



Faculty of Medicine
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**“Bio-psychosocial Aspects of Life After Stroke: Outcome Reported by
Patients at a Specialized Hospital in Bangladesh.”**

Submitted By

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CERTIFICATION

This is certifying that the thesis entitled **“Bio-psychosocial Aspects of Life After Stroke: Outcome Reported by Patients at a Specialized Hospital in Bangladesh.”** submitted by the student bearing roll no: 401, registration no: 5269, Academic session: 2012-2013 for the completion of the degree of M.Sc. in Physiotherapy, Department of Physiotherapy, BHPI, Bangladesh.

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Acronyms

CVA	Cerebrovascular accident
CT	Computed tomography
MRI	Magnetic resonance imaging
SDI	Socio-demographic indices
SIS	Stroke Impact Scale
PSD	Post-stroke depression
QoL	Quality of life
WHO	World Health Organization

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ABSTRACT

Purpose: To explore the bio-psychosocial aspects of life after stroke as reported by patients at a specialized hospital in Bangladesh. **Objectives:** To explore the socio-demographic (age, sex, occupation, marital status and educational qualifications, types, affected side treatment session information. Aims to find out the outcomes reported by patients of their physiological, social, psychological life, association of physical strength, hand function, mobility, activities of daily living, memory and thinking, communication and emotion, social participation and recovery from stroke on these aspects. **Methodology:** Study design was cross-sectional, 114 samples were selected from outpatient of neurology department of (CRP), Mirpur by structured questionnaire, face-to-face interviews by the data collector and was numerically coded and used SPSS 26.0 version software and analyzed in. **Results:** Total 114 stroke patients, (73; 64%) were male and (41; 36%) were female, with an average age of 62.86 years; (107; 93.9%), were married. (26; 22.8%) holding postgraduate degrees. Occupationally, (25; 21.9%) were employed, (29; 25.4%) were business owners, and (20; 17.5%) were retired, (40; 35.1%) had hemorrhagic strokes, while (74; 64.9%) had ischemic strokes, and (64; 56.1%) experienced left-sided disabilities. After treatment, 87.72% reported severe limitations in hand function, 19.44% severe memory impairments, 51.39% mild to no strength, and only 7.89% had severe communication impairments. Emotional resilience was 42.11% and 85.09% participated in moderate to high levels of social activity. No significant correlation between treatment sessions and age ($p= 0.555$), nor between treatment sessions and hand function. Age was not significantly correlated with recovery rate. A significant correlation was found between age and strength. Age and memory, age and emotion, showed no significant correlations. It indicated a significant difference between strength vs memory, emotion vs communication, ADLs vs Mobility, Hand function vs social participation. **Conclusion:** Stroke survivors face significant physical, cognitive, and emotional challenges, with hand function, mobility, and memory being particularly affected. The strong interconnections between various domains, emphasizing the importance of comprehensive recovery strategies.

Key words: *Bio-psychosocial aspects, Stroke survivors, Stroke Impact Scale.*

1.1 Background

Stroke, also known as a cerebrovascular accident (CVA), is a medical emergency that occurs when blood flow to a part of the brain is interrupted or reduced, depriving brain tissue of oxygen and nutrients. This interruption in blood flow can result from either a blockage in the blood vessels supplying the brain (ischemic stroke) or the rupture of blood vessels leading to bleeding into the brain (hemorrhagic stroke) (Tsao et al., 2022). A stroke occurs when a blood vessel in the brain bursts or becomes blocked by a clot or particles, depriving part of the brain of oxygen. As nerve cells in the affected area die within minutes, the body functions they control are lost. The severe impact of a stroke is due to the inability to replace these dead nerve cells (Andreone et al., 2020).

Stroke is the third leading cause of death worldwide and has a profound emotional impact on both patients and their families. It is also the most common cause of severe physical disability, affecting around 40% of stroke survivors (Varghese & Barboza, 2018). According to a study Hamre, (2021), stroke impacted 15 million people globally each year, resulting in 5 million deaths and leaving another 5 million survivors with permanent disabilities (Jambi et al., 2024).

According to a study, both Ischemic and hemorrhagic strokes prevalence of 87% of strokes are ischemic, 13% hemorrhagic (Steiger & Cifu, 2016). Hemorrhagic strokes, which are less common but more severe, occur when a cerebral blood vessel ruptures, causing bleeding within the brain or surrounding spaces. Both types require swift diagnosis and tailored treatment strategies to mitigate their devastating impact (Ilkhomovna et al., 2020).

According to a study, the most common risk factors include hypertension (58.62%), cigarette smoking (53.79%), lipid disorders (48.01%), heart diseases (25.75%), diabetes (20.01%), and a prior history of stroke (10.61%). A study conducted on 85 young stroke

patients (aged 14 to 45) hospitalized between 2008 and 2009 found that the majority (61.18%) had ischemic stroke (IS), while others experienced intracerebral hemorrhage (29.40%), subarachnoid hemorrhage (8.24%), or aneurysm (1.18%). Key risk factors for both IS and hemorrhagic stroke (HS) were hypertension (60.00%), hypercholesterolemia (38.80%), diabetes (35.20%), smoking (32.90%), premature atherosclerosis (8.20%), and oral contraceptive use (3.8%) (Islam et al., 2012).

Stroke remains a leading cause of death and disability worldwide. Although stroke mortality rates are declining due to advancements in treating acute stroke complications, the number of individuals living with long-term effects is increasing. Currently, more than 75% of people survive their first stroke, with 25% experiencing mild disabilities and 40% facing moderate to severe impairments. Stroke survivors are also at elevated risk for future vascular events, such as recurrent strokes, which increases their risk of death and further disability (Ovbiagele et al., 2014).

A study showed an estimated 16 million new stroke cases, and 62 million survivors were reported globally, with projections suggesting that, without substantial public health efforts, these numbers will rise to over 23 million new cases and 7.8 million deaths by 2030 (Yau et al., 2016). Stroke is the second leading cause of death worldwide, with around 11 million strokes annually and over 6.5 million resulting in death, the majority of which (86%) occur in low- and middle-income countries (Abissegue et al., 2024; Watkins, 2023). Disability rates among stroke survivors range from 24% to 54%, often leading to long-term impairments (Abissegue et al., 2024). The rising incidence, especially among younger populations, challenges global health targets such as Sustainable Development Goal 3.4 (Feigin et al., 2023). Economically, stroke imposes a heavy burden, with global costs surpassing \$891 billion annually (Feigin et al., 2023).

Stroke remains a leading cause of disability and mortality globally, despite advancements in medical care that have reduced acute stroke complications. While over 75% of stroke patients survive their first event, many experience significant residual disabilities, with 25% facing minor and 40% moderate to severe disabilities (Baldwin et al., 2024).

Stroke is a significant health concern in Bangladesh, particularly in rural areas where 74% of the population resides. The mortality rate from stroke has risen from 6.00% in 2006 to 8.57% in 2011, highlighting an urgent need for effective intervention strategies. (Rahman et al., 2023). A nationwide survey reported a prevalence of 11.39 per 1,000, with hypertension (79.2%) and diabetes (28.8%) as the most common risk factors (Mondal et al., 2021).

Stroke symptoms can vary depending on the type and brain area affected. Common signs include sudden numbness or weakness, confusion, difficulty speaking or understanding speech, vision problems, and challenges with walking, balance, or coordination. A sudden and severe headache without a known cause may also indicate a stroke. Immediate medical attention is crucial for mitigating brain damage and reducing the risk of long-term complications. Prompt treatment can mitigate brain damage and reduce the risk of long-term complications (Khan et al., 2020).

Stroke prevalence varies by demographic and area, but it remains a major health problem worldwide. Millions of people worldwide suffer from stroke every year; the World Health Organization (WHO) estimates that there are an astounding 15 million instances of stroke worldwide (Feigin et al., 2022). Regional differences exist in their occurrence, nevertheless; greater rates have been reported in certain regions, such as Southeast Asia and Africa (Feigin et al., 2021). Age is a critical factor since the incidence of stroke rises with age and disproportionately affects older people. Gender disparities are also relevant, since males are often more likely than women in many communities to have a stroke. Nonetheless, stroke prevalence is often greater in women owing to their longer life expectancy (Appelros et al., 2020). Furthermore, the correlation between the frequency of stroke and modifiable risk factors, such as diabetes, hypertension, obesity, smoking, and physical inactivity, is complex. This highlights the significance of focused interventions aimed at addressing these factors and mitigating the global stroke burden (Soto-Camara et al., 2020).

Cognitive impairments can worsen over time, impacting mood and overall well-being (Demeyere et al., 2021). For instance, 65.3% of long-term survivors exhibit cognitive difficulties, with significant rates of depression and fatigue (Kusec et al., 2023).

In Asia, the incidence of stroke varies between 116 to 483 per 100,000 individuals annually. The World Health Organization (WHO) ranks Bangladesh 84th globally for stroke mortality rates (Mishra et al., 2024). The age and sex-standardized mortality rate for stroke in Bangladesh is 54.8 per 100,000, with a disability-adjusted life year (DALY) loss of 888.1 per 100,000 (Swansea & Panarin, 2016). This substantial burden of stroke has lasting economic repercussions for individuals, families, and the nation. Despite the high number of stroke survivors, there has been no research focusing on the impact of stroke on quality of life (QoL) in Bangladesh (Islam et al., 2023).

Stroke is a major global public health issue, affecting an estimated 110 million people worldwide. The burden of stroke is particularly high in low- and middle-income countries, where aging populations and lifestyle factors are contributing to a rising incidence. In 2019, approximately 101.5 million stroke cases were recorded globally, with ischemic strokes comprising 76% of these cases (Golubnitschaja et al., 2022).

The World Stroke Organization reports over 13 million new cases each year, with increasing rates among younger populations (Lindsay et al., 2019). Over the past two decades, the incidence of stroke in adults aged 20-64 has risen by 25% (Global Burden of Stroke, 2022). Stroke is the second leading cause of death and disability worldwide, with healthcare costs amounting to an estimated \$721 billion annually (Golubnitschaja et al., 2022; Saini et al., 2021). More than half of stroke survivors require assistance with daily activities, significantly impacting their quality of life (Sharma, 2023).

The prevalence of stroke in the United States has shown notable trends over recent years. As of 2019, approximately 7.09 million individuals were living with stroke, with ischemic strokes accounting for 82.7% of these cases (Renedo et al., 2024). The age-standardized prevalence of stroke remained stable from 1999 to 2018 at about 3.1%, indicating no significant change in the overall burden during this period (Andres et al., 2023).

Stroke poses a significant health challenge across Asia, with varying prevalence rates influenced by demographic and socio-economic factors. In China, the China Kadoorie Biobank highlights alarming stroke incidence rates, particularly in regions with lower

socio-demographic indices (SDI) (Mi et al., 2023). Japan's aging population exacerbates stroke prevalence, as shown in the Japan Public Health Center-based Prospective Study (Cao et al., 2024). India faces a rising burden of non-communicable diseases, with the Indian Council of Medical Research-India Stroke Registry revealing critical insights into stroke risk factors (Pandian et al., 2023). South Korea is witnessing increasing stroke trends, especially among younger adults, as reported by the Korea National Health Insurance Service (Feigin et al., 2023).

In rural areas, community health workers identified hypertension (67.55%) and diabetes (25.21%) as common risk factors ("Prevalence and Risk Factors of Stroke in Rural Bangladesh: A Survey with Community Health Workers on 1.3 million people (Preprint)," 2023). Government health reports offer aggregated data on stroke-related hospital admissions and mortality, which are crucial for understanding healthcare utilization and guiding policy decisions (Podder & Biswas, 2023; Mondal et al., 2021).

The bio-psychological aspects of life after stroke vary significantly between acute and chronic phases, influencing recovery and quality of life. In the acute phase, cognitive impairments and emotional disturbances, such as anxiety and depression, are prevalent. These psychological factors significantly affect the quality of life and potential recovery (Zolkornyaev, 2023). Chronic stroke survivors frequently experience persistent psychological issues, including depression and anxiety, which correlate with reduced quality of life and increased activity limitations (Atigossou et al., 2022) (Kusec et al., 2023).

In contrast, some studies suggest that while psychological challenges are common, they can be effectively managed through tailored rehabilitation programs that consider individual patient characteristics and support systems (Zamzam et al., 2020).

Stroke rehabilitation offers a multifaceted approach to aiding individuals in their recovery journey post-stroke, addressing physical, cognitive, and emotional aspects. Through evidence-supported interventions, stroke survivors experience improvements in functional abilities, encompassing motor skills, balance, and activities of daily living, fostering greater independence in daily tasks (Ali et al., 2020). Mobility gains are

facilitated through targeted rehabilitation strategies like physical therapy and gait training, reinstating the ability to walk and enhancing overall mobility (Selves et al., 2020). Moreover, rehabilitation efforts significantly reduce disability and dependency by maximizing functional recovery and facilitating community reintegration, ultimately improving quality of life (Teasell et al., 2020).

Importantly, stroke rehabilitation aids in preventing complications such as muscle contractures and pressure ulcers, while also addressing cognitive impairments and emotional challenges like depression and anxiety, contributing to holistic recovery and well-being (Aggarwa et al., 2024). Long-term outcomes of intensive rehabilitation efforts translate to enhanced functional independence and reduced healthcare costs, underscoring the value of comprehensive stroke rehabilitation programs (Dijkstra-Kersten et al., 2020). Despite these benefits, it's crucial to acknowledge the significant adjustment and psychological impact stroke survivor's face, necessitating a holistic approach to stroke care that considers the broader well-being of patients beyond just neurological impairment and functional disability (Safdar et al., 2023). Despite cognitive challenges, patients often maintain high motivation for rehabilitation, which is essential for recovery (Zolkornyaev, 2023). Psychological stressors, including depression and anxiety, significantly impact quality of life in both acute and chronic stroke survivors, necessitating targeted mind-body interventions for effective recovery (Zrelak et al., 2024).

The Stroke Impact Scale (SIS) has been developed to be a more comprehensive measure of health impact for stroke populations. The Stroke Impact Scale (SIS) emerged as a tool to measure these important multidimensional consequences of stroke. This diagnosis-specific measure considers the perspective of the patient in multiple domains, ranging from hand function and activities of daily living to memory and social participation. The SIS incorporates meaningful dimensions of function and health-related quality of life into 1 self-report questionnaire. SIS Version 2.0 includes 64 items and assesses 8 domains [strength, hand function, activities and independent activities of daily living (ADL/IADL), mobility, communication, emotion, memory and thinking, and participation/role function (Boudokhane et al., 2021).

1.1 Rationale of the study

Stroke is a leading cause of disability worldwide, impacting not only physical abilities but also psychological health and social life (World Health Organization, 2020). Research has shown that the effects of stroke extend beyond physical impairments, affecting survivors' quality of life and their ability to reintegrate socially (Smith et al., 2019). The bio-psychosocial model, which looks at physical, psychological, and social aspects together, is widely accepted to understand these effects holistically (Engel, 1977). However, in Bangladesh, there is limited research on how stroke impacts these areas of life, especially from the perspective of patients at specialized hospitals.

Stroke patients in Bangladesh often face unique challenges. Factors such as age, level of education, job type, and marital status can affect recovery, access to care, and social support (Rahman & Ali, 2018). By learning more about how stroke survivors in Bangladesh experience physical limitations, memory and thinking challenges, emotional difficulties, and social reintegration, we can create better and more culturally relevant care plans.

This study aims to fill this gap by exploring the bio-psychosocial aspects of life after stroke among patients at a specialized hospital in Bangladesh. Understanding these patient experiences can help healthcare providers develop more complete, personalized care plans that address the full range of recovery needs, from physical and psychological health to social well-being (Jones et al., 2021). This approach can ultimately help improve long-term outcomes and quality of life for stroke survivors (Kim & Lee, 2022).

1.2 Research question

How is the bio-psychosocial aspect of life after stroke reported by patients at a specialized hospital in Bangladesh?

1.4 Aim of the study

The aim of the study is to explore the bio-psychosocial aspects (biological/physiological, psychological and social aspects) of life after stroke as reported by patients at a specialized hospital in Bangladesh.

1.5 Objectives

1.5.1 General objective

- To explore the bio-psychosocial aspect of life of stroke patients who were receiving physiotherapy treatment at a specialized hospital in Bangladesh

1.5.2 Specific Objectives

- To explore the socio-demographic (age, sex, educational status, occupation, marital status, types of strokes, affected side) information of the participants
- To find out the physiological aspect of life of stroke patients who were receiving physiotherapy treatment
- To find out the psychological aspect of life of stroke patients who were receiving physiotherapy treatment
- To find out the social aspect of life of stroke patients who were receiving physiotherapy treatment
- To find out the impact on recovery from stroke of stroke patients who were receiving physiotherapy treatment

1.6 Operational Definition

Stroke

Stroke, as defined by the World Health Organization (WHO), is a medical condition characterized by the sudden onset of focal (specific area) and global neurological deficits that last longer than 24 hours and may result in death.

