PSYCHOSOCIAL FACTORS ASSOCIATED WITH RISK OF FALL IN STROKE PATIENTS

By

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Student's Declaration

- This work has not previously been accepted in substance for any degree and is not concurrently submitted in candidature for any degree.

- This dissertation is being submitted in partial fulfillment of the requirements for the degree of MSc in Rehabilitation Science.

- This dissertation is the result of my independent work/investigation, except where otherwise stated. Other sources are acknowledged by giving explicit references. A Bibliography is appended.

- I confirm that if anything is identified in my work that I have done is plagiarism or any form of cheating that will directly me fail and I am subject to disciplinary actions of authority.

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Thesis Supervisor's Statement

As supervisor of Ms Ummay Kulsum Urmy's MSc Thesis work, we certify that we consider her thesis "**Psychosocial Factors Associated with Risk of Fall in Stroke Patients**" to be suitable for examination.

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We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine the University of Dhaka, for acceptance of this thesis entitled, "**PSYCHOSOCIAL FACTORS ASSOCIATED WITH RISK OF FALL IN STROKE PATIENTS**" submitted by Ummay Kulsum Urmi for the partial fulfillment of the requirements for the degree of M.Sc. in Rehabilitation Science.

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Acronyms

BHPI	Bangladesh Health Professions Institute
BBS	Berg Balance Scale
BMRC	Bangladesh Medical Research Council
CP	Conventional Physiotherapy
CRP	Centre for the Rehabilitation of the Paralysed
CVA	Cerebro Vascular Accident
DU	University of Dhaka
IRB	Institution Review Board
SRU	Stroke Rehabilitation Unit

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Abstract

Background: Stroke is a leading cause of disability globally, and its aftermath often includes a myriad of physical, psychological and social challenges. Sub-acute stroke patients are particularly vulnerable to falls due to their compromised mobility and balance.**Objectives:** The study aimed to explore the psychosocial factors associated with falls in Sub-acute stroke patients. **Method:** A cross-sectional study was conducted at the Neurology Unit (Outdoor) located at the Centre for the Rehabilitation of the Paralysed (CRP) in Savar, Dhaka. A total of 120 individuals diagnosed with sub-acute stroke were selected as the sample for the investigation. Depression, Anxiety and Stress (DASS-21) scale, self-structured questionnaire, and Berg balance scale (BBS) were used to explore psychological status, social status, and risk of falls respectively. The chi-square test was used to find the association and relationship between the variables. **Results:** Among the 120 participants, 90 individuals (66.2%) were male and females 30 individuals (22.1%). In this study 78 cases of ischemic strokes were recorded, making up 65.0% of the total, while 42 cases of hemorrhagic strokes were reported, accounting for 35.0%. among the participants, 78% of the participants answered "Yes" to a tendency to fall and 22% of the participants responded “No”. The psychological factors, depression, anxiety, and stress were significantly associated ($p<.05$) with risk of falls. “Problems during community participation” which is a part of social participation had a significant association (P=.004) with fall risk with a chi-square test value of 25.558. **Conclusion:** Participants with stroke face challenges, difficulties in balance, and a decline in function significantly. Some factors impact balance which tends to fall. Our study found that psychological factors are the important factor that may lead to falls. There is a great need to initiate proper supportive steps to focus on the psychological status during stroke rehabilitation.

Keywords: *Stroke, Depression, Anxiety, Stress, Psychosocial factors, Fall risk*

CHAPTER- I INTRODUCTION

1.1 Background

According to the American Stroke Association (2013), an acute cerebrovascular event resulting in death or neurological deficit for >24 hour or the presence of acute infarction demonstrated by brain imaging studies (American Heart and Stroke Association, 2013).

A stroke takes place when the blood supply to the brain is cut off, and the neurons incapacitate in a few minutes. This condition has now reached a stage where it poses a risk to the lives of people all over the world (Lee & Park, 2016).

The intermediate or subacute phase of stroke can be defined as the recovery period that occurs within two weeks to three months following the stroke onset and this requires strict physical therapy. It is also the period that the patient must make new ways of handling the process of rehabilitation to fit the new lifestyle they now have since having a stroke (Logan et al., 2018).

In 1970, the World Health Organization defined stroke as 'rapidly developed clinical signs of focal (or global) disturbance of cerebral function, lasting more than 24 hours or leading to death, with no apparent cause other than of vascular origin' (Coupland et al., 2017).

In 2013, there is an update regarding the definition of stroke by the American Heart Association/American Stroke Association they have added the silent pathology of stroke along with the traditional clinical definition, and this definition was mainly determined by radiological demonstration (infarction/hemorrhage) (Coupland et al., 2017).

In the new definition of American Heart Association/American Stroke Association, ischemic stroke is defined on the foundation of clinical and tissue criteria as brain, spinal cord, or retinal cell death attributable to ischemia, based totally on

neuropathological, neuroimaging, and scientific proof of permanent injury and intracerebral hemorrhage is described as rapidly creating clinical signs and symptoms of neurological dysfunction attributable to a focal collection of blood within the brain parenchyma or ventricular system that is not caused with the aid of trauma; and subarachnoid hemorrhage as rapid symptoms of neurological dysfunction and headache due to the fact of bleeding into the subarachnoid space (the space between the arachnoid membrane and pia mater of the brain or spinal cord), which is not induced through trauma (Feigin et al., 2018).

According to the World Health Organization (WHO) International Classification of Disease (ICD)-11 definition of stroke requires the presence of acute neurological dysfunction and encompasses the entities cerebral ischemic stroke, intracerebral hemorrhage, subarachnoid hemorrhage, and stroke not acknowledged to be ischemic or hemorrhagic (Feigin et al., 2018).

According to Global Burden of Disease (GBD) 2013, among adults aged 20-64 years, the worldwide prevalence of hemorrhagic stroke (HS) in 2013 was 3,725,085 and the prevalence of ischemic stroke (IS) was 7,258,216. The worldwide prevalence rates were 90.3 and 176 per 100,000 for hemorrhagic stroke and ischemic stroke, respectively. In 2013, the prevalence rate of ischemic and hemorrhagic stroke were considerably higher in developed countries in contrast to that in developing countries (Krishnamurthi et al., 2015).

