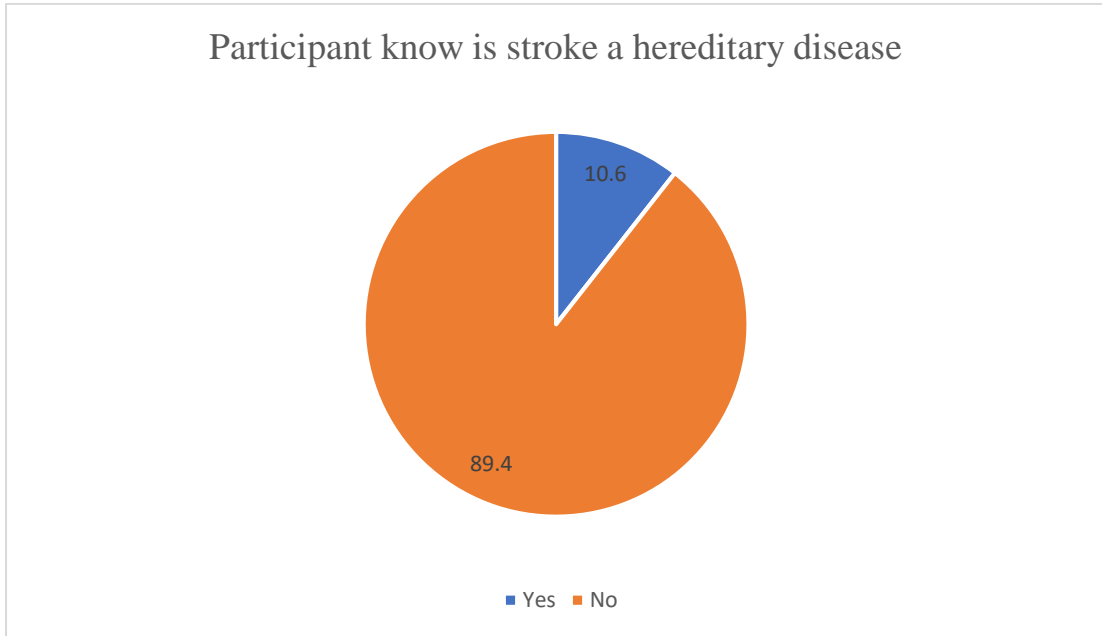In this study among the total participants know is stroke a hereditary disease 10.6% were yes and 89.4% were no.

Fig-14: Participant know is stroke a hereditary disease

4.2.10: Participant think stroke is caused by ancestor's sin

In this study among the total participants think stroke is caused by ancestor's sin

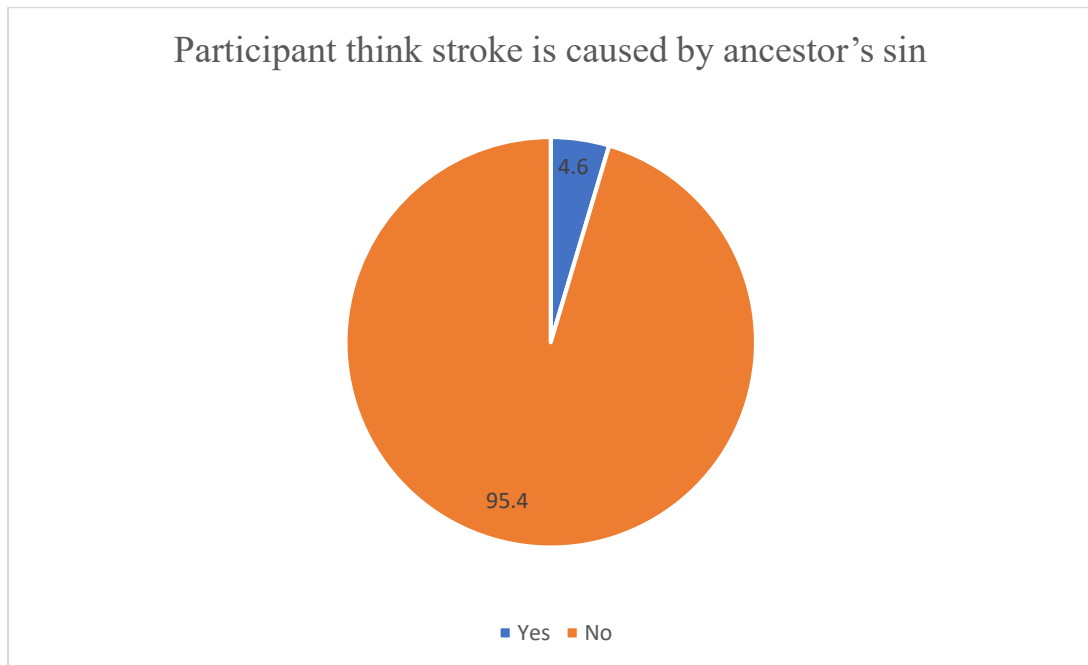4.6% were yes and 95.4% were no.

Fig- 15: Participant think stroke is caused by ancestor's sin

4.2.11: Participant know stroke an old person disease

In this study among the total participants know stroke an old person disease 13.9% were yes and 86.1% were no.
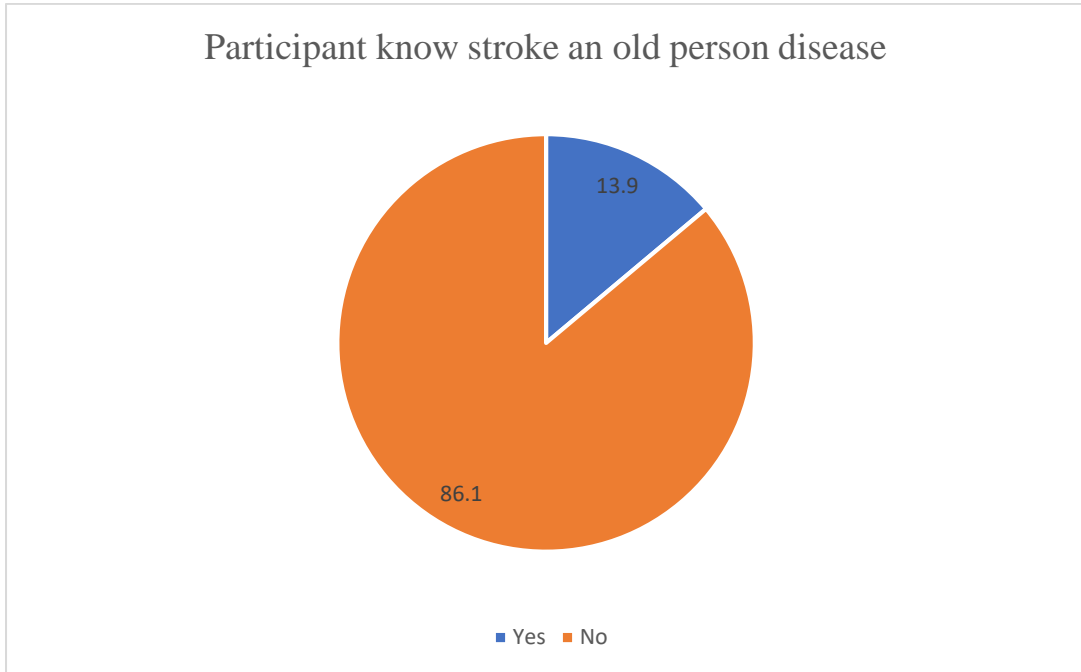
Participant know stroke an old person disease