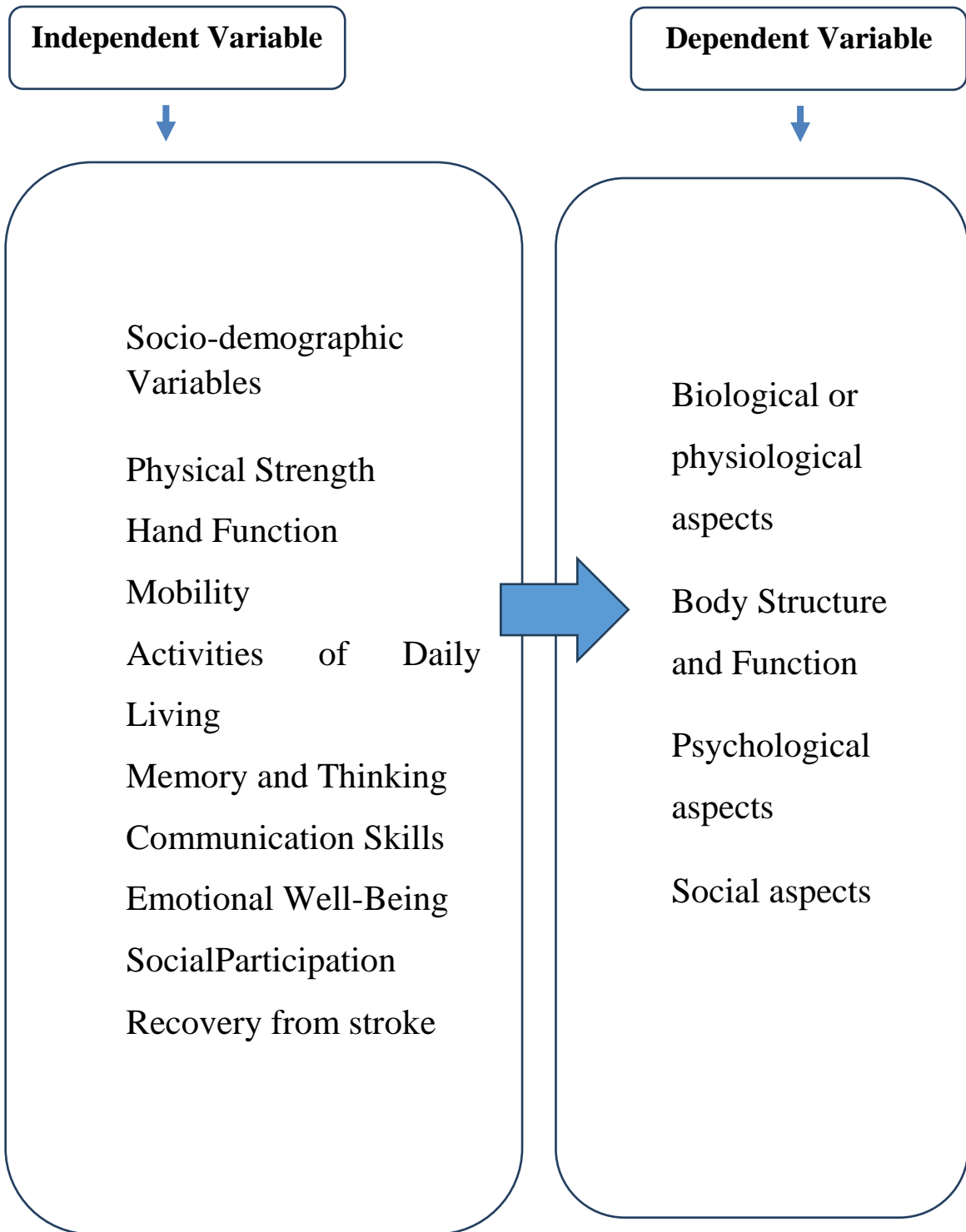
Stroke Impact Scale:

The Stroke Impact Scale (SIS) is an important tool used to measure how stroke affects various aspects of patients' lives, including strength, mobility, and emotional health, and was created with input from stroke survivors and healthcare professionals.

Bio-psychosocial

The bio-psychosocial approach means biological or physiological, psychological, and social aspect of patients.

1.7 Conceptual framework:



A stroke, or cerebrovascular accident (CVA), occurs when brain cells die due to a lack of oxygen, caused by blocked or ruptured arteries in the brain. According to the World Health Organization (WHO), stroke defines a sudden clinical sign of localized cerebral dysfunction from a vascular origin lasting over 24 hours, excluding transient ischemic attacks. Hemiplegia refers to paralysis on one side of the body, opposite to the brain area affected by the CVA (Simmons, D.G., 2021).

Cerebral ischemia and infarction occur due to sudden blockage of an artery supplying the brain or, less commonly, reduced blood flow beyond a narrowed artery. Causes include arterial wall disease, heart embolism, blood disorders, and other treatable conditions, which are more common in young stroke patients but can also affect the elderly. Venous infarction can result from head injury, encephalitis, or other global encephalopathy conditions (Etminan et al., 2021).

Most strokes in middle-aged and older women are thromboembolic (blood clot-related). It can lead to permanent brain damage, disability, or death. Symptoms include vision loss, confusion, vertigo, speech issues, weakness on one side, severe headache, and facial drooping, requiring immediate emergency care (Singh et al., 2023).

Hemorrhagic strokes occur when a blood vessel in the brain bursts, a process called hemorrhage. Causes include high blood pressure and cerebral aneurysms, which are weak spots in blood vessel walls. There are two types: intracerebral hemorrhage, where bleeding occurs within the brain (often due to hypertension), and subarachnoid hemorrhage, where an aneurysm bursts near the brain's outer membrane, spilling blood into the surrounding fluid (Mayo Clinic Staff, 2021; American Stroke Association, 2021).

The main risk factors for stroke are high blood pressure and atrial fibrillation, along with high cholesterol, diabetes, smoking, excessive alcohol and drug use, physical inactivity, obesity, processed red meat consumption, and an unhealthy diet. Alcohol increases the

risk of ischemic stroke and hemorrhage, while drugs like cocaine and amphetamines are linked to hemorrhagic stroke (Boehme, Esenwa, & Elkind, 2017).

Additionally preventable risk factors include diet, physical inactivity, smoking, substance abuse, and medical conditions like arteriovenous malformations, cerebral aneurysms, high cholesterol, diabetes, atherosclerosis, cardiovascular disease, high blood pressure, obesity, and transient ischemic attacks (TIAs). Unmodifiable factors include age, ethnicity, family history, and gender (Loh et al., 2022).

The prevalence of stroke in the United States has shown notable trends over recent years. As of 2019, approximately 7.09 million individuals were living with stroke, with ischemic strokes accounting for 82.7% of these cases (Renedo et al., 2024). The age-standardized prevalence of stroke remained stable from 1999 to 2018 at about 3.1%, indicating no significant change in the overall burden during this period (Andres et al., 2023).

Approximately 800,000 strokes occur annually, making it a leading cause of death and long-term disability (Sur, 2024). Europe also faces substantial stroke burdens, with varying incidence rates across regions, as highlighted by the EUROS project (Hilkens et al., 2024). The U.K. reports over 100,000 new cases each year, while Canada sees around 62,000 new cases annually (Renedo et al., 2024) (Baldwin et al., 2024). The U.S. recorded 7.09 million prevalent strokes in 2019, with ischemic strokes accounting for 82.7% (Renedo et al., 2024). Similarly, Europe grapples with stroke's significant impact, with incidence rates varying widely across different nations and regions, as revealed by data from the European Registers of Stroke (EUROS) project (Wafa et al., 2020). In the United Kingdom, stroke claims thousands of lives each year, with the Stroke Association reporting over 100,000 new cases annually, translating to approximately one stroke every five minutes (Thayabaranathan et al., 2022). Meanwhile, in Canada, stroke emerges as a notable health concern, with around 62,000 new cases recorded annually, as highlighted by the Heart and Stroke Foundation of Canada (Li et al., 2020).

Stroke poses a significant health challenge across Asia, with varying prevalence rates influenced by demographic and socio-economic factors. In China, the China Kadoorie

Biobank highlights alarming stroke incidence rates, particularly in regions with lower socio-demographic indices (SDI) (Mi et al., 2023). Japan's aging population exacerbates stroke prevalence, as shown in the Japan Public Health Center-based Prospective Study (Cao et al., 2024). India faces a rising burden of non-communicable diseases, with the Indian Council of Medical Research-India Stroke Registry revealing critical insights into stroke risk factors (Pandian et al., 2023). South Korea is witnessing increasing stroke trends, especially among younger adults, as reported by the Korea National Health Insurance Service (Feigin et al., 2023).

A stroke registry at BIRDEM found that 68% of patients were male, with an average age of 60.6 years, and ischemic strokes accounted for 72% of cases (Bhowmik et al., 2016; Mohammad et al., 2014). Hypertension was the most common modifiable risk factor, affecting 57.6% of patients (Mohammad et al., 2014). A nationwide survey reported a stroke prevalence of 11.39 per 1,000, with higher rates in males and older adults, as well as significant regional variations (Mondal et al., 2021).

In rural areas, community health workers identified hypertension (67.55%) and diabetes (25.21%) as common risk factors ("Prevalence and Risk Factors of Stroke in Rural Bangladesh: A Survey with Community Health Workers on 1.3 million people (Preprint)," 2023). Government health reports offer aggregated data on stroke-related hospital admissions and mortality, which are crucial for understanding healthcare utilization and guiding policy decisions (Podder & Biswas, 2023; Mondal et al., 2021).

According to a study Heylighen (2020) emphasizes that the ability to understand our world is fundamental to humanity. A stroke disrupts this understanding, turning a familiar environment into a confusing and threatening one. It impacts essential human abilities such as intellect, sensation, perception, and movement, with specific losses varying based on the location and extent of brain damage. The brain comprises four main parts: the right hemisphere, left hemisphere, cerebellum, and brain stem (American Stroke Association, 2021).

A stroke can dramatically alter a person's life, often leading to unrealistic expectations, depression, and physical and mental fatigue. Movements become more energy-

consuming and less automatic, making daily tasks such as dressing, toileting, and bathing challenging. Stroke effects vary based on the location and severity of brain injury, but common outcomes include weakness or paralysis on one side of the body, muscle stiffness, balance and coordination problems, language difficulties (aphasia and dysarthria), sensory neglect, pain, cognitive issues, fatigue, emotional instability, and depression (Carvalho et al., 2020).

Strokes are diagnosed using brain imaging and physical tests. Doctors may conduct blood tests to check cholesterol and blood sugar levels, assess pulse for irregularities, and measure blood pressure. Brain imaging helps determine the cause of the stroke (blocked artery or burst blood vessel), the affected brain region, severity, and risk of transient ischemic attack (TIA), enabling appropriate treatment (Singh et al., 2023).

Common imaging methods include computed tomography (CT) scans and magnetic resonance imaging (MRI) scans. CT scans provide quick assessments to identify bleeding or clotting, making them suitable for suspected major strokes, while MRI scans offer detailed images for complex cases or TIA recovery (Boulanger et al., 2021; Lam et al., 2021).

All patients suspected of having a stroke should receive a brain scan within 24 hours, with some requiring immediate scanning for potential thrombolytic treatment (Keselman et al., 2021). Additionally, CT or MR angiography can visualize blood vessels after injecting a dye. Swallow tests are essential for stroke patients, as swallowing difficulties can lead to aspiration and subsequent respiratory issues (Patel et al., 2020).

The swallowing test involves giving the person a few teaspoons of water to drink. If they can swallow without choking or coughing, they will then try half a glass of water. Any difficulty swallowing prompts a referral to a speech and language therapist for further assessment. In the meantime, patients are typically kept "nil by mouth" and may require fluids or food delivered intravenously or via a nasogastric tube (Nightingale et al., 2023).

The bio-psychosocial aspects of life after stroke in Bangladesh present significant challenges for survivors, particularly concerning quality of life (QOL) domains. A study indicated an average overall QOL score of 3.14 out of 5 among stroke survivors, with the

lowest scores in physical health (37.18) and higher in psychological (51.18) and environmental (52.08) areas (Sarkar et al., 2023). A bio-psychosocial approach ensures that both physical and psychological recovery are addressed, improving overall rehabilitation success (Müller et al., 2023). Stroke survivors often experience social isolation and changes in identity, which can worsen feelings of depression and anxiety (Mukherjee et al., 2006). Factors like gender, education level, and comorbid conditions such as diabetes and hypertension are associated with lower QOL (Sarkar et al., 2023). While some studies suggest that appropriate support and rehabilitation can lead to improvements in QOL over time (Li et al., 2001), the enduring impact of stroke on various life domains highlights the need for comprehensive care strategies.

People with intracerebral hemorrhage require neurosurgical evaluation to detect and treat the cause of the bleeding, although many may not need surgery. Anticoagulants and antithrombotic, key in treating ischemic stroke, can make bleeding worse. People are monitored for changes in the level of consciousness, and their blood pressure, blood sugar, and oxygenation are kept at optimum levels (Stocker et al., 2019).

Patients who have had stroke should ideally be admitted to a specialized "stroke unit," staffed by experienced nurses and therapists. Studies indicate that admission to such units increases survival rates compared to general hospital wards, even when treated by less experienced doctors. Early assessment aims to identify the stroke's cause, which informs the appropriate treatment, whether thromboembolic (ischemic) or hemorrhagic (Lauritano et al., 2022).

Stroke rehabilitation helps survivors regain everyday living skills and adapt to challenges following a disabling stroke. It involves a multidisciplinary team, including nurses, physiotherapists, occupational and speech therapists, and rehabilitation physicians, working together to prevent complications and educate family members. Assessment tools like the Barthel scale may be used to evaluate a patient's ability to manage post-discharge at home, while good nursing care is essential for monitoring vital signs and maintaining overall health (Achi et al., 2020).

Physiotherapy (PT), Occupational Therapy (OT), and Speech and Language Therapy (SLT) are essential components of stroke rehabilitation. PT focuses on improving joint range of motion, strength, and gross motor functions through exercises, while OT helps patients relearn daily activities such as eating and dressing. Speech therapy addresses speech production disorders and swallowing issues like dysphagia. Assistive technologies and interventions for spasticity, such as early mobilization, stretching, and electrical stimulation, are employed to enhance recovery and prevent complications (Dananjaya et al., 2024; Wang et al., 2020).

Stroke rehabilitation should begin as soon as possible, lasting from a few days to over a year, with most improvement occurring in the first few months. While the official "window" for significant recovery is typically considered closed after six months, patients can continue to regain abilities for years with consistent rehabilitation exercises and a healthy lifestyle (Stinear et al., 2020).

Current and future stroke rehabilitation methods include virtual reality and video games, which motivate patients to engage in therapy tasks more effectively than traditional methods. These affordable and accessible technologies are increasingly being adopted in clinics and homes for exercise and social interaction, enhancing the rehabilitation experience (Niknejad et al., 2021).

Other novel non-invasive rehabilitation methods are currently being developed to augment physical therapy to improve motor function of stroke patients, such as transcranial magnetic stimulation (TMS) and transcranial direct-current stimulation (tDCS) and robotic therapies (Camacho-Conde et al., 2022).

Post-stroke depression (PSD) is a common and serious complication affecting around 40% of stroke survivors, with prevalence rates ranging from 18% to 61%. In addition to psychosocial stress, neurobiological factors such as the location of the infarct and brain atrophy are linked to PSD. About one-third of stroke survivors experience significant depressive symptoms, either in the early or late stages after the stroke. While medical advancements have reduced stroke-related mortality, the increase in survivors with disabilities has led to a significant decline in their quality of life, with depression being

more prevalent among stroke survivors compared to the general population (Varghese & Barboza, 2018).

The Stroke Impact Scale (SIS) categorizes the different types of Domains in stroke survivors into three levels: Low (Severe Impact): Scores of 0-25% indicate significant memory impairments, affecting daily life (Duncan et al., 2001). Moderate (Moderate Impact): Scores of 26-50% show noticeable challenges, with patients needing assistance for familiar tasks (Edwards & O'Connell, 2003). High (Mild to No Impact): Scores of 51-100% suggest minimal memory issues and near-normal function (Duncan et al., 2001). The SIS aids in understanding cognitive recovery but may not capture all deficits, highlighting the need for further research (Godefroy et al., 2009).

The Stroke Impact Scale (SIS) is a valuable tool for categorizing stroke severity and understanding patient outcomes. It divides impact into four categories: Severe Impact (0-25): Significant impairments affecting daily life, with persistent disabilities reported (Duncan et al., 2001). Moderate Impact (26-50): Noticeable limitations, but patients can manage some activities (Duncan et al., 2002). Mild Impact (51-75): Minor difficulties with overall independence (Duncan et al., 2001). No to Minimal Impact (76-100): Near-normal functioning with few issues (Duncan et al., 2002). While SIS offers a structured assessment, individual experiences may vary, with some patients reporting challenges even at higher scores (Duncan et al., 2001).

3.1. Study design

Cross sectional study design was used to conduct the study. Across-sectional study is a snapshot of a particular group of people at a given point in time. This type of study looks at a group of people over an extended period and is used to describe what is happening now. To measure the prevalence, incidence or association between variables of any study this type of research is frequently used. Researchers can collect data on a few different variables to see how differences in sex, age, educational status and income, for example, might correlate with the critical variable of interest (Setia, 2016).

A cross-sectional descriptive study will be performed with structured questionnaires and interviews conducted with stroke patients and physiotherapy taken for certain periods of time from the Center for the Rehabilitation of the Paralyzed (CRP). This study design was appropriate to find out the objectives. The data was collected at the same time or within a short timeframe.

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3.2 Study site

The study was conducted in the Neurology Department of Center for the Rehabilitation of the Paralyzed (CRP)- Mirpur. It is a non-government organization working for the development of health care delivery system of Bangladesh through providing Physiotherapy services in outdoor programs.

3.3 Study population

A group of individuals or items that share one or more characteristics from which data can be gathered and analyzed is known as population. In this study the population was patients with stroke Neurology unit, CRP- Mirpur.

3.4. Sampling technique

Convenience sampling was chosen for the study. It involves selecting participants based on their availability and willingness to participate. In the context of study, this would mean recruiting patients who are currently receiving care at the specialized hospital's neurology department.

3.5 Sample size

$$n = \frac{Z^2 * p * (1 - p)}{E^2}$$

Confidence level of 95% ($Z \approx 1.96$)

- Margin of error (E)=0.05

- Estimated proportion (p)= 0.104

$$n = \frac{(1.96)^2 * 0.2 * (1 - 0.104)}{(0.05)^2}$$

=143.33

According to this equation, the sample should be 144 people (rounding up to the nearest whole number). Due to the fixed number of patients receiving treatment and continuing their treatment that's why unavailability of the patients during the data collection period caused in reduction of the sample size, therefore only 114 patients were selected conveniently.

3.6 Sampling procedure

The study was conducted by using the purposive sampling methods that involve selecting participants based on specific characteristics or criteria that align with my research objectives. This method is particularly useful when I want to ensure that my sample includes individuals who have experienced a stroke and can provide relevant insights into their bio-psychosocial impacts. Participants were chosen purposively because the

participants had some features or characteristics which enable detailed exploration of the research objectives. 114 subjects were selected for the study according to the inclusion and exclusion criteria, because it was not possible to study the total population within the time. This method contained some inclusion criteria to select the participant.

3.7 Inclusion Criteria

- Medically stable (Beltran-Rodriguez et al., 2022).
- Age between 30-90 years (Bhowmik et al., 2016).
- Both Male and female(Carcel et al., 2020).
- Onset of strokes from 1 month-36 months (Natalya et al., 2021).
- Both types of ischemic and hemorrhagic stroke (Bonkhoff et al., 2022).

