Faculty of Medicine

University of Dhaka

IMPACT OF FATIGUE AND PAIN SEVERITY ON PHYSIOTHERAPY TREATMENT OUTCOME AMONG THE STROKE PATIENTS ATTENDING AT CRP, SAVAR

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Bangladesh

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IMPACT OF FATIGUE AND PAIN SEVERITY ON PHYSIOTHERAPY TREATMENT OUTCOME AMONG THE STROKE PATIENTS ATTENDING AT CRP, SAVAR

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

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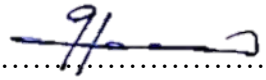

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DECLARATION

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 decline that same any publication, presentation or dissemination of information of the study. I would bind to take consent from the department of Physiotherapy of Bangladesh Health Profession Institute (BHPI).

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Acronyms

ADL	Activities of Daily Living
BHPI	Bangladesh Health Professions Institute
BI	Barthel Index
BMRC	Bangladesh Medical Research Council
BSS	Berg Balance Scale
CNS	Central Nervous System
CRP	Centre for the Rehabilitation of the Paralysed
CVA	Cerebrovascular Accident
DALY	Disability-adjusted life years
FSS	Fatigue Severity Scale
HRQOL	Health Related Quality of Life
IASP	International Association for the Study of Pain
ICH	Intracerebral Hemorrhage
IRB	Institutional Review Board
PAS	Pain After Stroke
PSF	Post Stroke Fatigue
SAH	Subarachnoid Hemorrhage
SPSS	Statistical Package for the Social Sciences
VAS	Visual Analog Scale
WHO	World Health Organization

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Abstract

Purpose: The study was conducted to identify the impact of fatigue and pain among stroke patients who were receiving treatment from the Center for the Rehabilitation of the Paralysed (CRP).

Specific Objective. To find out the demographic status of the participants. To evaluate the severity of fatigue. To evaluate the severity of fatigue and pain in cerebral infarction patients. To detect association between post stroke fatigue and pain among stroke patients.

Method: The cross-sectional study conducted by using convenience sampling procedure. The study population was all the stroke people who are receiving treatment at CRP. Total 110 participants were selected conveniently for this study within 18 to 75 of age range. Data was collected by using FSS, BSS, VAS and BI questionnaire. Data were analyzed through SPSS 20 version.

Result: Among 110 participants fifty six percent participants (n=62) were reported not fatigue and forty four percent (n=48) participants reported about their fatigue. Majority of the participants about fifty two percent reported moderate pain and about twenty two percent reported severe pain. In this research the mean age of the patient was 3.71 ±(1.35). Fatigue and pain was detected by FSS and VAS scale and the association of impact was measured with BSS and BI, from these dimensions the mean score of fatigue was 1.44 ±(4.98), and pain was 2.94±(0.78).

Conclusion: Study shows that pain causes lower ADL among survivors and intensity of pain have a significant association and co-relation with functional outcome. Therefore, PSF is related to function, balance, and cognitive functioning. When planning and carrying out therapies for stroke patients, fatigue should be taken into consideration.

Keyword: Stroke, Impact of fatigue and pain, Treatment outcome.

CHAPTER – I INTRODUCTION

1.1 Background

Fatigue following a stroke is frequent. More than 50% of stroke survivors report feeling fatigued in significant studies conducted over the first two years after the stroke. The majority of stroke survivors, even those with moderate impairments, report feeling fatigued. More than three times as many stroke survivors report feeling fatigued as age-matched controls. The diagnosis and evaluation of fatigue following a stroke substantially draws on earlier research in disorders like multiple sclerosis (Cumming et al. 2016).

Fatigue is a hidden but frequent issue among more than 80 million stroke survivors worldwide. A sense of depletion, low perceived energy, or tiredness is what is often referred to as fatigue, which is distinct from melancholy or weakness. Observational studies have demonstrated that early fatigue persists over 6–18 months after a stroke, with poststroke fatigue lasting at least six months in 26–47.3% of stroke survivors. Additionally, poststroke fatigue has been linked to inadequate daily living activities (ADL), a decline in health-related quality of life (HRQoL), and a greater fatality rate (Teng et al. 2022).

The feeling of being fatigued is particular. Stroke patients describe their state of fatigue as "a general feeling of tiredness", "a tiredness in the muscles", or "mental tiredness". After a stroke, fatigue leads to it being desirable to get more rest and sleep (Ho et al. 2020).

Brain stimulation may provide information about the etiology of PSF, if abnormal brain network activity or the involvement of particular brain areas is involved. This involves determining correlations with network integrity, "brain activity," and structural anatomical parameters like infarct location and size. Although some studies have identified links between neuroimaging characteristics and fatigue, such as subcortical infarcts and white matter hyperintensity, others have not confirmed these findings. The majority of studies describing the associations have been small (Jolly et al. 2023).

Post-stroke fatigue has a negative influence on patient independence and quality of life, and there is strong evidence linking it to high rates of morbidity and mortality. According to reports, this disorder affects between 29 and 68% of stroke survivors. Researchers have

become more and more interested in post-stroke fatigue, especially over the past ten years, but there is still a dearth of substantial data to assess its occurrence and identify the causes of its variability. There is a need for a synthesis of the research addressing this condition's occurrence and the reasons for its variation between studies because it has numerous effects on the lives of stroke survivors and their families (Alghamdi et al. 2021).

Among stroke survivors, fatigue is a prevalent somatic complaint. According to a meta-analysis, stroke survivors were fatigued between 25% and 85% of the time. According to a study, involvement in rehabilitation exercises and level of weariness were associated. The functional recovery and consequently the everyday life of stroke survivors would be impacted by a reduced degree of engagement in rehabilitation exercises. Various negative outcomes are brought on by fatigue after a stroke. It hinders those who are affected from returning to work and has a negative impact on their everyday activities and social interactions. Their quality of life is also affected (Ho et al. 2020).

Chan (1999) has argued that fatigue can be defined as 'a subjective lack of physical or mental energy (or both) that is perceived by the individual to interfere with usual or desired activities.'

In chronic neurological conditions such multiple sclerosis, Parkinson's disease, and poliomyelitis, fatigue is a common symptom. Although fatigue is a symptom of anxiety, many people often experience additional depressive symptoms in addition to their fatigue. The number of studies on fatigue in stroke patients has increased recently. It has been demonstrated that patients with cerebral infarction experience fatigue more frequently than matched controls. Several people have claimed that brainstem infarctions and basal ganglia infarctions and weariness are related. In stroke patients, fatigue may be linked to mortality. One of the toughest symptoms following a stroke, if not the worst, has reportedly been fatigue (Naess et al. 2012).

It's critical to comprehend how fatigue develops naturally after a stroke. Stroke survivors need to know whether their exhaustion is likely to get better, stay the same, or develop worse over time so they may make plans for the future, such as going back to work or engaging in past hobbies. In order to organize services appropriately, health care practitioners need to know how many stroke survivors are likely to feel exhausted at

various times. To determine how soon after a stroke a fatigue intervention should be given, researchers need to know whether exhaustion occurs right away after a stroke and how long it lasts (Duncan et al. 2012).

Considering that fatigue can have higher entrapment on stroke survivors, it is essential that you understand the breadth of the issue and the root causes. Even when depression, disability, and age are taken into account, post-stroke fatigue is still significantly linked to a low quality of life. For patients, it is also important to note that 40% of them list fatigue as one of their worst symptoms. Post-stroke fatigue restricts daily activities and has a negative impact on driving, reading, sleeping, returning to work, social engagement, and other activities of daily living. It has been connected to an increase in mortality and makes people more dependent on institutionalization and activities of daily living (Cumming et al. 2016).

The second most common cause of mortality worldwide is stroke. The functional ability and quality of life of many survivors are compromised by motor and sensorial consequences. According to the literature, there are two categories of post-stroke pain: neuropathic central post-stroke pain and pain related to peripheral mechanisms (such as musculoskeletal, spastic pain, headache, and shoulder pain) (Betancur et al. 2021).

The International Association for the Study of Pain (IASP) defines neuropathic pain as any pain brought on by a sensorimotor system lesion or disease. It may appear as an excessive reaction to a painful stimulus (hyperalgesia) or a painful response to a stimulus that is typically innocuous (allodynia), and it can be spontaneous or induced. Clinically speaking, neuropathic syndromes are characterized by a variety of symptoms other than pain, like tingling, numbness, or pins and needles. These syndromes can be divided into two groups: those that result from damage to the peripheral nervous system and those that are a result of a lesion or condition that affects the central nervous system (Liampas et al. 2020).

For a stroke survivor, experiencing pain after a stroke is a very common occurrence. Stroke-related pain can take many different forms, including neuropathic pain, central-post stroke pain, musculoskeletal pain (nociceptive pain), and pain associated with spasticity, among others (Paolucci et al. 2016).

Prior research revealed that different types of post-stroke pain range from 10% to 45.8%, and that central post-stroke pain ranges from, on average, 1% to 12% (Hansen et al. 2012).

Kumar and Elavarasi (2016) stated that, Pain is a universal indicator of any disease. It frequently has several different origins. Sometimes due to an injury, and sometimes due to a serious hidden illness. The well-known Greek philosopher "Plato" asserted that pain is a sensation that originates inside the body, implying that pain is more of an emotional experience.

According to the International Association for the Study of Pain (IASP) 1994, - "An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage" (Williams and Craig 2016).

After a stroke, pain is common in 11–66% of cases. PSP is more prevalent in individuals who experienced pain previous to their stroke, according to data from various research, pain and stroke are not always clearly associated. Headache, shoulder pain, pain from tense muscles, spasm, complicated regional pain syndrome, and central PSP are only a few of the several forms of pain syndrome. Moreover, in the bodily areas impacted by the cerebrovascular lesion, this could also have altered sensory perception and pain. Of the 271 patients 19 (7%) said they were in pain all the time, 23 (9%), regularly, 66 (24%) occasionally, and 163 (60%) never. When pain is isolated, this results in 85% reporting less frequent pain and 15% reporting more frequent pain (Westerlind et al. 2020).

Chronic pain usually develops as a typical consequence following stroke. However, it has been noted that after an ischemic stroke, chronic pain syndromes are a prevalent consequence. Additionally, the root cause of these repercussions is still not fully understood, but it is said to have a detrimental impact on quality of life in terms of health (O'Donnell et al. 2013).

Pain after a stroke (PAS) is still a medical issue that needs further attention. Aphasia, neglect syndrome, or dementia may prevent patients from describing PAS, and doctors may struggle to diagnose and treat it (due to a lack of training or the use of alternative pain scales). Other stroke non-motor symptoms, such as cognitive impairment, fatigue mood disorders, and depression, may also obscure PAS (Vuadens et al. 2005).

1.2 Rationale

Following a stroke, fatigue and pain are frequent neuropsychiatric side effects. Post-stroke fatigue and pain are viewed as obstacles for stroke patients throughout the recovery stage because they may interfere with the therapeutic process and have a detrimental impact on recovery. Important stroke patient variables that need further study include post-stroke fatigue and pain. The majority of stroke patients in Bangladesh obtain physiotherapy care later in the course of their illness, with poor results. Patients will be benefited most from physiotherapy treatment if we can identify the precise hurdles and concentrate on overcoming those specific barriers for the wellbeing of sufferers.

This study also will be helpful in making physiotherapist to aware and consider to overcome the fatigue and pain to assure the best possible treatment outcome.

It will assist to make current physiotherapy practice more holistic and effective for stroke patients.

Early detection of severity of post-stroke pain and fatigue as well as treatment of this symptoms, may help to prevent more serious effects on recovery for stroke patients.

As it is expected that it will help to give any further management of physiotherapy to the stroke patient.

1.3 Research Question

What are the impact of fatigue and pain severity among the stroke patients physiotherapy treatment outcome?

1.4 Aims of the study

To find out the impact of fatigue and pain severity among the stroke patients physiotherapy treatment outcome.

1.5 Objectives of the study

General objectives

The objective of this study is to evaluate the severity of fatigue and pain severity among the stroke patients physiotherapy treatment outcome.

Specific objectives

To explore the Socio-demographic information of the participants.

To evaluate the severity of fatigue of the respondents.