Fig-16: Participant know stroke an old person disease

4.2.12: Participant know exercise can prevent stroke

In this study among the total participants know exercise can prevent stroke 86.1% were yes and 13.9% were no.
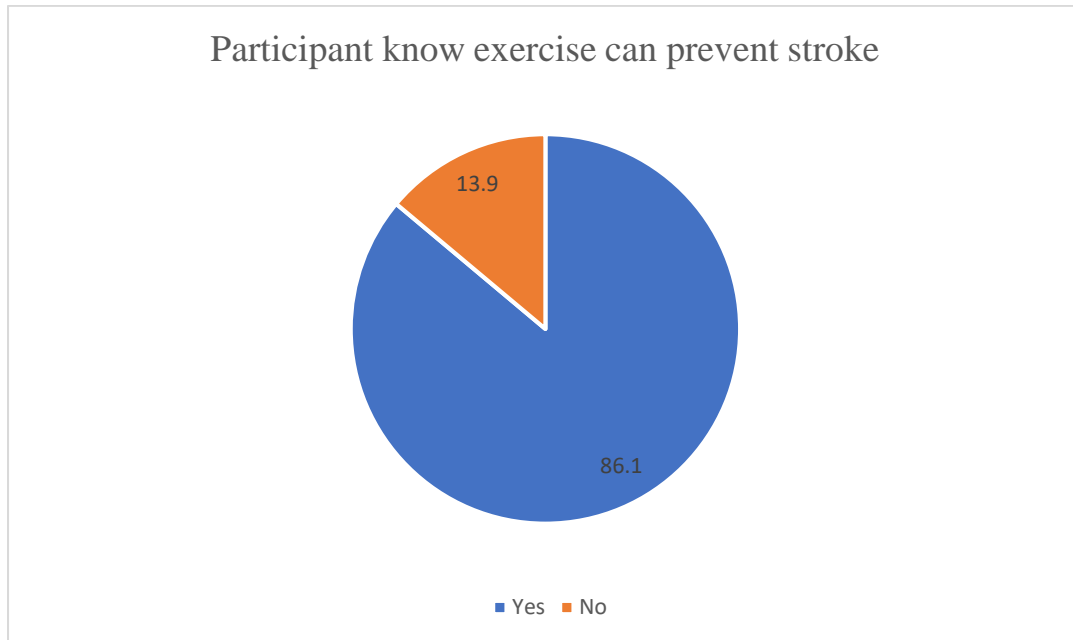
Fig- 17: Participant know exercise can prevent stroke

4.2.13: Contact with a stroke patient of the Participant

In this study among the total participants 22.5% said their my first-degree relatives had stroke, 23.8% said their my second-degree relatives had stroke, 31.1% said their looked after a stroke patient, 1.3% said they did not contact with any stroke patient.
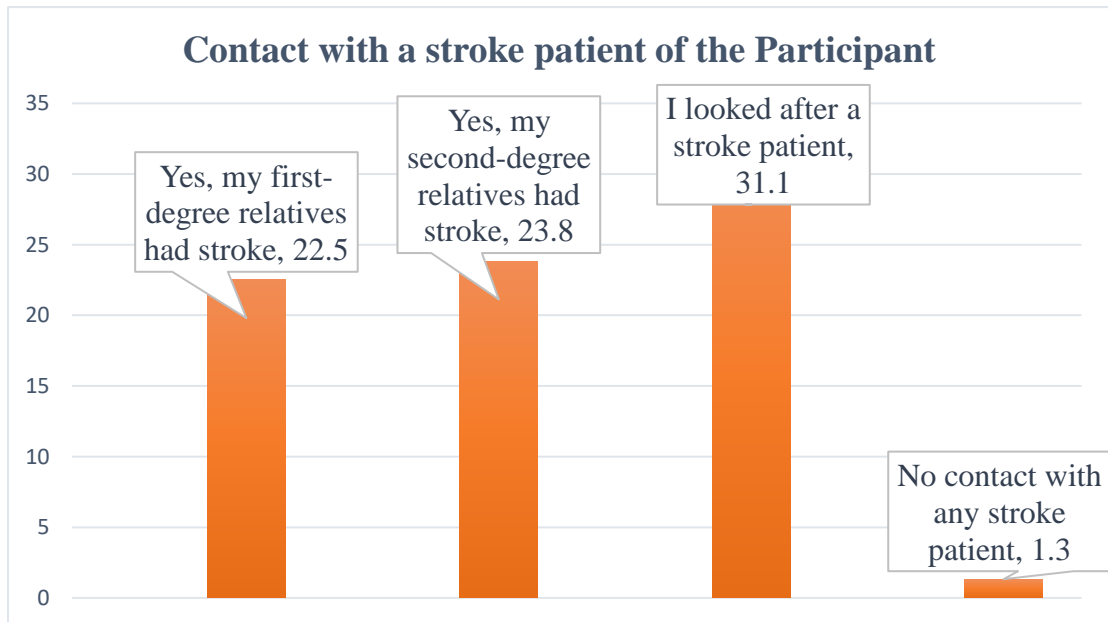
Fig-18: Contact with a stroke patient of the Participant

4.2.14: Participant know which organ is related to stroke

In this study among the total participants know which organ is related to stroke 2.0% were lung ,93.4% were brain., liver were 1.3% and heart were 3.3.

Participan know which organ is related to stroke

Brain, 93.4

Lung, 2.0   Liver, 1.3   Heart, 3.3

Lung   Brain   Liver   Heart
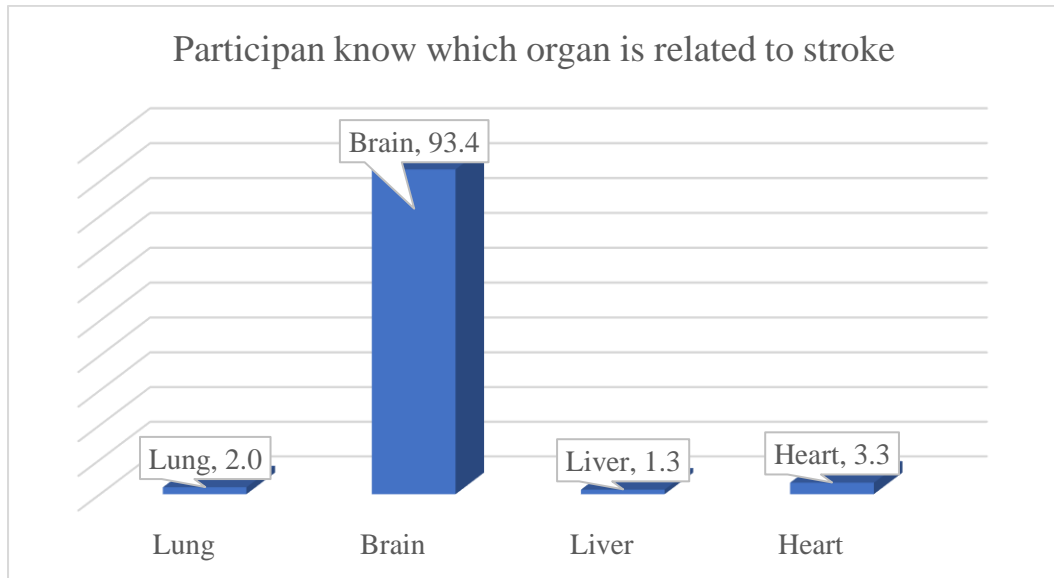
Fig-19: Participant know which organ is related to stroke

4.2.15: Awareness of stroke symptoms of the Participant

In this study among the total participants awareness of stroke symptoms, Disturbances of speaking and understanding 22.5% One-sided weakness 23.8%, Loss of sensation on the one side 31.1%, Facial weakness on the one side 7.9%, Severe headache 11.3%, Vertigo/imbalance 2.0%, Any vision disturbness1,3%.
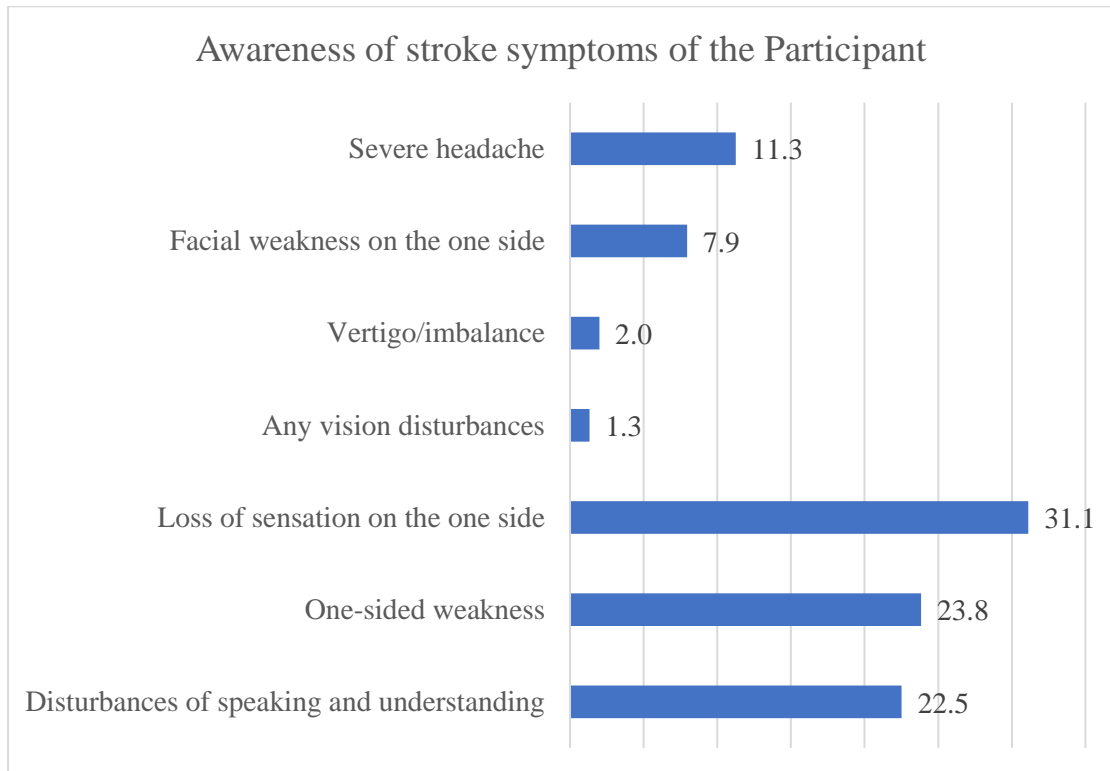
Fig-20: Awareness of stroke symptoms of the Participant