3.8 Exclusion Criteria

- Severe cognitive impairment or communication barriers (Allen et al., 2022).
- Previous rehabilitation interventions during the study period (Arienti et al., 2021).
- Language barriers (Teasell et al., 2020).
- Inability to provide informed consent (Houghton et al., 2020).
- Non-ambulatory status (Błaszcz et al., 2022).
- History of severe psychiatric illness (Zielinsk et al., 2020).

3.9. Method of Data collection

3.9.1. DataCollectionTools

A questionnaire was prepared by the research to collect the socio-demographic information (age, gender, marital, occupation etc.), types of strokes, duration of stroke, therapy session etc.) And, to assess the impairments due to strokes. Stroke impact scale (SIS) questionnaire, Pen, Paper, File, Pencil, and Calculator were used in the conduction of this study.

3.9.2 Data collection procedure

All patients who were diagnosed with stroke by the Physician and came to CRP for first time or receiving their Physiotherapy treatment will be asked to participate in the study. There was a structured questionnaire after reviewing literature to ask the participants. In the questionnaire, there was participant's demographic information including age, sex, onset, type and site of stroke, and then stroke impact scale (SIS).

3.10 Data analysis

The collected data was processed and analyzed in the statistical package for the social sciences (SPSS) v26 for windows. The analysis focuses on the quality of life of the patient. Researcher was analyzed the data by descriptive statistics using frequency (n), percentage (%), Pie diagram and Bar diagram and will show the associations by non-parametric test which will be Chi square (χ^2) Test and crosstab.

3.11 Ethical consideration

For conducting this research ethics committee have checked the proposal and allowed to carry out the research project. The formal permission was taken from the head of the physiotherapy department to collect the data. Data collection was started and completed within the allocated time frame. All the data was reviewed in strict secure and maintained confidentiality. The assessment files were strictly secured, and it was not open in front of others without a researcher.

3.12 Informed Consent

The written consent (appendix) was given from the Department Head of Physiotherapy to all participants prior to completion of the questionnaire. The investigator explained to the

participants about his or her role in this study. The investigator received a written consent form for every participant including signature. So, the participants assured that they could understand the consent form and their participation was on a voluntary basis. The participants were informed clearly that their information would be kept confidential. The investigator assured the participants that the study would not be harmful to them. The participants had the right to withdraw consent and discontinue participation at any time without prejudice to present or future treatment at the neurology department of CRP-Mirpur.

4.0 Socio-demographic Information

4.1 Age category of the participants

The study included 114 participants, with the following age group distribution: Most of the participants were 37 participants (32.46%) in the 61-70 age group. 32 participants (28.07%) in the 51-60 age group, 23 participants (20.18%) in the 71-80 age group, 16 participants (14.04%) in the 41-50 age group, and a small number of the participants were 6 participants (5.26%) who were the 81-90 age group oldest person.

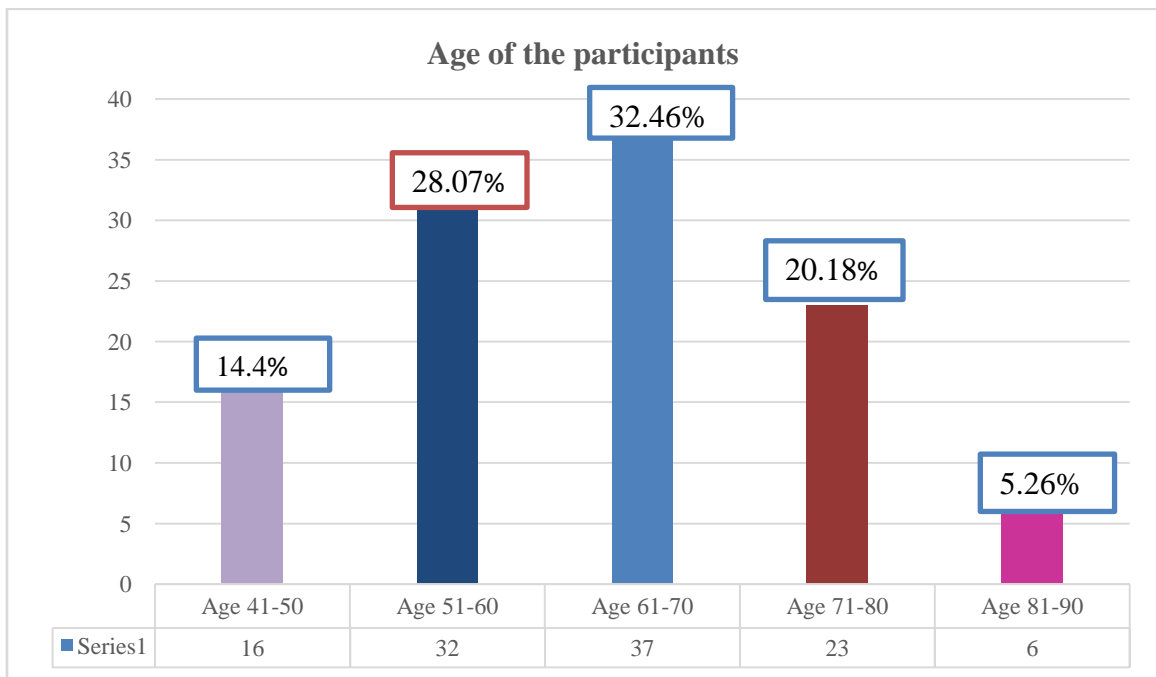


Figure 4.1: Age category of the participants

4.2 Gender of the participants

In this study total participants 114 among them n=73 (64%) was male, while n= 41 (36%) were female. This indicates a higher representation of male patients compared to female patients in the sample.

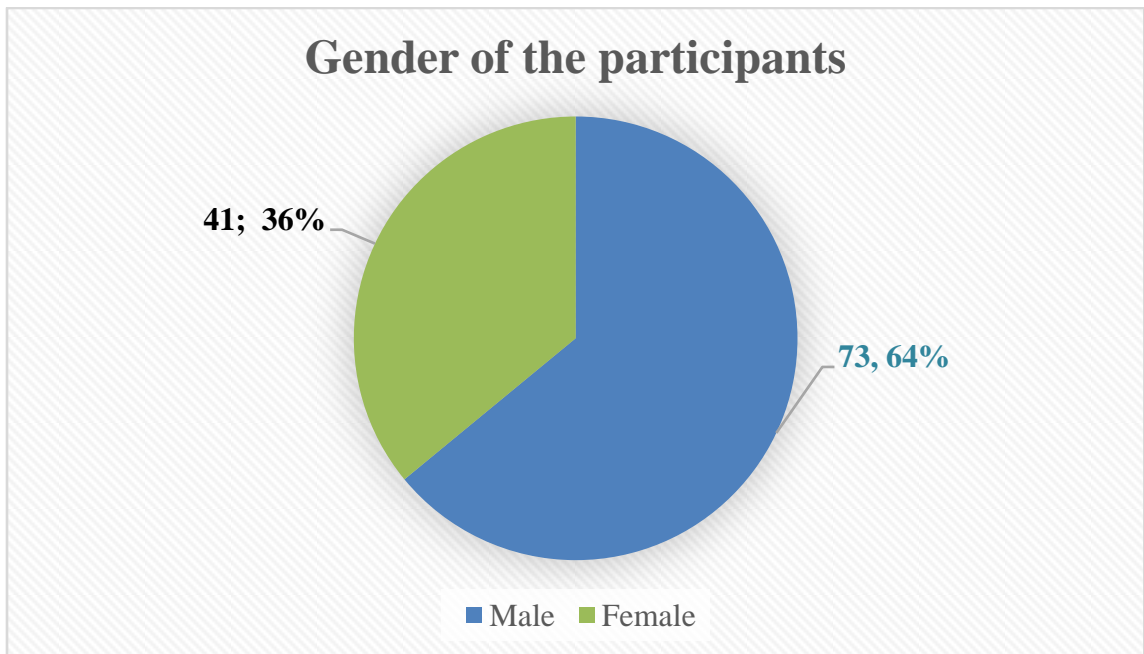


Figure 4.2: Gender of the participants

4.3 Education level of the participants

Among the 114 participants, most of the participants were highly educated people. About (22.8%) n=26 of the participants had completed postgraduate education, (19.3%) n=22 had higher secondary qualifications, (18.4%) n=21 had graduated, (16.7%) n=19 had secondary education, only (13.2%) n=15 had no formal education and (9.6%) n=11 had completed primary education.

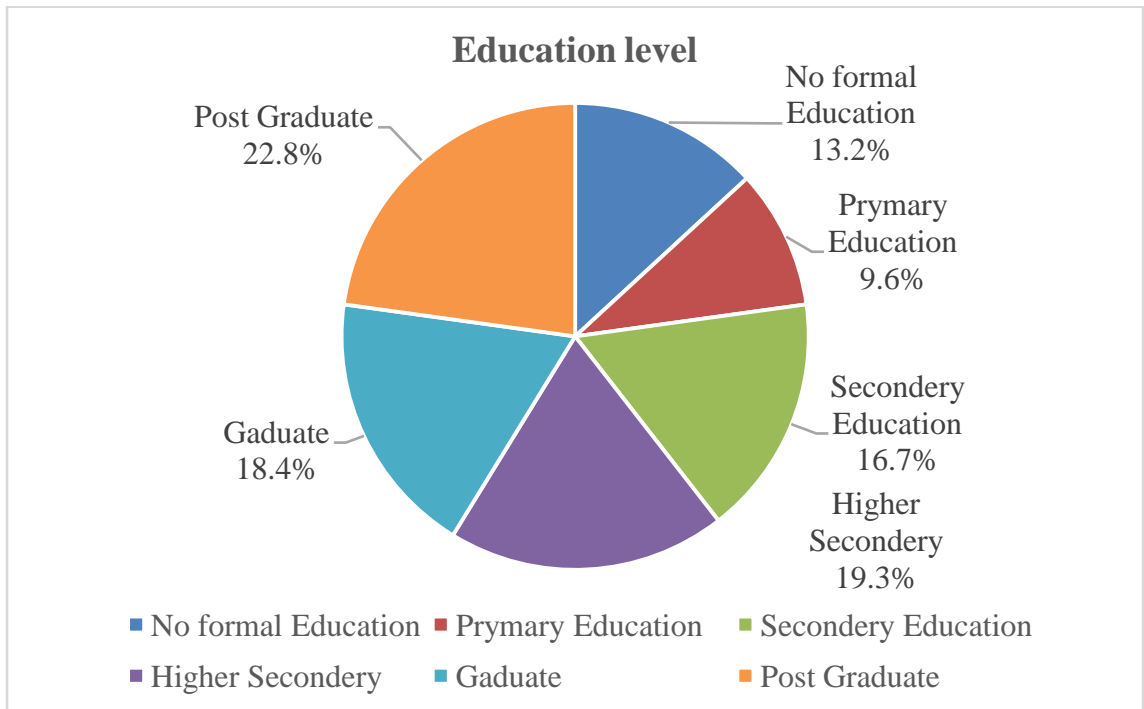


Figure 4.3: Education level of the participants

4.4 Occupation of the participants

The occupational distribution of the patients in the study shows a diverse range of employment statuses among the 114 participants. The largest groups included n=29 (25.4%) who were business owners and n=25 (21.9%) who were service holders. Additionally, n=24 (21.1%) identified as housewife, while n=20 (17.5%) was retired. A smaller number of the participants included n=9 (7.9%) who were farmers and n=4 (3.5%) who were day laborers. Lastly, n=3 (2.6%) reported being unemployed. This distribution reflects a broad spectrum of occupational backgrounds.

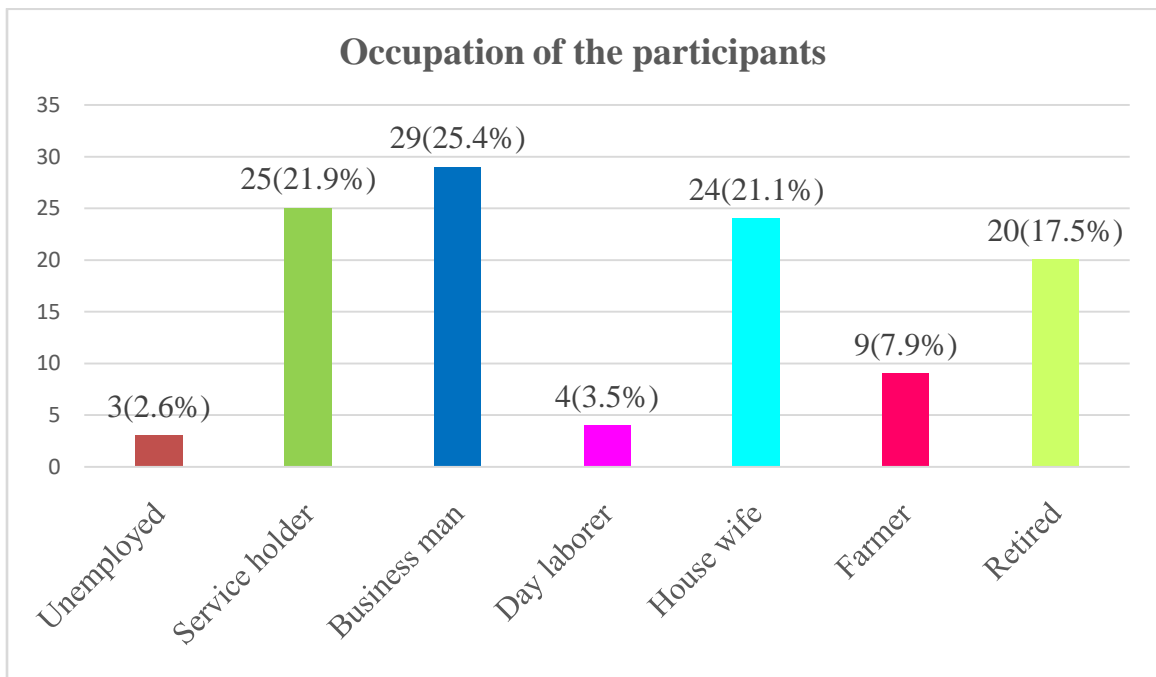


Figure 4.4: Occupation of the participants

4.5 Marital status of the participants

The marital status of the (n=114) participants in the study reveals that the majority, 107 out of 114 participants (93.9%), were married. Few of the participants n=4 (3.5%) who were divorced and n=3 (2.6%) who were widowed. This indicates that most patients in the study were married, with only a few belonging to others were married.

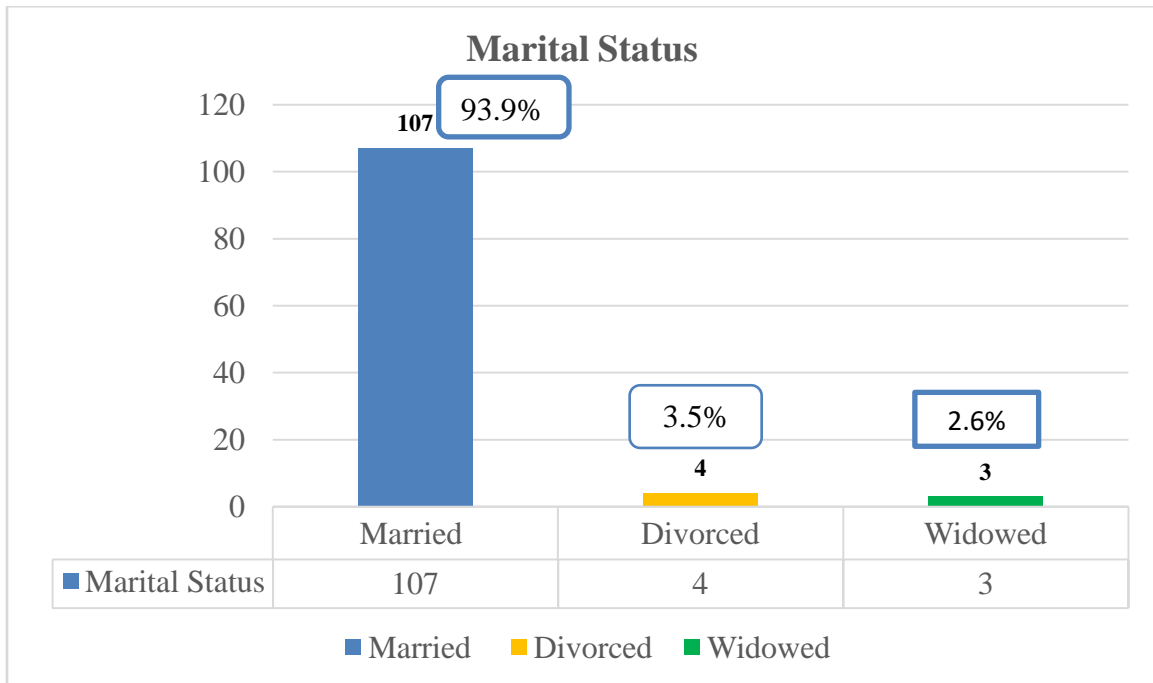


Figure 4.5: Marital status of the participants

4.6 Types of strokes of the participants

Among the participants (n=114), 74 patients (64.9%) had an ischemic stroke, and 40 patients (35.1%) had suffered a hemorrhagic stroke.