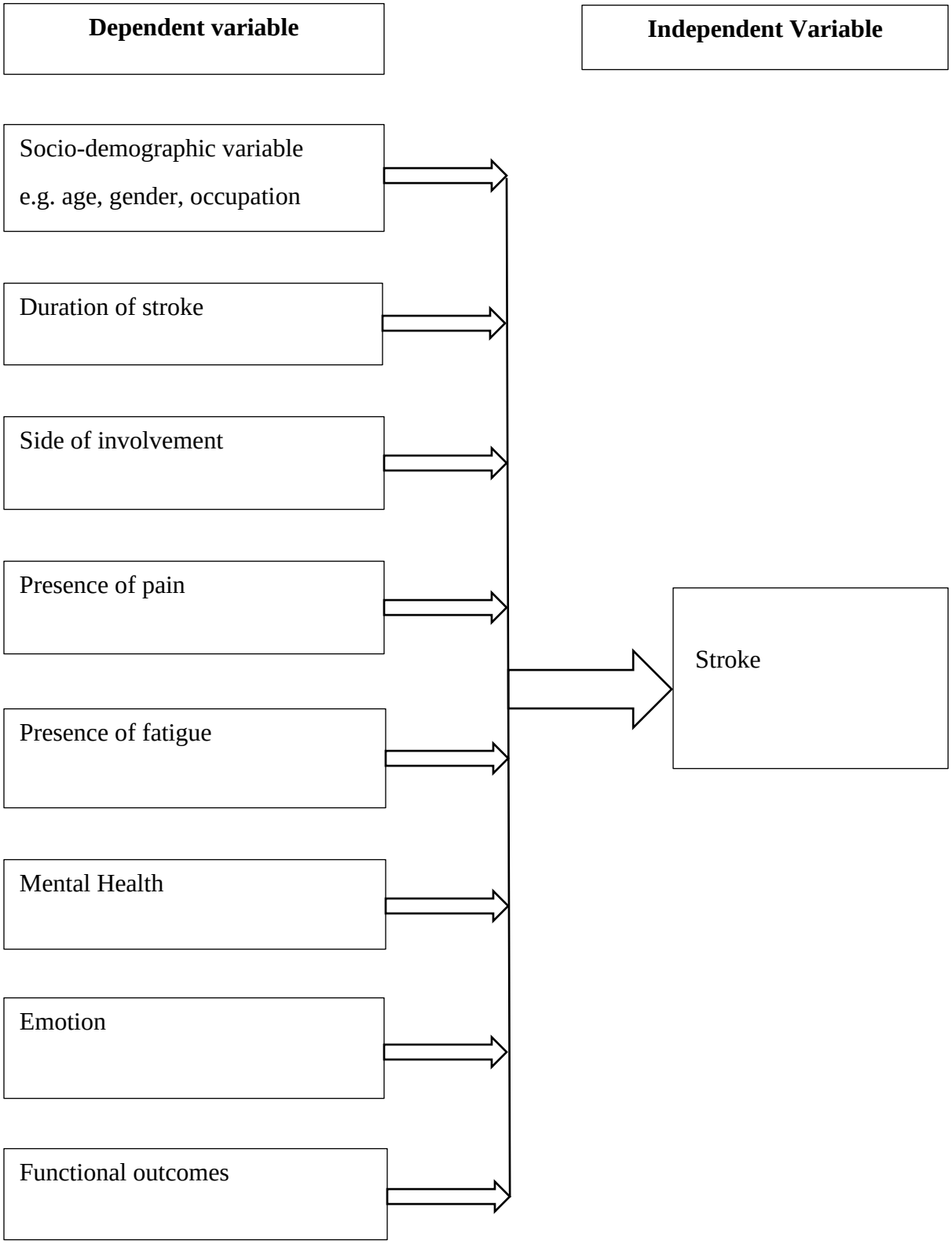
To evaluate the severity of pain of the respondents.

To determine the effect of pain and fatigue severity of patient on their physiotherapy treatment outcome.

To detect association between post stroke fatigue and pain among ischemic stroke patients with the age, gender, type of stroke of the respondents and the measurement tools (Fatigue Severity Scale, Visual Analog Scale, Berg Balance Scale and Birthel Index)

To explore the association between the severity of pain and fatigue along with the physiotherapeutic outcome of the patients suffering with stroke.

1.6 Conceptual Framework



CHAPTER: II LITERATURE REVIEW

Strokes are the third most common cause of disability and the second greatest cause of death throughout the world (Murray et al. 2012).

The Greek term "Apoplexia" originates from where the word "Stroke" comes from. The disorder known as apoplexy is characterized by the abrupt cessation of all mental functions while maintaining breathing and heart rate. Apoplexy is characterized by abrupt pain, asphyxiated loss of speech, immobility of any bodily part, and loss of bowel control, among other symptoms. However, this idea of a stroke cannot adequately characterize what a stroke is today (Coupland et al. 2017).

In 1970, the World Health Organization defined stroke as- 'rapidly developed clinical signs of focal disturbance of cerebral function, lasting more than 24 hours or leading to death, with no apparent cause other than of vascular origin'.

Statistics show that the probability of stroke increased by 84% and the fatality rate from stroke decreased by 26% in the last 20 years (1990–2010). Unsettlingly, stroke incidence has increased dramatically in low- and middle-income nations. On the other hand, in higher economic performance countries throughout the same period, the prevalence of stroke has significantly dropped. Fortunately, the death rate following a stroke has fallen to 20% in low- and middle-income countries and up to 25% in high-income ones (Feigin et al. 2014).

According to the survey conducted by Mondal et al. (2021), Bangladesh has a high prevalence of stroke with an overall prevalence of 11.39 per 1000 adult population. This is higher than other low- and middle-income nations (5.36 to 10.40 per thousand), but far lower than the reports from high-income countries (26-80 per thousand). While slightly higher than Sri Lanka but much lower than Pakistan (48 per thousand), the prevalence was comparable to the figures from India when compared to our neighboring South Asian nations. According to the global south, the prevalence data from Europe ranges between 14 and 20 per thousand, and the data from various regions of the USA range between 18 and 44 per thousand.

According to Duncan et al. (2012) 40% of stroke survivors have intermediate obstacles, while 15% to 30% have severe disabilities. The potential long-term incapacitating effects on stroke survivors along with their families are likely to have the biggest health impact and financial burden.

Two or more symptoms with a tendency to appear together have been referred to as symptom segments. "Symptom relationships within a cluster should be stronger than symptom links across clusters. A cluster of symptoms may or may not have a shared origin (Naess et al. 2012).

Worldwide, cerebrovascular accidents, also known as strokes, are the third most common cause of disability and the second greatest cause of early death. It is also to blame for depression and dementia. It typically happens as a result of an abrupt blockage or rupture of an artery to the brain, which results in a rapid loss of oxygen to the brain and a consequent lack of blood supply. Consequently, it causes the abrupt loss of brain cells (Johnson et al. 2016).

Stroke is a neurological disorder that is traditionally defined as a neurological disorder imposed to an acute focal injury of the central nervous system (CNS) by a vascular cause. It also includes cerebral infarction, intracerebral hemorrhage (ICH), and subarachnoid hemorrhage (SAH), and it is a leading cause of disability and death worldwide. When a "brain attack" occurs, blood flow to a specific part of the brain is interrupted. As a result, brain cells lose access to oxygen and start to degrade. The areas of the brain that regulate and perform various types of tasks, such as memory and motor control, are lost when brain cells die after a stroke (Sacco et al. 2013).

The most frequent motor deficits in those who have had a Cerebrovascular Accident (CVA) are muscular weakness, hypertonia, aberrant movement patterns, and physical deconditioning. CVA victims may also develop sensory and cognitive problems. As a result of their musculoskeletal conditions, people with CVA frequently experience limits in their ability to do basic daily tasks like walking and climbing, and descending stairs (Nascimento et al. 2011).

Whitehead and Baalbergen. (2019) has stated that, after a stroke, there are many neuropsychiatric sequelae, with depressive symptoms being the most prevalent. In 25 to 75 percent of patients, post-stroke depression manifests. However, it is common for stroke patients to go through emotional phases. They may experience emotions of worry, anxiety, grief over their bodily losses or changes, as well as other symptoms like those of depression. These typically go away with time and are effectively handled with the aid of the multidisciplinary team, which includes counselors. As a result, it's crucial to have a psychologist or counselor on the team. Given the prevalence of post-stroke depression, the rehabilitation physician should be highly suspicious of the diagnosis if the aforementioned symptoms continue and interfere with the patient's other treatments. Referral to a psychiatrist may be necessary, as is subsequent pharmacotherapeutic therapy with selective serotonin reuptake inhibitors or heterocyclics.

Appelros. (2006) has discussed that pain following a stroke might have either a central or peripheral source. The term "thalamic pain," which refers to central post-stroke pain caused by thalamic lesions, is a misnomer because lesions at any level of the central nervous system can generate central post-stroke pain. Following a stroke, peripheral (nociceptive) discomfort is frequently brought on by altered muscular tone. The shoulder is a common location for peripheral pain.

Multiple symptoms, including neurological and cognitive abnormalities brought on by cerebral lesions, are experienced by patients with cerebral infarction. Numerous patients also describe subjective symptoms as pain, despair, and exhaustion. Although there have been many studies on depression in individuals with cerebral infarction, until recently, investigations on pain and exhaustion in this population were disregarded. On follow-up, major depression affects 15-20% of patients with cerebral infarction, whereas fatigue affects up to 40% of patients and pain affects 30–40% of patients (Naess et al. 2012).

Given that fatigue can have crippling effects on stroke survivors, it is crucial to comprehend the breadth of the issue and the root causes. Even when depression, disability, and age are taken into account, post-stroke fatigue is still significantly linked to a low quality of life. For patients, it is also important to note that 40% of them list exhaustion as one of their worst symptoms. Post-stroke exhaustion restricts daily activities and has a negative impact

on driving, reading, sleeping, returning to work, social engagement, and other activities of daily living. It has been connected to an increase in mortality and makes people more dependent on institutionalization and activities of daily living (Cumming et al. 2016).

It is possible to say that a complete neurological dysfunction is the cause of stroke. The type of symptoms a stroke patient experiences entirely depends on the side of the brain that is injured. And if the artery that is clogged or burst is identified, it will be more precisely described. When it comes to diagnostic criteria, hemorrhagic and ischemic strokes are very similar. In the very early stages of stroke, MRI and CT scans aid in the differentiation of diagnoses (Musuka et al. 2015).

Mohammad. (2011) has argued about the activity of brain that because of the complexity of its structure and function, the brain is a fascinating topic in neurology. Along with physical degradation, the brain is more vulnerable as we age to a variety of complex, life-threatening disorders that require prompt treatment. One such ailment that is a hot topic in the new millennium is stroke because it is a leading cause of disability both globally and in Bangladesh, as well as being a major cause of death.

Stroke is the primary cause of long-term disability in the West, and the severity of the stroke affects the functional consequences. According to estimates, 460 stroke survivors out of every 100,000 will experience incomplete recovery, and one-third will be in charge of at least one ADL. In the three months following a stroke, 50% to 70% of survivors regain functional independence, but 15% to 30% are totally incapacitated. The remaining 20% need institutional care. 85% of stroke victims lose the ability to use their upper limbs in the beginning of the disease (Carod and Egido. 2009).

Stroke rates are high and rising globally, with clear racial and ethnic differences. Therefore, in populations that are aging and where a rising number of people are living with stroke-related disability and continuous risk, effective primary stroke prevention methods are essential. There is, however, little data on the effects of drops (or increases) in rates and case fatality across entire populations because to the significant difficulties in identifying historical changes in stroke incidence and outcome. This raises questions about how public health initiatives and advancements in the provision of healthcare services would affect the prevalence of this serious illness (Feigin et al. 2015).

Pain after a stroke is seen as a key issue for stroke victims. Its prevalence rate varies and can be anywhere from 19 and 74%, which makes it a hindrance to stroke survivorship. Due to factors like study population, period after stroke onset evaluation, etc., there is a considerable variation in prevalence rate. After a stroke, pain is also related to long-term mortality. More damaging strokes are caused by both central and peripheral forms of pain mechanisms. Additionally, pain causes other issues that eventually lead to disease Sommerfeld and Welmer. 2012).

Stroke rehabilitation typically involves a cyclical process that includes assessment, patient identification, and measurement; goal-setting, which involves setting genuine, progressive goals for improvement; intervention, which involves supporting goal-achieving; and reevaluation to gauge success in relation to established objectives. The most well-known annoyance brought on by a motor disability is a restriction in the ability to move muscles. Speaking, using foul language, seeing, feeling, and consciousness are other common impairments (Langhorne et al. 2011).

Following coronary heart disease and infectious diseases like the flu and pneumonia, stroke has been identified as the third most common cause of death in Bangladesh. In 2011, the age-adjusted mortality rate for stroke was 108.31 per 100,000 individuals, up from 6.00% in 2006 and 8.57% in 2011. Bangladesh ranks 84 globally in terms of stroke mortality, according to the World Health Organization (WHO). The WHO reported that the age-standardized DALY rate (per 100 000 people) for stroke was 864, but the number of disability-adjusted life years (DALY) lost (per 1000 people) due to stroke was 485. These figures suggest that the economic impact of stroke in Bangladesh will be significant in the future. The fact that 40–30% of Bangladeshis are already estimated to be living in poverty exacerbates the situation. From a community survey encompassing 15 627 participants 40 years of age and older, the prevalence of stroke has been assessed. For the age ranges of 40–49 years, 50–59 years, 60–69 years, 70–79 years, and 80 years and more, respectively, the prevalence of stroke was reported as 0–20%, 0–30%, 0–20%, 1–00%, and 1–00%. The ratio of male to female patients was 3:44, and the total prevalence of stroke was 0:30% (Islam et al. 2013).

We found that the prevalence of fatigue was much lower in Asian populations (35% vs. 54%) as compared to other regions. It should be highlighted that the four Asian studies—three from South Korea and one from Hong Kong—were all from East Asia. In Asia, there are several stroke epidemiology patterns, including younger age and a higher probability of hemorrhagic stroke (Cumming et al. 2016).

CHAPTER:3 METHODOLOGY

The theoretical frameworks and analytical techniques were used to accomplish the research objectives are presented in this chapter. This chapter also discusses the types of data needed and the methods used to collect them. This chapter's goal is to examine the research design in light of the study purpose.

3.1 Study design:

An observational study design commonly used in medical research is the cross-sectional study, which examines data from a population at a single point in time. Researchers simultaneously measure the study subjects' exposures and outcomes in a cross-sectional study. A "snapshot" of a group of people is what is meant to be captured (Wang and Cheng 2020).

A cross-sectional survey involves the collection of information from a sample taken from a predetermined population. With this approach, a group of people was chosen, and the information needed by the researcher was then collected when they utilize a certain service. A population's level of fatigue and pain can be determined using this data, and its impact might be evaluated. A survey is a type of data collection that involves objectively measuring key sample variables without the use of systematic bias or manipulation (which usually uses a questionnaire). The survey concept often approaches a sample of the target audience, interviews them, or distributes a questionnaire to them.

3.2 Study area:

The researcher collected data from the Neurology unit, Department of physiotherapy, Centre for the Rehabilitation of the Paralysed (CRP), Savar, Dhaka-1343. Patients with stroke were those being treated here.

3.3 Study Duration:

The study was conducted since 1st May to 31th July 2023

3.4 Study population

A study's population is the total number of participants, incidents, or observations. All type of stroke patients getting rehabilitation treatment at the Neurology Unit of the Centre for the Rehabilitation of the Paralyzed (CRP), Savar, Dhaka, were used as the study's sample population.