In Global Burden of Disease (GBD) 2016, 80.1 million stroke cases were reported to be common; 41.1 million of these instances were in females and 39.0 million in males. 84.4% of the total number of common strokes were ischemic strokes. There were 13.7 million new incidents of stroke in 2016. The greatest age-standardized rates of stroke were observed in East Asia, specifically in China (354 per 100,000 person-years). These rates were also observed throughout Eastern Europe, with Latvia having the highest rate at 335 per 100,000 person-years, and Estonia having the lowest rate at 200 per 100,000 person-years. Incidence of stroke according to age was comparable for men and women under 55, but significantly higher for men than women between the ages of 55 and 75. (Johnson et al., 2019).

From 1990 to 2016, Age-standardized incidence declined from globally (–8.1%), in all SDI groups without the middle SDI group, and in most regions. In age-standardized stroke incidence, the area with the greatest decrease was once southern Latin America (–33.3%), and the region with the greatest enlargement was once East Asia (4.9%). The greatest decrease was in southern Latin America (–38.0%), and the greatest increase used to be in East Asia (17.5%), for ischemic stroke. In all regions, hemorrhagic stroke incidence diminished. In the high-income Asia Pacific, the largest decrease was (–32.5%), and in southern sub-Saharan Africa, the smallest decrease was (–5.1%) (Johnson et al., 2019).

From Global Burden of Disease (GBD) 2017, the global crude number of new stroke occasions has increased by way of 76% from 6.8 million new occasions in 1990 to 11.9 million in 2017. The global rate of age-standardized stroke prevalence has increased by 3% from 1990 to 2017 to attain 1300.6 per 100,000 in 2017; mainly in UMICs (Upper Middle-Income Countries). Contrarily, both LICs (Lower-Income Countries) and HICs (Higher Income Countries) have exhibited a respective 3% and 8% minimize in the age-standardized rates of stroke prevalent cases by 2017. Of note, in contrast to ischemic strokes, the age-standardized rates of hemorrhagic strokes have extensively reduced global from 1990 to 2017 (Avan et al., 2019).

Based only on an annual incidence of 135 to 145 strokes per 100,000 people and an early case mortality rate of 27% to 41%, it has been predicted that 1.5 million people in India have a stroke annually, with another 500,000 surviving with a handicap attributable to stroke. Stroke has the potential to have a major long-term impact on Indian families, particularly in rural areas (Lindley et al., 2017).

In Pakistan, there was once a crude age and sex-adjusted stroke incidence of 95 per 100,000 people per year for the following Years 2000 to 2016, with the highest incidence being 584,000 of 650,000, stated among men and women aged 75 to 85 (Khan et al., 2019). In Bangladesh, the rates of stroke were recorded as follows: 0·20%, 0·30%, 0·20%, 1·00%, and 1·00% for the age groups aged 40–49, 50–59, 60–69, 70–79, and 80 years or older, respectively. According to

Islam et al. (2013), the overall stroke prevalence was 0·30%, and the ratio of male to female participants was 3·44: 2·41(Hellstrom, 2018).
The worldwide incidence of stroke is not continuous and a systematic review and meta-analysis projected of stroke for the year 2018 to be 6 per 1000, or 0. 6%. This makes it means that about 6 percent of the adults who are 18 years and above have experienced a stroke sometime in their lifetime based on the study conducted by (Pigman et al., 2019).

This important study reveals the problem of falling among Stroke survivors, which can be a source of annoyance because of their dysfunctional body movements as is often the case. However, effective and significant consideration of psychological factors contributes notably to boosting this risk level, though it is not given much importance (Hellstrom, 2018).

Implementation of these psychological factors is vital to support the subacute phase stroke patients in minimizing adverse outcomes. Recovery trajectories are sequenced and therefore reflect the overall post-stroke timeline. The incidence of stroke differs in various groups; however, in a combined population study conducted by a systematic review and meta-analysis, it was discovered that age standardized prevalence of stroke was 6%. with 31. 0% KI penetration in 2018 (Pigman et al., 2019).

This suggests that approximately similar investigation into the geological and economic viability of a particular area can be completed relatively quickly and at a low cost. According to statistics, 5 percent of the population of adult persons who are above 18 years has at some point in their lives have had a stroke. Swallowing is a prevalent and possibly life-threatening issue in stroke patients because of the physical disabilities inherent in the individual. Secondly, it is also worth noting that psychological factors are often overlooked, and they play a major role in contributing to the possibility of falling as well (Hellstrom, 2018).

Explorations of psychological factors therefore remain important in facilitating the safety as well as enhancing the quality of life of the subacute stroke patients. They

can have emotional consequences that are quite significant, with post-stroke patients suffering from depression and anxiety. Such psychological issues may lower a person's interest in exercising and physiotherapy, so s/he is likely to avoid activities that enhance balance and mobility. Further, schizophrenia and other psychoses also lead to deficits in attention and concentration, which also have a strong correlation with falling (Markovic et al., 2017).

It is also common to discover that many of the survivors will experience what is known as post-stroke fall related fear, which is essentially the belief that they are likely to fall when walking; this is in actuality a self-fulfil lying prophecy. This fear can manifest as a slow, tentative walking pattern, reduced mobility, and avoidance of any activities that place placing significant demand on one's balance, disuse and muscle atrophy, which in itself enhances the risk of falling. Reducing this fear through psychoeducation, cognitive behavioral therapy and the gradual reintegration of low-risk activities is critical in finding ways of minimizing the risks of falls (Kim et al., 2016).

Managing these psychological factors calls for a pragmatic model of care that involves doctors, caregivers, and the stroke survivors. Some of the interventions may include; psychotherapy, group therapy, cognitive-behavioral therapy, pharmacotherapy, and appropriate measures to minimize the likelihood of the victim slipping. Understanding the factors that affect the fall risk of subacute stroke patients enables the formulation of effective and holistic treatment plans of these patients in their further care processes with an aim of providing a better quality life for these patients (Mhango, 2018).