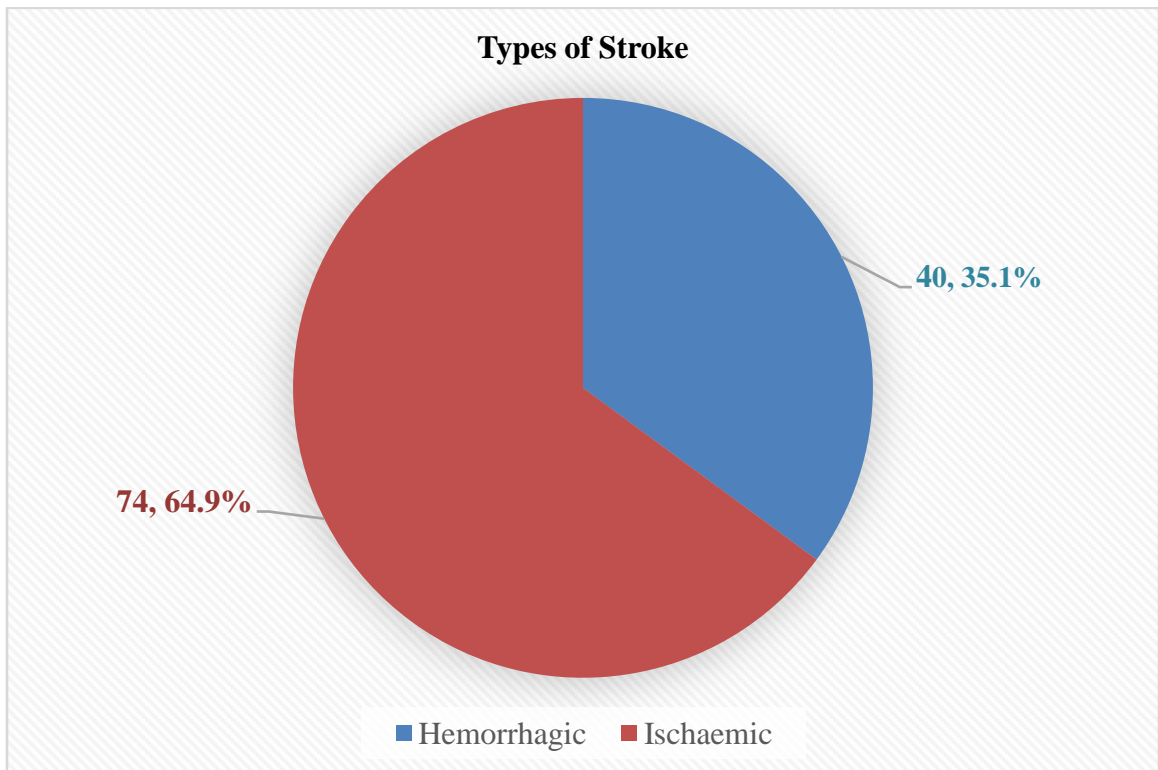


Figure 4.6: Types of strokes of the participants

4.7 Affected side of the participants

The study examined the stroke-affected side of 114 individuals, revealing that (n=64) participants (56.1%) experienced left-sided impairment, while (n=44) individuals (38.6%) had right-sided disability. A smaller group of (n=6) participants (5.3%) suffered from bilateral problems. This distribution indicates that most stroke patients had left-sided disabilities, with a notable percentage also experiencing right-sided impairment.

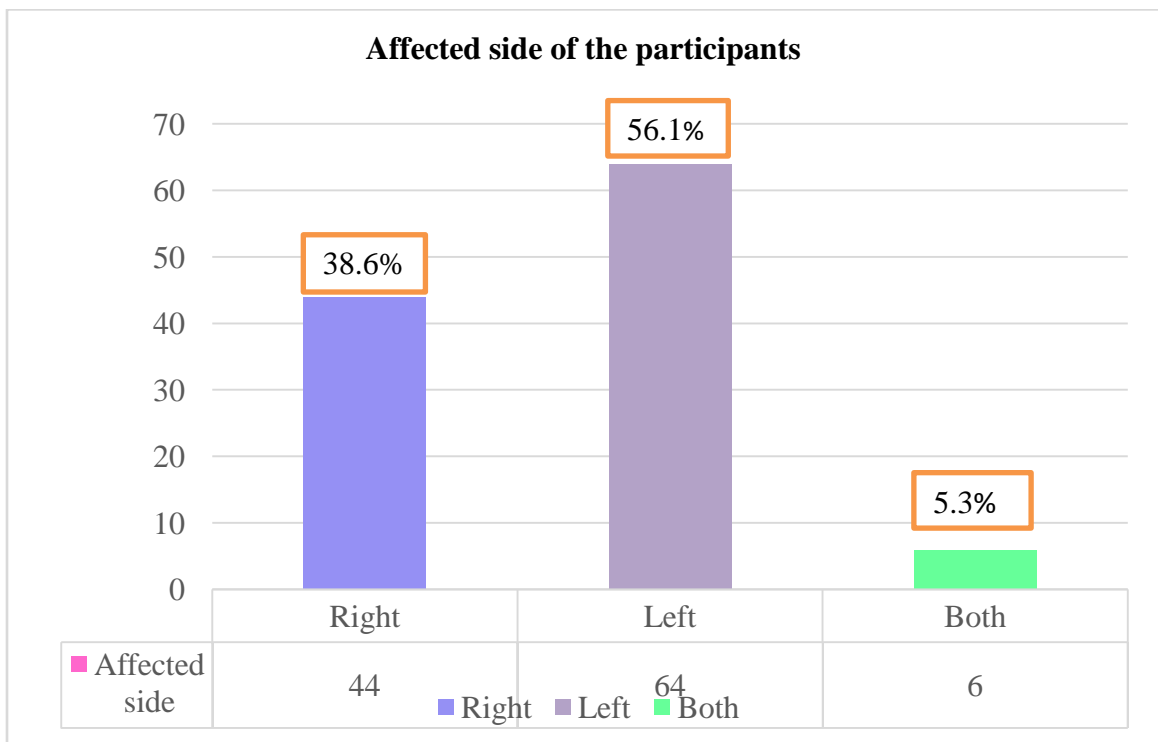


Figure 4.7: Affected side of the participants

4.8 Onset of Stroke of the participants

Therapy had taken after onset (duration) in months of stroke.

Onset (duration) in months of stroke	Mean	Minimum	maximum
	8.57	1	36

Table 4.1 Onset of Stroke of the participants

Among the participants the rate of the onset of stroke was one month to 36 month. That means the participants who receiving physiotherapy treatment their duration of onset was minimum 1 month and maximum was 36 month. And their mean value was 8.57 months.

4.9.0 The number of participants and frequency distribution of different domain: like – Strength, Hand Function, Mobility, Activities of Daily Living (ADL), Memory and Thinking, Communication, Emotion, Social Participation of the SIS (stroke impact Scale).

4.9.1. Physical Strength of the participants:

	A lot of strength	Quite a bit of strength	Some strength	A little strength	No strength at all
	Frequency (n= number and %= percentage)				
Variables	(n;%)	(n; %)	(n; %)	(n; %)	(n; %)
a. Arm that was most affected by your stroke?	0;0	6;5.3	40;35.1	36;31.6	32;28.1
b. Grip of your hand that was most affected by your stroke?	1;0.9	5;4.4	39;34.2	38;33.3	31;27.2
c. Leg that was most affected by your stroke?	13;11.4	59;53.8	31;27.2	11;9.6	0;0
d. Foot/ankle that was most affected by your stroke?	13;11.4	57;51.3	35;31.5	9;9.9	0;0

Table 4.2 Physical strength of the participants

The physical strength levels among participants varied across different body parts affected by stroke, with the highest levels observed in the legs. For the leg, 59 participants (53.8%) reported "quite a bit" of strength, and 13 (11.4%) reported "a lot of strength," with no participants indicating "no strength at all." In the foot/ankle, 57 (51.3%) retained "quite a bit" of strength, and 13 (11.4%) had "a lot of strength." Strength levels were lower in the arm, where 36 participants (31.6%) reported "a little strength," and 32 (28.1%) reported "no strength at all." For hand grip, 38 (33.3%) had "a little strength," and 31 (27.2%) had "no strength at all." Overall, these findings suggest participants maintained greater strength in their legs and feet than in their arms and hands following a stroke.

4.9.2. Memory and thinking of the participants:

	Not difficult at all	At a little difficult	Somewhat difficult	Very difficult	Extremely difficult
	Frequency (n= number and %= percentage)				
Variables	(n;%)	(n; %)	(n; %)	(n; %)	(n; %)
a. Remember things that people just told you?	13; 11.4	49; 43.0	50; 43.9	2; 1.8	0; 0
b. Remember things that happened the day before?	17; 14.9	51; 44.7	38; 33.3	8; 7.0	0; 0
c. Remember to do things (e.g. keep scheduled appointments or take medication)?	16; 14.0	37; 32.5	46; 40.4	15; 13.2	0; 0
d. Remember the day of the week?	37; 32.5	44; 38.6	25; 21.9	8; 7.0	0; 0
e. Concentrate?	13; 11.4	37; 32.5	47; 41.2	15; 13.2	2; 1.8
f. Think quickly?	11; 9.6	17; 14.9	58; 50.9	25; 21.9	3; 2.6
G. Solve everyday problems?	19; 16.7	38; 33.3	33; 28.9	19; 16.7	5; 4.4

Table 4.3 Memory and thinking of the participants

The analysis of memory and thinking abilities among participants, with most challenges reported for thinking quickly and solving everyday problems. Thinking quickly was "somewhat difficult" for 58 (50.9%) and "extremely difficult" for 3 (2.6%). Solving everyday problems was also challenging, with 19 (16.7%) finding it "very difficult" and 5 (4.4%) "extremely difficult." Concentrating posed a moderate difficulty, with 47 (41.2%) reporting it as "somewhat difficult." Remembering day-to-day details showed less difficulty, as 37 (32.5%) found it "a little difficult" to remember appointments or medication, and 15 (13.2%) found it "very difficult." Remembering things from the previous day was only "very difficult" for 8 (7.0%). Remembering the day of the week was not challenging for most, with 37 (32.5%) experiencing "no difficulty at all." Overall, mild to moderate difficulties were more common, with fewer participants reporting severe challenges across tasks.

4.9.3. Emotion of the participants:

	None of the time	A little of the time	Some of the time	Most of the time	All of the time
	Frequency (n= number and %= percentage)				
Variables	(n;%)	(n; %)	(n; %)	(n; %)	(n; %)
a. Feel sad?	7; 6.1	61; 53.5	42; 36.8	4; 3.5	0; 0
b. Feel that there is nobody you are close to?	14; 12.3	64; 56.1	32; 28.1	4; 3.5	0; 0
c. Feel that you are a burden to others?	25; 21.9	38; 33.3	41; 36.0	10; 8.8	0; 0
d. Feel that you have nothing to look forward to?	31; 27.2	21; 18.4	41; 36.0	21; 18.4	0; 0
e. Blame yourself for mistakes that you made?	27; 23.7	27; 23.7	46; 40.4	14; 12.3	0; 0
f. Enjoy things as much as ever?	19; 16.7	31; 27.2	49; 43.0	15; 13.2	0; 0
g. Feel quite nervous?	3; 2.6	54; 47.4	30; 26.3	26; 22.8	1; 0.9
h. Feel that life is worth living?	44; 38.6	41; 36.0	14; 12.3	14; 12.3	1; 0.9
i. Smile and laugh at least once a day?	55; 48.2	42; 36.8	14; 12.3	3; 2.6	0; 0

Table 4.4 Emotion of the participants

The emotional well-being of participants varied, with a mix of positive and negative feelings. Smiling and laughing daily was frequent, with 55 participants (48.2%) doing so "none of the time" and 42 (36.8%) "a little of the time." Life was considered "worth living" for 44 (38.6%) "none of the time" and by 41 (36.0%) "a little of the time." Many participants, 61 (53.5%), felt sad only "a little of the time," while 42 (36.8%) felt sad "some of the time." Feelings of loneliness were generally low, with 64 (56.1%) feeling lonely "a little of the time" and 14 (12.3%) "none of the time."

Blaming themselves for mistakes was common, with 46 (40.4%) doing so "some of the time." Enjoyment of life appeared moderate, as 49 (43.0%) reported enjoying things "some of the time." Thirty-one participants (27.2%) felt they had "nothing to look forward to" "none of the time," while 41 (36.0%) experienced this feeling "some of the time." Similarly, feeling like a burden was reported "some of the time" by 41 (36.0%). Overall, participants demonstrated mixed emotional well-being, often balancing positive emotions with mild to moderate levels of sadness, loneliness, nervousness, and feelings of burden.

4.9.4. Communication of the participants:

	Not difficult at all	A little difficult	Somewhat difficult	Very difficult	Extremely difficult
	Frequency (n= number and %= percentage)				
Variables	(n;%)	(n; %)	(n; %)	(n; %)	(n; %)
a. Say the name of someone who was in front of you?	27; 23.7	53; 46.5	23; 20.2	10; 8.8	1; 0.9
b. Understand what was being said to you in a conversation?	23; 20.2	53; 46.5	20; 17.5	17; 14.9	1; 0.9
c. Reply to questions?	39; 34.2	37; 32.5	27; 23.7	11; 9.6	0; 0
d. Correctly name objects?	48; 42.1	30; 26.3	27; 23.7	8; 7.0	1; 0.9
e. Participate in a conversation with a group of people?	16; 14.0	42; 36.8	32; 28.1	20; 17.5	4; 3.5
f. Have a conversation on the telephone?	18; 15.8	38; 33.3	27; 23.7	28; 24.6	3; 2.6
g. Call another person on the telephone, including selecting the correct phone number and dialing?	4; 3.5	16; 14.0	15; 13.2	43; 37.7	36; 31.6

Table 4.5 Communication of the participants

The communication abilities of participants varied across tasks, with one-on-one interactions being generally easier than group or phone conversations. Saying someone's name presented minimal difficulty for most, with 53 (46.5%) finding it "a little difficult" and 27 (23.7%) finding it "not difficult at all." Understanding conversations was also manageable, with 53 (46.5%) finding it "a little difficult" and 23 (20.2%) reporting no difficulty. Responding to questions was "not difficult at all" for 39 (34.2%), and correctly naming objects was easy for 48 (42.1%).

Group interactions, however, were more challenging, with 20 (17.5%) finding it "very difficult" to participate in group conversations and 4 (3.5%) finding it "extremely difficult." Phone communication posed the most difficulty: 28 (24.6%) found it "very

difficult" to have conversations on the phone, and calling someone, including dialing correctly, was "very difficult" for 43 (37.7%) and "extremely difficult" for 36 (31.6%). Overall, participants found one-on-one interactions easier than group discussions or phone conversations, especially when making outgoing calls.

4.9.5. ADLs of the participants:

	Not difficult at all	A little difficult	Somewhat difficult	Very difficult	Could not do at all
	Frequency (n= number and %= percentage)				
Variables	(n;%)	(n; %)	(n; %)	(n; %)	(n; %)
a. Cut your food with a knife and fork?	1; 0.9	7; 6.1	31; 27.2	40; 35.1	35; 30.7
b. Dress the top part of your body?	1; 0.9	22; 19.3	39; 34.2	39; 34.2	13; 11.4
c. Bathe yourself?	12; 10.5	35; 30.7	31; 27.2	30; 26.3	6; 5.3
d. Clip your toenails?	0; 0	15; 13.2	18; 15.8	39; 34.2	42; 36.8
e. Get to the toilet on time?	34; 29.8	30; 26.3	33; 28.9	8; 7.0	9; 7.9
f. Control your bladder (not have an accident)?	38; 33.3	33; 28.9	30; 26.3	7; 6.1	6; 5.3
g. Control your bowels (not have an accident)?	39; 34.2	34; 29.8	22; 19.3	11; 9.6	8; 7.0
h. Do light household tasks/chores (e.g. dust, make a bed, take out garbage, do the dishes)?	1; 0.9	9; 7.9	28; 24.6	47; 41.2	29; 25.4
i. Go shopping?	4; 3.5	19; 16.7	21; 18.4	26; 22.8	44; 38.6
j. Do heavy household chores (e.g. vacuum, laundry or yard work)?	2; 1.8	7; 6.1	13; 11.4	26; 22.8	66; 57.9

Table 4.6 ADLs of the participants

Participants reported varying difficulty levels with activities of daily living (ADLs), with household chores posing the most significant challenges. Heavy chores like vacuuming, laundry, or yard work were the most difficult, with 66 (57.9%) unable to perform them and 26 (22.8%) finding them "very difficult." Shopping was also highly challenging, as 44 (38.6%) could not go shopping at all and 26 (22.8%) found it "very difficult." Light household tasks were similarly challenging, with 47 (41.2%) finding them "very difficult" and 29 (25.4%) unable to do them.

For personal care, clipping toenails was the most difficult, with 42 (36.8%) unable to do it and 39 (34.2%) finding it "very difficult." Cutting food with a knife and fork also presented challenges, as 35 (30.7%) could not do it and 40 (35.1%) found it "very difficult." Dressing the upper body was slightly easier, though 39 (34.2%) found it "very difficult" or "somewhat difficult" and 13 (11.4%) "could not do it at all." Bathing posed a moderate challenge, with 30 (26.3%) finding it "very difficult" and 6 (5.3%) unable to bathe independently.

Bathroom-related tasks were more manageable, with 38 (33.3%) reporting no difficulty in bladder control and 34 (29.8%) experiencing no issues reaching the toilet on time. Overall, participants struggled the most with heavy household chores, while personal care tasks like bathing and dressing were somewhat manageable, and bathroom tasks posed the least difficulty.

4.9.6. Mobility of the participants:

	Not difficult at all	A little difficult	Somewhat difficult	Very difficult	Could not do at all
	Frequency (n= number and %= percentage)				
Variables	(n;%)	(n; %)	(n; %)	(n; %)	(n; %)
a. Stay sitting without losing your balance?	58; 50.9	29; 25.4	21; 18.4	4; 3.5	2; 1.8
b. Stay standing without losing your balance?	38; 33.3	35; 30.7	24; 21.1	15; 13.2	2; 1.8
c. Walk without losing your balance?	20; 17.5	30; 26.3	32; 28.1	21; 18.4	11; 9.6
d. Move from a bed to a chair?	50; 43.9	27; 23.7	28; 24.6	6; 5.3	3; 2.6
e. Walk one block?	12; 10.5	35; 30.7	20; 17.5	38; 33.3	9; 7.9
f. Walk fast?	7; 6.1	8; 7.0	41; 36.0	20; 17.5	38; 33.3
g. Climb one flight of stairs?	12; 10.5	34; 29.8	25; 21.9	32; 28.1	11; 9.6
h. Climb several flights of stairs?	7; 6.1	6; 5.3	37; 32.5	25; 21.9	39; 34.2
i. Get in and out of a car?	10; 8.8	20; 17.5	26; 22.8	37; 32.5	21; 18.4

Table 4.7 Mobility of the participants

The mobility abilities of participants showed varied levels of difficulty, with more strenuous tasks posing the greatest challenges. Climbing several flights of stairs was the most difficult, with 39 (34.2%) unable to do so and 25 (21.9%) finding it "very difficult." Similarly, walking fast was challenging, as 38 (33.3%) reported being unable to do it and another 38 (33.3%) found it "very difficult." Getting in and out of a car was also difficult, with 21 (18.4%) unable to do so and 37 (32.5%) reporting it as "very difficult."