4.2.16: Participant thinks awareness that stroke treatment is urgent

In this study among the total participants thinks awareness that stroke treatment is urgent, Emergency service 41.6%, Neurology outpatient clinics 45.7%, Neurosurgery outpatient clinics 4.6%, Family physician 5.3 and internal medicine outpatient clinics were 3.3%.
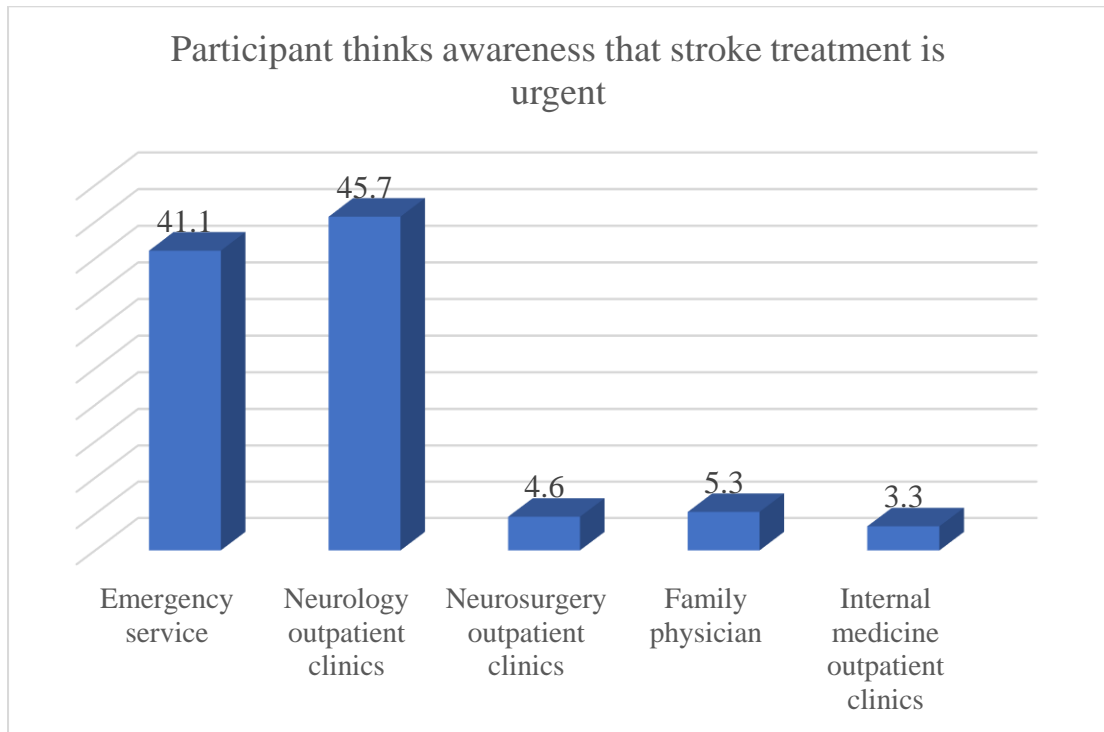
Fig-21: Participant thinks awareness that stroke treatment is urgent

4.2.17: Participant what do if encounter a stroke patient

In this study among the total participants what do if encounter a stroke patient, Pour water over the patients head 43.7%, Call the ambulance/take the patient to hospital 38.4, Wait a little because the patient might heal 2.6%, I have no idea 15.2%.

Participant wht do if encounter a stroke patient
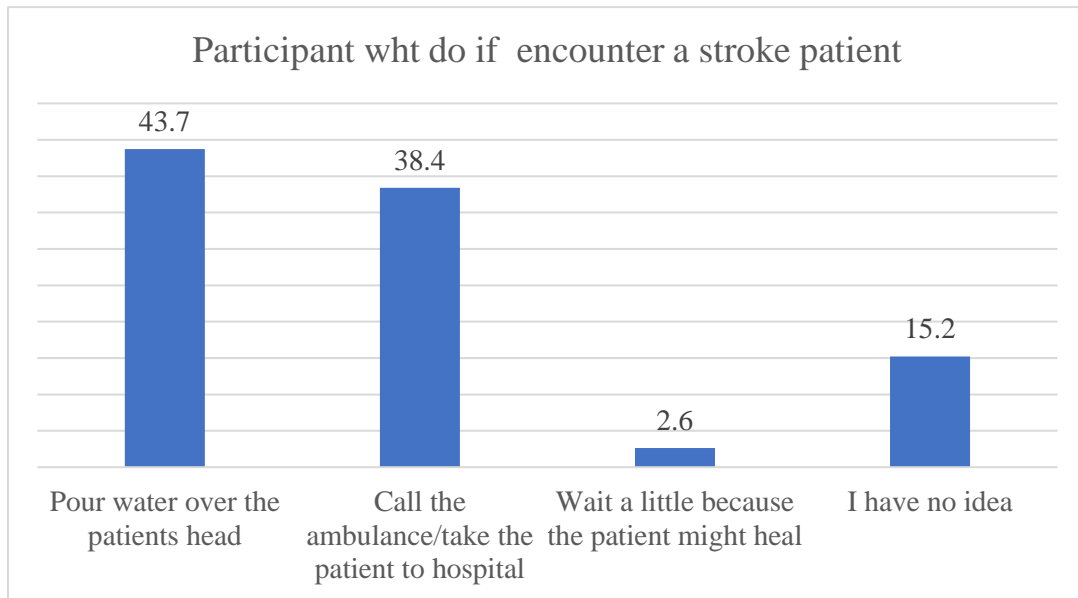
Fig-22: Participant what do if encounter a stroke patient

4.2.18: Participant thinks awareness of stroke risk factors

In this study among the total participants thinks awareness of stroke risk factors, High blood pressure 76.8%, Diabetes Mellitus 4.0%, High blood cholesterol 5.3%, Smoking 10.6%, Excessive alcohol 1.3%, Cardiac disease 2.0%.
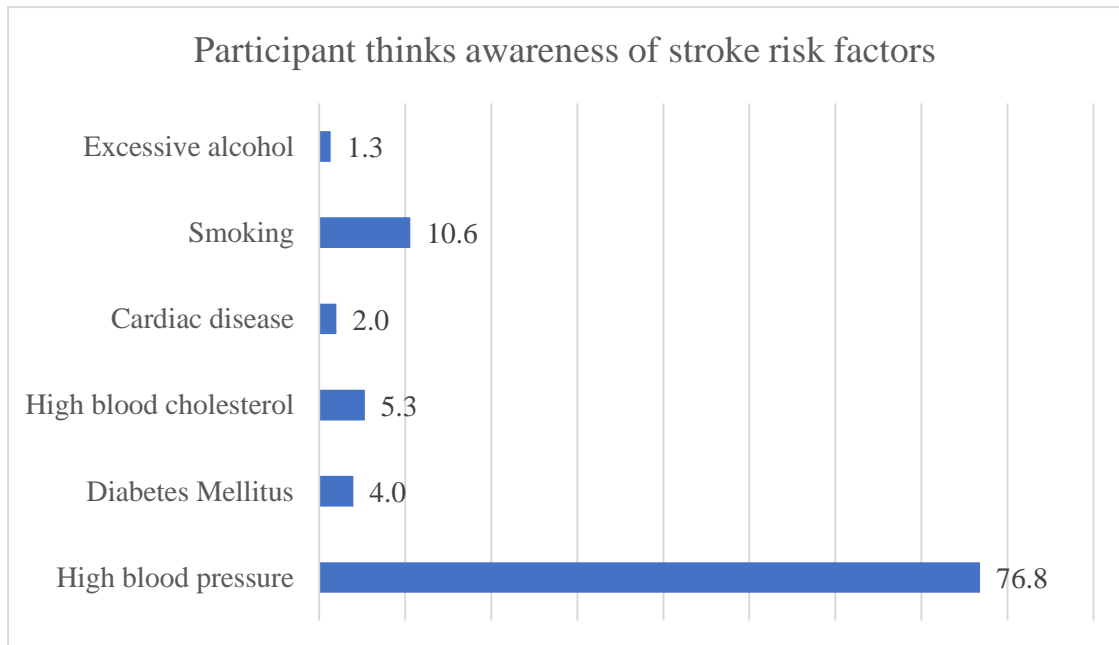
Fig-23: Participant thinks awareness of stroke risk factors