3.5 Sampling Technique

Convenience sampling techniques was used to perform the study since they were the simplest, least expensive, and fastest way to choose the sample (Bodnar et al., 2013). It was simple to obtain volunteers using the convenience sampling approach who meet the requirements for the study's goal.

3.6 Sample Size

The equation of sample size calculation is given below

$$n = \frac{Z^2\, pq}{d^2}$$

Here,

n = sample size

Z = the standard normal deviation which is 1.96

P = expected prevalence which is 1.139 (Mondal et al., 2022).

q = (1- p)

= (1- 1.139)

= 0.139

d = 0.05

The actual sample size was, n = 243

As it is academic thesis, self-funding and data was collected from a single specialized hospital by considering the feasibility and time limitation 110 sample were selected conveniently.

3.7 Inclusion and Exclusion criteria

3.7.1 Inclusion criteria:

- Both male and female patient who had stroke within 6 months and had taken physiotherapy treatment at least 8-12 session.
- Both ischemic and hemorrhagic type of stroke patients were considered for this study.
- Age range between 18 -75 years
- Patients who were willing to participate.

3.7.2 Exclusion Criteria

- Medically unstable patient (patients those who are having a change in mental status or a significant change or abnormality in important vital signs like blood pressure, pulse, breathe, heart rate, oxygenation status)
- Patients who had cognitive problem confirmed by psychiatrist
- Patients who were affected with serious infectious disease

3.8 Data collection tools

Questionnaire, consent forms, pen, papers, pen drive, eraser, white paper, clip board

3.9 Outcome measurement Tool:

Fatigue Severity Scale, Visual Analog Scale, Berg Balance Scale, Barthel Index.

3.9.1 Fatigue Severity Scale (FSS)

PSF was quantified using the Fatigue Severity Scale (FSS), which has been validated in persons with stroke. The FSS consists of 9 items and each item is rated on a 7-point Likert scale. For example, the first item on the FSS is “My motivation is lower when I am fatigued” and the participant was asked to rate from strongly disagree (1) to strongly agree (7). All 9 responses are summed to yield a total score (maximum total score = 63). A total score greater than 36 or an average score greater than 4 is considered indicative of significant pathological fatigue (Goh and Stewart, 2019).

3.9.2 Visual Analog Scale (VAS)

The current findings provide assistance for this effort by identifying cutoffs for transforming VAS scores into specific pain intensity classifications. Specifically, and in both of the samples studied, the results indicated that a 100-mm VAS score less than 5 mm may be labeled as no pain, 100-mm VAS scores from 5 to 44 mm may be labeled as mild pain, 100-mm VAS scores from 45 to 74 mm may be labeled as moderate pain, and 100-mm VAS scores 75 mm and greater may be labeled as severe pain (Jensen, 2003).

3.9.3 Berg Balance Scale (BBS)

The BBS is a widely used tool to measure static and dynamic balance. It consists of 14 items and each item is rated on a scale from 0 to 4. The maximum total score on the BBS is 56, with a higher score indicating better balance performance (Goh and Stewart, 2019).

3.9.4 Barthel Index (BI)

The original BI was scored in steps of five points to give a maximum total score of 100. A widely adopted modification to the index by Collin et al., (1988) includes a revised score range of 0–20 (Sainsbury et al., 2005).

3.10 Data collection procedure

The patients' written permission was taken. In-person interviews were performed to collect data using a questionnaire. Prior to data collection, researchers made sure that data collectors understood the entire data collection process. To prevent mistakes, all of the data were gathered by careful data collectors in the presence of the researcher. The researcher went over each questionnaire again to look for any missing or confusing information.

3.10 Duration of data collection

Data was collected carefully and confidentiality and maintained all ethical considerations. The researcher gave each participant a particular time to collect the data. Each questionnaire took approximately 15-20 minutes to complete.

3.10 Data Analysis

Data analysis employed descriptive statistics. A collection of results can be described using descriptive statistics by highlighting the most intriguing aspects of the data. The statistical program for social science (SPSS) version 20 was used for the statistical analysis. Each questionnaire was examined again for any missing or unclear information. At first, put the names of the variables, along with the varieties, values, decimal, label alignment, and measurement level of the data, in the variable view of SPSS first. The SPSS data view input procedure initially came next. After entering all the information, the researcher double-checked the data to make sure it had been accurately transferred from the questionnaire sheet to the SPSS data view. The raw data was then prepared for SPSS analysis. Tables, bar graphs, and pie charts are utilized to show data that has been subjected to descriptive statistical analysis and percentage calculations. Bar graphs and pie charts were customized using Microsoft Office Excel 2019. To find out the association among the different variables Chi-Square test was performed.

3.13 Chi-Square (x2) test

Chi-Square (x2) test is the most popular discrete data hypothesis testing method. It is a nonparametric test of statistical significance for bivariate tabular analysis with a contingency table. Chi-Square test helps to analyze data come in the form of counts. This test can be applied to nominal or categorical data which can't be analyzed using the ranking technique.

3.14 Ethical consideration

The Bangladesh Medical Research Council (BMRC) and World Health Organization (WHO) Research criteria were strictly followed to throughout the entire research project. The dissertation proposal, which also included the methodology, was submitted to the Institutional Review Board (IRB) of the Bangladesh Health Professions Institute (BHPI) for approval, and the proposal was approved by the faculty members. The supervisor of the research project and the course coordinator initially gave permission before the study was conducted. In order to participate in this study, interested people were given written consent forms, informed of the study's objectives, and provided verbal explanations of the consent form in Bengali. The participants were informed that their participation was fully voluntary and that they had the absolute right to renounce or stop at any time without any restrictions. Additionally, the confidentiality of their identities was guaranteed. The fact that a written questionnaire would be used to gather the data was made clear to the participants. The supervisor also went over the questionnaire and consent form. Every possible participant was asked to sign a written consent form during the interview process in order to participate in this study. Information regarding their part in the study was provided to the participants. The purpose of the study and its methods were also explained to the participants. Participants were also made aware that although the data they complied with might appear, their names and residences would not be stated or used. The study's information was never disclosed to anybody else; it was only ever discussed with the supervisor. After the study is finished, these documents will be made public. Although the participants may not directly benefit from the study's findings, rehabilitation specialists may.

3.15 Rigor of the study

The rigorous manner was maintained to conduct the study. The study was conducted in a clean and systemic way. During the data collection it was ensured participants were not influenced by experience. The answer was accepted whether they were in negative or positive impression. No leading questions were asked or no important questions were avoided. The participant information was coded accurately and checked by the supervisor to eliminate any possible errors. The entire information was handled with confidentiality. In the result section, outcome was not influenced by showing any personal interpretation. Every section of the study was checked and rechecked by the research supervisor.

CHAPTER: IV RESULT

Data were analyzed by descriptive statistics and calculated as percentages and presented by using column charts, pie charts, bar charts and tables.

Socio demographic characteristic of stroke patients

4.1 Age of the participants

The study was conducted on 110 participants who had Stroke. In the study maximum age of a participant was 75 and the minimum age of a participant was 18. Participants in between 48- 57 years were found 27.3% (n= 30), participants in between 38- 47 years were found 25.5% (n=28) , participants in between 58-67 years were found 23. 6% (n= 26), participants in between 18- 27 years were found 9.1% (n=10), participants in between 68-75 years were found 7.3% (n= 8), participants in between 28-37 years were found 7.3% (n=8).

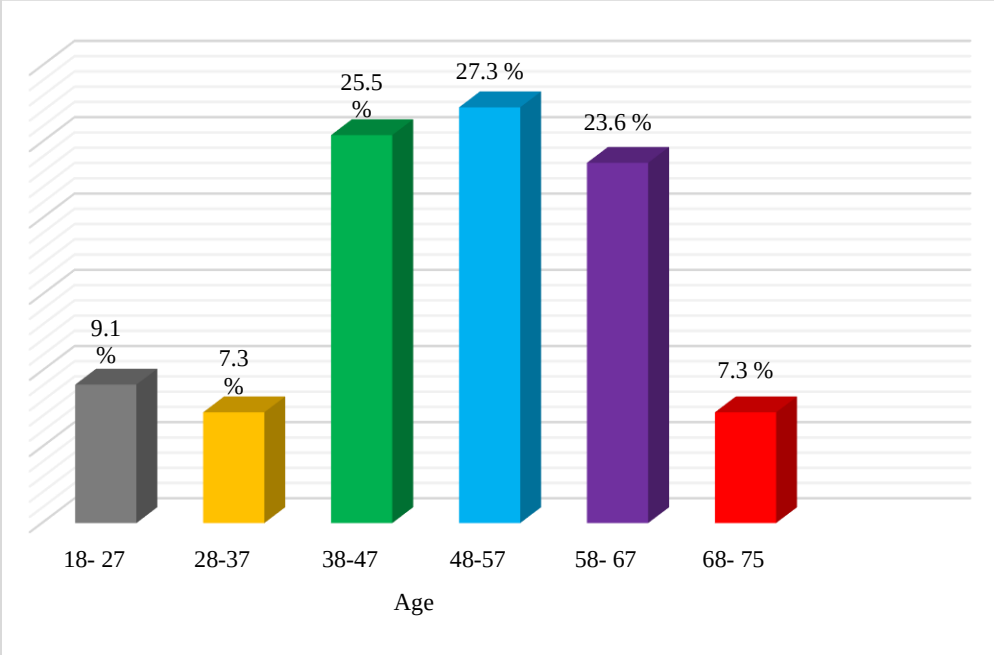


Figure- 4.1: Age group of the Respondents

4.2 Gender of the participants:

In the study researcher found the ratio of male were more than female. Among the 110 participants 67% (n=74) were male and 33% (n=36) were female

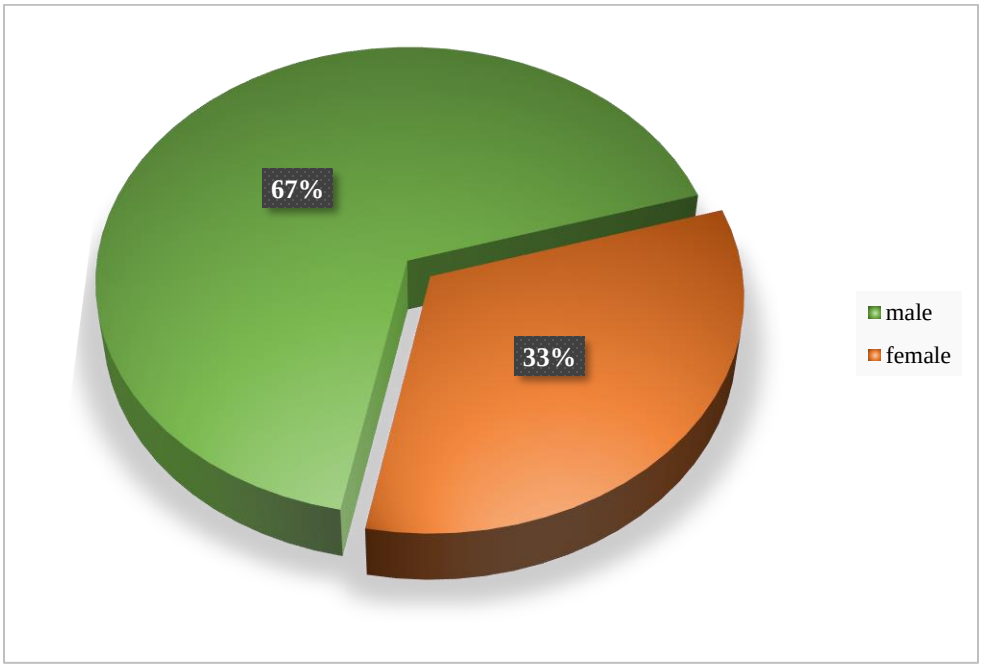


Figure-4.2: Gender of the participants

4.3 Living area of the participant:

From the distribution of data, it was determined that among the 110 participants 52% (n=57) patients lives in urban area 48% and (n=53) patients lives in rural area.

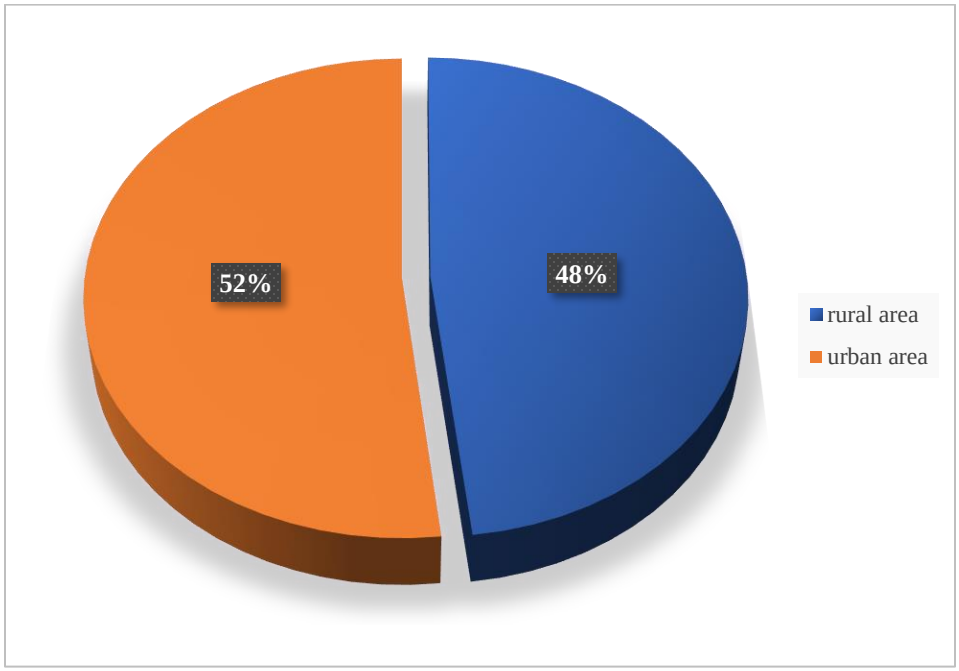


Figure-4.3: Living area of the participants

4.4 Stroke type of the participant:

The column chart showed that among the 110 participants it was found that 70% (n=77) had stroke and 30% (n=33) of the patient had hemorrhagic stroke.