Climbing one flight of stairs was somewhat more manageable, although 32 (28.1%) found it "very difficult" and 11 (9.6%) could not do it at all. Walking without balance

issues posted moderate difficulty, with 32 (28.1%) finding it "somewhat difficult" and 11 (9.6%) unable to walk without losing balance.

For simpler balance tasks, participants fared better. Standing without balance issues was manageable for many, as 38 (33.3%) reported "no difficulty at all" and only 15 (13.2%) found it "very difficult." Sitting without balance issues was the easiest, with 58 (50.9%) experiencing "no difficulty at all." Overall, while balance tasks were largely manageable, fast walking, stair climbing, and getting in and out of a car were significantly challenging for participants.

4.9.7. Hand function of the participants

	Not difficult at all	A little difficult	Somewhat difficult	Very difficult	Could not do at all
	Frequency (n= number and %= percentage)				
Variables	(n;%)	(n; %)	(n; %)	(n; %)	(n; %)
a. Carry heavy objects (e.g. bag of groceries)?	0; 0	16; 14.0	44; 38.6	36; 31.6	18; 15.8
b. Turn a doorknob?	38; 33.3	42; 36.8	25; 21.9	5; 4.4	4; 3.5
c. Open a can or jar?	0; 0	27; 23.7	40; 35.1	40; 35.1	7; 6.1
d. Tie a shoelace?	1; 0.9	8; 7.0	33; 28.9	39; 34.2	33; 28.9
e. Pick up a dime?	0; 0	3; 2.6	34; 29.8	44; 38.6	33; 28.9

Table 4.8 Hand function of the participants

Tasks requiring fine motor control, such as picking up small objects, tying shoelaces, and opening jars, were the most challenging for participants, with many finding them either "very difficult" or unable to complete them at all. In contrast, gross motor tasks like turning a doorknob were more manageable, with a larger percentage of participants reporting minimal difficulty. Carrying heavy objects also presented challenges, though it was slightly easier than fine motor tasks, with many participants finding it "somewhat difficult."

4.9.8 Social participation of the participants:

	None of the time	A little of the time	Some of the time	Most of the time	All of the time
	Frequency (n= number and %= percentage)				
Variables	(n; %)	(n; %)	(n; %)	(n; %)	(n; %)
a. Your work (paid, voluntary or other)	15; 13.2	59; 51.8	34; 29.8	2; 1.8	4; 3.5
b. Your social activities?	38; 33.3	50; 43.9	17; 14.9	5; 4.4	4; 3.5
c. Quiet recreation (crafts, reading)?	10; 8.8	51; 44.7	41; 36.0	10; 8.8	2; 1.8
d. Active recreation (sports, outings, travel)?	10; 8.8	19; 16.7	47; 41.2	30; 26.3	8; 7.0
e. Your role as a family member and/or friend?	58; 50.9	37; 32.5	14; 12.3	2; 1.8	3; 2.6
f. Your participation in spiritual or religious activities?	59; 51.8	42; 36.8	6; 5.3	4; 3.5	3; 2.6
g. Your ability to control your life as you wish?	48; 42.1	34; 29.8	24; 21.1	5; 4.4	3; 2.6
h. Your ability to help others?	33; 28.9	43; 37.7	24; 21.1	11; 9.6	3; 2.6

Table 4.9 Social participation of the participants

The social participation of participants showed limited engagement across most areas, especially in work, social activities, and family roles. For instance, 59 (51.8%) engaged in work (paid or voluntary) only "a little of the time," while 15 (13.2%) did not engage at all. Social activities were similarly restricted, with 50 (43.9%) participating "a little of the time" and 38 (33.3%) "none of the time."

Roles as family members or friends were fulfilled "none of the time" by a notable 58 (50.9%), and spiritual or religious activities were not attended "none of the time" by 59 (51.8%). Regarding life control, 48 (42.1%) felt they had control "none of the time," while 34 (29.8%) reported control "a little of the time."

Quiet recreational activities like crafts or reading saw moderate engagement, with 51 (44.7%) participating "a little of the time" and 41 (36.0%) "some of the time." Active recreation, such as sports or outings, was less frequent, with 47 (41.2%) participating "some of the time" but 19 (16.7%) only "a little of the time." Helping others was somewhat more feasible, with 43 (37.7%) able to help "a little of the time" and 24 (21.1%) "some of the time."

Overall, participants reported limited involvement in social, recreational, and family-related activities, with the highest engagement in quiet recreation and the lowest in family roles and spiritual activities.

4.10 Severity of the stroke of the participants

The impact severity distribution among stroke recovery patients shows that 59.6% fall into the Mild Impact range (51-75), indicating they face minor challenges but maintain independence. Moderate Impact (26-50) comprises 34.2%, reflecting noticeable limitations in daily activities. A small percentage, 4.4%, experience No to Minimal Impact (76-100), indicating near-normal functioning. Only 1.8% are categorized under Severe Impact (0-25), highlighting significant impairments consistent with findings of persistent disabilities (Duncan et al., 2001).

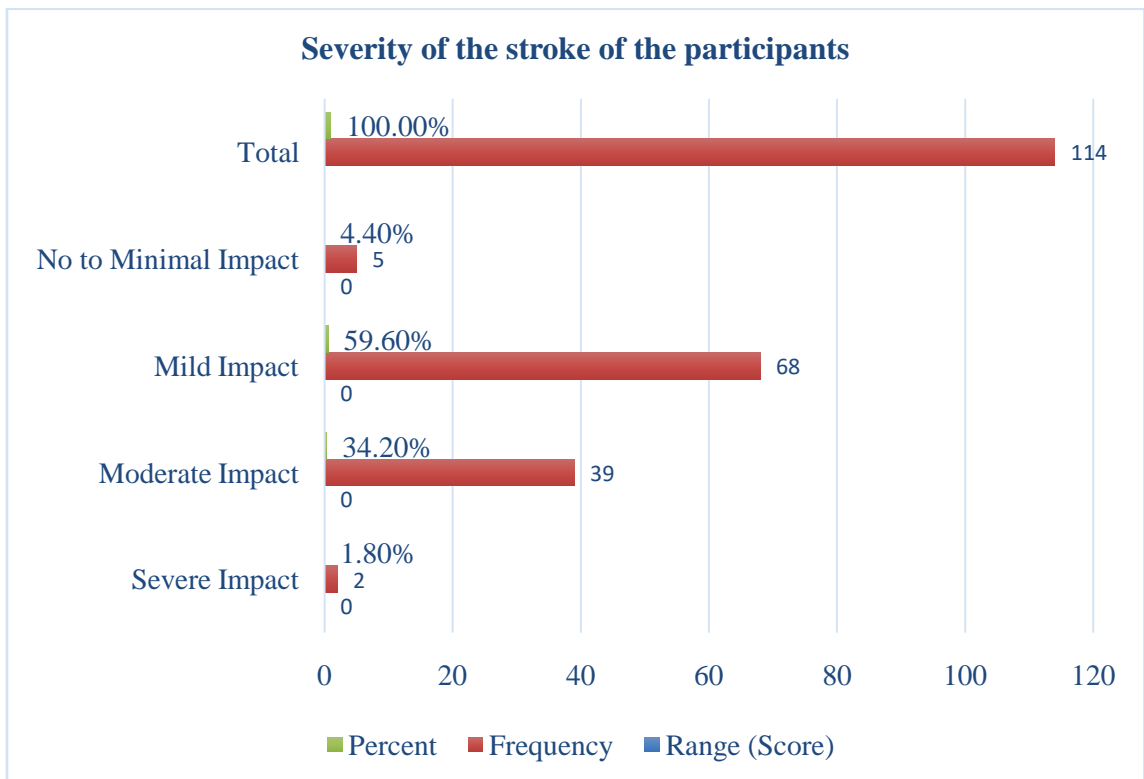


Figure: 4.8 Severity of the stroke of the participants

4.11 Level of Memory of the participants

In a study involving a total of 114 participants, Participants' memory performance was categorized into three levels based on severity. The "Low (Severe Impact)" group, with 0-25% memory performance, included 28 participants (19.44%). The "Moderate (Moderate Impact)" group, showing 26-50% performance, comprised 38 participants (26.39%). Lastly, the "High (Mild to No Impact)" category, covering 51-100% performance, consisted of 48 participants (33.33%). This distribution reveals that a notable portion of participants had high memory performance, while fewer experienced severe memory issues.

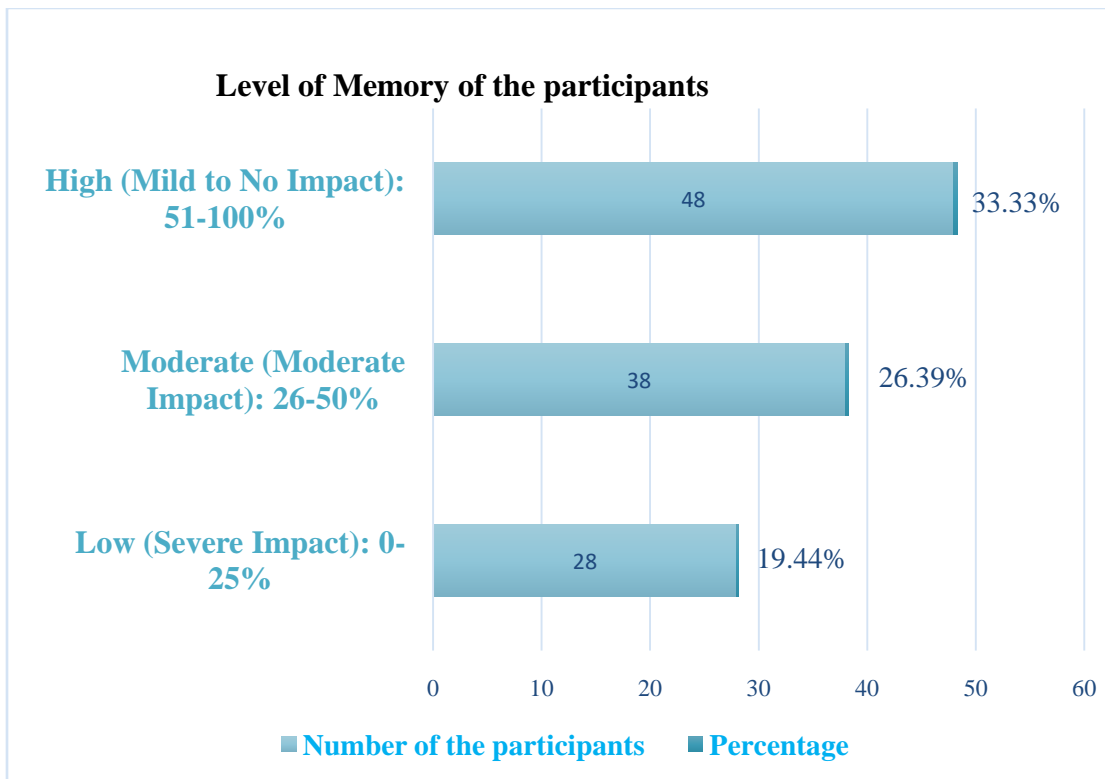


Figure: 4.9 Level of Memory of the participants

4.12 Level of physical strength of the participants

Strength	Number of the participants	Percentage
Low (Severe Impact): 0-25%	8	7.02%
Moderate (Moderate Impact): 26- 50%	32	28.07%
High (Mild to No Impact): 51-100%	74	64.9%

Table 4.10 Level of physical strength of the participants

Among the 114 participants, 8 (7.02%) were categorized under Low (Severe Impact) strength, 32 (28.07%) of the participants had Moderate (Moderate Impact) strength category, and 74 (64.9%) exhibited High strength (Mild to No Impact). Overall, most participants reported experiencing mild to no impact, with only a small number indicating severe or moderate impacts.

4.13 Level of Emotion of the participants

Emotion	Number of the participants	Percentage
Low (Severe Impact): 0-25%	28	24.56%
Moderate (Moderate Impact): 26-50%	38	33.33%
High (Mild to No Impact): 51-100%	48	42.11%

Table 4.11: Level of Emotion of the participants

In this study, among 114 participants, the, 28 participants (24.56%) claimed Low (sever impact) level of emotional impact. 38 participants (33.33%) claimed Moderate category impact. Lastly, 48 participants (42.11%) claimed the High (Mild to No Impact)emotional impact after stroke.

4.14 Level of Communication of the participants

ADLs	Number of the participants	Percentage
Low (Severe Impact): 0-25%	53	46.49%
Moderate (Moderate Impact): 25-50%	30	26.32%
High (Mild to No Impact): 51- 100%	31	32.46%

Table 4.12 Level of communication of the participants

Among the 114 participants, 53 (46.5%) experienced significant difficulties and were categorized as Low (Severe Impact). Thirty participants (26.3%) faced moderate challenges, classified as Moderate (Moderate Impact), while 31 participants (27.2%) reported minimal to no difficulties, categorized as High (Mild to No Impact). Overall, most participants demonstrated low functioning in daily activities, highlighting the need for additional support and interventions for those most affected.

4.15 The level of ADLs of the participants

Among the 114 participants, the results of hand function based on severity revealed that 100 participants (87.7%) experienced severe impairment. The remaining participants fell into the Moderate (Moderate Impact) category with 9 participants (7.9%), and the High (Mild to No Impact) category with 5 participants (4.4%). This indicates a significant prevalence of severe hand function impairment within the study group, with no reports of mild impact.

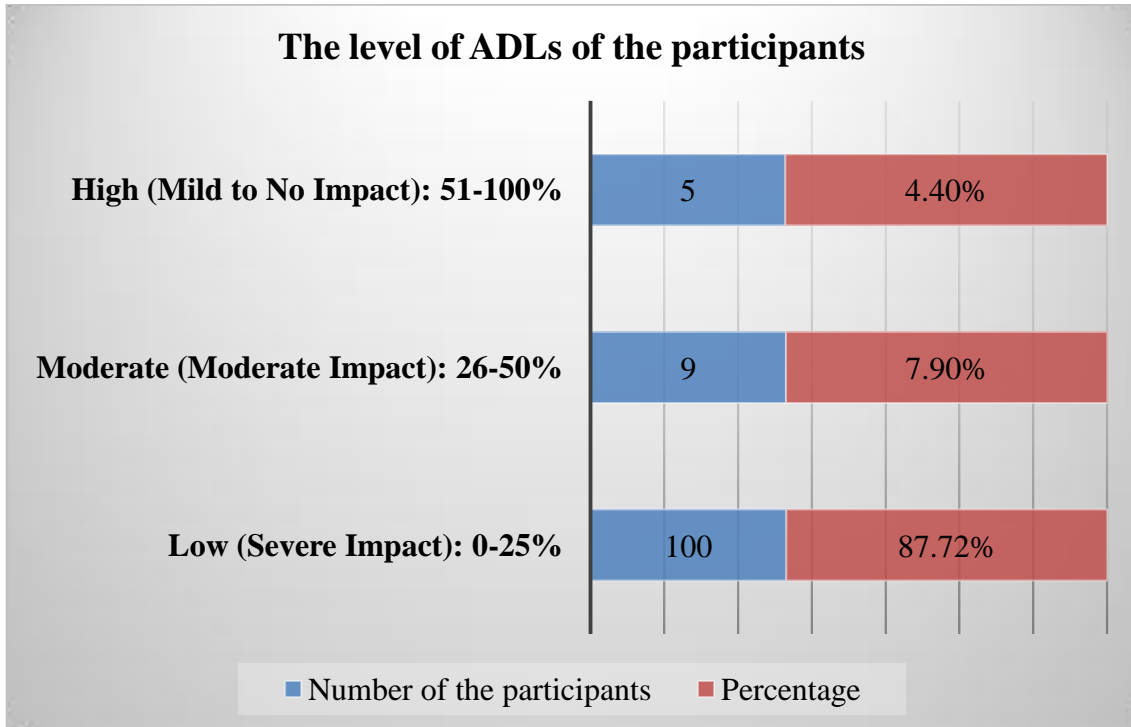


Figure 4.10: The level of ADLs of the participants

4.16 The level of Mobility of the participants

Among the 114 participants, 53 participants (46.5%) reported low mobility (severe impact), 15 participants (13.2%) reported moderate mobility impact, while a significant number, 46 participants (40.4%), reported high mobility (mild to no impact). This distribution highlights a notable prevalence of both low and high mobility among participants, with moderate mobility being relatively uncommon.

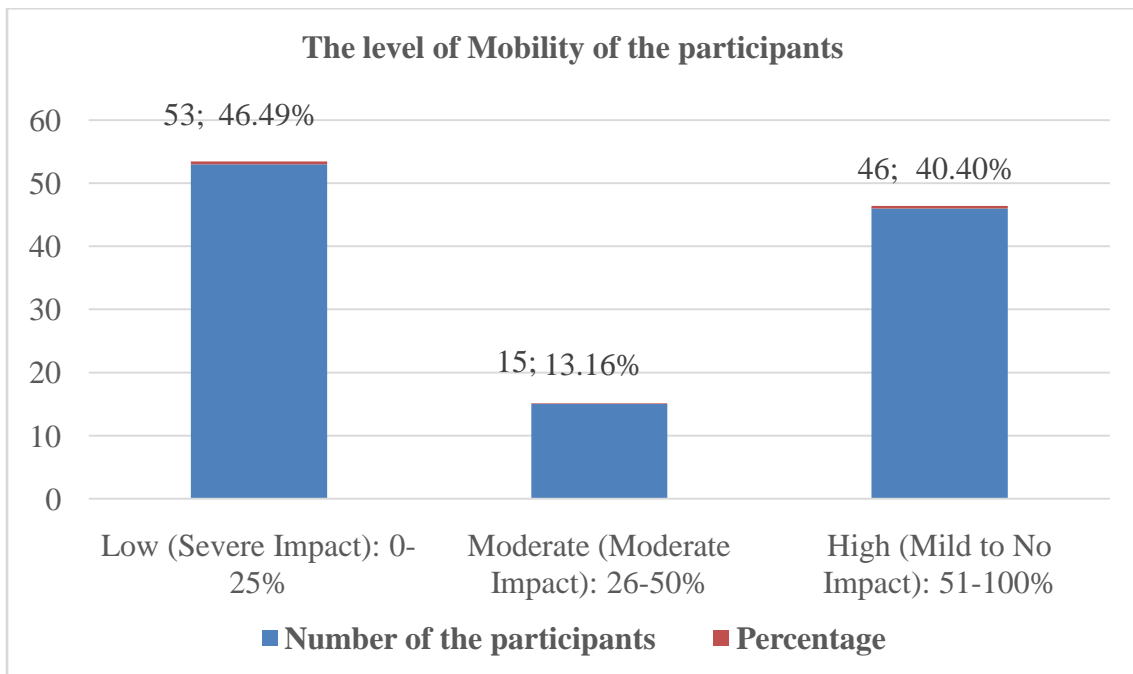


Figure 4.11: Level of mobility of the participants

4.17 The level of Hand function of the participants

Hand function	Number of the participants	Percentage
Low (Severe Impact): 0-25%	100	87.72%
Moderate (Moderate Impact): 26-50%	10	8.7%
High (Mild to No Impact): 51-100%	4	3.51%

Table 4.13: The level of Hand function of the participants

Among the 114 participants, the result of hand function among participants based on severity revealed that 100 participants (87.72%) experienced severe impairment, and the moderate or high impact (Mild to No Impact) categories, both of which recorded 8.7 and 3.51%. This indicates a significant prevalence of severe hand function impairment within the study group, with mild reports of moderate or mild impact.