Impairments are but one component of fall risk in subacute stroke patients, and further investigation is needed. Condition like depression, anxiety or fear of falling affects a patient's risk to fall greatly. These factors need to be managed to minimize the dangers of falls and enhance the quality of life of expectant stoke patients throughout the process of rehabilitation. Since post-stroke patients suffer from strictures failing and their emotions are far beyond the normal range, they can wear the cap of depressive and anxious patients. These psychological aspects reduce an

individual's desire to engage in physical therapy and other forms of rehabilitation to perform basic exercises as requires for better balance and mobility. Moreover, it is noteworthy that low mood and stress also have negative impact on individuals' cognitive performance inclining them to such disorders as forgetfulness or inability to focus which are the additional significant risk factors for fall occurrence (Markovic et al., 2017).

They mentioned that about 50 to 70% of patients who suffer from a stroke will develop a fear of falling, which in turn may have a contributing factor towards falls. This fear can lead to a reduced exercise regimen, slow movement and reduced mobility, or outright avoidance of any task that requires balance and often ends up developing muscle atrophy and other facets that increase vulnerability to falls. This is why for patients with this kind of fear, psychoeducation is helpful, furthermore, CBT and systematic desensitization in which activities are gradually reintroduced to prevent falls experienced by the elderly should be employed (Kim et al., 2016).

There is a need to incorporate physicians, nurses, family members of the victims, and the suffering individuals themselves to seek for a solution. It may involve psychotherapy, group sessions with other patients, approaches by neuropsychiatry, prescription of psychopharmacological treatment, and institution of measures to discourage falling. Consequently, recognizing the impact of psychological factors to falls on subacute stroke patients, the caregivers will be in a better position to develop, enhanced approaches that can improve on their safety and their well-being. Therefore, the aim of this study was to investigate of the incidence and risk factors for falling in subacute stroke patients, to know that falling is not only caused by the physical limitation. This is closely related to psycho-social factors such as fear of falling and anxiety as well as depression. Hence, it is important that all these factors be taken into consideration to support the needs of stroke survivors as they recover (Kim et al., 2016).

1.2 Rationale

A stroke is a rapidly manifesting clinical symptom of localized brain function disruption of assumed vascular origin lasting longer than 24 hours, according to WHO. Stroke requires acute neurological dysfunction and includes cerebral ischemic stroke, intracerebral hemorrhage, subarachnoid hemorrhage, and stroke not classified as ischemic or hemorrhagic. In the intermediate or subacute phase of stroke, recovery takes two weeks to three months and needs intense physical therapy. It is also when the patient must adapt their rehabilitation to their new lifestyle after a stroke. This significant research shows that stroke patients commonly fall, which may be frustrating due to their defective bodily motions. Though overlooked, effective and substantial psychological aspect consideration boosts this danger level. Sub-acute stroke patients are particularly worried about the physical, emotional, and social effects of falls. Sub-acute stroke sufferers worldwide dread hospitalization, another stroke, or other illness. Thus, this investigation will complete the information vacuum on psychosocial variables that may increase the risk of this patient group. Before continuing, sub-acute stroke patients are dissatisfied, apprehensive, or unhappy, have poor self-esteem, and lack social support, which hinders locomotor coordination and balance and predisposes them to fall. This research finds that stroke patients' falls cause injuries, longer hospital stays, and higher medical costs. Early evaluation of high-risk patients and psychosocial treatment may improve patient outcomes and save health care expenditures.

Various stroke victims have cognitive and communicative disorders, causing various problems. For their handicap, most stroke patients have sadness, tension, and worry. Psychosocial variables and sub-acute stroke patients' risk of falls have not been studied before, thus I wish to investigate.

1.3 Research Question

What are the associations between psychosocial factors and risk of fall in stroke patients?

1.4 Operational Definition

Stroke

An acute cerebrovascular event resulting in death or neurological deficit for >24 hours or the presence of acute infarction demonstrated by brain imaging studies (American Heart and Stroke Association, 2013).

Physiotherapy

Physiotherapy relieves physical limits, pain, and impairments without the need for diagnostic testing. Physiotherapists provide care for patients of all ages with musculoskeletal injuries, neurological disorders, and chronic conditions including pain and arthritis (Mehta, 2022).

Psychosocial status:

The state of a person's cognitive abilities and functions. a mindset or condition of mind. A person cannot be deemed psychologically healthy until they exhibit typical emotional, behavioral, and social maturity. This suggests that the concerned person is in a condition of mental health that is adequate for them to function normally in society and throughout everyday activities. They have outstanding mental health, which is the kind that dictates our emotions. In terms of our conduct, they also exhibit outstanding behavioral wellness. Not to mention, they are in good social health—a term that describes the kind of wellbeing that stems from our interactions with other people (Woodward et al., 2015).

Depression:

"Depression is a common mental disorder," according to the WHO. An estimated 5% of adults worldwide are thought to be affected by the illness. It is typified by a lingering melancholy and a lack of enthusiasm or enjoyment for 12 previously fulfilling or joyful activities. It may also interfere with appetite and sleep. Fatigue and difficulty focusing are prevalent. Depression has a major role in the global disease burden and is one of the main causes of disability worldwide. Depression can have persistent or repeated consequences that significantly impair a person's capacity to operate and lead a fulfilling life. Complex connections between social, psychological, and biological factors are among the causes of depression. Events in

life including childhood hardship, grief, and unemployment can both contribute to and accelerate the development depression

Anxiety

According to American Psychological Association (APA) “Anxiety is an emotion characterized by feelings of tension, worried thoughts and physical changes like increased blood pressure. People with anxiety disorders usually have recurring intrusive thoughts or concerns. They may avoid certain situations out of worry. They may also have physical symptoms such as sweating, trembling, dizziness or a rapid heartbeat.”

Stress

Stress is a psychological and physiological response to challenges or demands, often referred to as stressors, which can be internal (thoughts, emotions) or external (environmental factors, social situations). The stress response involves the activation of the body's autonomic nervous system, releasing hormones like cortisol and adrenaline, which prepare the body for a "fight or flight" reaction. While stress can be beneficial in small doses by enhancing alertness and performance, chronic stress can lead to negative health outcomes such as anxiety, depression, cardiovascular diseases, and weakened immune function.