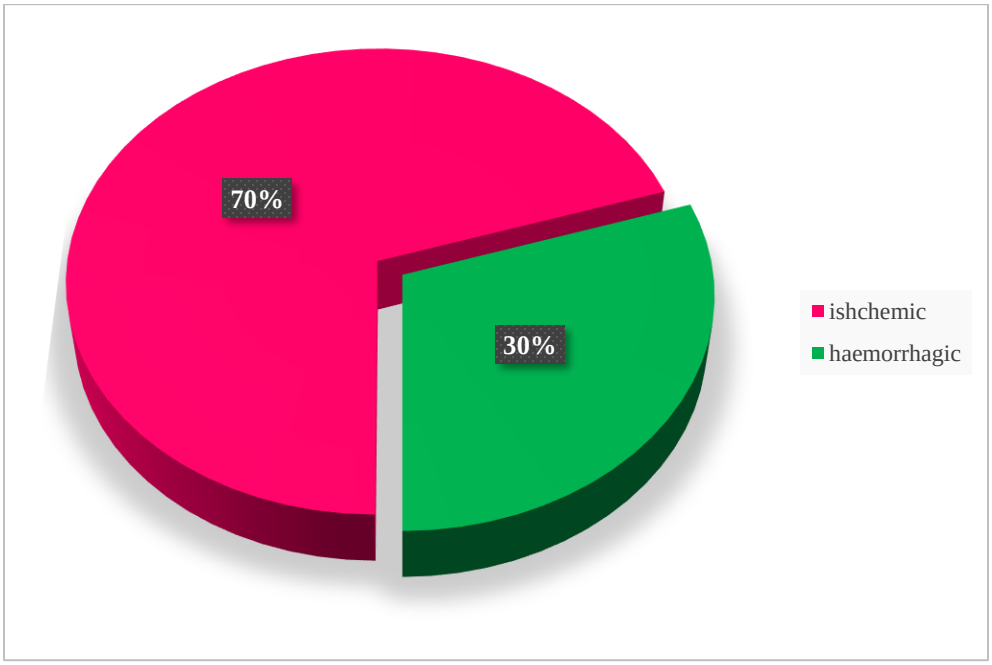


Figure-4.4 Stroke type of the participant

4.5 Participant's Demographic Data

Table -1: Socio-Demographic Characteristics of the participants

Characteristics	n (%)	Characteristics	n (%)
Age		**Gender**	
(48-57) years	30 (27.3%)	Male	74 (67.3%)
(38-47) years	28 (25.5%)	Female	36 (32.7%)
(58-67) years	26 (23.6%)	**Occupation**	
(18-27) years	10 (9.1%)	Housewife	30 (27.3%)
(28-37) years	8 (7.3%)	Business	29 (26.4%)
(68-75) years	8 (7.3%)	Corporate job	25 (22.7%)
Education		Govt. job	9 (8.2%)
Higher secondary	29 (26.4%)	Student	6 (5.5%)
Secondary	24 (21.8%)	Unemployed	4 (3.6%)
Primary	23 (20.3%)	Teacher	4 (3.6%)
Bachelor/Masters	21 (19.1%)	Farmer	3 (2.7%)
Illiterate	13 (11.8%)	**Family status**	
Marital status		Single family	69 (62.2%)
Married	87 (79.1%)	Joint Family	41 (37.3%)
Widowed	13 (11.8%)	**Affected side of brain**	
Unmarried	10 (9.1%)	Left	61 (55.5%)
Stroke type		Right	49 (44.5%)
Ischemic	77 (70%)	**Duration of receiving physiotherapy**	
Hemorrhagic	33 (30%)	>20 session	35 (31.8%)
Affected side of body		17-20 session	33 (30%)
Right	61 (55.5%)	13-16 session	24 (21.8%)
Left	49 (44.5%)	8-12 session	18 (16.4%)

Among the 110 participants, it was determined that the majority of the respondents, 27.3%(n=30) were within the range of years of age 48-57. The second highest rate respondents 25.5% (n= 28) were within the age group of 38-47 years of age. The third highest age group was 58-67 years of age was 23.6% (n= 26). Here most of them were male 67.3% (n= 74) and 32.7% (n= 36) were female. Among the participants almost 79.1% (n= 87) were married, 11.8% (n =13) were widowed and 9.1% (n=10) were unmarried. Among the 110 participants 26.4% (n= 29) were involved with business professions and 22.7% (n= 25) were involve with corporate job and 8.2% (n= 9) were involved with govt. job. Among the 110 participants, 26.4% (n= 29) completed higher education and 21.8% (n=24) were completed their S.S.C level, 20.9% (n=23) were primary level, 19.1% (n=21) of the participants were completed their bachelor degree or above and 11.8% (n=13) were illiterate. Among the 110 participants 70 % were attacked by stroke and 30% were attacked by hemorrhagic stroke. And 61(55.5%) were right sided hemiplegic and 49(44.5%) were left sided hemiplegic.

4.6 Status of Fatigue among the participants:

Among the 110 respondents 56% (n=62) participants reported about their not being fatigue and 44% (n=48) participants reported about their fatigue. From the total score those who have scored at least between (1-35) does not considered to have fatigue. Although those who have scored 36 or above have been considered to have fatigue and advised to consult a physician.

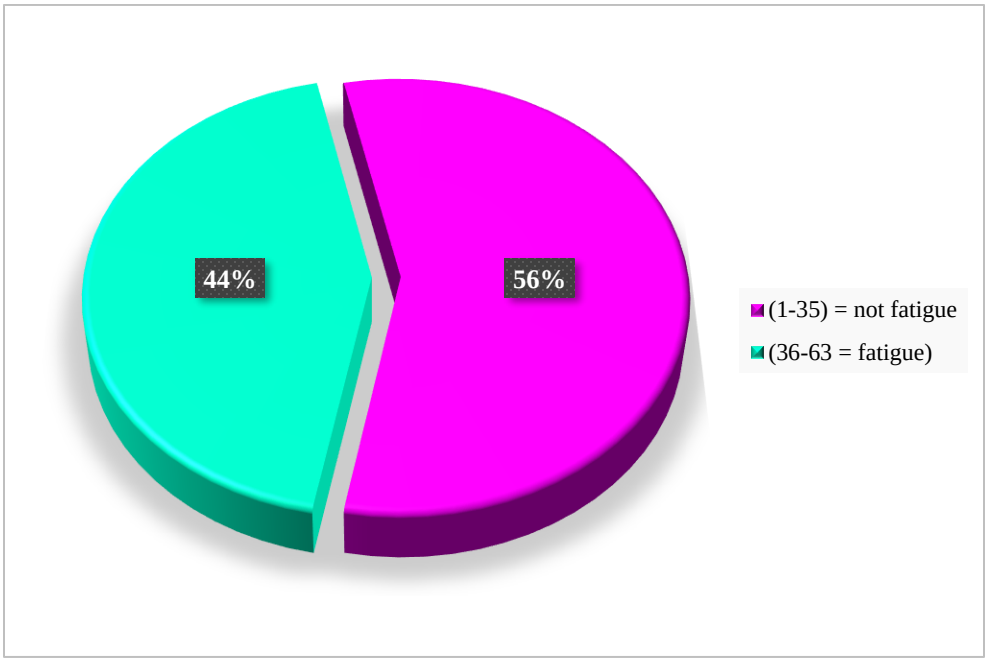


Figure-4.6 Status of Fatigue

4.7 Fatigue level among the respondents as per Fatigue Severity

Table- 2: Participants fatigue level

1. My motivation is lower when I am fatigued		
Score	**Percentages n (%)**	**Mean (±SD)**
1	0.90	
2	2.70	
3	9.10	
4	19.10	5.30 (±1.50)
5	19.10	
6	19.10	
7	30.0	
2. Exercise brings on my fatigue		
1	2.70	
2	6.40	
3	21.40	
4	16.40	4.68(±1.70)
5	12.70	
6	21.80	
7	18.20	
3. I am easily fatigued		
1	10.90	
2	12.70	
3	27.30	
4	15.50	3.80(±1.79)
5	10.90	
6	13.60	
7	9.10	
4. Fatigue interferes with my physical functioning		
1	17.30	

2	15.50	
3	26.40	
4	27.30	3.10(±1.39)
5	8.20	
6	5.50	
7	0.0	
5. Fatigue causes frequent problems for me		
1	27.30	
2	19.10	
3	30.90	
4	13.60	2.60(±1.31)
5	7.30	
6	1.80	
7	0.0	
6. My fatigue prevents sustained physical functioning		
1	28.20	
2	20.90	
3	28.20	
4	13.60	2.57(±1.34)
5	6.40	
6	2.70	
7	0.0	
7. Fatigue interferes with carrying out certain duties and responsibilities		
1	26.40	
2	22.70	
3	23.60	
4	16.40	2.28(±1.44)
5	6.40	
6	3.60	
7	0.90	

8. Fatigue is among my three most disabling symptoms		
1	2.70	
2	1.80	
3	6.40	
4	27.30	4.93(±1.37)
5	26.40	
6	21.80	
7	13.60	
9. Fatigue interferes with my work, family, or social life		
1	21.80	
2	21.80	
3	28.20	
4	16.40	2.75(±1.29)
5	11.80	
6	0.0	
7	0.0	

The FSS is a nine-item self-administered questionnaire that examines how severe fatigue was throughout the course of the previous week in various contexts. Each item is given a grade between 1 and 7, where 1 means a strong disagreement and 7 a strong agreement. The final score is the mean of the nine items (Valko et al., 2008).

It seems that about 30% of the respondents strongly agree (7) with the fact that have been facing lower motivation when they are being fatigue. And the frequency gradually becoming less like 19.10% respondents are in between (4) and 2.70% people strongly disagree (2) about the fact. And the mean of this percentage is 5.30 and in sequence standard deviation is ± 1.50. In addition, this data was also analyzed by using SPSS version 20. From 110 participants the status of fatigue was 44% who was assessed as fatigue and 56% was assessed as not fatigue. Mean of the percentage was 1.44 and standard deviation was ±0.49.

4.8 Status of Pain among the participants

The study was conducted on 110 participants who had Stroke and the pain was measured by VAS scale. In the study majority of the participants about 52.7% reported moderate pain and secondly most participant 22.7% was suffered from severe pain and about 20% participants were found who had mild pain and again approximately 4.5% participants reported no pain.

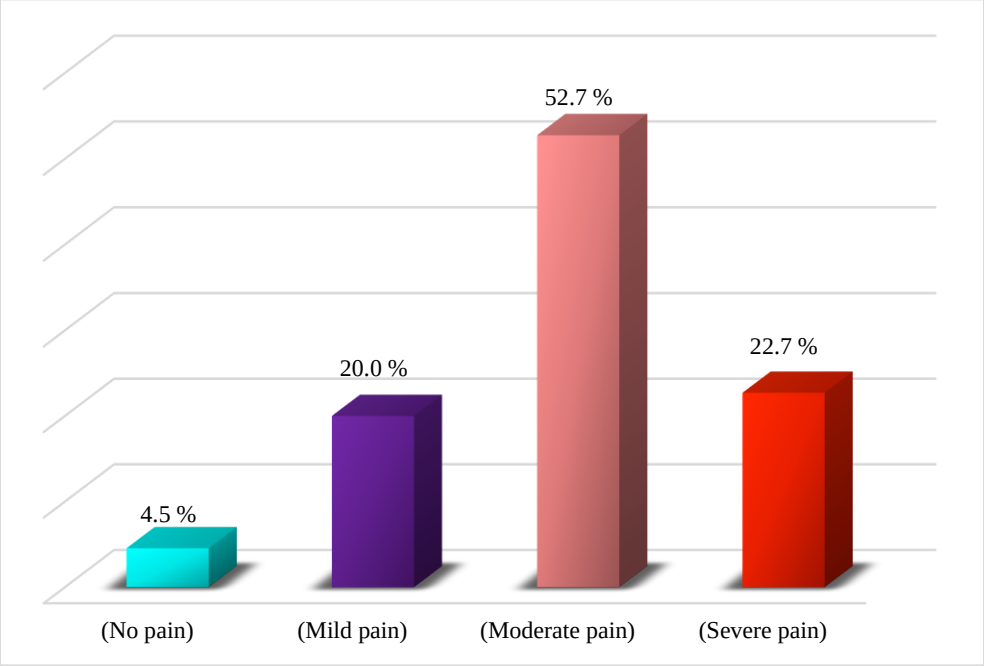


Figure 4.8: Status of pain among stroke participant

4.9 Percentages of score of Berg Balance Scale:

Table -3: Participants balance percentage:

1.Sitting to standing		
Score	**Percentages n (%)**	**Mean (±SD)**
0= needs moderate or maximal assist to stand	6.40	
1= needs minimal aid to stand or stabilize	26.40	
2= able to stand using hands after several tries	33.60	1.98 (±0.98)
3= able to stand independently using hands	30.0	
4= able to stand without using hands and stabilize independently	3.60	
2. Standing Unsupported		
0= unable to stand 30 seconds unsupported	4.50	
1= needs several tries to stand 30 seconds unsupported	26.40	2.15(±1.04)
2= able to stand 30 seconds unsupported	27.30	
3= able to stand 2 minutes with supervision	33.60	
4= able to stand safely for 2 minutes	8.20	
3. Sitting with back unsupported but feet supported on floor or on a stool		
0= unable to sit without support 10 seconds	0.90	
1= able to sit 10 seconds	13.60	
2= able to sit 30 seconds	38.20	2.44(±0.90)
3= able to sit 2 minutes under supervision	35.50	
4= able to sit safely and securely for 2 minutes	11.80	
4. Standing to sitting		
0= needs assist to sit	4.50	
1= sits independently but has uncontrolled descent	20.0	
2= uses back of legs against chair to control descent	35.50	2.21(±1.02)