4.18 The level of social participation in the community of the participants

Social participants	Number of the participants	Percentage
Low (Severe Impact): 0-25%	17	14.91%
Moderate (Moderate Impact): 26-50%	57	50.0%
High (Mild to No Impact): 51-100%	40	35.09%

Table 4.14: Social participation in the community of the participants

Among the 114 participants, 17 (14.91%) were classified as having Low (Severe Impact), indicating they faced significant challenges in participation. 57 participants (50.0%) fell into the Moderate (Moderate Impact), indicating moderate levels of participation, while 40 participants (35.09%) were categorized as having High (Mild to No Impact), reflecting a strong engagement in social activities within the community.

4. 19 Association between treatment session and Hand function

Variables	Chi-square test (X^2)	p-value
Treatment session And Hand function	555.6	0.007*

Table 4.15 Association between treatment session and Hand function

The association between treatment sessions and hand function was assessed using the Chi-square test. The results indicate a Chi-square value (X^2) of 555.6. with a p-value of 0.007. This suggests a statistically significant relationship between the treatment sessions and hand function.

As per data analysis it is found that p value is less than 0.05 ($p < 0.05$). So, it means that the founding result is significant. The result shows that there was a relation between treatment session and hand function among the participants which further means that there was a relationship between treatment effect on hand function.

4. 20 Association between Age of the participants and Recovery from stroke

Variables	Chi-square test (X^2)	p-value
Age of the participants and Recovery from stroke	548.5	0.46

Table 4.16 Association between Age of the participants and Recovery from stroke

In the study, the correlation between the age of the participants and their recovery from stroke was analyzed using the Chi-square (X^2) test. The results indicated a Chi-square value of 548.5, with a corresponding p-value of 0.46.

As per data analysis it is found that p value is more than 0.05 ($p > 0.05$). So, it means that the founding result is not significant. The result shows that there is no relation between Age of the participants and Recovery from stroke among the participants which further means that there is no relationship between Age of the participants and Recovery from stroke.

4.21 Association between Treatment Session and Recovery from stroke

Variables	Chi-square test (X^2)	p-value
Treatment Session and Recovery from stroke	365.62	0.997

Table 4.17 Association between Treatment Session and Recovery from stroke

In the study, the correlation between the age of the participants and their recovery from stroke was analyzed using the Chi-square (X^2) test. The results indicated a Chi-square value of 365.62, with a corresponding p-value of 0.997.

As per data analysis it is found that p value is more than 0.05 ($p > 0.05$). So, it means that the founding result is not significant. The result shows that there is no relation between Treatment Session and Recovery from stroke the participants which further means that there is no relationship between Treatment Session and Recovery from stroke.

4.22 Association between affected side of the participants and recovery from stroke

Variables	Chi-square test (X^2)	p-value
Affected side of the participants and Recovery from stroke	33.1830	0.222

Table 4.18 Association between affected side of the participants and recovery from stroke

In the study, the correlation between affected side of the participants and recovery from stroke was analyzed using the Chi-square (X^2) test. The results indicated a Chi-square value of 33.1830, with a corresponding p-value of 0.222.

As per data analysis it is found that p value is more than 0.05 ($p > 0.05$). So, it means that the founding result is not significant. The result shows that there is no relation between the affected side of the participants and recovery from stroke which further means that there is no relationship between affected side of the participants and recovery from stroke.

4.23 Association between duration of stroke and recovery from stroke

Variables	Chi-square test (X^2)	p-value
Duration of the participants and Recovery from stroke	334.30	0.78

Table 4.19 Association between duration of the stroke and recovery from stroke

In the study, the correlation between duration of the stroke and recovery from stroke was analyzed using the Chi-square (X^2) test. The results indicated a Chi-square value of 334.30, with a corresponding p-value of 0.78.

As per data analysis it is found that p value is more than 0.05 ($p > 0.05$). So, it means that the founding result is not significant. The result shows that there is no relation between the duration of the stroke and recovery from stroke which further means that there is no relationship between duration of the stroke and recovery from stroke.

4.24 Association between Age of the participants and strength

Variables	Chi-square test (X^2)	p-value
Age of the participants and Strength	559.52	0.044*

Significant (*)

Table 4.20 Association between age and strength

In the study, the correlation between age and strength was analyzed using the Chi-square (X^2) test. The results indicated a Chi-square value of 559.52, with a corresponding p-value of 0.044.

As per data analysis it is found that p value is less than 0.05 ($p < 0.05$). So, it means that the founding result is significant. The result shows that there is a relationship between age and strength.

4.25 Association between age and Memory

Variables	Chi-square test (X^2)	p-value
Age of the participants and memory	728.45	0.3346

Table 4.21: Association between age and Memory

The association between age and memory was assessed using a Chi-square test. The analysis yielded a Chi-square value 728.45 with a p-value of 0.3346.

As per data analysis it is found that p value is more than 0.05 ($p > 0.05$). So, it means that the founding result is not significant. The result shows that there is no relation between age and Memory which further means that there is no relationship between age and Memory.

4.26 Association between age and Emotion

Variables	Chi-square test (X^2)	p-value
Age of the participants and Emotion	973.78	0.424

Table 4.22 Association between age and Emotion

The correlation between age and emotion was analyzed using a Chi-square test. The results showed a Chi-square value of 973.78 and a p-value of 0.424.

As per data analysis it is found that p value is more than 0.05 ($p > 0.05$). So, it means that the founding result is not significant. The result shows that there is no relation between age and Emotion which further means that there is no relationship between age and Emotion.

4.27 Association between duration of stroke and memory

Variables	Chi-square test (X^2)	p-value
Duration of the stroke and memory	428.09	0.95

Table 4.23 Association between duration of stroke and memory

The correlation between the duration of the stroke and memory was assessed using a Chi-square test, which produced a Chi-square statistic (X^2) of 428.09 and a p-value of 0.95.

As per data analysis it is found that p value is more than 0.05 ($p > 0.05$). So, it means that the founding result is not significant. The result shows that there is no relation duration of stroke and memory impairment which further means that there is no relationship between duration of stroke and memory.

4.28 Association between the duration of stroke and Hand function

Variables	Chi-square test (X^2)	p-value
Duration of the stroke And Hand function	344.69	0.184

Table 4.24: Association between duration of stroke and Hand function

The analysis of the correlation between the duration of the stroke and hand function, conducted using a Chi-square test, yielded a Chi-square statistic (X^2) 344.69 of and a p-value of 0.184.

As per data analysis it is found that p value is more than 0.05 ($p > 0.05$). So, it means that the founding result is not significant. The result shows that there is no relation duration of stroke and Hand function which further means that there is no relationship between duration of stroke and Hand function.

4.29 Association between duration of stroke and Emotion

Variables	Chi-square test (X^2)	p-value
Duration of the stroke and Emotion	495.91	0.85

Table 4.25 Association between duration of stroke and Emotion

The correlation between the duration of the stroke and emotional levels was examined using a Chi-square test, resulting in a Chi-square statistic (X^2) 495.91 of and a p-value of 0.85.

As per data analysis it is found that p value is more than 0.05 ($p > 0.05$). So, it means that the founding result is not significant. The result shows that there is no relation duration of stroke and Emotion which further means that there is no relationship between duration of stroke and Emotion.

4.30 Domain of SIS (stroke impact scale)

SIS Domain	Median
Physical Strength	12
Memory	25
Emotion	34
Communication	25
ADLs	27
Mobility	28
Hand Function	14
Social participation	33
Stroke Recovery	50

Table 4.26: Domain of SIS (stroke impact scale)

The table showed the median across various domains of the Stroke Impact Scale (SIS). The "Strength" domain shows a median score of 12, indicating a relatively narrow range of variability in this measure. "Memory" has a higher median score of 25, suggesting moderate impairment in cognitive functions among the participants. The "Emotion" domain shows the highest median score of 34, reflecting notable emotional impacts post-stroke. In "Communication," the median is 25, pointing to moderate variability in communication abilities. "Activities of Daily Living (ADLs)" and "Mobility" domains have medians of 27 and 28, respectively, indicating considerable challenges and variability in performing daily tasks and mobility. "Hand Function" shows a median of 14, which is relatively low, signifying substantial difficulties in manual dexterity. The

"Social Participation" domain has a median score of 33, indicating a significant impact on social engagement. Finally, "Stroke Recovery" is rated with a median score of 50, suggesting a broad range of perceived recovery among the participants. These findings illustrate the multifaceted impact of stroke on individuals, affecting physical, cognitive, and emotional domains.

4.31 Association among the Domains of SIS Scale

Pairs	t- test	d f	Sig.(2-tailed)	Interpretation
Pair 1 Strength-memory	-30.215	133	0.000*	Significant
Pair 2 Emotional-Communication	22.96	133	0.000*	Significant
Pair 3 ADLs- Mobility	-2.34	133	0.022*	Significant
Pair 4 Hand function – Social Participants	-42.135	133	0.00*	Significant

Table 4.27: Correlations among the Domains of SIS Scale

Table 4.26 presents the results of paired t-tests examining the associations among various domains of the Stroke Impact Scale (SIS). Each pair wise comparison reveals a statistically significant relationship, suggesting notable interdependencies among the domains.

In Pair 1, comparing "Strength" and "Memory," the t-test value of -30.215 (df = 133, p = 0.000) indicates a strong and significant association between physical strength and memory functions among participants. Pair 2, which examines the relationship between "Emotion" and "Communication," yields a positive t-test value of 22.96 (df = 133, p = 0.000), suggesting a significant connection between emotional well-being and communication abilities post-stroke.

For Pair 3, assessing "Activities of Daily Living (ADLs)" and "Mobility," the t-test value of -2.34 (df = 133, p = 0.022) confirms a significant relationship, highlighting the interrelated challenges in daily functioning and mobility experienced by stroke survivors. Pair 4, comparing "Hand Function" and "Social Participation," demonstrates the strongest association with a t-test value of -42.135 (df = 133, p = 0.000). This result underscores the substantial impact that manual dexterity limitations can have on social engagement and participation.

These findings highlight the interconnected nature of physical, cognitive, and social domains in the post-stroke recovery process, illustrating the multifaceted challenges that individuals may face across various aspects of daily life.

In this study of 114 participants (stroke patients), (73; 64%) were male, while (41; 36%) were female, indicating a higher representation of male patients in the sample (Meirhaeghe et al., 2018). Participants divided into age groups: (16; 14.04%) aged 41-50, (32; 28.07%) aged 51-60, (37; 32.46%) aged 61-70, (23; 20.18%) aged 71-80, and (6; 5.26%) aged 81-90, offering a comprehensive demographic overview (Yu et al., 2015; Kes et al., 2016).

Among them, (15; 13.2%) had no formal education, (11; 9.6%) completed primary education, (19; 16.7%) had secondary education, and (22; 19.3%) had higher secondary qualifications. Additionally, (21; 18.4%) participants were graduates, while (26; 22.8%) held postgraduate degrees (Xu et al., 2008; Engels et al., 2014).

The marital status of the 114 participants revealed that the majority, (107; 93.9%), were married. A small portion consisted of (4; 3.5%) participants who were divorced, and (3; 2.6%) participants who were widowed (Oh et al., 2021).

In this study shows a variety of employment statuses where (3; 2.6%) were unemployed, (25; 21.9%) were service holders, and (29; 25.4%) were business owners. Day laborers comprised (4; 3.5%), while (24; 21.1%) identified as housewives. Additionally, (9; 7.9%) were farmers, and (20; 17.5%) were retired. This distribution highlights a diverse range of occupational backgrounds, with business owners and service holders representing the largest groups (Sreedharan et al., 2013; Hallevi et al., 2020).

Among the participations 114, (n=40; 35.1%) patients had suffered hemorrhagic stroke and (n=74; 64.9%) patients had an ischemic stroke (Agba et al., 2023; Li et al., 2022). The study examined the stroke-affected side of 114 individuals, finding that (44; 38.6%) had right-sided disabilities, (64; 56.1%) had left-sided impairments, and (6; 5.3%) experienced bilateral issues. This distribution indicates that most stroke patients had left-sided disabilities, with a notable percentage also experiencing right-sided impairment (Daniel & Olaogun, 2023).

participants face considerable challenges in their social participation and daily activities, which impacts their overall quality of life. For instance, only a small number of participants engaged regularly in work or social activities, with many reporting limited or no involvement. Quiet recreational activities like reading or crafts were slightly more accessible, yet still limited for most. Active recreation, such as sports or outings, was particularly difficult, with nearly half participating only occasionally or not at all.

Participants also expressed difficulty in fulfilling their roles as family members or friends and in participating in religious or spiritual activities. The majority felt they had limited control over their lives, and only a few were able to help others regularly. These findings suggest that mobility and physical limitations may significantly reduce opportunities for meaningful social engagement, which could impact mental well-being. Enhancing support for social activities and accessible recreational opportunities could help improve social participation and quality of life.

The impact severity distribution among stroke recovery patients shows that 59.6% fall into the Mild Impact range (51-75), indicating they face minor challenges but maintain independence. Moderate Impact (26-50) comprises 34.2%, reflecting noticeable limitations in daily activities. A small percentage, 4.4%, experience No to Minimal Impact (76-100), indicating near-normal functioning. Only 1.8% are categorized under Severe Impact (0-25), highlighting significant impairments consistent with findings of persistent disabilities (Duncan et al., 2001).

In a study of 114 participants using the SIS scale, various domains affected by stroke were assessed. Memory performance showed that (28; 19.44%) participants had Low (Severe Impact), (38; 26.39%) had Moderate, and (48; 33.33%) had High (Mild to No Impact) memory capabilities. For strength, (8; 5.56%) participants were categorized as Low, while (74; 51.39%) exhibited High strength, indicating most experienced mild to no impact. In terms of emotional impact, (28; 24.56%) participants reported Low impact, while (48; 42.11%) indicated High emotional resilience. Communication levels revealed that (9; 7.89%) participants faced Low impact, but a predominance experienced Moderate (46.49%) and High (45.61%) impact. Regarding ADLs, (53; 46.49%) participants

experienced Low functioning, indicating significant difficulties. For mobility, (53; 46.49%) participants reported Low mobility, while (52; 45.61%) reported High mobility. Notably, (100; 87.72%) of participants experienced severe impairment in hand function, with 10 participants achieving Moderate and 4 participants High levels. Lastly, in social participation, (17; 14.91%) participants faced Low impact, while (57; 50.0%) reported Moderate participation, and (40; 35.09%) reported High participation, reflecting varying levels of community engagement. Overall, the findings highlight significant challenges in multiple domains, emphasizing the need for targeted interventions.

The association between treatment sessions and hand function was assessed using the Chi-square test, yielding a Chi-square value (X^2) of 555.6. and a p-value of 0.007. This indicates a statistically significant relationship between treatment sessions and hand function (Mann et al., 2005; Sale et al., 2014). The study assessed the correlation between participants' age and stroke recovery (Ghaziani et al., 2017). The high p-value indicates no statistically significant association between age and recovery from stroke. The correlation between treatment sessions and stroke recovery, indicating that no significant correlation can be concluded between treatment sessions and stroke recovery. The analysis found no significant relationship between the affected side of the stroke and recovery, the stroke recovery is not influenced by whether the stroke impacted the left or right side. The relationship between stroke recovery and treatment received, the significance threshold these results suggest no statistically significant association between the duration of the stroke and recovery. The correlation between age and strength among participants indicates a statistically significant correlation, suggesting that variations in age may be associated with differences in strength levels. Association between age and memory, these results indicate no statistically significant relationship between participants' age and memory performance, as the p-value far exceeds the standard significance threshold. The correlation between age and emotion, these findings indicate no statistically significant relationship between participants' age and emotional state. The correlation between stroke duration and memory, these results indicate no statistically significant correlation, suggesting that the time since the stroke may not significantly impact memory outcomes. These results suggest that there is no statistically significant correlation between the duration of the stroke and hand function. These

findings indicate that there is no statistically significant correlation between the duration of the stroke and emotional well-being, suggesting that the time since the stroke does not meaningfully impact emotional outcomes in this sample.

In this study the median scores across various domains of the Stroke Impact Scale (SIS) reveal significant challenges in multiple areas post-stroke. The "Strength" domain has a median score of 12, indicating low variability, while "Memory" (median 25) suggests moderate cognitive impairment. "Emotion" shows the highest median of 34, reflecting notable emotional effects. Communication abilities are moderately variable (median 25), and both "Activities of Daily Living (ADLs)" and "Mobility" present considerable challenges (medians of 27 and 28). "Hand Function" has a low median score of 14, indicating difficulties in manual dexterity. "Social Participation" (median 33) highlights a significant impact on social engagement, and "Stroke Recovery" shows a broad range of recovery perceptions with a median of 50. These results underscore the diverse physical, cognitive, and emotional impacts of stroke.

The study examined the associations between various domains of the Stroke Impact Scale (SIS) through pairwise comparisons, all of which showed statistically significant differences. Pair-1 ("Strength vs. Memory") had a p-value of 0.001, indicating a strong relationship between strength and memory, consistent with previous studies (Jd et al., 2001; Spalek et al., 2015). Pair-2 ("Emotion vs. Communication") also showed a significant relationship with a p-value of 0.001, supported by earlier research (Spalek et al., 2015). Pair-3 ("ADLs vs. Mobility") had a p-value of 0.022, suggesting a complex relationship between physical capabilities and daily functioning (Roberson et al., 1995). Lastly, Pair-4 ("Hand Function vs. Social Participation") showed a strong relationship with a p-value of 0.001, aligning with the findings of Hsu & Lachenbruch (2005) on the importance of social engagement in cognitive assessments. All pairs highlight the interconnected nature of physical, emotional, and social domains in stroke recovery.