4.2.19: Participant thinks symptom of a stroke

In this study among the total participants thinks symptom of a stroke, Sudden chest pain 19.2%, Sudden numbness or weakness in the face, arm, or leg 56.3%, Sudden trouble walking, dizziness, loss of balance 19.9%. sudden shortness of breath 4.6%..
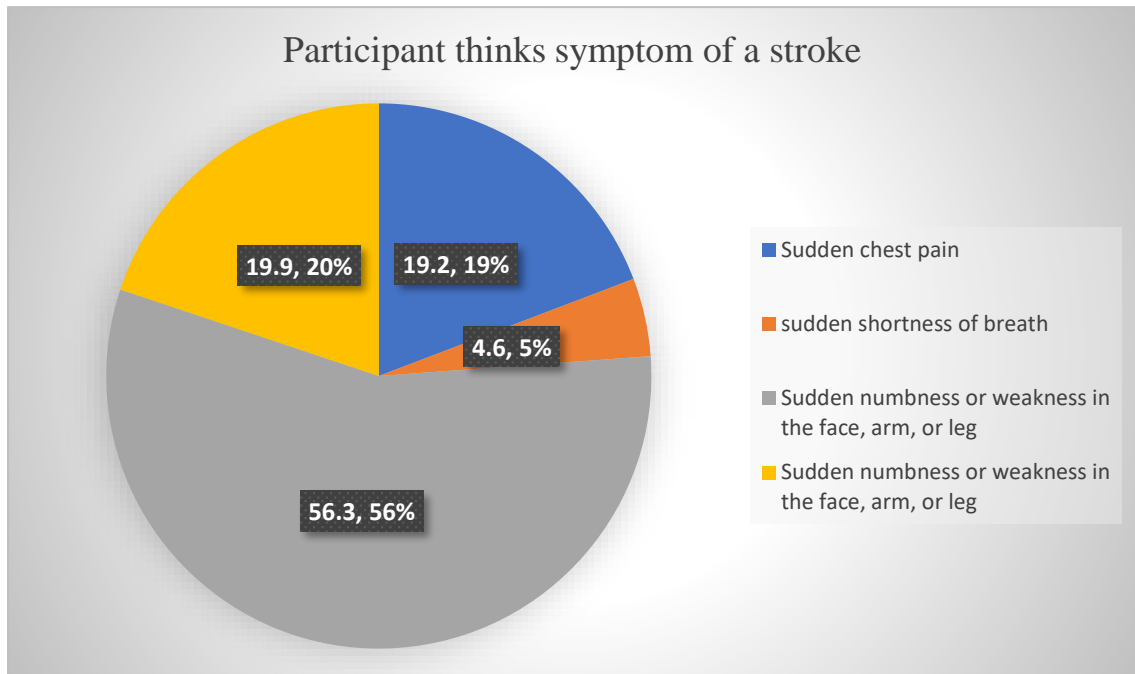
Fig-24: Participant thinks symptom of a stroke

4.2.20: Kind of hospital will participant go

This study among the total participants kind of hospital went, was Neurology hospital 87.4%, General hospital 10.6%, Cardiovascular hospital 1.3%, Urology hospital 0.7%.
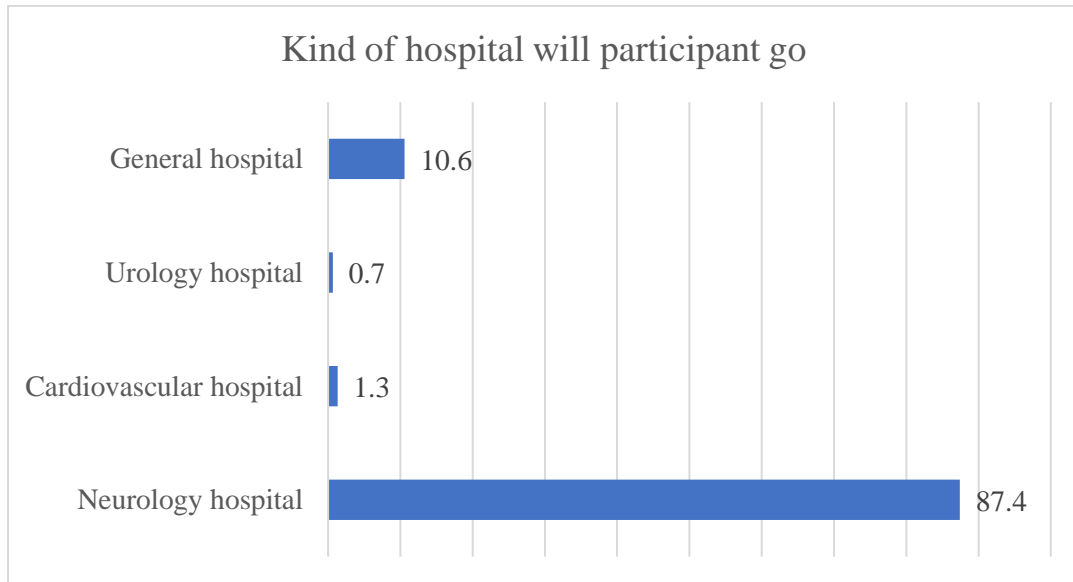
Fig-25: Kind of hospital will participant go

4.2.21: Participant ever been hospitalized

In this study among the total participants ever been hospitalized, were 40.4% (61) Yes and 59.6% (90) participant was do not thinks ever been hospitalized.

Variables	Percentage	Frequency
Ever been hospitalized		
Yes	40.4	61
No	59.6	90
If yes please specify		
1 day	7.3	11
6 days	11.9	18
12 days	7.9	12
More than 12 days	13.2	20
Total	40.4	61

Table- 4: Participant thinks ever been hospitalized

4.4 : ASSOCIATION

4.4.1: Association between Age group of the participant and Participant know about stroke

The table shows that the chi value was .002 and the P-value was 17.256. So, there is significant Association between Age group of the participant and Participant know about stroke.

Association between Age group of the participant and Participant know about stroke						
					P value	Chi value
Age of the participant	Participant know about stroke					
Total	Yes	No	No idea			
20-40	30	36	9	75	17.256	.002*
41-61	38	21	0	59		
>61	13	4	0	17		
Total	81	61	9	151		

(*Significant at 95% Confidence level)

Table no:5- Association between Age group of the participant and Participant know about stroke.

4.4.2: Association between Gender of the Participant and Participant thinks symptom of a stroke

The table shows that the chi value was .853 and the P-value was .786 . So, there is no significant association between Gender of the Participant and Participant thinks symptom of a stroke.

Association between Gender of the Participant and Participant thinks symptom of a stroke						
					P value	Chi value
Gender of the participant Total	Participant thinks symptom of a stroke					
	Sudden chest pain	sudden shortness of breath	Sudden numbness or weakness in the face, arm, or leg			
Male	23	6	63	22	.853	.786
Female	6	1	22	8		
Total	29	7	85	30		

Table no:5- Association between Gender of the Participant and Participant thinks symptom of a stroke.