3= controls descent by using hands	30.0	
4= sits safely with minimal use of hands	10.0	
5. Transfer		
0= needs two people to assist or supervise to be safe	2.70	
1= needs one person to assist	38.20	
2= able to transfer with verbal cuing and/or supervision	33.60	1.89(±0.98)
3= able to transfer safely definite need of hands	18.20	
4= able to transfer safely with minor use of hands	7.30	
6. Standing unsupported with eyes closed		
0= needs help to keep from falling	10.90	
1= unable to keep eyes closed 3 seconds but stays safely	30.90	1.76(±1.04)
2= able to stand 3 seconds	34.50	
3= able to stand 10 seconds with supervision	18.20	
4= able to stand 10 seconds safely	5.50	
7. Standing unsupported with feet together		
0= needs help to attain position and unable to hold for 15 seconds	23.60	
1= needs help to attain position but able to stand 15 seconds feet together	23.60	
2= able to place feet together independently but unable to hold for 30 seconds	30.90	1.52(±1.09)
3= able to place feet together independently and stand 1 minute with supervision	20.90	
4= able to place feet together independently and stand 1 minute safely	0.90	
8. Reaching forward with outstretched arm while standing		

0= loses balance while trying/requires external support	18.20	
1= reaches forward but needs supervision	23.60	
2= can reach forward 5 cm (2 inches)	23.60	1.80(±1.20)
3= can reach forward 12 cm (5 inches)	29.10	
4= can reach forward confidently 25 cm (10 inches)	5.50	
9. pick up object from the floor from a standing position		
0= unable to try/needs assist to keep from losing balance or falling	6.40	
1= unable to pick up and needs supervision while trying	35.50	
2= unable to pick up but reaches 2-5 cm from slipper and keeps balance independently	23.60	2.01(±1.18)
3= able to pick up slipper but needs supervision	20.0	
4= able to pick up slipper safely and easily	14.50	
10. Turning to look behind over left and right shoulders while standing		
0= needs assist to keep from losing balance or falling	6.40	
1= needs supervision when turning	29.10	
2= turns sideways only but maintains balance	30.90	2.00(±1.06)
3= looks behind one side only other side shows less weight shift	25.50	
4= looks behind from both sides and weight shifts well	8.20	
11. Turn 360 degrees		
0= needs assistance while turning	14.50	
1= needs close supervision or verbal cuing	30.0	
2= able to turn 360 degrees safely but slowly	38.20	

3= able to turn 360 degrees safely one side only 4 seconds or less	14.50	1.61(±0.99)
4= able to turn 360 degrees safely in 4 seconds or less	2.70	
12. Place alternate foot on step or stool while standing unsupported		
0= needs assistance to keep from falling / unable to try	26.40	
1= able to complete > 2 steps need minimal assist	29.10	
2= able to complete 4 steps without aid with supervision	29.10	1.34(±1.03)
3= able to stand independently and complete 8 steps in > 20 seconds	15.50	
4= able to stand independently and safely and complete 8 steps in 20 seconds	0.0	
13. Standing unsupported one foot in front		
0= loses balance while stepping or standing	22.70	
1= needs help to step but can hold 15 seconds	38.20	
2= able to take small step independently and hold 30 seconds	21.80	1.36(±1.07)
3= able to place foot ahead independently and hold 30 seconds	14.50	
4= able to place foot tandem independently and hold 30 seconds	2.70	
14. Standing on one leg		
0= unable to try of needs assist to prevent fall	25.50	
1= tries to lift leg unable to hold 3 seconds but remains standing independently	38.20	
2= able to lift leg independently and hold ≥ 3 seconds	23.60	1.24(±0.97)

3= able to lift leg independently and hold 5-10 seconds	12.70
4= able to lift leg independently and hold > 10 seconds	0.0

The clinical criterion standard for measuring balance is the Berg Balance Scale (BBS), which has been validated. The BBS was created to evaluate an older person's ability to balance, assess changes in balance over time, screen patients for rehabilitation therapy services, and anticipate falls in older people living independently and hospitalized. Patients with stroke are one of the populations for which the intervention is relevant (Kornetti et al., 2004).

Among the 110 participants wheelchair bounded patients was about 34.5% (n=38), patients who can walk with assists are 55.5% (n=61) and about 10%(n=11) participants are independent. The mean of this scale is 1.75 and standard deviation $\pm$0.623.

4.10 Association between variables

The Chi-square test was use to find the association between the variables. If the P-value is <0.05 then the result is significant which means there is association between the variables.

4.10.1 Association of age and Fatigue Severity Scale (FSS) total score:

Age and Fatigue Severity Scale (FSS) total score	Chi-Square value	P-Value
	51.432	**0.000***

For association of age and Fatigue Severity Scale (FSS) total score, P-value is 0.000 which is less than 0.05. So, the result is significant that indicates there is an association between age and Fatigue Severity Scale (FSS) total score. And by that we can assume that the more the age of the respondents would be suffered with more fatigue.

4.10.2 Association of age and Visual Analog Scale (VAS) score:

Age and Visual Analog Scale (VAS) score	Chi-Square value	P-Value
	31.676	**0.007***

For association of age and Visual Analog Scale (VAS) score, P-value is 0.007 which is less than 0.05. So, the result is significant that indicates there is a association between age and Visual Analog Scale (VAS) score. That means age also has an impact on pain.

4.10.3 Association of Gender and Fatigue Severity Scale (FSS) total score:

Gender and Fatigue Severity Scale (FSS) total score	Chi-Square value	P-Value
	0.490	0.311

The observed P-value for association of Gender and Fatigue Severity Scale (FSS) total score is 0.311. So, the result is not significant that means there is no association between Gender and Fatigue Severity Scale (FSS) total score. As comprehend that male and female patients have an analytically similar pattern of fatigue either its man or woman no significant was noted.

4.10.4 Association of Gender and Visual Analog Scale (VAS) score:

Gender and Visual Analog Scale (VAS) score	Chi-Square value	P-Value
	2.638	0.451

The observed P-value for association of Gender and Fatigue Severity Scale (FSS) total score is 0.357. So, the result is not significant that means there is no association between Gender and Fatigue Severity Scale (FSS) total score. According to this association researcher had assumed that male and female patient have same type of pain intensity, it doesn’t really related to gender.

4.10.5 Association of Type of stroke and Fatigue Severity Scale (FSS) total score:

Type of stroke and Fatigue Severity Scale (FSS) total score:	Chi-Square value	P-Value
	2.281	0.097

The observed P-value for association of Type of stroke and Fatigue Severity Scale (FSS) total score is 0.097. So, the result is not significant that means there is no association between Type of stroke and Fatigue Severity Scale (FSS) total score. As in, fatigue severity does not related to stroke type like its either hemorrhagic or ischemic.

4.10.6 Association of Type of stroke and Visual Analog Scale (VAS) score:

Type of stroke and Visual Analog Scale (VAS) score	Chi-Square value	P-Value
	3.809	0.238

The observed P-value for association of Type of stroke and Visual Analog Scale (VAS) score is 0.238. So, the result is not significant that means there is no association between Type of stroke and Visual Analog Scale (VAS) score. However, pain intensity or feelings of pain doesn't apparently related to the type of stroke either ischemic or hemorrhagic.

4.10.7 Association of Visual Analog Scale (VAS) score and Fatigue Severity Scale (FSS) total score:

Visual Analog Scale (VAS) score and Fatigue Severity Scale (FSS) total score	Chi-Square value	P-Value
	10.290	**0.016***

For association of Visual Analog Scale (VAS) score and Fatigue Severity Scale (FSS) total score, P-value is 0.016 which is <0.05 that means the result is significant which points out that there is association between Visual Analog Scale (VAS) score and Fatigue Severity Scale (FSS) total score. This means that a patient's fatigue is considerably affected by pain intensity.

4.10.8 Association of Berg Balance Scale (BBS) score and Fatigue Severity Scale (FSS) total score:

Berg Balance Scale (BBS) score and Fatigue Severity Scale (FSS) total score	Chi-Square value 26.788	P-Value **0.000***

There is a strong association of Berg Balance Scale (BBS) score and Fatigue Severity Scale (FSS) total score because their P-value is 0.000 which is less than 0.05. As we have selected BBS scale to observe the treatment outcome of the patient here it appears that fatigue has an effect on patient's balance improvement.

4.10.9 Association of Berg Balance Scale (BBS) score and Visual Analog Scale (VAS) score:

Berg Balance Scale (BBS) score and Visual Analog Scale (VAS) score:	Chi-Square value 23.949	P-Value **0.001***

There is a association of Berg Balance Scale (BBS) score and Visual Analog Scale (VAS) score because their P-value is 0.001 which is less than 0.05. At the same time, it can be observed that there is less improvement of balance due to pain.

4.10.10 Association of Birthel Index (BI) score and Fatigue Severity Scale (FSS) total score:

Birthel Index (BI) score and Fatigue Severity Scale (FSS) total score	Chi-Square value 36.816	P-Value **0.004***

For association of Barthel Index (BI) total score and Fatigue Severity Scale (FSS) total score, P-value is 0.004 which is <0.05. So, the result is significant that indicates there is association between Barthel Index (BI) score and Fatigue Severity Scale (FSS) total score.

Basically, we observe ADL (activity of daily living) with BI, and here we can assume fatigue affects ADL.

4.10.11 Association of Birthel Index (BI) score and Visual Analog Scale (VAS) score:

Birthel Index (BI) score and Visual Analog Scale (VAS) score	Chi-Square value	P-Value
	74.493	**0.018***

For association of Barthel Index (BI) total score and Visual Analog Scale (VAS) score, P-value is 0.018 which is <0.05. So, the result is significant that indicates there is association between Barthel Index (BI) score and Visual Analog Scale (VAS) score. Here again, pain also interferes with the patient's life.

Chapter – V Discussion

Finding prior research that has already been published and evaluating its suitability for application to the gathered data are the goals of the analysis and discussion. In regard to the study's research questions and objectives, the study's findings are discussed in this chapter. The main topic of discussion is determining the impact of fatigue and pain among stroke patients, as well as its relationship to functional prognosis.

In this study on 110 participants who had stroke researcher found that, minimum age of a participant was 18 and maximum age of a participant was 75. Participants in between 18-27 years were found 9.1% (n=10), participants in between 28-37 years were found 7.3% (n=8), participants in between 38- 47 years were found 25.5% (n=28), participants in between 48- 57 years were found 27.3% (n= 30), participants in between 58-67 years were found 23. 6% (n= 26), participants in between 68- 75 years were found 7.3% (n= 8). Majority of the participants age range was between 38-67 years and the mean age of the respondents were 3.71±1.35 years. Among the 110 participants 67% (n=74) were male and 33% (n=36) were female and 48% (n=53) patients lives in rural area and 52% (n=57) patients lives in urban area.

Whether in a Bangladeshi study by (Mondal et al., 2022) found that majority (59.4%) of the respondents in this study were in younger age range (<40years), followed by 19.6% were in the 41–50 years group, 12.3% in the 51–60 years group and 8.7% were in >60 years. The age range was 18 to 113 years. The mean age of the respondents was 39.97 ± 14.03 years. About half (13,878, 54.9%) of the respondents were male and the rest (11,409, 45.1%) were female. Around 58.9% (14904) of the total respondents were from the urban areas and the rest (41.1%) were from rural areas.

The minimum age range of the above study was similar to this study but the maximum age range was dissimilar. But the ratio of respondents living area was quite similar with this study. However, the ratio of gender as in affected percentage of male female is not similar.

A study by Gurcay et al., (2009) mentioned that they took 67 post stroke survivors age ranged from between 33 to 81 years. Among them 36 (53.7%) were male and Female 31 (46.35%). Which is not alike with this study.

Among the 110 participants, researcher found that 11.8% (n=13) were illiterate, 20.9% (n=23) were primary level, 21.8% (n=24) were completed their S.S.C level, 26.4% (n= 29) completed higher education and 19.1% (n=21) of the participants were completed their bachelor degree or above. Among the 110 participants 70 % were attacked by stroke and 30% were attacked by hemorrhagic stroke. And 61(55.5%) were right sided hemiplegic and 49(44.5%) were left sided hemiplegic.

Another study of Texas found in their research among fifty-three individuals, no formal education 1% (2), 6 years of education 17% (32), 9 years of education 15% (28). 12 years of education 9% (17) and about 16 years of educational qualification 8% (15) however >16 years of education is 3% (6). Lesion hemisphere in stroke where Right side is 29% (55) Left side is 24% (45). Dominant hand affected 22% (41) and not affected 31% (59) (Goh and Stewart, 2019). As in this research the dominant part affected was quite more than the study by Goh and Stewart.

In this study, among the 110 participants it was found that 70% (n=77) had stroke and 30% (n=33) of the patient had hemorrhagic stroke.

A study by Nayeem et al. (2010) in Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka found that 87% were ischemic and 13% were hemorrhagic stroke among participant. Other study Hossain et al. (2011) stated that 61% were ischemic and 39% were hemorrhagic stroke at Faridpur medical college, Bangladesh. And also mentioned that higher rate of hemorrhagic stroke is also found in number of hospitals in Asian countries such as Singapore, Malaysia (33%) Thailand (30%),37 Korea (31%), Taiwan (31%). One of the causes of high incidence of hemorrhagic stroke in this hospital may be due to the acute admission is more related to hemorrhagic stroke.

Therefore, the findings of the present study were much alike with the previous study regarding the ratio of type of stroke.

Among the 110 respondents 44% (n=48) participants reported about their fatigue and 56% (n=62) participants reported about their not being fatigue. So, it can be estimated that the percentage of fatigue is 44%.

According to McDonald and Elizabeth, (2023) the prevalence of PSF was 42% (at six months after ischemic stroke. As in, this percentage is very similar to this research.