Social Status

Social status refers to the position or rank of an individual or group within a society. It is determined by a combination of factors including wealth, education, occupation, family background, and social connections. Social status influences one's access to resources, opportunities, and power within a community or society. High social status often provides individuals with greater advantages and privileges, while low social status can limit access to resources and opportunities.

CHAPTER- II LITERATURE REVIEW

Stroke is one of the major causes of disability in the world and its victims experience numerous physical and psychological deficits. Mobility and balance are areas that can be significantly affected after a stroke particularly in the sub-acute stages, making the patients prone to falling. A great deal of research has been dedicated to the physical determinants of fall risk, while psychological factors receive attention constantly. Psychological factors entail mental and social wellbeing, state of mind including depressed mood, anxiety, social support, cognitive function which has a close relation to an individual's prosperity (Xie et al., 2022).

Some of the psychological factors which have been said to be associated with the development of falling risk among sub-acute stroke patients include the following. Depression and anxiety, as are seen in the presently studied patients, can cause low motivation and engagement in rehabilitation besides affecting attention and balance (Clague-Baker, 2020).

The social support also has its role; a greater social support leads to a better prognosis of the patient's condition, whereas social isolation enhances the likelihood of fall in patients with Parkinson's disease. memory, appendicular, sensory and perceptual problems, and weaknesses in attention and executive functioning can limit the capability of an individual to carry out daily tasks safely. Furthermore, falls are a similar term with psychological factors tested and confirmed to provoke a self-fulfilling prophecy that magnifies both the risks and the anxiety around falling (Hellström, 2018).

The mobility and motor control are significantly affected post-stroke, sensation abnormalities, and cognitive dysfunction all increase the likelihood of falls in patients This paper also has evidence form CRP researchers, proving that some of patients who suffered a stroke fell, while the other potentially can fall because of fear and unsafe conditions of their homes. (Mohammad et al., 2011).

In Bangladesh the main modifiable source of stroke include: hypertension 63%, heart disease 24%, diabetes mellitus 21%, and hyperlipidemia 75%. Based on the data obtained, the majority of the stroke patients belong to the rural populace; In the hospital-based study, about 46 percent of the total number of patients who had stroke were from villages as identified by (Hossain et al., 2011).

Employees of a Bangladeshi medical university hospital showed poor knowledge of major risk factors, warning signs, organs affected, and existing therapeutic approaches (Bhat et al., 2016).

Falls are the second most frequent cause of unintentional injuries, or those injuries that occur without intention on the part of the victim. Every year, 424000 people are said to die from fall and most of them are in low and middle-income countries at 80% of the global figure. Falls are fatal most commonly in the group of the population of more than 65 years; 37% of victims are from this group. 3 million falls severe enough to warrant medical attention are incidents that happen every year (WHO, 2016).

Aphasia, right hemiparesis, and right hemianopia are common symptoms of stroke in the left hemisphere, and left hemispatial neglect, left hemiparesis, and left hemianopia in the right hemisphere, depending on the afflicted region of the brain. Since 90% of strokes are supratentorial, the acronym FAST—which stands for facial droop, arm drop, speech disruption, and time—can be used to help the public notice and respond to strokes. Numerous other symptoms, such as diplopia, bulbar palsies, dysphagia, unilateral dysmetria, incoordination, and decreased consciousness, are associated with posterior circulation or infratentorial stroke. Stroke is usually painless, though headaches and other head, face, or neck pain may be auxiliary symptoms. The abrupt onset of stroke is the most significant historical characteristic (Musuka et al., 2015).

Stroke Rehabilitation is a systematic, dynamic, goal-oriented process that attempts to help stroke survivors achieve their optimal levels of physical, cognitive, emotional, linguistic, social, and functional activities, according to a recently

published study. It starts as soon as feasible after the initial stroke event and continues until the stroke survivor is medically stable and able to define goals for rehabilitation and recovery. Physicians, physiotherapists, occupational therapists, speech-language pathologists, and nurses are among the particularly qualified members of the rehabilitation team who help stroke patients recover from their post-stroke misery by utilizing various rehabilitation methods (Hebert et al., 2016).
To assist the stroke survivors in reducing complications and residual post-stroke functional disabilities, Rehabilitation initiated early after a stroke has been shown. By reducing functional disability and incidence of complications, it helps to increase the quality of life for stroke survivors and a decrease in potentially expensive long-term care costs (Whitehead & Baalbergen, 2019).

Three therapeutic disciplines—physiotherapy, occupational therapy, and speech and language therapy—have historically been involved in post-stroke rehabilitation. Occupational therapy and physical therapy professions frequently appear to overlap. Although the primary focus of both fields is on the motor impairments of stroke survivors, their methods and angles of attack vary. Physiotherapists concentrate on proper alignment, early mobilization, and mobility in stroke survivors who are hemiplegic; occupational therapists, on the other hand, focus on the resumption of activities of daily living, such as dressing and grooming, which frequently involves the use of assistive devices. The management and treatment of cognitive, communication, and swallowing deficits is the specialty of speech and language therapists. (Whitehead & Baalbergen, 2019).

Following their hospital release, a significant number of stroke survivors encounter ongoing issues. Muscle weakness, balance issues, cognitive decline, immobility, and reliance on everyday activities have all been experienced by stroke survivors. Stroke survivors are directed to physiotherapy and rehabilitation programs to address these issues. In the stroke rehabilitation phase, collaboration between three parties or groups is required. The stroke survivors who have functional limitations make up the first group. The family member who stays with the stroke survivor during life transitions is the second party, and the physiotherapist, who is essential to the rehabilitation program, is the third party (Demir et al., 2015).

According to recent research, the primary stay of stroke recovery appears to be exercise treatment. Exercises performed following a stroke can differ in terms of their objectives, such as repetitive task training, goal-directedness, and task orientation, or in terms of their technical characteristics, such as length, training load, and kind of feedback. By addressing particular locations such as the trunk, pelvis, shoulders, hands, and feet, the Bobath therapy tries to facilitate volitional movement and normalize tone, guiding patients through the beginning and end of specified tasks. Both the patient and the therapist must actively participate in the treatment (Hatem et al., 2016).