Our study found that knowledge of stroke and its associated risk factors amongst participants prior to their stroke was poor. In 2013 stroke resulted in 6.5 million deaths, with approximately 25.7 million stroke survivors, resulting in 113 million disability adjusted life years (Feign et al, 2017). With such poor awareness of the risk factors associated with stroke, it is likely that very few understand the importance of seeking medical advice to manage any modifiable risk factors. Many of the strokes occurring could potentially be preventable if these risk factors are better managed. Previous research has shown that use of mass media and public education campaigns are effective for increasing awareness of stroke and its risk factors (Müller-Nordhorn et al., 2006 and Becker et al., 2001)

There are a number of barriers in Bangladesh that may affect how easy it is to disseminate information via media sources including low literacy levels (Bangladesh Bureau of Statistics, 2008) and difficulty accessing internet particularly in rural areas (Islam and Hoq, 2010). As stated previously by it is vital that government and health professionals work closely to educate the public to reduce this growing epidemic. (Venketasubramanian et al.,2017). Despite varying lengths of stay (1-30 days), none of our participants received any form of rehabilitation during their acute hospital admission. A previous review found that patients with acute stroke who receive multidisciplinary stroke rehabilitation were more likely to survive, regain independence and return home (Stroke Unit Trialists' Collaboration, 2013).

Greater functional outcomes on discharge and follow-up were associated with higher initial functioning following the stroke and early initiation of multidisciplinary stroke rehabilitation (Cifu and Stewart, 1999). Stroke describes the importance of rehabilitation professionals assessing stroke patients as soon as possible post-admission. This is supported by who found greater functional gain and shorter length of stay in hospital with patients who received stroke rehabilitation within 30 days of their first stroke (Salter et 39 al.,2006). The National Institute for Health and Care Excellence (2013) also suggests that health and social care professionals should work together to promptly assess patients prior to discharge from hospital. This guideline recommends that people with disability following stroke should receive a

multidisciplinary approach to rehabilitation, including being offered 45 minutes of each relevant therapy for a minimum of 5 days a week in a stroke unit. Furthermore, rehabilitation should be continued once in the community by a specialist stroke team. The lack of provision of any form of rehabilitation whilst in hospital and lack of advice to seek rehabilitation on discharge, may have contributed to the patients' poor satisfaction level with the healthcare system. (Hebert et al,. 2016).

In addition to the lack of rehabilitation whilst in hospital, there are several other factors feed into the delay of initiating rehabilitation. These include the inconsistent advice and low rate of onward referrals from medical professionals (40%) to commence rehabilitation and absence of a pathway linking patients into rehabilitation facilities on discharge. For instance, one participant did not receive any rehabilitation until 9 months post-stroke. This time delay results in an increased risk of secondary complications occurring without therapy intervention (Brandstater and Shutter, 2002). Studies have found that significant improvements are made in rehabilitation in the first 3 months following stroke, with the recovery rate decreasing between 3 and 6 months (Verheyden et al, 2008 and Lee et al,. 2015).

The life changing effects of stroke on patients, understandably results in challenges to readjust upon returning home. The personal, social and economic impact on stroke survivors has been well documented (Daniel et al, 2009 and Walsh et al,. 2015). Common challenges in this study included financial problems, social isolation and difficulties walking. We found the most common challenge among participants and caregivers was the financial burden of stroke supported similar findings in their review. (Mishra et al,. (2016).

The study aimed to assess the level of knowledge on prevention of stroke among people in different part of Bangladesh. The data was collected by the researcher himself. Structured questions were used with both open-ended and close-ended questions in the questionnaire. This study's participant means and standard deviation of participant age where are Mean ± SD= 42.52±14.465; here 18-38years 44.4% (67), 39-59 years 39.1% (59) and >59 years 16.6% (25) of the participant.

In this study 75.6% participant were male and 24.4% participant were female. In this study 68.9% participant were living in rural, 6.0% participant were living in semi urban and 25.2% participant were living in urban. In this study 37.7% were SSC, 17.2% were HSC, 17.2% were graduation and 7.3% were others, this study 64% were nuclear and extended was 33%, others 3%.. In this study 23.8% were job, 24.4% were Business and 51.8% others. This study's participant means and standard deviation of participant income was Mean ± SD= 14112.58±11874.086; here 0-10000 taka 83.4% (126), >22000 taka 16.6% (25 of the participant, this study 97% were muslim and 3% were hindhu. In this study 82.8% were married and 16.6% were unmarried, others 0.7.

In this study 54% know about stroke and 40% do not know,6% no idea. In this study 31% yes and 68% No. Here Hemorrhagic 13.9%, Ischemic 15.3% and Transient ischemic attack (TIA) 4.0%. In this study 22.5% were Yes, my first-degree relatives had stroke, 23.8% were Yes, my second-degree relatives had stroke, 31.8% were I looked after a stroke patient 1.3% No contact with any stroke patient. In this study 2%% were lung ,93.4% were brain., liver were 1.3% and heart were 3.3. In this study Disturbances of speaking and understanding 22.5% One-sided weakness 23.8%, Loss of sensation on the one side 31.1%, Facial weakness on the one side 7.9%, Severe headache 11.3%, Vertigo/imbalance 2.0%, Any vision disturbness1,3%.

In this study Emergency service 41.1%,Neurology outpatient clinics 45.7%, Neurosurgery outpatient clinics 4.6%, Family physician 5.3 and internal medicine outpatient clinics were 3.3%. In this study Pour water over the patients head 43.7%, Call the ambulance/take the patient to hospital 38.4, Wait a little because the patient might heal 2.6%, I have no idea 17.8. In this study High blood pressure 86.8%, Diabetes Mellitus 4.4%, High blood cholesterol 5.3%, Smoking 10.6%, Excessive alcohol 1.3%, Cardiac disease 2.0%. In this study Sudden chest pain 19.2%, Sudden numbness or weakness in the face, arm, or leg 56.3%, Sudden trouble walking, dizziness, loss of balance 19.9%. sudden shortness of breath 4.6%. This study was Neurology hospital 86.4%, General hospital 10.6%, Cardiovascular hospital 1.3%, Urology hospital 0.7%.

In this study were 40.4% Yes and 59.6% participant was do not thinks ever been hospitalized. The table (table no.5) shows that the chi value was .002 and the P-value was 17.256. So, there is significant Association between Age group of the participant and Participant know about stroke. The table (table no.6) shows that the chi value was .853 and the P-value was .786 . So, there is no significant association between Gender of the Participant and Participant thinks symptom of a stroke.

CHAPTER-VI	CONCLUSION AND RECOMMENDATIONS

CONCLUSION

The study aimed to assess the level of knowledge on prevention of stroke among general people in Bangladesh. Young age, urban residence, and having long duration hypertension follow-up were predictors of good knowledge on stroke prevention. These findings have immense importance of different stakeholders that have responsibilities on the reduction of hypertension complications characteristically stroke. Further, it is chief for health-care providers for hypertension intervention activities. In addition to being crucial for healthcare professionals' hypertension intervention efforts, these findings are of great significance to various stakeholders who bear responsibility for reducing the incidence of hypertension-related complications, such as stroke. Education level was strongly correlated with stroke knowledge, but not with wealth, sex, or gender. The management of stroke patients in Bangladesh is not well handled by primary healthcare providers, therefore giving medical staff basic training will undoubtedly speed up the process of referring these patients to treatment facilities. Furthermore, we think that organizing stroke-related health camps across the nation with the help of the public media and government action might likely alter the people's understanding of and attitudes regarding stroke.

RECOMMENDATION

The recommendation evolves out of the content in which the study was conducted. Therefore main recommendation would be made. Further research of the different perspectives emerged from the study, is recommended: In Bangladesh, as a new knowledge on prevention of stroke among people in different part of Bangladesh. should be strong evidenced based so that can develop a with other professionals standard in comparison with the support of the global evidence of rigorous. This type of study should be considered that need to be collected adequate resources that knowledge on this area could be extended and later result can obtain to generalize to the population. During further research it is recommended to take more samples with adequate time to solve the recent problems areas for better result and perspectives.

REFERENCE

Ariful Islam, M., Rahman, A., Aleem, M.A. and Islam, S.M.S., 2016. Prevalence and associated factors of depression among post-stroke patients in Bangladesh. *International journal of mental health and addiction*, *14*, pp.154-166.

Boulanger, J.M., Lindsay, M.P., Gubitz, G., Smith, E.E., Stotts, G., Foley, N., Bhogal, S., Boyle, K., Braun, L., Goddard, T. and Heran, M.K.S., 2018. Canadian stroke best practice recommendations for acute stroke management: prehospital, emergency department, and acute inpatient stroke care, update (2018). *International Journal of Stroke*, *13*(9), pp.949-984.