According to Ho et al. (2021) prevalence of fatigue following stroke ranged from 25% to 85%. A European study showed the prevalence of fatigue which was calculated with using FSS and resulted in an estimate of 48%. Time of assessment (<6 vs ≥6 months), stroke type (ischemic vs hemorrhagic/subarachnoid hemorrhage) and geographical location (East Asia vs Europe). In their study they found that the patients who were interviewed within the first 6 months had a prevalence of 36% (95% CI 30–42%), whereas those who were assessed after that had a higher proportion of 56% (95% CI 50–63%) ($p < 0.001$). Moreover, while participants with stroke had a prevalence of 36% (95% CI 30– 42%), those who suffered from hemorrhagic stroke had nearly double that figure 66% (95% CI 59–74%) ($p < 0.001$). Additionally, studies that were conducted in Asia had a lower estimate 37% (95% CI 29–45) than those carried out in Europe 51% (95% CI 42–59%) ($p = 0.02$) (Alghamdi et al., 2021).

The study was conducted on 110 participants who had Stroke and the pain was measured by VAS scale. In the study about 4.5% participants reported no pain. About 20% participants were found who had mild pain. Majority of the participants about 52.7% reported moderate pain and secondly most participant 22.7% was suffered from severe pain.

This is similar with the findings of (Klit et al., 2009). They have stated that, Prevalence of chronic pain varies widely from 11% to 55%.

On the other hand, Paolucci et al., (2016) had found that, risk factor of stroke like co-morbidity, age and gender significantly influenced post stroke pain. According to them patients younger than 65 years and women have a higher risk of suffering from pain after stroke. These findings are not similar to the findings of this study. But this study found another association between pain intensity and pain category.

In this study researcher also found association of Visual Analog Scale (VAS) score and Fatigue Severity Scale (FSS) total score, where P-value is 0.016 which is <0.05 that means the result is significant which points out that there is association between Visual Analog Scale (VAS) score and Fatigue Severity Scale (FSS) total score.

Another European research from Goh and Stewart (2019) found Scores on the fatigue severity scale (FSS) which showed a significant fair, correlation with the BBS (P = 0.03). The model revealed that BBS was a significant predictor of FSS score (P = 0.02).

In this research, there is a strong association of Berg Balance Scale (BBS) score and Fatigue Severity Scale (FSS) total score found by the researcher because in the association the result of the P-value is 0.000 which is less than 0.05, which makes the result significant. Which is very similar with the study done by Goh and Stewart (2019) because both of the study has a significant P-value, and supports this study as well.

Limitation of the Study:

There were certain particular limitations and obstacles on getting the study's results into consideration. The limitations are listed below:

The sample size for the study was small. In the current study, only 110 samples were used. The condition of all stroke patients in the country cannot be determined from just 110 samples. A large number of samples would be better because they would be more useful. One of the biggest restrictions was time. Researcher had a limited amount of time to conduct the research, therefore managing a big number of samples for the study was not possible. There was no study on fatigue and its prevalence on stroke patient in Bangladesh. And also, the impact of fatigue on the stroke patient more than 6 months period was not possible to include in this study. The only place where the sample was taken was CRP, Savar, Dhaka. Given that as this was the researcher's first study endeavor, this is requested to the supervisor and the respected teachers to overlook any errors.

CHAPTER: VI CONCLUSION AND RECOMMENDATION

6.1 Conclusion

The researcher examined the frequency and association of fatigue and pain among patients who had stroke as well as the impact between post-stroke fatigue and pain with functional outcome.

This study found that post stroke fatigue has important connections to both motor and cognitive ability. Planning and implementing therapies for stroke patients must take into account the impact of fatigue.

Researcher didn't find any associations of gender and Fatigue Severity Scale (FSS). In the study it was found that there was strong association of Association of age and Fatigue Severity Scale (FSS) ($P<0.05$). In this study there was association among Birthel Index (BI) score and Fatigue Severity Scale and Visual Analog Scale ($P<0.05$). There was a strong association among Berg Balance Scale (BBS) and Fatigue Severity Scale and Visual Analog Scale ($P<0.05$). So, fatigue and pain were prevalent in stroke patients and had an impact on patient's functional outcome like balance and activity of daily living. Researcher also found strong association of Visual Analog Scale (VAS) score and Fatigue Severity Scale (FSS) total score as observed P-value was 0.016 ($P<0.05$). A post-stroke fatigued patient may lack motivation to push himself/ herself during rehabilitation, whereas a post-stroke pain patient may had poor adherence to rehabilitative efforts due to a significant decrease in both physical and mental energy, both of which degrade activity in daily livings (ADL) performance and also the anticipated functional outcome in time of rehabilitation.

Study showed that pain causes lower activity of daily living among survivors and intensity of pain had a significant association and co-relation with functional outcome. According to the result of this research, intensity of pain affected functional component of participants, and age was also associated with pain. Therefore, PSF is related to functional gait, balance, and cognitive functioning. When planning and carrying out therapies for stroke patients,

fatigue should be taken into consideration. Future research is required to examine the potential value of balance and cognitive training for PSF management.

6.2 Recommendation

After completing the research, the researcher found some recommendation. Some points to be noted that might be taken for the better accomplishment for further study. The main recommendations would be as follow:

Should take more samples for generating the result and make more valid and reliable. Sample should collect from different institutes and rehabilitation center in different districts of Bangladesh to generalize the result. To find out an effective and efficient result in generalized form, other measurement scales should be used in consideration. A larger sample size may increase the statistical significance of some of the results. A long-term follow-up examination may provide the long-term effect on the impact of fatigue and pain on stroke. Pain and fatigue have an adverse consequence after having stroke and has influence on daily life and treatment procedure of patients with stroke. As fatigue is a neglected issue, it is necessary to give more and more attention to this aspect after stroke. There were some limitations of this study mentioned at the relevant section and it is recommended to overcome those limitations during further study.

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APPENDIX

Appendix 1 (A)

March 30, 2023
The Head of the Physiotherapy Department
Centre for the Rehabilitation of the Paralyzed (CRP)
Chapain, Savar, Dhaka-1343
Through: Head, Department of Physiotherapy, BHPI

Subject: Seeking permission for data collection to conduct my research project.

Dear Sir,

With due respect and humble submission to state that I am **Kaniz Fatema**, student of 4th Professional B.Sc in Physiotherapy at Bangladesh Health Professions Institute (BHPI). According to the course curriculum, we have to conduct research for the partial fulfillment of our degree. My research project entitled **"Impact of Fatigue and Pain Severity on Physiotherapy Treatment Outcome Among the Stroke Patient Attending at CRP, Savar"** under the supervision of **Dr. Shamima Islam Nipa**, Lecturer-Rehabilitation Science, Department of M.Sc. in Rehabilitation Science (MRS). So, I need to take permission to collect data for my research project from the Neurology Department, CRP-Savar. I would like to assure you that anything in my study will not be harmful to the participants.

I, therefore, pray and hope that you would be kind enough to grant my application & give me permission for data collection and oblige thereby.

Sincerely Yours,
Kaniz Fatema Kaniz Fatema
4th Professional B.Sc in Physiotherapy
Roll: 33, Session 2017-2018
Bangladesh Health Professions Institute (BHPI)

Recommended
1151

Recommended from Dept.
Shofiq
30.03.2023
Md. Shofiqul Islam
Associate Professor & Head
Department of Physiotherapy
Bangladesh Health Profess ons Institute (BHPI)
CRP, Chapain, Savar, Dhaka-1343

Approved
30/3/23
Dr. Mohammad Anwar Hossain, PhD
Senior Consultant & Head
Physiotherapy Department
Associate Professor, BHPI
CRP, Savar, Dhaka-1343

Appendix 1 (B)

বাংলাদেশ হেল্‌থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)
Bangladesh Health Professions Institute (BHPI)
(The Academic Institute of CRP)

Ref: CRP/BHPI/IRB/03/2023/714 Date: 13/03/2023

To
Kaniz Fatema
B.Sc. in Physiotherapy,
Session: 2017-2018, DU Reg. No: 8656
BHPI, CRP, Savar, Dhaka- 1343, Bangladesh

Subject: Approval of the dissertation proposal **"Impact of Fatigue and Pain Severity on Physiotherapy Treatment Outcome among the Stroke Patients Attending at CRP, Savar"** by ethics committee.

Dear
Kaniz Fatema,
Congratulations
The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application to conduct the above-mentioned dissertation, with yourself, as the Principal Investigator Dr. Shamima Islam Nipa, Lecturer, Department of Rehabilitation Science, Bangladesh Health Professions Institute (BHPI) as dissertation supervisor. The following documents have been reviewed and approved:

Sr. No.	Name of the Documents
1	Dissertation Proposal
2	Questionnaire (English and Bengali version)
3	Information sheet & consent form

The purpose of the study is to evaluate the impact of fatigue and pain severity among stroke patient attending at CRP. Should there any interpretation, typo, spelling, grammatical mistakes in the title, it is the responsibilities of the investigator. Since the study involves questionnaire that takes maximum 20-25 minutes and have no likelihood of any harm to the participants. The members of the Ethics committee approved the study to be conducted in the presented form at the meeting held at 09:00 AM on January 9, 2023 at BHPI, 34th IRB Meeting.

The institutional Ethics committee expects to be informed about the progress of the study, any changes occurring in the course of the study, any revision in the protocol and patient information or informed consent and ask to be provided a copy of the final report. This Ethics committee is working accordance to Nuremberg Code 1947, World Medical Association Declaration of Helsinki, 1964 - 2013 and other applicable regulation.

Best regards,

Muhammad Millat Hossain
Associate Professor, Dept. of Rehabilitation Science
Member Secretary, Institutional Review Board (IRB) BHPI,
CRP, Savar, Dhaka-1343, Bangladesh

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Appendix-2 (A)

সম্মতিপত্র

(অংশগ্রহণকারীকে পড়ার জন্য অনুরোধ করা হলো)

আসসালামুআলাইকুম, আমি কানিজ ফাতিমা, ঢাকা বিশ্ববিদ্যালয়ের চিকিৎসা অনুষদের অধীনে বাংলাদেশ হেলথ প্রফেশনস ইন্সটিটিউট (বি এইচ পি আই) এর ফিজিওথেরাপি কোর্সের ২০১৭-১৮ সেশনের শিক্ষার্থী। আমার বিএসসি ইন ফিজিওথেরাপি ডিগ্রী অর্জনের জন্য আমাকে একটি গবেষনা সম্পূর্ণ করতে হবে। আমার গবেষনার শিরোনাম হল, **"সিআরপি, সাভারে উপস্থিত স্ট্রোক রোগীদের মধ্যে ক্লান্তি এবং ব্যথার তীব্রতার প্রভাব"**। এই গবেষণাটি অধ্যয়নের মুল লক্ষ্য হচ্ছে স্ট্রোক রোগীদের মধ্যে ক্লান্তি এবং ব্যাথার তীব্রতার প্রভাব কি তা নিরুপন করা। এই গবেষনা সম্পূর্ণ করার জন্য আমি আপনাকে আপনার শারিরীক ও মানসিক অবস্থা সম্পর্কিত কিছু প্রশ্ন করব । আপনাকে আশ্বস্ত করছি, আমার ও আমার প্রশ্নের দ্বারা আপনার কোনরূপ ক্ষতি হবে না। আপনার দেওয়া তথ্য গোপন রাখা হবে এবং শুধুমাত্র গবেষনার উদ্দ্যেশ্যে ব্যাবহার করা হবে। যে কোন সময় গবেষনায় আপনার অংশগ্রহন বন্ধ করার অধিকার রয়েছে। পাশাপাশি আপনি যদি কোন প্রশ্নের উত্তর দিতে অশ্বস্তি বোধ করেন তবে আপনি সেই প্রশ্ন এড়িয়ে যেতে পারেন। প্রশ্নাবলী পূরন করতে ৩০ মিনিট থেকে ৪০ মিনিট সময় লাগবে। অনুগ্রহ করে আমার প্রশ্নাবলীর সঠিক উত্তর দিন এবং আপনার স্বাস্থ্যের মুল্যয়ন করতে ডেটা সংগ্রহকারীকে যথাসাধ্য সহযোগীতা করুন।

হ্যা না

ধন্যবাদ আপনার অংশগ্রহনের পাশাপাশি প্রশ্নগুলোর যথাযথ উত্তর দিয়ে সহযোগিতা করার জন্য।

অংশগ্রহনকারীর স্বাক্ষর..... তারিখ.....

তথ্য সংগ্রহকারীর স্বাক্ষর..... তারিখ.....

গবেষকের স্বাক্ষর..... তারিখ.....

Appendix-2 (B)

Informed consent

(Please read out to the participant)

Assalamualaikum, I am Kaniz Fatima, a student of Physiotherapy Course 2017-18 session of Bangladesh Health Professions Institute (BHPI) under Faculty of Medicine, University of Dhaka. I need to complete a research to get my BSc in Physiotherapy degree. The title of my research is, "Impact of Fatigue and Pain among in Stroke Patients attending at CRP, Savar". The main aim of this research study is to determine the impact of fatigue and pain intensity in stroke patients. To complete this survey, I will ask you some questions about your physical and mental condition. I assure you, you will not be harmed by me and my questions. The information you provide will be kept confidential and used for research purposes only. You have the right to stop participating in research at any time. Also, if you feel unsure about answering a question, you can skip that question. It will take 30 minutes to 40 minutes to complete the questionnaire. Please answer my questionnaire correctly and assist the data collector as much as possible in evaluating your health.

Yes No

Thank you for your participation as well as your cooperation by answering the questions appropriately.

Signature of Participant..... Date .....

Signature of Data Collector ..... Date .....

Signature of the Researcher..... Date .....

Appendix 3 (A)

প্রশ্নাবলিঃ বাংলা

পর্ব ১- অংশগ্রহণকারীর ব্যাক্তিগত বিবরন

নামঃ..... রোগীর আইডি.....

ঠিকানা.....

যোগাযোগের নাম্বার (যদি সম্ভব).....