Muscle strengthening strategies for the paretic arm involve incremental active workouts performed against resistance. These exercises can be carried out against a manual resistance that the therapist applies. Arms-length placement has been used in routine physical therapy for many years in an effort to avoid the decrease of range of motion in joints, which is mostly caused by spasticity. (Hatem et al., 2016).

Additionally, physical therapy administered hands-on or with the use of tools like casts, splints, and taping can be used to execute stretches. The therapist gives stroke survivors instructions on how to perform bilateral training, which can be done with or without the use of an external device. The patients are taught to move the affected upper extremity either simultaneously or alternately. Principles of motor skill development are applied in the therapeutic technique known as constraint-induced movement therapy (CIMT). It is a specific kind of task-oriented training (Hatem et al., 2016).

According to published research, the Swiss ball, also known as the physio ball, is frequently utilized in training programs for both rehabilitation and leisure. Exercises for the Swiss musculoskeletal system, neurological system, and contextual effects reduce impaired balance and coordination and promote postural control, trunk control, sitting, and dynamic balance control. Swiss ball workouts help to improve functional mobility, trunk control, and anticipatory activation by preserving the synergy between muscle groups. (Muniyar & Darade, 2018).

Exercise with physioball enhances proprioception and visual sensory input, which helps to regain function after a stroke. It also contributes to the development of considerable body awareness and symmetry, as well as the equilibrium reaction, strength, and endurance of weak.Evidence implies that the Swiss ball was also utilized in traditional physical treatment. (Muniyar & Darade, 2018).

Research indicates that traditional physical therapy was also applied in conjunction with Swiss ball training. This includes activities such as gait training, strengthening, stretching, ice or cryotherapy, passive movements, and PNF techniques (Proprioceptive Neuro-muscular Facilitation Techniques). According to some study, core stability training may enhance trunk function as well as balance and mobility. Clinical settings can safely and easily incorporate core stability training in an upright, anti-gravity position, as it has been shown to be more beneficial than lying down (Haruyama et al., 2017).

Some researchers have mentioned that core stability training could improve not only trunk function but also balance and mobility. Core stability training in an upright, anti-gravity position is more effective than that in a lying position and used to be safe and easy to implement in a clinical setting (Haruyama et al., 2017).

Published studies have shown that gait performance is an indicator of mobility impairment and disability after stroke. They added that it predicts mortality, morbidity, and risk of future stroke. After the stroke, proximal lower limb control plays a key role in improving gait speed and walking performance. For gait restoration after stroke, body weight supported treadmill training (BWSTT) is a task-oriented technique (Mao et al., 2015).

Some of the main areas of life are affected when one is stricken by stroke, making them change their behavior and build new paths in their lives. Although strokes happen acutely, rehabilitation is powerfully chronic and challenging, beginning with instant difficulties addressing physical, psychological and social losses all of which interact significantly with each other (Alaszewski et al., 2007).

According to a study, that has been conducted by Czernuszenko and Członkowska in the year 2009, patients with severe disabilities post stroke in the early period after stroke are at a high risk of falling during the rehabilitation program with the frequency of the falls highest among the patients who are greater then 65 years of age. Belgen et al. (2006) also stated that the patients who became fallen had 5 times higher risks to become dependent on others for performing instrumental daily tasks as compared to the patients who did not fall. 6 folds more likely to develop a fear of falling thereby leading to loss of confidence, which in turn results to the loss of mobility, reduced exercise tolerance, and consequently loss of functional self – management.

These findings of root cause fear, result in withdrawal, and decreased physical functioning mirror the 'cycle of decline' described by Friedman and colleagues (2002) where the pronounced fear of falling again reduces physical activity, leads to physical deconditioning and further decline in ADLs, loss of independence, decreased community mobility, social isolation, and depressive symptoms. Depression, which is a real risk factor associated with falling over the one year risk period for hospitalized patients with a stroke, is linked to higher levels of fall incidence (Ugur et al. , 2000).

Disability status and depression after stroke greatly affect the quality of life of these patients respectively, therefore, minimizing disability and early detection together with treatment of depression important in enhancing the quality of life of stroke patients in terms of physical and mental health related quality of life (Hr-QoL) (Serda et al., 2015).

Over two thousand years back, the father of modern medicine, Hippocrates detailed stroke as the neurological condition that is manifested by the initial and sudden attack of the muscles on one or both sides of the body as currently described by the National Institute of Neurological Disorders and Stroke (NINDS, 2004).

The nature of ischemic and hemorrhagic strokes involve different mechanisms and factors that affect their manifestation, and while the prevalence of ischemic stroke among patients in East China is notably higher than that of hemorrhagic stroke (Zhang et al. , 2011).

In pathological processing, an infarction is even more common than a hemorrhage, affecting 80-90% of the total number of stroke patients while the latter is observed in only 10-20% of cases. This can manifest as focal neurological signs in mild brain injury or severe neurological complications as a result of the severity and localization of the brain lesion (Kuriakose & Xiao, 2020).

Risk factors for stroke fall into two categories: probs are categorized as modifiable (reversible) and nonmodifiable (irreversible). Several risk factors, which are essentially non-modifiable, include age; male gender, particularly if above 60years or below 45 years; prior vascular events such as previous myocardial infarction, stroke, or peripheral embolism; elevated fibrinogen levels; Afro Caribbean race, compared to Asian and Europe; and heredity (Boehme et al., 2017; Albert et al.,2009).

Adjustable factors include hypertension; diabetes; some scopes of heart disease inclusive of atrial fibrillation, heart failure, and endocarditis; hyperlipidemia; smoking; alcoholism; polycythemia; and oral contraception (Aune et al., 2023).

The acute dangers of tobacco smoking as well as alcohol consumption have for a long time been ascertained as modifiable risk factors for stroke with system vasculature as well as blood rheology whose pathophysiological influences are multifactorial (Juvela et al. ,1993).