Campbell, B.C., De Silva, D.A., Macleod, M.R., Coutts, S.B., Schwamm, L.H., Davis, S.M. and Donnan, G.A., (2019). Ischaemic stroke. *Nature Reviews Disease Primers*, *5*(1), pp.1-22.

Cheung, R.T.F., 2014. A systematic approach to the definition of stroke. *Austin Journal of Cerebrovascular Disease & Stroke*.

Coupland, A.P., Thapar, A., Qureshi, M.I., Jenkins, H. and Davies, A.H., (2017). The definition of stroke. *Journal of the Royal Society of Medicine*, *110*(1), pp.9-12.

Dar, N.Z., Khan, S.A., Ahmad, A. and Maqsood, S., (2019). Awareness of stroke and health-seeking practices among hypertensive patients in a tertiary care hospital: a cross-sectional survey. *Cureus*, *11*(5).

Dichgans, M., Pulit, S.L. and Rosand, J., (2019). Stroke genetics: discovery, biology, and clinical applications. *The Lancet Neurology*, *18*(6), pp.587-599.

Farrag, M.A., Oraby, M.I., Ghali, A.A., Ragab, O.A., Nasreldein, A., Shehata, G.A., Elfar, E. and Abd-Allah, F., (2018). Public stroke knowledge, awareness, and response to acute stroke: Multi-center study from 4 Egyptian governorates. *Journal of the neurological sciences*, *384*, pp.46-49.

Feigin, V.L., Brainin, M., Norrving, B., Martins, S., Sacco, R.L., Hacke, W., Fisher, M., Pandian, J. and Lindsay, P., (2022). World Stroke Organization (WSO): global stroke fact sheet (2022). *International Journal of Stroke*, *17*(1), pp.18-29.

Fekadu, G., Chelkeba, L. and Kebede, A., (2019). Risk factors, clinical presentations and predictors of stroke among adult patients admitted to stroke unit of Jimma university medical center, south west Ethiopia: prospective observational

study. *BMC neurology*, *19*(1), pp.1-11.

Healey, J.S., Amit, G. and Field, T.S., (2020). Atrial fibrillation and stroke: how much atrial fibrillation is enough to cause a stroke?. *Current Opinion in Neurology*, *33*(1), pp.17-23.

Hankey, G.J., and Blacker, D.J., (2015). Is it a stroke, BMJ, P.P: 1-6; doi: 10.1136/bmj.h56

Hussain, K., and Morrisse,H., (2019). PHARMACIST LED – STROKE PUBLIC HEALTH AWARENESS, International Journal of Current Research, Vol. 11, Issue, 04, pp.2799-2805; DOI: https://doi.org/10.24941/ijcr.34979.04.2019

Islam, M.N., Moniruzzaman, M., Khalil, M.I., Basri, R., Alam, M.K., Loo, K.W. and Gan, S.H., 2013. Burden of stroke in Bangladesh. *International journal of stroke*, *8*(3), pp.211-213.

Kalkonde, Y.V., Alladi, S., and Kaul, H., Hachinski, V., (2018). Stroke Prevention Strategies in the Developing World. Stroke, 49:3092-3097, DOI: 10.1161/STROKEAHA.118.017384.

Kalkonde, Y.V., Alladi, S., Kaul, S. and Hachinski, V., (2018). Stroke prevention strategies in the developing world. *Stroke*, *49*(12), pp.3092-3097.

Krishnamurthi, R.V., Barker-Collo, S., Barber, P.A., Tippett, L.J., Dalrymple-Alford, J.C., Tunnage, B., Mahon, S., Parmar, P.G., Moylan, M. and Feigin, V.L., (2020). Community knowledge and awareness of stroke in New Zealand. *Journal of Stroke and Cerebrovascular Diseases*, *29*(3), p.104589.

Kuriakose, D. and Xiao, Z., (2020). Pathophysiology and treatment of stroke: present status and future perspectives. *International journal of molecular sciences*, *21*(20), p.7609.

Li, S., Cui, L.Y., Anderson, C., Zhu, S., Xu, P., Wei, T., Luo, Y., Chen, S., Jiang, N., Hong, Y. and Liu, W., (2019). Public awareness of stroke and the appropriate responses in China: a cross-sectional community-based study (FAST-RIGHT). *Stroke*, *50*(2), pp.455-462.

Lindsay, M.P., Norrving, B., Sacco, R.L., Brainin, M., Hacke, W., Martins, S., Pandian, J. and Feigin, V., (2019). World Stroke Organization (WSO): global stroke fact sheet 2019.

Luengo-Fernandez, R., Violato, M., Candio, P. and Leal, J., (2020). Economic

burden of stroke across Europe: A population-based cost analysis. *European stroke journal*, *5*(1), pp.17-25.

Mousa, O., Almujhem, A.A., AlJumaan, R.O., AlOthman, M.A. and Sayed, A., (2020). Public awareness of stroke among adult people in eastern region of saudi arabia, community-based cross-sectional study. *Merit Research Journal of Medicine and Medical Sciences*, *8*, p.319.

Norrving, B., Barrick, J., Davalos, A., Dichgans, M., Cordonnier, C., Guekht, A., Kutluk, K., Mikulik, R., Wardlaw, J., Richard, E. and Nabavi, D., (2018). Action plan for stroke in Europe 2018–2030. *European stroke journal*, *3*(4), pp.309-336.

Pandian, J.D., Gall, S.L., Kate, M.P., Silva, G.S., Akinyemi, R.O., Ovbiagele, B.I., Lavados, P.M., Gandhi, D.B. and Thrift, A.G., (2018). Prevention of stroke: a global perspective. *The Lancet*, *392*(10154), pp.1269-1278.

Shi, K., Tian, D.C., Li, Z.G., Ducruet, A.F., Lawton, M.T. and Shi, F.D., 2019. Global brain inflammation in stroke. *The Lancet Neurology*, *18*(11), pp.1058-1066.

Stroke., (2022). National Center for Chronic Disease Prevention and Health Promotion , Division for Heart Disease and Stroke Prevention. Available: https://www.cdc.gov/stroke/about.htm#:~:text=A%20stroke%2C%20sometimes%20called%20a,term%20disability%2C%20or%20even%20death, [assessed on 1 January 2023].

Wu, S., Wu, B.O., Liu, M., Chen, Z., Wang, W., Anderson, C.S., Sandercock, P., Wang, Y., Huang, Y., Cui, L. and Pu, C., (2019). Stroke in China: advances and challenges in epidemiology, prevention, and management. *The Lancet Neurology*, *18*(4), pp.394-405.

Mamin, F.A., Islam, M.S., Rumana, F.S. and Faruqui, F., 2017. Profile of stroke patients treated at a rehabilitation centre in Bangladesh. *BMC research notes*, *10*(1), pp.1-6.

Mohammad, Q.D., Habib, M., Mondal, B.A., Chowdhury, R.N., Hasan, M.H., Hoque, M.A., Rahman, K.M., Khan, S.U., Chowdhury, A.H. and Haque, B., 2014. Stroke in Bangladeshi patients and risk factor. *Mymensingh medical journal: MMJ*, *23*(3), pp.520-529.

Pandian, J.D., Gall, S.L., Kate, M.P., Silva, G.S., Akinyemi, R.O., Ovbiagele, B.I., Lavados, P.M., Gandhi, D.B.C., and G Thrift, A.G., (2018). Prevention of stroke:

a global perspective. Series of three papers about stroke, Vol 392, [online]. Available < www.thelancet.com> [accessed on 12 December 2022].

Simiao,W, Wu, B., Ming, L., Chen, Z., Craig, S., (2019). Stroke in China: advances and challenges in epidemiology, prevention, and managemen, Neurological diseases in China 2, vol. 18; p.p. 316,

Zaman, M.M., Choudhury, S.R., Ahmed, J., Hussain, S.M.A., Sobhan, S.M.M. and Turin, T.C., 2015. Prevalence of stroke in a rural population of Bangladesh. *Global Heart*, *10*(4).

APPENDIX- I

SAIC COLLEGE OF MEDICAL SCIENCE AND TECHNOLOGY
Approved by Ministry of Health and Family Welfare
Affiliated with Dhaka University

Date : ....