6.1 Limitation

The investigator tried his level best to complete the study but still there were some situational limitations and barriers while considering the result of the study.

- The study focused solely on the socio-demographic conditions and the psychosocial aspects of stroke patients.
- Due to the limited number of questions in the scale/domain, the analysis was brief, which restricted the ability to deeply correlate other findings.
- The data collection was conducted exclusively within the Department of Physiotherapy at CRP, as there were no specialized hospitals where patients stay for extended periods to gather more comprehensive data.

6.2 Recommendation

Through this study investigators of Bio-psychological aspect of life after stroke. Regarding these things should be done in future.

- Further study should be done with a larger population.
- The study will be designed following ICF model to find out the recovery from stroke.
- Study should be in any other different settings. e.g. Hospital
- Study should be done associations with different types of tools – FMS, SF-36

The study included 114 participants, primarily aged 61-70 years, with a notable male predominance (64%). The majorities were well educated, with 22.8% holding postgraduate degrees, and most (93.9%) were married. Health conditions revealed that 64.9% had ischemic strokes, while 35.1% had hemorrhagic strokes, with 56.1% experiencing left-sided impairments and 38.6% facing right-sided disabilities. The assessment using the Stroke Impact Scale (SIS) highlighted varying degrees of strength impairment, particularly in the affected arm (35.1% reported some strength) and leg (53.8% reported quite a bit of strength). Memory tasks posed challenges for many, with 43.9% struggling to recall recent information. Emotional well-being was also impacted, as 53.5% felt sad occasionally, and 36% perceived themselves as burdensome. Communication difficulties were evident, with 46.5% finding it somewhat hard to understand conversations. Daily tasks such as dressing and bathing were problematic for many participants; for instance, 35.1% had difficulty cutting food. Mobility was a concern, with only 17.5% able to walk without losing balance, and 50.9% could remain seated without losing balance. Hand function was significantly limited, with 38.6% finding it somewhat difficult to carry heavy objects, and 87.7% experienced severe impairments in this area. Social participation was moderate, with 50% engaging in community activities at a moderate level. The study showed that 59.6% faced mild impacts, while 34.2% had moderate challenges, and only 1.8% experienced severe impacts. Memory performance varied, with 33.3% showing high performance but 19.44% suffering severe memory impairments. Statistically significant relationships were found between treatment sessions and hand function ($X^2 = 555.6$, $p = 0.007$), while age, affected side of the body, and stroke duration showed no significant relationships with recovery outcomes. Interestingly, age influenced strength levels ($X^2 = 559.52$, $p = 0.044$) but not memory or emotional outcomes.

This study examined the median scores across various domains of the Stroke Impact Scale (SIS), revealing significant challenges post-stroke. The "Strength" domain had a

median score of 12, indicating low variability, while "Memory" (median 25) suggested moderate cognitive impairment. The "Emotion" domain showed the highest median score of 34, reflecting emotional impacts, and "Communication" had moderate variability (median 25). Both "Activities of Daily Living (ADLs)" and "Mobility" showed considerable challenges (medians of 27 and 28), while "Hand Function" had a low median of 14, highlighting manual dexterity issues. "Social Participation" (median 33) showed significant impacts on social engagement, and "Stroke Recovery" (median 50) indicated a broad range of recovery perceptions. These results underline the diverse physical, cognitive, and emotional effects of stroke.

The study also examined the associations between SIS domains through pairwise comparisons, all of which showed statistically significant differences. Pair-1 ("Strength vs. Memory") had a p-value of 0.001, indicating a strong relationship between strength and memory. Pair-2 ("Emotion vs. Communication") also showed a significant relationship ($p = 0.001$), and Pair-3 ("ADLs vs. Mobility") had a p-value of 0.022, suggesting a complex relationship between physical abilities and daily functioning. Pair-4 ("Hand Function vs. Social Participation") had a p-value of 0.001, emphasizing the importance of social engagement in cognitive assessments. Overall, the findings highlight the interconnected nature of physical, emotional, and social domains in stroke recovery.

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ANNEXURE

Inform consent (Bangla)

সম্মতিপত্র

আসসালামুআলাইকুম, আমি মোঃ নাহিদুল ইসলাম নাহিদ, মাস্টার্স অব সাইন্স ইন ফিজিওথেরাপি, বাংলাদেশ হেলথ প্রফেশন্স ইন্সটিটিউট (ঢাকা বিশ্ববিদ্যালয়ের অধিনে) এর একজন ছাত্র। আমার তত্ত্বাবধায়কের সাহায্যে আমি একটি গবেষণা প্রকল্প পরিচালনা করছি যা আমার পাঠ্যক্রমের একটি অংশ। এটির শিরোনাম “**স্ট্রোকের পর রোগীদের জীবনের বায়ো-সাইকো সোসিয়ালদিক; বাংলাদেশে একটি বিশেষায়িত হাসপাতালে রোগীদের দ্বারা রিপোর্ট করা ফলাফল**”। অধ্যয়নের উদ্দেশ্য গুলি হল দ্রুত স্ট্রোক রোগীদের ফিজিওথেরাপি চিকিৎসা প্রদান করলে কি ধরনের এবং কেমন প্রভাব ফেলে তা খুঁজে বের করা। আপনি যদি আমার আমন্ত্রণ গ্রহণ করেন এবং আমার অধ্যয়নে অংশ নেন তবে এটি খুবই সহায়ক হবে। আপনি যদি এই গবেষণায় অংশগ্রহণ করতে সম্মত হন, আমি কিছু ব্যক্তিগত তথ্য জানতে চাইব যা আপনার সাথে ঘনিষ্ঠভাবে সম্পর্কিত। এটি প্রায় ২০-৩০ মিনিট সময় নিবে এবং আপনি সেচ্ছায় এই গবেষণায় অংশগ্রহণ করতে পারেন।

আপনি যদি কোনো অস্বস্তিবোধ করেন বা কোন একটি প্রশ্ন এড়িয়ে যেতে চান তবে আমাকে বলুন, আমি সেটি বাদ রেখে পরের প্রশ্ন চালিয়ে যাব। অধ্যয়নে অংশগ্রহণের জন্য আপনাকে অর্থপ্রদান করা হবেনা। আপনার সম্মতি প্রত্যাহার করার এবং যেকোন সময় অংশগ্রহণ বন্ধ করার অধিকার রয়েছে। এই গবেষণার তথ্য সংগ্রহ করা হবে এবং অংশগ্রহণকারীর অনুমতি ছাড়া অন্যদের সাথে বলা যাবে না। তথ্য নিরাপদে রাখা হবে এবং গোপনীয়তা বজায় রাখা হবে। আমি আশা করি অধ্যয়নটি স্ট্রোক রোগীদের চিকিৎসার প্রভাব সংক্রান্ত বিষয় গুলো বের করা এবং জীবনযাত্রার মান উন্নয়নে সাহায্য করবে। তাই আপনাকে আমি এইগবেষণার অংশ হওয়ার জন্য অনুরোধ করছি।

এই গবেষণায় আপনি একজন অংশগ্রহণকারী হিসাবে যদি আপনার অধিকার সম্পর্কে কোন প্রশ্ন থাকে তবে আপনি গবেষক মোঃ নাহিদুল ইসলাম নাহিদের সাথে বা গবেষকের সুপার ভাইজার মুহাম্মদ মিল্লাত হোসেনের সাথে যোগাযোগ করতে পারেন।

আমি শুরু করার আগে আপনার কি আর কোন প্রশ্ন আছে?

হ্যাঁ না

তাহলে, সাক্ষাৎকার নিয়ে এগিয়ে যেতে আপনি সম্মত আছেন?

হ্যাঁ না

অংশগ্রহণকারীর স্বাক্ষর ও তারিখঃ.....

গবেষকের স্বাক্ষর ও তারিখঃ.....

Inform consent (English)

AssalamuAlaikum, I am Md. Nahidul Islam Nahid, a student of Master of Science in Physiotherapy, Bangladesh Health Professions Institute (under Dhaka University). With the help of my supervisor, I conducting a research project which is a part of my curriculum. It is titled “**Bio-Psychosocial Aspects of Life After Stroke: Outcome Reported by Patients at a Specialized Hospital in Bangladesh.**” The objectives of the study are to explore the bio-psychosocial aspects of life of stroke patients after receiving physiotherapy treatment at a specialized hospital in Bangladesh. It will be very helpful if you accept my invitation and participate in my study. If you agree to participate in this study, I will ask for certain personal information that is closely related to you. It will take about 20-30 minutes, and you can participate in this study voluntarily.

If you feel any discomfort or want to skip any question, tell me, I will skip it and move on to the next question. You will not be paid for participating in the study. You have the right to withdraw consent and stop participating at any time. Data from this study will be collected and not shared with others without the participant's permission. Information will be kept secure and confidential. I hope the study will help to find out the implications of treatment and improve the quality of life of stroke patients. So, I request you to be a part of this study.

If you have any questions about your rights as a participant in this study, you may contact the researcher, Md. Nahidul Islam Nahid, or the researcher's supervisor, Muhammad Millat Hossain, Associate Professor and Course coordinator, MRS.

Do you have any other questions before I begin?

Yes No

So, do you agree to proceed with the interview?

Yes No

Signature and Date of Participant:

Signature and Date of Researcher:

Questionnaire (Bengali)

গবেষণার শিরোনাম: “স্ট্রোকের পর জীবনের বায়ো-সাইকোসোসিয়াল দিকঃ বাংলাদেশে একটি বিশেষায়িত হাসপাতালে রোগীদের দ্বারা রিপোর্ট করা ফলাফল।”

পর্ব- কঃ

রোগীর ব্যক্তিগত, সামাজিক এবং পারিবারিক তথ্যঃ

সনাক্তকরণ নাম্বারঃ

তারিখঃ

১।রোগীর নামঃ

২।রোগীর বয়সঃ

৩।রোগীর লিঙ্গঃ ১. পুরুষ ২. মহিলা

৪।রোগীর ঠিকানাঃ

৫।রোগীর মোবাইল নাম্বারঃ

৬।রোগীর শিক্ষাগত যোগ্যতাঃ ১. অশিক্ষিত ২. প্রাথমিক ৩. মাধ্যমিক

৪. উচ্চমাধ্যমিক ৫. স্নাতক ৬. স্নাতকোত্তর

৭।রোগীর পেশাঃ ১. বেকার ২. ছাত্র ৩. চাকুরিজিবি ৪. ব্যবসায়িক

৫. দিনমজুর ৬. গৃহিণী ৭. কৃষক ৮. অবসরপ্রাপ্ত

৮।রোগীর বৈবাহিক অবস্থাঃ ১. বিবাহিত ২. অবিবাহিত ৩. বিবাহবিচ্ছেদ ৪. বিধবা

৯।স্ট্রোক হওয়ার তারিখঃ

১০।কি ধরণের স্ট্রোকঃ ১. রক্তশূন্যতাজনিত ২. রক্তক্ষরণজনিত

১১।আক্রান্ত পাশঃ ১. ডানপাশ ২. বামপাশ ৩. উভয়পাশ

১২।সেশন সংখ্যাঃ

পর্ব- খঃ

এসআইএস স্কেল- (স্ট্রোক ইমপ্যাক্ট স্কেল)

এই প্রশ্নগুলি আপনার স্ট্রোকের ফলে হতে পারে এমন শারীরিক সমস্যাগুলি সম্পর্কে।

আপনার কাছে সবচেয়ে নির্ভুল মনে হয় এমন উত্তর নির্বাচন করুন। কোডের পাশে “√” দিন।

১. গতসপ্তাহে, আপনি আপনার শক্তিকে কীভাবে মূল্যায়ন করবেন..	অনেক শক্তি	বেশ কিছুটা শক্তি	কিছু শক্তি	সামান্য শক্তি	মোটেশক্তি নেই
১.১: স্ট্রোক দ্বারা আপনার সবচেয়ে বেশি ক্ষতিগ্রস্ত হয়েছিল বাহু?	৫	৪	৩	২	১
১.২: স্ট্রোক দ্বারা আপনার সবচেয়ে বেশি ক্ষতিগ্রস্ত হয়েছিল হাতের মুঠোয়?	৫	৪	৩	২	১
১.৩: স্ট্রোকে সবচেয়ে বেশি ক্ষতিগ্রস্ত হয়েছিল আপনার পা?	৫	৪	৩	২	১
১.৪: স্ট্রোকে আপনার সবচেয়ে বেশি ক্ষতিগ্রস্ত হয়েছিল পা/গোড়ালি?	৫	৪	৩	২	১

এই প্রশ্নগুলি আপনার স্মৃতি এবং চিন্তাভাবনা সম্পর্কে।

আপনার কাছে সবচেয়ে নির্ভুল মনে হয় এমন উত্তর নির্বাচন করুন। কোডের পাশে “√” দিন।

২. গতসপ্তাহে, আপনার জন্য কতটা কঠিন ছিল...	মোটেশক্তি নেই	একটুকঠিন	কিছুটা কঠিন	খুব কঠিন	চরম কঠিন
২.১: লোকে আপনাকে যাবলেছিল তা মনে আছে?	৫	৪	৩	২	১
১৩.২: আগের দিন ঘটে যাওয়া ঘটনা গুলো মনে	৫	৪	৩	২	১

আছে?					
২.৩: কিছু করতে মনে আছে (যেমন, নির্ধারিত অ্যাপয়েন্টমেন্ট রাখা বা ওষুধ খাওয়া)?	৫	৪	৩	২	১
২.৪: সপ্তাহের দিন মনে আছে?	৫	৪	৩	২	১
২.৫: মনোনিবেশ করতে পারেন?	৫	৪	৩	২	১
২.৬: তাড়াতাড়ি ভাবতে পারেন?	৫	৪	৩	২	১
২.৭: দৈনন্দিন সমস্যার সমাধান করতে পারেন?	৫	৪	৩	২	১

এই প্রশ্নগুলি হল আপনি কেমন অনুভব করছেন, আপনার মেজাজের পরিবর্তন সম্পর্কে এবং আপনার স্ট্রোকের পর থেকে আপনার আবেগ নিয়ন্ত্রণ করার ক্ষমতা সম্পর্কে।

আপনার কাছে সবচেয়ে নির্ভুল মনে হয় এমন উত্তর নির্বাচন করুন। কোডের পাশে “✓” দিন।

৩. গত সপ্তাহে, আপনার কতবার...	সময়ের কিছু নেই	কিছু সময়ের	মাঝে মাঝে	বেশির ভাগ সময়	সব সময়
৩.১: খারাপ লেগেছিল?	৫	৪	৩	২	১
৩.২: আপনার কাছে কেউ নেই মনে হয়েছে?	৫	৪	৩	২	১
৩.৩: নিজেকে অন্যের বোঝা মনে হয়েছে?	৫	৪	৩	২	১
৩.৪: আপনার জন্য অপেক্ষা করার মতো কেউ নেই বলে মনে হয়েছে?	৫	৪	৩	২	১
৩.৫: আপনি ভুলের জন্য নিজেকে দোষারোপ করেছেন?	৫	৪	৩	২	১
৩.৬: যতটা সময় কিছু জিনিস উপভোগ করেছেন?	৫	৪	৩	২	১
৩.৭: বেশ নার্ভাস লেগেছে?	৫	৪	৩	২	১

৩.৮: জীবন বেঁচে থাকার যোগ্য মনে হয়েছে?	৫	৪	৩	২	১
৩.৯: দিনে অন্তত একবার হাসিখুশি থেকেছেন?	৫	৪	৩	২	১

নিম্নলিখিত প্রশ্নগুলি অন্য লোকেদের সাথে যোগাযোগ করার আপনার ক্ষমতা, সেই সাথে আপনি যা পড়েন এবং কথোপকথনে যা শুনেন তা বোঝার ক্ষমতা সম্পর্কে। আপনার কাছে সবচেয়ে নির্ভুল মনে হয় এমন উত্তর নির্বাচন করুন। কোডের পাশে “√” দিন।

৪. গত সপ্তাহে, এটা কতটা কঠিন ছিল...	মোটোও কঠিন নয়	একটু কঠিন	কিছুটা কঠিন	খুব কঠিন	চরম কঠিন
৪.১: আপনার সামনে কে ছিলেন তার নাম বলুন?	৫	৪	৩	২	১
৪.২: একটা কথা বার্তায় আপনাকে কী বলা হচ্ছিল বুঝতে পেরেছেন?	৫	৪	৩	২	১
৪.৩: প্রশ্নের উত্তর দিতে পেরেছেন?	৫	৪	৩	২	১
৪.৪: সঠিকভাবে বস্তুর নাম বলতে পেরেছেন?	৫	৪	৩	২	১
৪.৫: মানুষের একটি দলের সাথে একটি কথোপকথনে অংশগ্রহণ করতে পেরেছেন?	৫	৪	৩	২	১
৪.৬: টেলিফোনে কথোপকথন করতে পেরেছেন?	৫	৪	৩	২	১
৪.৭: সঠিক ফোন নম্বর নির্বাচন এবং ডায়াল সহ টেলিফোনে অন্য ব্যক্তিকে কল করতে পেরেছেন?	৫	৪	৩	২	১

নিম্নলিখিত প্রশ্নগুলি আপনি একটি সাধারণ দিনে করতে পারেন এমন কার্যকলাপ গুলি সম্পর্কে জিজ্ঞাসা করে।