Patients with CVA may exhibit a range of deficits, with motor disabilities including muscle weakness, hypertonia, atypical movements, and physical over-s disables being the most common. These musculoskeletal disorders cause extensive diseases and disabilities and often reduce functional and daily living mobility like walking and climbing stairs. The complication also affects language including aphasia in

which an individual finds it difficult to understand or write spoken language, and dysarthria, where a person knows what is being said but cannot pronounce the words clearly, in addition to memory, thought, attention, learning and object recognition, orientation of body parts, command following, and swallowing dysfunction (Chohan, Venkatesh & How, 2019).

Strokes are medical emergencies and it is critical for the management and treatment of the stroke to occur as soon as possible (Amanullah et al., 2009). As it stands, there is no known cure for stroke, but observing procedures and mechanisms that call for change to prevent this medical condition can be identified and controlled. This is especially crucial when health care infrastructure and amenities are scarce or lacking, especially in the developing countries, for instance Bangladesh where majority of the populace lives below the poverty line (Hossain et al., 2011)

Biology and environment present numerous aspects that may affect stroke recovery; the possibility of an individual's recovery is only particular to the individual (Romero, Morris & Pikula, 2008).

The disability level and the functional outcome related to stroke was influenced by the severity of the stroke; Stroke is the leading cause of long-term disability in the western countries. The actuarial risks of dependency at one year post-stroke are predicted to be 460 per 100,000 for those with an additional impaired functional outcome and this number is likely to continue to rise as one-third of the stroke population require help with at least one ADL. A study on stroke rehabilitation discovered that around 50% to 70% of patients regain useful motor function in the initial three months following stroke, 15% to 30% stay significantly impaired, and about 20% need care in an institution. Further, initial assessments have revealed that 85 percent of stroke patients present with impaired initial upper extremity use (Ahmed Chohan, Venkatesh & How, 2019). PSD is not only one of the most frequent developments after stroke, but also one of the most severe complications with a range of 20-60%. PSD exhibits comparable features and manifestations as those of the Major Depressive Disorder (MDD) (Altieri et al., 2012).

Based on the literature review, Van Peppen et al. (2004) outlined the components of stroke patient rehabilitation, and these include multifaceted medical evaluation of their needs, focus on early active physiological interaction, early mobilization to prevent the effects of bed rest, specialized nursing care, and early integration of their caregivers in the rehabilitation process, and immediate assessment of possible discharge. The expected functional outcome about patients needs to be assumed to ensure proper goals and objectives are set for the patient, the right course of treatment is made and also for the purposes of planning for the discharge of the patient (Callaban, et al., 2003).

Walking, moving and doing exercises have significant benefits in particular physiotherapy that involves exercises, physical manipulation, massaging, training of skills, and applying electrical stimulation to promote healing and regaining of movements (Stroke Association, 2012).

Another issue that needs to be addressed along with knowledge is motivation; the primary goal of physical therapy after caring for a stroke is to attempt to restore as much of the client's strength and movement as possible, this is made through teaching individuals how to use both halves of their body again (Hatem et al.,2016).

In clinical practice, physiotherapists, as per the aforementioned developed abilities and based on scientific rationales, have a significant responsibility in the physical rehabilitation of those with stroke-related complications. A molecular motor is a macromolecular machine this kind of organized and properly timed hub of care and focus as well as interprofessional effective treatment and rehabilitation significantly enhances individual patient survival and independence as well as hospital stay (Van Peppen et al., 2004). Since the cells in the brain cannot be regenerated, any injured part of the brain due to a stroke does not grow new cells and instead, can only be rewired and hopefully, have the lost function made up for elsewhere, albeit not with new cells. Neuroplasticity is a term suggesting the ability of the brain to change and restore itself after trauma, and physiotherapy is instrumental in the process. This indicates that physiotherapists work alongside other professionals in a stroke team including occupational therapists, speech and language therapists, physicians,

nurses, and social workers among others in providing tertiary services to stroke survivors. With them, the following constitute the multidisciplinary stroke rehabilitation team (Stroke Association, 2012).

In physiotherapy care, priorities include recovering and promoting the motor capacity of the affected limbs and also developing postural control (Outermans et al., 2010). The prevalence and incidence of stroke in developing nations, including India and Pakistan, have ramifications pointing to the substantial burden of the condition in these areas (Kamalakannan et al., 2017; Khan, 2018).

To prevent falls among sub-acute stroke patients, therefore it is important to identify the contribution of psychological factors in falling risk as this may lead to improvements in recovery and patient care (Han, Song and Kim, 2011).

The unique study by Adandom et al. (2024) also provides a very useful insight into the part played by neuroticism and extraversion, and the impact these have on predicting falls and FrPCs. This corroborates with the findings of previous studies showing that personality makes can mediate behaviours related to falls such as, fear of falling as well as, perceived balance.

In a way similar to the works by Tinetti and Williams (1997) and Shumway Cook & Wool-lacott (2007), cognitive perverse pulled out of falls in senior and elderly populations and point towards the strong correlation between cognitive decline, balance, and falls. In addition, Adamong et al. ’s study (2024) also emphasizes how the need for the intervention program that oversees all contributing factors to falling by addressing personality differences, concurrent to earlier evidence suggesting the worth of integrating both physical and psychological approaches toward minimizing the number of falls.

Therefore, the research of Adandom et al. (2024) contributes to the growing literature on the findings of psychological issues that play an important part in falls prevention while encouraging future studies for the culture of a topsy-turvy approach to the comprehensive and complex problems related to falls in elders.

Patients with lower levels of social support were more prone to falls. Social isolation can lead to decreased physical activity and poorer mental health, both of which are risk factors for falls. The importance of social support was similarly emphasized in a study by Hill et al. (2017), which found that stroke patients with robust social networks had better rehabilitation outcomes and lower fall rates. Social engagement encourages physical activity and adherence to rehabilitation protocols, reducing fall risk.

Langhorne et al. (2018) supported these findings, showing that social isolation is a significant predictor of falls in elderly populations, including stroke survivors. The fear of falling itself was a significant predictor of actual falls. This fear can lead to a reduction in physical activity, resulting in muscle weakness and decreased balance, thus increasing the likelihood of falls. Lower self-efficacy was associated with higher fall risk. Patients who lack confidence in their ability to perform daily activities may be more cautious and unsteady, contributing to falls.