Ref :
Ref.No: SCMST/PT/ERB-2017-18/1-2023/02

3rd January'2023

To

Mehedi Hasan

4th Professional B.Sc. in Physiotherapy

Saic College of Medical Science and Technology (SCMST)

Mirpur-14, Dhaka-1216.
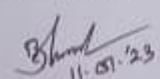
Sub: Permission to collect data
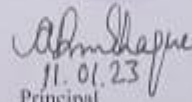
Dear Hasan,

Ethical review board (ERB) of SCMST pleased to inform you that your proposal has been reviewed by ERB of SCMST and we are giving you the permission to conduct study entitled "Evaluation of awareness for stroke prevention in general population in Bangladesh" and for successful completion of this study you can start data collection from now.

Wishing you all the best.

Thanking You,

11-01-23
Head of ERB
Ethical Review Board
Saic College of Medical Science and Technology

11.01.23
Principal
Saic College of Medical Science and Technolog
Mirpur-14, Dhaka-1216

Address: Saic Tower, M-1/6, Mirpur-14, Dhaka-1216.Mobile:01936005804
E-mail: simt140@gmail.com, Web:www.saicmedical.edu.bd

VERBAL CONSENT FORM (English)

(Please read out to the participant)

Respected……………

I am Mehedi Hasan student of B.Sc. in Physiotherapy is Conducting a study titled **knowledge on prevention of stroke among general people in Bangladesh**. The objectives of the study are to assess the level of knowledge on prevention of stroke among people in different part of Bangladesh.

You will be selected as participant based on your performances. Should we proceed?

-Yes

-No

If yes, please give your sincere response to the following questions.

Thanks for filling up the questionnaire. The Contents of the questionnaire are confidential and no other persons will be able to see your data. The answers to this questionnaire will go only to the researchers and information identifying faculties and staffs will not be disclosed. I appreciate the time that you spare to participate in this study to ensure its success. Your support is invaluable and very much appreciated

Consent Letter

 I have already been informed about this research project and understood all the information that has been given. I have also been assured that all information obtained is strictly confidential and will be used only for medical research purposes. Herewith, I am willing to participate in this Research project.

Respondent   **Researcher**

Initials: Signature:

Time: Date:

KNOWLEDGE ON PREVENTION OF STROKE AMONG PEOPLE IN
DIFFERENT PART OF BANGLADESH

Code no : | | | | **Date:**

Participant name: …………………………………………..

Address   :…………………………………………………

Mobile No.,,,

Section: 1. Sociodemographic information.

Q.N	Question	Ans.
1.	What is your age?	
2.	What is your gender? 1. Male 2. Female 3. Others	
3.	Where do you live? 1. Urban 2. Semi urban 3. Rural	
4.	What is your education level? 1. SSC	

	2. HSC 3. Graduate 4. Post Graduate 5. Others	

5.	Types of your family?
	
	     1. Nuclear
	
	     2. Extended
	
	     3. Others	

6.	What is your Occupation? 1. Job 2. Business 3. Other	,
7.	What's about your monthly income? …………………………………………	

8.	What is your religion?
	
	     1. Muslim
	
	     2. Hindu
	
	     3. Buddhist
	
	     4. Christian
	
	     5. Others	

Q.N	Question	Ans.
9.	What is your marital status? 1. Married 2. Unmarried 3. Others	

Section: 2. Stroke awareness related information

Q.N	Question	Ans.
1.	Do you know about stroke ? 1. Yes 2. No 3. No idea	
2.	Do you know types of stroke? 1. Yes 2. No	
3.	Have you ever had a stroke? 1. Yes 2. No If yes please specify 1. Hemorrhagic 2. Ischemic 3. Transient ischemic attack (TIA)	

4.	Do you have any Family History of Stroke? 1. Yes 2. No	☐
5.	Do you have any Personally know someone with stroke? 1. Yes 2. No	☐
6.	Do you thinks stroke is contagious? 1. Yes 2. No	☐
7.	Do you think stroke can be prevented? 1. Yes 2. No	☐
8.	Is stroke a hereditary disease? 1. Yes 2. No	☐
9.	Do you think stroke is caused by ancestor's sin? 1. Yes 2. No	☐
10.	Is stroke an old person disease? 1. Yes 2. No	☐
11.	Do you know exercise can prevent stroke? 1. Yes	

	2. No	

12.	Have you had any contact with a stroke patient?
	
	    1. Yes, my first-degree relatives had stroke
	
	    2. Yes, my second-degree relatives had stroke
	
	    3. I looked after a stroke patient
	
	    4. No contact with any stroke patient	

13.	Which organ is related to stroke?
	
	    1. Lung
	
	    2. Brain
	
	    3. Liver
	
	    4. Kidney
	
	    5. Heart	

14.	Awareness of stroke symptoms: Which of the followings are signs of stroke?
	
	    1. Disturbances of speaking and understanding
	
	    2. One-sided weakness
	
	    3. Loss of sensation on the one side
	
	    4. Any vision disturbances
	
	    5. Vertigo/imbalance
	
	    6. Facial weakness on the one side
	
	    7. Severe headache	

15.	Awareness that stroke treatment is urgent: Where a patient with a stroke should be taken?	

	1. Emergency service 2. Neurology outpatient clinics 3. Neurosurgery outpatient clinics 4. Family physician 5. Internal medicine outpatient clinics	☐
16.	What would you do if you encounter a stroke patient? 1. Pour water over the patients head 2. Call the ambulance/take the patient to hospital 3. Wait a little because the patient might heal 4. I have no idea	☐
17.	Awareness of stroke risk factors: What are the risk factors for stroke? 1. High blood pressure 2. Diabetes Mellitus 3. High blood cholesterol 4. Cardiac disease 5. Smoking 6. Excessive alcohol	☐
18.	Do you know which of these is a symptom of a stroke? 1. Sudden chest pain 2. Sudden shortness of breath. 3. Sudden numbness or weakness in the face, arm, or leg 4. Sudden trouble walking, dizziness, loss of balance	☐

19.	What kind of hospital will you go to?
	
	   1. Neurology hospital
	
	   2. Cardiovascular hospital
	
	   3. Urology hospital
	
	   4. General hospital
		☐

20.	Have you ever been hospitalized? 1. Yes 2. No If yes please specify- 1. 1 day 2. 6 days 3. 12 days 4. More than 12 days	☐ ☐

সম্মতিপত্র

উত্তর দাতার আইডি নাম্বার

প্রিয় অংশগ্রহনকারী

আমি মেহেদী হাসান সাইক কলেজ অব মেডিকেল সায়েন্স এন্ড টেকনোলজি এর বি এস সি ইন ফিজিওথেরাপী বিভাগের একজন ছাত্র । আমার বি এস সি ইন ফিজিওথেরাপী ডিগ্রি সম্পন্ন করতে গবেষণার অংশ হিসেবে **বাংলাদেশের সাধারণ মানুষের মধ্যে স্ট্রোক প্রতিরোধ সম্পর্কে জ্ঞান** শিরোনামে একটি গবেষণার কাজ করছি। এখানে আপনার সামাজিক-জনতাত্ত্বিক তথ্য এবং স্ট্রোক প্রতিরোধে সচেতনতা সম্পর্কিত কিছু প্রশ্ন দেয়া আছে যা আপনাকে পুরন করতে হবে। আপনার নিজের দ্বারা দেয়া এই সাক্ষাতকার দিতে ১০-১৫ মিনিট সময় লাগবে। এখানে প্রশ্নাবলীর একটা তালিকা দেয়া আছে এবং আপনাকে প্রত্যেকটি প্রশ্নের উত্তর দিতে হবে ।এই গবেষণায় প্রাপ্ত তথ্য শুধু মাত্র শিক্ষা ক্ষেত্রে ব্যবহার করা হবে এবং অংশগ্রহণকারীর ব্যক্তিগত তথ্য সম্পূর্ণ গোপনীয়তার মধ্যে থাকবে, অন্য কোথাও প্রকাশ করা হবে না। গবেষণা সময়ে অংশগ্রহনকারী কোনরকম দ্বিধা বা ঝুকি ছাড়াই যেকোনো সময় এটাকে বাদ দিতে পারবেন। আপনার একান্ত সহযোগীতা কামনা করছি।

অংশগ্রহনকারীর ঘোষনা

আমাকে এই গবেষণার জন্য আমন্ত্রন জানানো হয়েছে এবং সম্পূর্ণ প্রশ্ন গুলো পড়ে বুঝানো হয়েছে এবং আমি কোন ধরনের দ্বিধা ছাড়াই উত্তর দিয়েছি। আমি লক্ষ্য করেছি এই গবেষণায় আমার অংশগ্রহন সম্পূর্ণ স্বেচ্ছায় এবং কোন রকম ঝুকি ছাড়াই আমি যেকোনো সময় এটাকে বাদ দিতে পারব। আমি এই গবেষণায় অংশগ্রহণে সম্পূর্ণ সম্মতি জ্ঞাপন করছি।

অংশগ্রহনকারীর নাম : ....