আপনার কাছে সবচেয়ে নির্ভুল মনে হয় এমন উত্তর নির্বাচন করুন। কোডের পাশে “√” দিন।

৫. গত সপ্তাহে, এটা কতটা	মোটোও	একটুক	কিছুটুক	খুব	কিছুতেই পা
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কঠিন ছিল...	ঠিন না	ঠিন	ঠিন	কঠিন	রিনি
৫.১: একটি ছুঁড়ি এবং কাঁটাচামচ দিয়ে আপনার খাবার কাটতে পেরেছেন?	৫	৪	৩	২	১
৫.২: আপনার শরীরের উপরের অংশ পোষাক পরতে পেরেছেন?	৫	৪	৩	২	১
৫.৩: নিজে গোসল করতে পেরেছেন?	৫	৪	৩	২	১
৫.৪: আপনার পায়ের নখ কাটতে পেরেছেন?	৫	৪	৩	২	১
৫.৫: সময় মতো টয়লেটে যেতে পেরেছেন?	৫	৪	৩	২	১
৫.৬: আপনার মুত্রবিসর্জন নিয়ন্ত্রণ করতে পেরেছেন (একটি দুর্ঘটনা আছে না)?	৫	৪	৩	২	১
৫.৭: আপনার মলত্যাগ নিয়ন্ত্রণ করতে পেরেছেন (কোন দুর্ঘটনানেই)?	৫	৪	৩	২	১
৫.৮: হাল্কা ঘরোয়া কাজ/ কাজ করতে পেরেছেন (যেমন ধুলোবালি, বিছানা তৈরি করা, আবর্জনা তোলা, থালা-বাসন ধোয়া)?	৫	৪	৩	২	১
৫.৯: কেনাকাটা করতে যেতে পেরেছেন?	৫	৪	৩	২	১
৫.১০: ভারী গৃহস্থালির কাজ (যেমন ভ্যাকুয়াম, লন্ড্রি বা উঠোনের কাজ) করতে পেরেছেন?	৫	৪	৩	২	১

নিম্নলিখিত প্রশ্নগুলি আপনার বাড়িতে এবং সম্প্রদায়ে চলাফেরার ক্ষমতা সম্পর্কে। আপনার কাছে সবচেয়ে নির্ভুল মনে হয় এমন উত্তর নির্বাচন করুন। কোডের পাশে “√” দিন।

৬. গত ২ সপ্তাহে, এটা কতটা কঠিন ছিল...	মোটোও কঠিননা	একটু কঠিন	কিছুটা কঠিন	খুব কঠিন	কিছুতেই পারিনি
৬.১: ভারসাম্য না হারিয়ে বসে থাকতে পেরেছেন?	৫	৪	৩	২	১

৬.২: ভারসাম্য না হারিয়ে দাঁড়িয়ে থাকতে পেরেছেন?	৫	৪	৩	২	১
৬.৩: ভারসাম্য না হারিয়ে হাঁটতে পেরেছেন?	৫	৪	৩	২	১
৬.৪: একটি বিছানা থেকে একটি চেয়ারে সরতে পেরেছেন?	৫	৪	৩	২	১
৬.৫: এক ব্লকের উপর হাঁটতে পেরেছেন?	৫	৪	৩	২	১
৬.৬: দ্রুত হাঁটতে পেরেছেন?	৫	৪	৩	২	১
৬.৭: সিঁড়ি এক ফ্লাইট আরোহণ করতে পেরেছেন?	৫	৪	৩	২	১
৬.৮: সিঁড়ি কয়েক ফ্লাইট আরোহণ করতে পেরেছেন?	৫	৪	৩	২	১
৬.৯: গাড়িতে উঠতে এবং নামতে পেরেছেন?	৫	৪	৩	২	১

নিম্নলিখিত প্রশ্নগুলি আপনার হাত ব্যবহার করার ক্ষমতা সম্পর্কে যা আপনার স্ট্রোকের
দ্বারা সবচেয়ে বেশি প্রভাবিত হয়েছিল।

আপনার কাছে সবচেয়ে নির্ভুল মনে হয় এমন উত্তর নির্বাচন করুন। কোডের পাশে “√”
দিন।

৭. গত ২ সপ্তাহে, আপনার স্ট্রোকের দ্বারা সবচেয়ে বেশি প্রভাবিত আপনার হাত ব্যবহার করা কতটা কঠিন ছিল...	মোটোও কঠিননা	একটু কঠিন	কিছুটা কঠিন	খুব কঠিন	কিছুতেই পারিনি
৭.১: ভারী জিনিস বহন করতে পেরেছেন (যেমন মুদির ব্যাগ)?	৫	৪	৩	২	১
৭.২: একটি দরজার নল চালু করতে পেরেছেন?	৫	৪	৩	২	১
৭.৩: একটি ক্যান বা জার খুলতে পেরেছেন?	৫	৪	৩	২	১
৭.৪: জুতার ফিতা বাঁধতে পেরেছেন?	৫	৪	৩	২	১

৭.৫: একটি পয়সা কুড়াতে পেরেছেন?	৫	৪	৩	২	১
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নিচের প্রশ্নগুলি হল কিভাবে স্ট্রোক আপনার কাজকর্মে অংশগ্রহণ করার ক্ষমতাকে প্রভাবিত করেছে, যেগুলি আপনার জন্য অর্থপূর্ণ এবং আপনাকে জীবনের উদ্দেশ্য খুঁজে পেতে সাহায্য করে।

আপনার কাছে সবচেয়ে নির্ভুল মনে হয় এমন উত্তর নির্বাচন করুন। কোডের পাশে “✓” দিন।

৮. গত ৪ সপ্তাহে, আপনি কতটা সময় সীমাবদ্ধতা ছিলেন...	সময়েরকিছুনেই	কিছু সময়ের	কিছু সময়ের বেশিরভাগ	সময়	সব সময়
৮.১: আপনার কাজে (বিনিময়ে, স্বেচ্ছায় বা অন্য)?	৫	৪	৩	২	১
৮.২: আপনার সামাজিক কর্মকাণ্ড?	৫	৪	৩	২	১
৮.৩: শান্ত বিনোদন (কারুশিল্প, পড়া)?	৫	৪	৩	২	১
১৯.৪: সক্রিয় বিনোদন (খেলাধুলা, আউটিং, ভ্রমণ)?	৫	৪	৩	২	১
৮.৫: একজন পরিবারের সদস্য এবং/ অথবা বন্ধু হিসাবে আপনার ভূমিকা?	৫	৪	৩	২	১
৮.৬: আধ্যাত্মিক বা ধর্মীয় কর্মকাণ্ডে আপনার অংশগ্রহণ?	৫	৪	৩	২	১
৮.৭: আপনার ইচ্ছা মত আপনার জীবন নিয়ন্ত্রণ করার ক্ষমতা?	৫	৪	৩	২	১
৮.৮: অন্যদের সাহায্য করার আপনার ক্ষমতা?	৫	৪	৩	২	১

৯. স্ট্রোক থেকে উন্নতি

০ থেকে ১০০ এর স্কেলে, ১০০ পূর্ণ উন্নতির প্রতিনিধিত্ব করে এবং ০ কোন উন্নতির প্রতিনিধিত্ব করে না, আপনি আপনার স্ট্রোক থেকে কতটা উন্নতি করেছেন?

আপনার কাছে সবচেয়ে নির্ভুল মনে হয় এমন উত্তর নির্বাচন করুন। কোডের পাশে “√” দিন।

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_ ০ কোনো উন্নতি নেই।

Questionnaire (English)

Title: “Bio-psychosocial Aspects of Life After Stroke: Outcome Reported by Patients at a Specialized Hospital in Bangladesh.”

Part A:

Personal, social and demographic status:

Code No:

Date:

1. Patients Name:
2. Patients Age:
3. Patients Sex: 1. Male 2. Female
4. Patients address:
5. Patients’ phone number:
6. Patients’ educational qualification: 1. Non educated, 2. Primary, 3. Secondary, 4. Higher secondary, 5. Graduation
7. Patients’ occupation: 1. No work, 2. Student, 3. Service holder, 4. Businessman, 5. Day laborer, 6. Housewife 7. Farmer.
8. Patient’s marital status: 1. Unmarried 2. Married 3. Divorce 4. Widowed
9. Onset of stroke:
10. Type of stroke: 1. Hemorrhagic 2. Ischemic
11. Affected Site: 1. Right 2. Left 3. Both sides
12. Treatment session received:

Part B:

Stroke Impact Scale

These questions are about the **physical problems** which may have occurred as a result of your stroke.

1. In the past week, how would you rate the strength of your	A lot of strength	Quite a bit of strength	Some strength	A little strength	No strength at all
a. Arm that was most affected by your stroke?	5	4	3	2	1
b. Grip of your hand that was most affected by your stroke?	5	4	3	2	1
c. Leg that was most affected by your stroke?	5	4	3	2	1
d. Foot/ankle that was most affected by your stroke?	5	4	3	2	1

These questions are about your **memory and thinking**.

2. In the past week, how difficult was it for you to...	Not difficult at all	all A little difficult	Somewhat difficult	Very difficult	Extremely difficult
a. Remember things that people just told you?	5	4	3	2	1

b. Remember things that happened the day before?	5	4	3	2	1
c. Remember to do things (e.g. keep scheduled appointments or take medication)?	5	4	3	2	1
d. Remember the day of the week?	5	4	3	2	1
e. Concentrate?	5	4	3	2	1
f. Think quickly?	5	4	3	2	1
G. Solve everyday problems?	5	4	3	2	1

These questions are about how you feel, about changes in your mood and about your **ability to control your emotions** since your stroke.

3. In the past week, how often did you...	None of the time	A little of the time	Some of the time	Most of the time	All of the time
a. Feel sad?	5	4	3	2	1
b. Feel that there is nobody you are close to?	5	4	3	2	1
c. Feel that you are a burden to others?	5	4	3	2	1
d. Feel that you have nothing to look forward	5	4	3	2	1

to?					
e. Blame yourself for mistakes that you made?	5	4	3	2	1
f. Enjoy things as much as ever?	5	4	3	2	1
g. Feel quite nervous?	5	4	3	2	1
h. Feel that life is worth living?	5	4	3	2	1
i. Smile and laugh at least once a day?	5	4	3	2	1

The following questions are about your **ability to communicate with other people**, as well as your ability to understand what you read and what you hear in a conversation.

4. In the past week, how difficult was it to...	Not difficult at all	A little difficult	Somewhat difficult	Very difficult	Extremely difficult
a. Say the name of someone who was in front of you?	5	4	3	2	1
b. Understand what was being said to you in a conversation?	5	4	3	2	1
c. Reply to questions?	5	4	3	2	1
d. Correctly name	5	4	3	2	1

objects?					
e. Participate in a conversation with a group of people?	5	4	3	2	1
f. Have a conversation on the telephone?	5	4	3	2	1
g. Call another person on the telephone, including selecting the correct phone number and dialing?	5	4	3	2	1

The following questions ask about **activities you might do during a typical day.**

5. In the past 2 weeks, how difficult was it to...	Not difficult at all	A little difficult	Somewhat difficult	Very difficult	Could not do at all
a. Cut your food with a knife and fork?	5	4	3	2	1
b. Dress the top part of your body?	5	4	3	2	1
c. Bathe yourself?	5	4	3	2	1
d. Clip your toenails?	5	4	3	2	1
e. Get to the toilet on time?	5	4	3	2	1

f. Control your bladder (not have an accident)?	5	4	3	2	1
g. Control your bowels (not have an accident)?	5	4	3	2	1
h. Do light household tasks/chores (e.g. dust, make a bed, take out garbage, do the dishes)?	5	4	3	2	1
i. Go shopping?	5	4	3	2	1
j. Do heavy household chores (e.g. vacuum, laundry or yard work)?	5	4	3	2	1

The following questions are about your **ability to be mobile, at home and in the community.**

6. In the past 2 weeks, how difficult was it to...	Not difficult at all	A little difficult	Somewhat difficult	Very difficult	Could not do at all
a. Stay sitting without losing your balance?	5	4	3	2	1
b. Stay standing without losing your balance?	5	4	3	2	1
c. Walk without losing your balance?	5	4	3	2	1
d. Move from a bed to a	5	4	3	2	1

chair?					
e. Walk one block?	5	4	3	2	1
f. Walk fast?	5	4	3	2	1
g. Climb one flight of stairs?	5	4	3	2	1
h. Climb several flights of stairs?	5	4	3	2	1
i. Get in and out of a car?	5	4	3	2	1

The following questions are about your ability to use your hand that was most affected by your stroke

7. In the past 2 weeks, how difficult was it to use your hand that was most affected by your stroke to...	Not difficult at all	A little difficult	Somewhat difficult	Very difficult	Could not do at all
a. Carry heavy objects (e.g. bag of groceries)?	5	4	3	2	1
b. Turn a doorknob?	5	4	3	2	1
c. Open a can or jar?	5	4	3	2	1
d. Tie a shoe lace?	5	4	3	2	1
e. Pick up a dime?	5	4	3	2	1

The following questions are about how stroke has affected your **ability to participate in the activities** that you usually do, things that are meaningful to you and help you to find purpose in life.

8. During the past 4 weeks, how much of the time have you been limited in...	None of the time	A little of the time	Some of the time	Most of the time	All of the time
a. Your work (paid, voluntary or other)	5	4	3	2	1
b. Your social activities?	5	4	3	2	1
c. Quiet recreation (crafts, reading)?	5	4	3	2	1
d. Active recreation (sports, outings, travel)?	5	4	3	2	1
e. Your role as a family member and/or friend?	5	4	3	2	1
f. Your participation in spiritual or religious activities?	5	4	3	2	1
g. Your ability to control your life as you wish?	5	4	3	2	1
h. Your ability to help others?	5	4	3	2	1

9. Stroke Recovery

On a scale of 0 to 100, with 100 representing full recovery and 0 representing no recovery, how much have you recovered from your stroke?

_____ 100 Full Recovery

_____ 90

_____ 80

_____ 70

_____ 60

_____ 50

_____ 40

_____ 30

_____ 20

_____10

_____0 No Recovery.

IRB application letter:

Date: 17-09-2023

The Chairman

Institutional Review Board (IRB)

Bangladesh Health Professions Institute (BHPI)

CRP-Savar, Dhaka-1343, Bangladesh

Subject: Application for review and ethical approval.

Sir,

With due respect and humble submission to state that I am Md. Nahidul Islam Nahid, student of Part II M.Sc. in Physiotherapy at Bangladesh Health Professions Institute (BHPI). This is a 2(Two) year full time course. Conducting thesis project is partial fulfillment of the requirement for the degree of M.Sc. in physiotherapy. I have to conduct a thesis entitled, "Impact of Early Rehabilitation of Stroke Survivors at A Specialized Hospital in Bangladesh." under the supervision of concern supervisor, Department of Physiotherapy, BHPI, CRP-Savar, Dhaka-1343. The purpose of this study is to explore the Impact of Early Rehabilitation of Stroke Survivors at A Specialized Hospital in Bangladesh. I would like to assure that anything of my study will not be harmful for the participants.

Informed that a consent will be received from all participants, data will be kept confidential.

I, therefore pray and hope that your honor would be kind enough to approve my thesis proposal and give me permission to start data collection and oblige thereby.

Sincerely,

Nahidul

Md. Nahidul Islam Nahid

Part II M.Sc. in Physiotherapy

Roll: 12,

Session: 2021-22

BHPI, CRP, Savar, Dhaka-1343,

Bangladesh

Recommendation from the thesis supervisor:

Attachment: Thesis proposal including process and procedure for maintaining confidentiality, Questionnaire (English version), Informed consent.

Shazal
Shazal Kumar Das
Lecturer
Dept. of Physiotherapy
BHPI, CRP, Savar, Dhaka-1343

IRB approval letter:



Ref

CRP-BHPI/IRB/10/2023/794

Date

28/10/2023

To
Md. Nahidul Islam Nahid
Part II M.Sc. in Physiotherapy
Session: 2021-22
Student ID: 11210108
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: Approval of the thesis proposal 'Impact of Rehabilitation of Stroke Survivors at a Specialized Hospital in Bangladesh' by ethics committee.

Dear Md. Nahidul Islam Nahid,
Congratulations.

The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application to conduct the above mentioned dissertation, with yourself, Muhammad Millat Hossain as thesis supervisor(s). The Following documents have been reviewed and approved:

Sl. No.	Name of the Documents
1	Thesis proposal
2	Questionnaire (English & / or Bengali version)
3	Information sheet & consent form.

The purpose of the study is to determine Impact of Rehabilitation of Stroke Survivors at a Specialized Hospital in Bangladesh. The study involves use of a questionnaire to find out the impact that may take 20 to 30 minutes to answer and there is no likelihood of any harm to the participants. The members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at 09:00 am on 17th September, 2023 at BHPI (37th 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 and Course coordinator, MRS
Member Secretary, Institutional Review Board (IRB)
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

সিআরপি-চাপাইন, সার, ঢাকা-১৩৪৩, বাংলাদেশ। ফোন: +৮৮ ০২ ২২৪৪৪৪৪৪-৫, +৮৮ ০২ ২২৪৪৪১৪০৪, মোবাইল: +৮৮ ০১৭৩০ ০৫৯৬৪৭
CRP-Chapain, Savar, Dhaka-1343, Bangladesh. Tel: +88 02 224445464-5, +88 02 224441404, Mobile: +88 01730059647
E-mail : principal-bhpi@crp-bangladesh.org. Web: bhpi.edu.bd

Data Collection permission letter:

Date 24-02-2024

To,

The Head of Department,

CRP, Chapain, Savar, Dhaka-1343.

Through: The Proper Channel

Subject: Request for permission to conduct data collection for thesis paper.

Dear Sir,

I would like to inform you that I am Md. Nahidul Islam Nahid, student of Masters in Physiotherapy (Part -II) in BHPI and ask your permission to allow me to conduct a survey among the stroke patients for my research purpose. This is in view of my thesis, entitled "**Impact of Rehabilitation of Stroke Survivors at a Specialized Hospital in Bangladesh**". I will conduct the data collection procedure among stroke patients in CRP at neurology Department after your permission.

The survey would for 3 months from January' 24 to March' 24 which last only 20-30 minutes (break times) and would be arranged at a time convenient to the stroke patient's schedule. Participation in the survey is entirely voluntary and there are no known or anticipated risks to participation in this study. All information provided will be kept in utmost confidentiality and would be used only for academic purpose. The name of the respondents and the information will not appear in my thesis resulting from this study unless agreed to.

If you agree, kindly sign below acknowledging your consent and permission for me to conduct this study/ survey at your department.

Your approval to conduct this study will be greatly appreciated. Thank you in advance for your interest and assistance with this research.

Sincerely,

Nahidul

Md. Nahidul Islam Nahid

BHPI, CRP, Savar, Dhaka.

ID: 11210108

Roll: 12

Approved
M. Hossain
24/02/24

Prof. Dr. Mohammad Armar Hossain, PhD
Professor, Physiotherapy Dept. BHPI
Senior Consultant & Head, Physiotherapy Dept.
CRP, Savar, Dhaka 1343