Research by Bandura et al. (2014) indicated that higher self-efficacy is associated with better physical performance and lower fall risk in stroke patients. Confidence in one's abilities promotes more active engagement in rehabilitation activities, improving balance and strength. Similarly, studies by Jones et al. (2019) showed that enhancing self-efficacy through targeted interventions can reduce falls and improve quality of life in stroke survivors. The study found that higher levels of depression and anxiety were significantly associated with an increased risk of falls. Sub-acute stroke patients experiencing these psychological conditions may have impaired balance and cognitive function, contributing to a higher fall risk.

A study by Kammersgaard et al. (2013) also highlighted the role of depression and anxiety in increasing fall risk among stroke survivors. They found that psychological distress negatively impacted physical rehabilitation outcomes, leading to a higher incidence of falls.

Williams et al. (2015) corroborated these findings, suggesting that anxiety and depression significantly impair balance and gait stability, increasing the likelihood of falls in post-stroke patients. Furthermore, research by Nouwen et al. (2012) indicated that depressive symptoms are linked to impaired executive function and motor skills, which are critical for maintaining balance and preventing falls in stroke survivors.

Patients with lower levels of social support were more prone to falls. Social isolation can lead to decreased physical activity and poorer mental health, both of which are risk factors for falls. Cumming et al. (2010) emphasized the need for routine mental health screening in stroke patients to identify those at higher risk of falls due to depression and anxiety.

The importance of social support was similarly emphasized in a study by Hill et al. (2017),which found that stroke patients with robust social networks had better rehabilitation outcomes and lower fall rates. Social engagement encourages physical activity and adherence to rehabilitation protocols, reducing fall risk. Langhorne et al. (2018) supported these findings, showing that social isolation is a significant predictor of falls in elderly populations, including stroke survivors. A study by Greysen et al. (2014) highlighted that stroke patients with limited social support often have lower engagement in rehabilitation activities and poorer functional outcomes, which can increase fall risk.

Choi et al. (2013) also found that social support interventions, such as peer support groups, can enhance physical and psychological well-being, thereby reducing fall risk. The fear of falling itself was a significant predictor of actual falls. This fear can lead to a reduction in physical activity, resulting in muscle weakness and decreased balance, thus increasing the likelihood of falls.

The relationship between fear of falling and actual falls was explored by Zijlstra et al. (2012), who found that fear of falling can lead to activity restriction, muscle weakness, and increased fall risk. This aligns with the current study's findings that fear of falling is a critical factor in fall incidents.

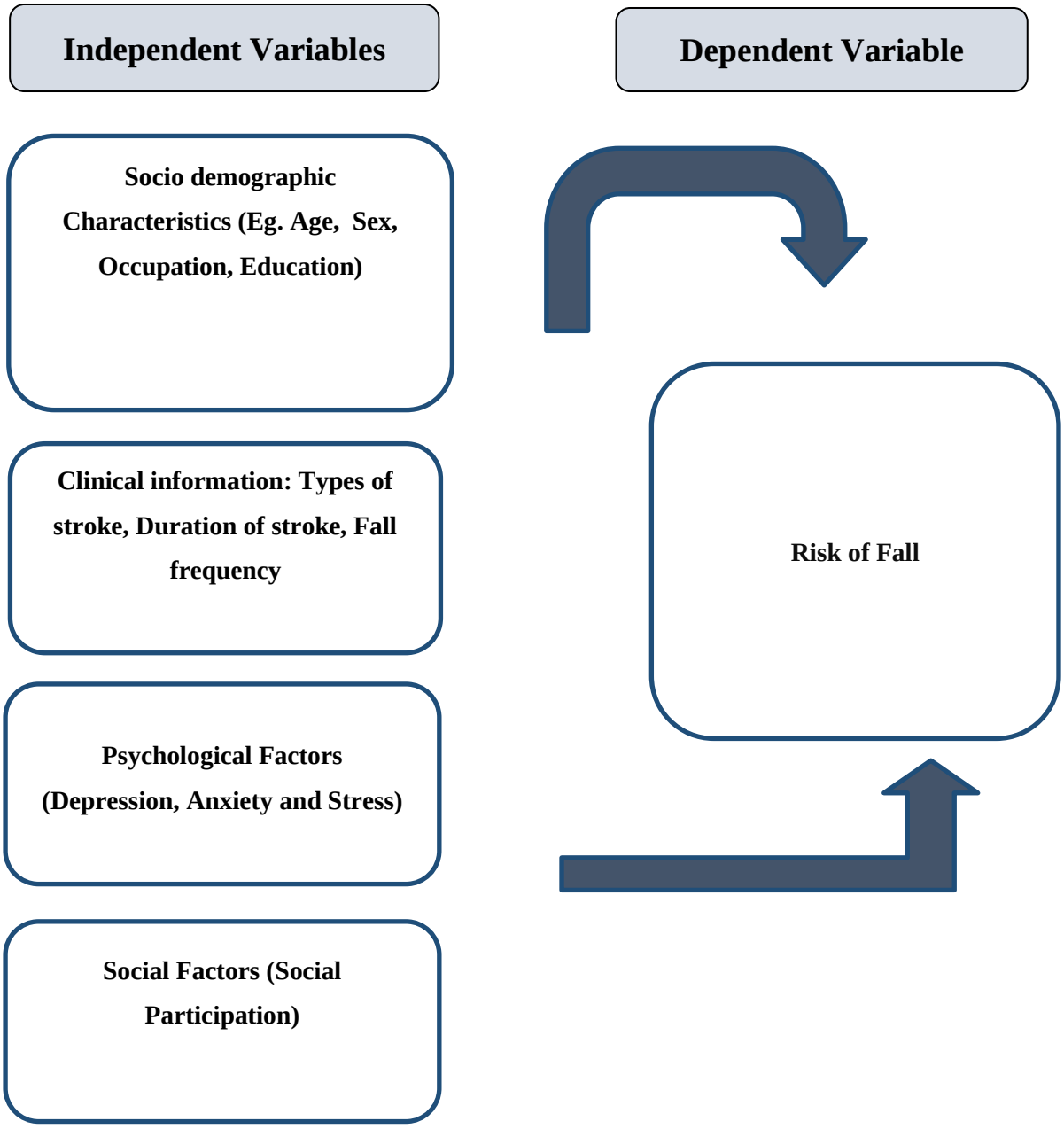
Delbaere et al. (2016) expanded on this by demonstrating that interventions targeting fear of falling, such as cognitive-behavioral therapy, can effectively reduce fall rates in stroke patients.