স্বাক্ষর / টিপসই এবং তারিখ:...

বাংলাদেশের সাধারণ মানুষের মধ্যে স্ট্রোক প্রতিরোধ সম্পর্কে জ্ঞান

তারিখঃ

কোড

অংশগ্রহণকারীর

নামঃ...

ঠিকানাঃ..

....

মোবাইল নাম্বারঃ...

অধ্যায়ঃ ১- সামাজিক-জনতান্ত্রিক তথ্য

প্রশ্ন নং	প্রশ্ন	উত্তর
১।	আপনার বয়স কত ?..	
২।	আপনার লিঙ্গ কি? ১।পুরুষ ২।মহিল	
৩।	আপনি কোথায় বাস করেন ? ১। শহর ২। মফস্বল ৩। গ্রাম	
৪।	আপনার শিক্ষাগত যোগ্যতা কি? ১। এসএসসি ২। এইচএসসি ৩। স্নাতক	

	৪। স্নাতকোত্তর	
	৫। অন্যান্য	
৫।	আপনি কোন ধরণ এর পরিবারের বাস করেন?	
	১। একক	
	২। যৌথ	
	৩। অন্যান্য	
৬।	আপনার পেশা কি?	
	১। চাকরি	
	২। ব্যবসা	
	৩। অন্যান্য	
৭।	আপনার মাসিক আয় কত?..	
৮।	আপনার ধর্ম কি?	
	১। মুসলিম	
	২। হিন্দু	
	৩।বৌদ্ধ	
	৪।খ্রিস্টান	
	৫।অন্যান্য	
৯।	আপনার বৈবাহিক অবস্থা কি?	
	১। বিবাহিত	
	২। অবিবাহিত	
	৩।অন্যান্য	

অধ্যায়ঃ ২. স্ট্রোক সচেতনতা সম্পর্কিত তথ্য

প্রশ্ন নং	প্রশ্ন	উত্তর
১।	আপনি কি স্ট্রোক সম্পর্কে জানেন? ১। হ্যাঁ ২। না ৩। কোন ধারণা নেই	
২।	আপনি কি স্ট্রোকের প্রকার জানেন? ১। হ্যাঁ ২। না	
৩।	আপনার কি কখনও স্ট্রোক হয়েছে? ১।হ্যাঁ ২।না যদি হ্যাঁ হয় অনুগ্রহ করে উল্লেখ করুন ১। হেমোরেজিক ২। ইস্কেমিক ৩। ক্ষণস্থায়ী ইস্কেমিক আক্রমণ (টিআইএ)	
৪।	আপনার কি স্ট্রোকের কোনো পারিবারিক ইতিহাস আছে? ১। হ্যাঁ ২। না	
৫।	আপনি কি স্ট্রোক আক্রান্ত কাউকে ব্যক্তিগতভাবে চেনেন? ১। হ্যাঁ ২। না	
৬।	আপনি কি মনে করেন স্ট্রোক সংক্রামক? ১। হ্যাঁ	

	২। না	
৭।	আপনি কি মনে করেন স্ট্রোক প্রতিরোধ করা যায়? ১। হ্যাঁ ২। না	
৮।	স্ট্রোক কি বংশগত রোগ? ১। হ্যাঁ ২। না	
৯।	আপনি কি মনে করেন পূর্বপুরুষের পাপের কারণে স্ট্রোক হয়? ১। হ্যাঁ ২। না	
১০।	স্ট্রোক একটি বৃদ্ধ ব্যক্তি রোগ? ১। হ্যাঁ ২। না	
১১।	আপনি কি জানেন ব্যায়াম স্ট্রোক প্রতিরোধ করতে পারে? ১। হ্যাঁ ২। না	
১২।	আপনার কি একজন স্ট্রোক রোগীর সাথে কোন যোগাযোগ আছে? ১। হ্যাঁ, প্রথম ডিগ্রির আত্মীয়দের স্ট্রোক হয়েছিল ২।হ্যাঁ, আমার সেকেন্ড-ডিগ্রী আত্মীয়দের স্ট্রোক হয়েছিল ৩। আমি একজন স্ট্রোক রোগীর দেখাশোনা করেছি ৪। কোনো স্ট্রোক রোগীর সাথে যোগাযোগ নেই	
১৩।	কোন অঙ্গ স্ট্রোকের সাথে সম্পর্কিত? ১। ফুসফুস ২। মস্তিষ্ক ৩। যকৃত	

	৪। কিডনি	
	৫। হৃদয়	
১৪।	স্ট্রোকের লক্ষণ সম্পর্কে সচেতনতা: নিচের কোনটি স্ট্রোকের লক্ষণ? ১।কথা বলা এবং বোঝার ব্যাঘাত ২। একতরফা দুর্বলতা ৩।একদিকে সংবেদন হারানো ৪। কোন দৃষ্টি ব্যাঘাত ৫। ভার্টিগো/ভারটিগো ৬। একদিকে মুখের দুর্বলতা ৭। তীব্র মাথাব্যথা	
১৫।	সচেতনতা যে স্ট্রোকের চিকিৎসা জরুরি: স্ট্রোকের রোগীকে কোথায় নেওয়া উচিত? ১। জরুরী পরিষেবা বিভাগ ২। নিউরোলজি বহিরাগত রোগীদের ক্লিনিক ৩। নিউরোসার্জারি বহিরাগত রোগীদের ক্লিনিক ৪। পারিবারিক চিকিৎসা ৫। অভ্যন্তরীণ ঔষধ ও বহিরাগত রোগীদের ক্লিনিক	
১৬।	আপনি যদি স্ট্রোক রোগীর মুখোমুখি হন তবে আপনি কী করবেন? ১। রোগীর মাথায় জল ঢালা ২। অ্যাম্বুলেন্স কল করুন/রোগীকে হাসপাতালে নিয়ে যান ৩। একটু অপেক্ষা করুন কারণ রোগী সুস্থ হতে পারে ৪। আমার কোন ধারণা নাই	
১৭।	স্ট্রোকের ঝুঁকির কারণ সম্পর্কে সচেতনতা: স্ট্রোকের ঝুঁকির কারণগুলি কী কী? ১। উচ্চ রক্তচাপ ২। ডায়াবেটিস মেলিটাস ৩। উচ্চ রক্তের কোলেস্টেরল ৪। কার্ডিয়াক রোগ	

	৫। ধূমপান	
	৬।অতিরিক্ত অ্যালকোহল	
১৮।	আপনি কি জানেন এইগুলির মধ্যে কোনটি স্ট্রোকের লক্ষণ?	
	১। হঠাৎ বুকে ব্যথা	☐
	২। হঠাৎ শ্বাসকষ্ট।	
	৩। মুখ, বাহু বা পায়ে হঠাৎ অসাড়তা বা দুর্বলতা	
	৪। হঠাৎ হাঁটতে সমস্যা, মাথা ঘোরা, ভারসাম্য হারানো	
১৯।	আপনি কোন ধরনের হাসপাতালে যাবেন?	
	১। নিউরোলজি হাসপাতাল	☐
	২। কার্ডিওভাসকুলার হাসপাতাল	
	৩। ইউরোলজি হাসপাতাল	
	৪। সাধারন হাসপাতাল	
২০।	আপনি কি কখনো হাসপাতালে ভর্তি ছিলেন?	☐
	১।হ্যাঁ	
	২।না	
	যদি হ্যাঁ হয় অনুগ্রহ করে উল্লেখ করুন-	
	১। ১ দিন	
	২। ৬ দিন	☐
	৩। ১২ দিন	
	৪। ১২ দিনের বেশি	

APPENDIX- VI

Gant Chart

Activities/ Month	July 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	App 23	May 23	Jun 23
Proposal Presentation	■											
Introduction	■	■										
Literature Review	■	■	■	■	■	■	■	■	■	■	■	■
Methodology			■	■								
Data collection						■	■	■				
Data Analysis									■			
Result									■			
1st progress presentation										■		
Discussion											■	
Conclusion and Recommendation											■	
2nd progress presentation										■		
Communication with supervision	■	■	■	■	■	■	■	■	■	■	■	■
Final Submission												■