পর্ব ২- রোগীর আর্থ জনতাত্ত্বিক তথ্য

প্রশ্নসমূহ	উত্তর
বয়স	বছর
লিঙ্গ	• পুরুষ = ১ • মহিলা =২
শিক্ষাগত যোগ্যতা	• কোন প্রাতিষ্ঠানিক শিক্ষা নাই = ১ • প্রাথমিক শিক্ষা = ২ • মাধ্যমিক শিক্ষা = ৩ • উচ্চ মাধ্যমিক শিক্ষা = ৪ • স্নাতক ডিগ্রী/ স্নাতোকোত্তর = ৫
পেশা	
বৈবাহিক অবস্থা	• বিবাহিত = ১ • অবিবাহিত = ২ • বিধবা/ বিপত্নিক = ৩ • বিবাহ বিচ্ছিন্ন = ৪

পরিবারের ধরন	• একক পরিবার = ১ • যৌথ পরিবার = ২
বসবাসের এলাকা	• গ্রাম = ১ • শহর = ২ • পাহাড়ি এলাকা = ৩
পরিবারের সদস্য সংখ্যা	
উপার্জনকারী ব্যাক্তি	
মাসিক আয়	
স্ট্রোকের তারিখ	
স্ট্রোকের ধরন	• ইশকেমিক = ১ • হেমোরেজিক = ২
মস্তিষ্কের আক্রান্ত অংশ	• ডান = ১ • বাম = ২
শরীরের আক্রান্ত অংশ	• ডান = ১ • বাম = ২
গ্রহনকৃত ফিজিওথেরাপি চিকিৎসা	• ৮-১২ সেশন = ১ • ১৩-১৬ সেশন = ২ • ১৭-২০ সেশন = ৩ • > ২০ সেশন = ৪

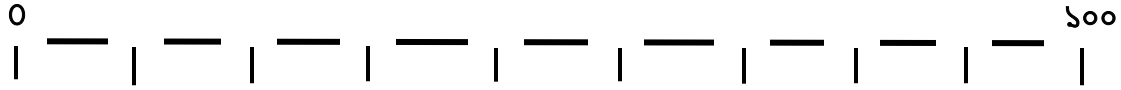
পর্ব ৩- ক্লান্তি তীব্রতা স্কেল (এফএসএস)

এফএসএস প্রশ্নাবলী:

গত সপ্তাহে, আমি খুঁজে পেয়েছি যে:	অসম্মত ⟷ সম্মত						
১. যখন আমি ক্লান্ত থাকি তখন আমি কম উৎসাহ পাই।	১	২	৩	৪	৫	৬	৭
২. ব্যায়াম করলে আমার ক্লান্ত লাগে ।	১	২	৩	৪	৫	৬	৭
৩. আমি খুব সহজেই ক্লান্ত হয়ে যাই ।	১	২	৩	৪	৫	৬	৭
৪. ক্লান্তি আমার শারীরিক কার্যকলাপে হস্তক্ষেপ করে	১	২	৩	৪	৫	৬	৭
৫. ক্লান্তি আমার জন্য ঘন ঘন সমস্যা সৃষ্টি করে।	১	২	৩	৪	৫	৬	৭
৬. আমার ক্লান্তি দীর্ঘস্থায়ী শারীরিক ক্রিয়াকলাপকে বাধা দেয়।	১	২	৩	৪	৫	৬	৭
৭. ক্লান্তি নির্দিষ্ট দায়িত্ব এবং কর্তব্য পালনে হস্তক্ষেপ করে	১	২	৩	৪	৫	৬	৭
৮. ক্লান্তি আমার তিনটি সবচেয়ে অক্ষম লক্ষণগুলির মধ্যে একটি।	১	২	৩	৪	৫	৬	৭
৯. ক্লান্তি আমার কাজ, পারিবারিক বা সামাজিক জীবনে হস্তক্ষেপ করে।	১	২	৩	৪	৫	৬	৭
সম্পূর্ণ ফলাফল:							

পর্ব ৪- ভিজ্যুয়াল অ্যানালগ স্কেল

ব্যাথার তীব্রতাঃ



(ব্যাথা নেই) (তীব্র ব্যাথা)

পর্ব ৫- বার্গ কার্যকরী ভারসাম্য পরিমাপ

নং	প্রশ্ন/ নির্দেশনা	প্রতিক্রিয়া
১	**বসা থেকে দাঁড়ানো** নির্দেশনাঃ দয়া করে দাঁড়ান। সহায়তার জন্য আপনার হাত ব্যাবহার করবেন না।	**৪**.হাতের সাহায্য ছাড়া দাঁড়াতে পারে এবং স্বাধীনভাবে ভারসাম্য রক্ষা করতে পারে **৩**.হাতের সাহায্য নিয়ে নিজে নিজে দাঁড়াতে পারে **২**.হাতের সাহায্য নিয়ে কয়েকবার চেষ্টার পর দাঁড়াতে পারে **১.**নুন্যতম সাহায্যের প্রয়োজন হয় দাঁড়াতে এবং ভারসাম্য রক্ষা করতে **০**.মধ্যম থেকে সম্পুর্ন সাহায্যের মাধ্যমে দাঁড়াতে পারে
২	**সাহায্য ছাড়া দাঁড়ানো** নির্দেশনাঃ কোন কিছু না ধরে দুই মিনিট দাঁড়ানো	৪.নিরাপদে দুই মিনিট দাঁড়াতে পারে ৩.পর্যবেক্ষন সহ দুই মিনিট দাঁড়াতে পারে ২.সাহায্য ছাড়া ৩০ সেকেন্ড দাঁড়াতে পারে ১.সাহায্য ছাড়া ৩০ সেকেন্ড দাঁড়াতে করেকবার চেষ্টা করা লাগে ০.সাহায্য ছাড়া ৩০ সেকেন্ড দাঁড়াতে অসমর্থ্য

যদি নিরাপদে দুই মিনিট দাঁড়াতে পারে তাহলে সাহায্য ছাড়া বসার জন্য সম্পূর্ণ নাম্বার দেয়া হবে। এখন দাঁড়ানো থেকে বসার প্রস্তুতি।

৩	**মেঝেতে বসা পায়ে কোন সাহায্য ছাড়া** নির্দেশনাঃ হাত ভাজ করে দুই মিনিট বসবেন	৪.নিরাপদ ভাবে দুই মিনিট বসতে পারে ৩.পর্যবেক্ষনসহ দুই মিনিট বসতে পারে ২.৩০ সেকেন্ড বসতে পারে ১.১০ সেকেন্ড বসতে পারে ০.সাহায্য ছাড়া ১০ সেকেন্ড বসে থাকতে অসমর্থ্য
৪	**দাঁড়ানো থেকে বসা** নির্দেশনাঃ দয়া করে বসেন	৪.হাতের সামান্য সাহায্য নিয়ে নিরাপদে বসতে পারে ৩.হাতের ভারসাম্য রেখে বসতে পারে ২.পায়ের পেছনের দিক চেয়ারের সাথে লাগিয়ে ভারসাম্য রেখে বসতে পারে ১.স্বাধীনভাবে বসতে পারে কিন্তু ভারসাম্য ছাড়া ০.সাহায্য নিয়ে বসতে পারে
৫	**স্থানান্তর** নির্দেশনাঃ দয়া করে হাতে ভর দিয়ে চেয়ারে অথবা বিছানার একদিকে যাওয়া এবং ফিরে আসা এবং হাতে ভর ছাড়া অন্যদিকে যাওয়া ও ফিরে আসা	৪.হাতের নুন্যতম সাহায্যে স্থানান্তর পারা ৩.হাতের দৃঢ়ভাবে সাহায্য নিয়ে স্থানান্তর পারা ২.মৌখিক নির্দেশনা অথবা পর্যবেক্ষনের মাধ্যমে স্থানান্তর পারা ১.একজন সাহায্যকারী প্রয়োজন হয় ০.দুইজন সাহায্যকরার প্রয়োজন হয়

৬	**সাহায্য ছাড়া চোখ বন্ধ করে দাঁড়ানো** নির্দেশনাঃ চোখ বন্ধ করা এবং ১০ সেকেন্ড দাঁড়ানো	৪.১০ সেকেন্ড নিরাপদে দাঁড়াতে পারা ৩.পর্যবেক্ষনের মাধ্যমে ১০ সেকেন্ড নিরাপদে দাঁড়াতে পারা ২.তিন সেকেন্ড দাঁড়িয়ে থাকতে পারে ১.তিন সেকেন্ড দাঁড়িয়ে থাকতে পারে কিন্তু চোখ বন্ধ রাখতে পারে না ০.পরে যাওয়া রোধ করতে সাহায্য লাগে
৭	**সাহায্য ছাড়া দুই পা একত্র করে দাঁড়ানো** নির্দেশনাঃ দয়া করে দুটি পা একত্র করুন এবং সাহায্য ছাড়া দাঁড়ান	৪.পা দুটি একত্র করে স্বাধীনভাবে এক মিনিট দাঁড়াতে পারে ৩.পর্যবেক্ষনসহ দুই পা একত্র করে দাঁড়াতে পারে ২.দুই পা একত্র করে স্বাধীনভাবে দাঁড়াতে পারে কিন্তু ৩০ সেকেন্ড ধরে রাখতে পারে না ১.দুই পা একত্র করে দাঁড়িয়ে ১৫ সেকেন্ড ধরে রাখার সক্ষমতা আছে ০.পা একত্র করে দাঁড়িয়ে ১৫ সেকেন্ড ধরে রাখার সক্ষমতা নাই
৮	**দাঁড়ানো অবস্থায় দুই হাত উঁচু করে সামনের দিকে ঝোঁকা** নির্দেশনাঃ দুই হাত ৯০ ডিগ্রী উঁচু করে আঙ্গুল সোজা রেখে যতটা সম্ভব সামনে ঝুকুন	৪.আত্মবিশ্বাসের সহিত ১০ ইঞ্চি সামনের দিকে পৌছাতে পারে ৩.নিরাপদে ৫ ইঞ্চির বেশি পৌছাতে পারে ২.নিরাপদে ২ ইঞ্চির বেশি পৌছাতে পারে ১.পর্যবেক্ষনের সাহায্যে সামনে যেতে পারে ০. পড়ার হাত থেকে রক্ষা পেতে সাহায্যের প্রয়োজন
৯	**মেঝে থেকে কোন বস্তু তোলা** নির্দেশনাঃ মেঝেতে আপনার পায়ের সামনে রাখা জুতাটি তুলুন	৪.নিরাপদে এবং সহজে জুতা তুলতে পারে ৩.পর্যবেক্ষনের সাহায্যে জুতা তুলতে পারে ২.জুতা তুলতে পারে না কিন্তু জুতার কাছে ১ থেকে ২ ইঞ্চি যেতে পারে এবং স্বাধীনভাবে ভারসাম্য রক্ষা করতে পারে ১.তুলতে অসমর্থ্য এবং চেষ্টার সময় পর্যবেক্ষন প্রয়োজন ০.অসমর্থ্য বা সাহায্যের প্রয়োজন
১০	**পিছনে তাকান/ ডান এবং বাম কাধ দিয়ে পিছনে তাকানো** নির্দেশনাঃ দাঁড়ানো অবস্থায় ডান এবং বাম কাঁধ দিয়ে পিছনে তাকানো	৪.দুই দিক দিয়েই পিছনে ঘুরতে পারে এবং সমানভাবে ভর দেয় ৩.শুধুমাত্র এক দিকে পিছনে ঘুরতে পারে এবং অন্যদিকে কম ভর দেয় ২.শুধুমাত্র পাশে ঘুরে কিন্তু ভারসাম্য বজায় রাখে ১.ঘোরার সময় তত্ত্বাবধানের প্রয়োজন হয় ০.ভারসাম্য হারানো বা প্রথম থেকে রক্ষা করতে সাহায্যের প্রয়োজন হয়
১১	**৩৬০ ডিগ্রী ঘোরা**	৪.চার সেকেন্ডের কম সময় দুই দিকেই ৩৬০ ডিগ্রী নিরাপদে ঘুরতে পারে

	নির্দেশনাঃ পুরোপুরি বৃত্তাকারে ঘুরে দাঁড়ান, থামুন আবার অন্যদিকে পুরোপুরি বৃত্তাকারে ঘুরে দাঁড়ান	৩.চার সেকেন্ড বা তার কম সময়ে শুধু একদিকে নিরাপদে ঘুরতে পারে ২.নিরাপদে কিন্তু ধীরে ধীরে ৩৬০ ডিগ্রী ঘুরে দাঁড়াতে সক্ষম ১.নিবিড় পর্যবেক্ষন দরকার ০.ঘোরার সময় সাহায্যের প্রয়োজন হয়
১২	**টুল ছোঁয়া গণনা করুন** নির্দেশনাঃ প্রতিটি পায়ের পাতা কোন ধাপ বা টুলকে চারবার না ছোঁয়া পর্যন্ত প্রক্রিয়াটি চালু থাকবে	৪.স্বাধীন ও নিরাপদ ভাবে দাঁড়াতে সক্ষম এবং আঁটটি ধাপ ২০ সেকেন্ডের মধ্যে সম্পন্ন করতে পারে ৩.স্বাধীনভাবে দাঁড়াতে সক্ষম এবং আঁটটি ধাপ সম্পন্ন করতে ২০ সেকেন্ডের বেশি সময় প্রয়োজন ২.তত্ত্বাবধানের মাধ্যমে সাহায্য ছাড়াই চারটি ধাপ সম্পন্ন করতে পারে ১.নুন্যতম সহায়তার মাধ্যমে দুইটি ধাপের বেশি সম্পন্ন করতে পারে ০.পতন থেকে রক্ষা করার জন্য সাহায্য প্রয়োজন বা চেষ্টা করতে অক্ষম
১৩	**অসমর্থ ভাবে দাঁড়ানো অবস্থায় একটি পা সামনে রাখুন** নির্দেশনাঃ এক পা সরাসরি অন্য পায়ের সামনে রাখুন। আপনি যদি মনে করেন আপনি আপনার পা সরাসরি সামনে রাখতে পারবেন না তবে আপনার সামনের পায়ের গোড়ালিটি অন্য পায়ের আঙ্গুলের চেয়ে এগিয়ে নেয়ার চেষ্টা করুন	৪.স্বাধীনভাবে ফুট টেন্ডেম স্থাপন করতে এবং ৩০ সেকেন্ড ধরে রাখতে সক্ষম ৩.স্বাধীনভাবে পা এগিয়ে রাখতে এবং ৩০ সেকেন্ড ধরে রাখতে সক্ষম ২.স্বাধীনভাবে ছোট স্টেপ নিতে এবং ৩০ সেকেন্ড ধরে রাখতে সক্ষম ১.স্টেপ নিতে সাহায্যের প্রয়োজন কিন্ত ১৫ সেকেন্ড ধরে রাখতে সক্ষম ০.পদক্ষেপ দেয়া বা দাঁড়ানোর সময় ভারসাম্য হারায়
১৪	**এক পায়ে দাঁড়ানো** নির্দেশনাঃ কোন সাহায্য ছাড়া যতক্ষন পারে এক পায়ে দাঁড়ায়	৪.স্বাধীনভাবে পা উত্তোলন করতে এবং ১০ সেকেন্ডের বেশি সময় ধরে রাখতে সক্ষম ৩.স্বাধীনভাবে পা উত্তোলন করতে এবং ৫-১০ সেকেন্ড ধরে রাখতে সক্ষম ২.স্বাধীনভাবে পা উত্তোলন করতে এবং ৩ সেকেন্ডের বেশি সময় ধরে রাখতে সক্ষম ১.পা উত্তলনের চেষ্টা করে তিন সেকেন্ড ধরে রাখতে পারে না কিন্তু স্বাধীনভাবে দাঁড়াতে পারে ০. চেষ্টা করতে অক্ষম বা সাহায্য ছাড়া পড়ে যেতে পারে

মোট স্কোর (০-৫৬).....

০-২০= হুইলচেয়ার ব্যাবহার, ২১-৪০= সাহায্য নিয়ে হাটা, ৪১-৫৬=স্বাধীন

পর্ব ৬ - বারথেল ইনডেক্স

১। খাওয়া
০= খেতে পারে না
৫= সাহায্যের প্রয়োজন (কাটতে, মাখন লাগাতে)
১০= স্বাধীন

২। গোসল
০= নির্ভরশীল
৫= স্বাধীন

৩। পরিচর্যা
০= নিজের যত্ন করতে সাহায্যের প্রয়োজন
৫= স্বাধীনভাবে মুখমণ্ডল/চুল/দাতের যত্ন নিতে পারে

৪। পোশাক পরিধান
০= নির্ভরশীল
৫= সাহায্য প্রয়োজন কিন্তু প্রায় অর্ধেক সাহায্য ছাড়া করতে পারেন
১০= স্বাধীন (বোতাম, জিপ, লেস, ইত্যাদি সহ)

৫। অন্ত্র(মল)
০= অসংযত বা এনিমা দিতে হয়
৫= মাঝে মাঝে দুর্ঘটনা
১০= সংযত

৬। মুত্র
০= অসংযত বা ক্যাথেটারাইজড এবং একা পরিচালনা করতে অক্ষম
৫= মাঝে মাঝে দুর্ঘটনা
১০= সংযত

৭। টয়লেট ব্যবহার
০= নির্ভরশীল
৫= সাহায্য প্রয়োজন কিন্তু নিজেও কিছু করতে পারেন
১০= স্বাধীন (চালু এবং বন্ধ, ড্রেসিং, মুছা)

৮। স্থানান্তর (বিছানা থেকে চেয়ারে এবং পিছনে)

০= নির্ভরশীল, বসার ভারসাম্য নেই

৫= অধিকতর সাহায্য (এক বা দুই ব্যক্তি, শারীরিকভাবে), বসতে পারেন

১০= সামান্য সাহায্য (মৌখিক বা শারীরিক)

১৫= স্বাধীন

৯। গতিশীলতা (সমতল পৃষ্ঠে)

০= অচল বা <50 গজ

৫= হুইলচেয়ার স্বাধীন, কোণ সহ, > 50 গজ

১০= একজন ব্যক্তির সাহায্যে হাঁটে (মৌখিক বা শারীরিক) > 50 গজ

১৫= স্বাধীন (তবে কোনো সাহায্য ব্যবহার করতে পারে; উদাহরণস্বরূপ, লাঠি) > 50 গজ

১০। সিঁড়ি

০= নির্ভরশীল

৫= সাহায্য প্রয়োজন (মৌখিক, শারীরিক, সাহায্য বহন)

১০= স্বাধীন

মোট (০-১০০)ঃ

০-২০ = সম্পূর্ন নির্ভরশীল, ২১-৬০ = অধিকতর নির্ভরশীল, ৬১-৯০= পরিমিত নির্ভরশীল, ৯১-৯৯ = সামান্য নির্ভরশীল

Appendix- 3(B)

Part 1 - Participant's Personal Details

Name:……. Patient's ID……..

Address:……..

Contact no (If possible)……..

Part 2 – Socio-demographic data of the patient

Question	Answer
Age	Year
Gender	• Male = 1 • Female = 2
Educational status	• Illiterate = 1 • Primary = 2 • Secondary = 3 • Higher secondary = 4 • Bachelor / Masters = 5
Occupation	
Marital status	• Married = 1 • Unmarried = 2 • Widowed = 3 • Divorced = 4
Family type	• Single family = 1 • Joint family = 2
Living area	• Rural area = 1 • Urban area = 2
Family members	
Earning member	
Monthly income	

Date of stroke	
Type of stroke	• Ischemic = 1 • Hemorrhagic = 2
Affected part of the brain	• Right = 1 • Left = 2
Affected part of the body	• Right = 1 • Left = 2
Physiotherapy treatment received	• 8-12 session = 1 • 13-16 session = 2 • 17-20 session = 3 • >20 session = 4

Part 3 – Fatigue Severity Scale (FSS)

FSS Questionnaire

During the past week, I have found that:	Disagree ⟷ Agree						
1. My motivation is lower when I am fatigued.	1	2	3	4	5	6	7
2. Exercise brings on my fatigue.	1	2	3	4	5	6	7
3. I am easily fatigued.	1	2	3	4	5	6	7
4. Fatigue interferes with my physical functioning	1	2	3	4	5	6	7
5. Fatigue causes frequent problems for me.	1	2	3	4	5	6	7
6. My fatigue prevents sustained physical functioning.	1	2	3	4	5	6	7
7. Fatigue interferes with carrying out certain duties and responsibilities.	1	2	3	4	5	6	7
8. Fatigue is among my three most disabling symptoms	1	2	3	4	5	6	7
9. Fatigue interferes with my work, family, or social life.	1	2	3	4	5	6	7
Total Score:							

Part 4 – Visual Analog Scale

Severity of pain (in mm)

No pain Severe pain

Part 5 – Berg Balance Scale

No	Questions/Instructions	Response
1	**SITTING TO STANDING**:(Please stand up. Try not to use your hand for support)	(4) able to stand without using hands and stabilize independently (3) able to stand independently using hands (2) able to stand using hands after several tries (1) needs minimal aid to stand or stabilize (0) needs moderate or maximal assist to stand
2	**STANDING UNSUPPORTED**: (Please stand for two minutes without holding on	(4) able to stand safely for 2 minutes (3) able to stand 2 minutes with supervision (2) able to stand 30 seconds unsupported (1) needs several tries to stand 30 seconds unsupported (0) unable to stand 30 seconds unsupported
3	**SITTING WITH BACK UNSUPPORTED BUT FEET SUPPORTED ON FLOOR OR ON A STOOL**: (Please sit with arms folded for 2 minutes)	(4) able to sit safely and securely for 2 minutes (3) able to sit 2 minutes under supervision (2) able to sit 30 seconds (1) able to sit 10 seconds (0) unable to sit without support 10 seconds
4	**STANDING TO SITTING:** (Please sit down)	(4) sits safely with minimal use of hands (3) controls descent by using hands (2) uses back of legs against chair to control descent (1) sits independently but has uncontrolled descent (0) needs assist to sit
5	**TRANSFERS**: (Arrange chair for pivot transfer. Ask subject to transfer one way toward a seat with armrests and one way toward a seat without armrests. You may use a bed and a chair	(4) able to transfer safely with minor use of hands (3) able to transfer safely definite need of hands (2) able to transfer with verbal cuing and/or supervision (1) needs one person to assist

		(0) needs two people to assist or supervise to be safe
6	**STANDING UNSUPPORTED WITH EYES CLOSED**: (Please close your eyes and stand still for 10 seconds)	(4) able to stand 10 seconds safely (3) able to stand 10 seconds with supervision (2) able to stand 3 seconds (1) unable to keep eyes closed 3 seconds but stays safely (0) needs help to keep from falling
7	**STANDING UNSUPPORTED WITH FEET TOGETHER**: (Place your feet together and stand without holding on)	(4) able to place feet together independently and stand 1 minute safely (3) able to place feet together independently and stand 1 minute with supervision (2) able to place feet together independently but unable to hold for 30 seconds (1) needs help to attain position but able to stand 15 seconds feet together (0) needs help to attain position and unable to hold for 15 seconds
8	**REACHING FORWARD WITH OUTSTRETCHED ARM WHILE STANDING**: (Lift arm to 90 degrees. Stretch out your fingers and reach forward as far as you can. Ask subject to use both arms when reaching to avoid rotation of the trunk)	(4) can reach forward confidently 25 cm (10 inches) (3) can reach forward 12 cm (5 inches) (2) can reach forward 5 cm (2 inches) (1) reaches forward but needs supervision (0) loses balance while trying/requires external support
9	**PICK UP OBJECT FROM THE FLOOR FROM A STANDING POSITION**: (Pick up the shoe/slipper, which is place in front of your feet)	(4) able to pick up slipper safely and easily (3) able to pick up slipper but needs supervision (2) unable to pick up but reaches 2-5 cm from slipper and keeps balance independently (1) unable to pick up and needs supervision while trying (0) unable to try/needs assist to keep from losing balance or falling
10	**TURNING TO LOOK BEHIND OVER LEFT AND RIGHT SHOULDERS WHILE STANDING**: (Turn to look	(4) looks behind from both sides and weight shifts well (3) looks behind one side only other side shows less weight shift

	directly behind you over toward the left shoulder. Repeat to the right. Examiner may pick an object to look at directly behind the subject to encourage a better twist turn.)	(2) turns sideways only but maintains balance (1) needs supervision when turning (0) needs assist to keep from losing balance or falling
11	**TURN 360 DEGREES**: (Turn completely around in a full circle. Pause. Then turn a full circle in the other direction)	(4) able to turn 360 degrees safely in 4 seconds or less (3) able to turn 360 degrees safely one side only 4 seconds or less (2) able to turn 360 degrees safely but slowly (1) needs close supervision or verbal cuing (0) needs assistance while turning
12	**PLACE ALTERNATE FOOT ON STEP OR STOOL WHILE STANDING UNSUPPORTED**: (Place each foot alternately on the step/stool. Continue until each foot has touch the step/stool four times)	(4) able to stand independently and safely and complete 8 steps in 20 seconds (3) able to stand independently and complete 8 steps in > 20 seconds (2) able to complete 4 steps without aid with supervision (1) able to complete > 2 steps need minimal assist (0) needs assistance to keep from falling / unable to try
13	**STANDING UNSUPPORTED ONE FOOT IN FRONT**: (Place one foot directly in front of the other. If you feel that you cannot place your foot directly in front, try to step far enough ahead that the heel of your forward foot is ahead of the toes of the other foot. To score 3 points, the length of the step should exceed the length of the other foot and the width of the stance should approximate the subject's normal stride width)	(4) able to place foot tandem independently and hold 30 seconds (3) able to place foot ahead independently and hold 30 seconds (2) able to take small step independently and hold 30 seconds (1) needs help to step but can hold 15 seconds (0) loses balance while stepping or standing
14	**STANDING ON ONE LEG**: (Stand on one leg as long as you can without holding on)	(4) able to lift leg independently and hold > 10 seconds (3) able to lift leg independently and hold 5-10 seconds (2) able to lift leg independently and hold ≥ 3 seconds

		(1) tries to lift leg unable to hold 3 seconds but remains standing independently (0) unable to try of needs assist to prevent fall

Total score (0 – 56)……..

0 – 20= Wheelchair bounded, 21 – 40 = Walk with support, 41 – 56 = Independent

Part 6 – Barthel index

1. FEEDING

0 = unable

5 = needs help cutting, spreading butter, etc., or requires modified diet

10 = independent

2. BATHING

0 = dependent

5 = independent (or in shower)

3. GROOMING

0 = needs to help with personal care

5 = independent face/hair/teeth/shaving (implements provided)

4. DRESSING

0 = dependent

5 = needs help but can do about half unaided

10 = independent (including buttons, zips, laces, etc.)

5. BOWELS

0 = incontinent (or needs to be given enemas)

5 = occasional accident

10 = continent

6. BLADDER

0 = incontinent, or catheterized and unable to manage alone

5 = occasional accident

10 = continent

7. TOILET USE

0 = dependent

5 = needs some help, but can do something alone

10 = independent (on and off, dressing, wiping)

8. TRANSFERS (BED TO CHAIR AND BACK)

0 = unable, no sitting balance

5 = major help (one or two people, physical), can sit

10 = minor help (verbal or physical)

15 = independent

9. MOBILITY (ON LEVEL SURFACES)

0 = immobile or < 50 yards

5 = wheelchair independent, including corners, > 50 yards

10 = walks with help of one person (verbal or physical) > 50 yards

15 = independent (but may use any aid; for example, stick) > 50 yards

10.STAIRS

0 = unable

5 = needs help (verbal, physical, carrying aid)

10 = independent

0 – 20= Total dependence, 21- 60 = Severe dependence, 61-90 = moderate dependence, 91- 99 = Slight dependence