Consequences for rehabilitation and care are obvious when considering psychological aspects. The present study highlights therefore the need for a composite intervention model incorporating mental health treatments and cognitive-stimulation, alongside social support in order to effectively address the risk of falling. They advocated for students to create or identify appropriate psychometric tests that incorporate both psychological and physiological assessments. There is therefore a need for a causal–temporal analysis with regard to psychological factors and the risk of falling with longitudinal designs. Also, the feasibility of all the experimental treatments, including psychological therapy, group support, and cognitive rehabilitation for decreasing the probability of the fall needs future research (Gangwani, 2022).

The forensic model has identified the psychological factors associated with falling risk and by addressing these psychological factors, care providers in the sub-acute phase of stroke rehabilitation can effectively improve the quality of life for these patients.

CHAPTER-III METHODOLOGY

3.1Conceptual framework



3.2 Objective of the study

3.2.1 General objective

To find out how psychosocial factors influence the fall in sub-acute stroke patients.

3.2.2 Specific objective

- To find out the socio-demographic information of the sub-acute stroke individuals.
- To find out the association between socio-demographic factors and risk of fall in stroke patients.
- To explore the psychological factors in stroke patients.
- To find out the association between psychological factors (e.g., depression, anxiety, and stress) and the risk of fall in stroke patients
- To explore the social factors in stroke patients.
- To find out the association between social factors and the risk of falls in stroke patients

3.3 Study Design

A cross-sectional descriptive study was conducted by utilizing structured questionnaires. Studies that present a scenario across a brief time span are called cross-sectional studies. Cross-sectional study enables a researcher to explore the existing status and association of a variety of factors. Researchers investigated the association between stroke survivors' risk of falls and psychosocial factors in this study.

3.4. Study Population

"Population" refers to the people, objects, or occurrences that belong to a specific group or category, which were the focus of the investigation. The objectives of the study and a thorough review of pertinent literature were to inform the selection criteria for the study populations. The selection criteria were developed gradually as the theoretical underpinnings and assumptions of the investigation become clear. The individuals with sub-acute stroke diagnoses made up the research population.

3.5. Study area

Data was gathered at the Centre for the Rehabilitation of the Paralysed (CRP) in Savar, Dhaka, in the Neurology Unit (Outdoor). In later research, the investigator gathered a sample of people who willingly chose to participate in this study.

3.6 Study Period

The study period took 6 months (October 2023 to March 2024).

3.7 Sample size

Determining the optimal sample size is a challenging task, as it heavily relies on the specific characteristics and objectives of the research being conducted. Carefully planned statistical investigations yield higher-quality results. Considering the investigation's goals, the sample size's appropriateness is critical. The research sample size needs to be high enough to guarantee that a significant effect—which is significant from a scientific standpoint—will also provide statistical significance.

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

$$= \frac{(1.96)^2 \; x \; 0.3 \; x \; 0.7}{(0.05)^2}$$

= 322.56

= 323

Here, Z (confidence interval) = 1.96

p = 0.3 (Islam et al., 2013).

And q = (1-p)

= (1-0.5)

= 0.5

d= 0.05

The actual sample size will be n= 322.56 (323)

A sample size of 323 was established. However, getting a bigger sample size was difficult due to the study's period limits, which were part of an academic research effort. For this reason, a sample of 120 people with stroke was chosen.

3.8. Inclusion criteria

- Sub-acute stroke patients within the defined time frame (Bugdayci et al., 2010).
- Both male and female were included. (Bugdayci et al., 2010).
- Adults aged 18 to 65 years old (Liang et al,2021)
- Willingness to participate in the study (Stphen et al., 2015)

3.9 Exclusion Criteria:

- Participants were excluded if they had clinically diagnosed dementia (Rutovic et al.,2019)
- Severe physical disabilities, or major psychiatric illnesses. (Liang et al,2021)
- Individuals with severe cognitive impairment. (Liang et al,2021)
- Those unable to provide informed consent (Stphen et al., 2015)

3.10. Sampling technique

The technique of convenience sampling was utilized to make it easier to choose a certain subset of people from a large population. This sampling methodology was chosen by the researcher because it can gather a significant amount of data by employing a variety of techniques. Additionally, because this method concentrates on discovering suitable candidates, it should take less time than other alternative sampling strategies. Samples were chosen according to preset inclusion and exclusion criteria.

3.11 Data collection tools

The required instruments for the study were include the Bengali Consent form and questionnaire, along with supplementary supplies like as writing utensils (pen, pencil, eraser), a clipboard, white paper, and a notebook.

3.12 Data management

Microsoft Excel 2016 and the Statistical Package for Social Science (SPSS) version 22.0 were used to analyze the data. Every questionnaire had gone through a rigorous screening procedure to find any instances where information is unclear or missing. Data was input into the variable view of SPSS, including the variables' names, types, values, decimal points, labels, alignment, and measurement levels. Using SPSS, the

next step is to open the data view. Following the entry of all data, the researcher carefully reviewed the data to confirm that the transcribing procedure from the questionnaire sheet to the SPSS data view was accurate. After that, the raw data was examined in the SPSS application.

3.13 Measurement tool

Structured questionnaires Depression, Anxiety and Stress Scale - 21 Items (DASS-21), and Berg balance scale (BBS) to assess risk of falling.

Depression, Anxiety, and Stress Scale - 21 Items (DASS-21) is a set of three self-report scales designed to measure the emotional states of depression, anxiety and stress.

The Berg Balance Scale (BBS): A 5-point BBS scale is used to grade functional tasks. It is a valid and highly reliable procedure when applied to stroke victims (Berg et al., 1995). Berg Balance Scale (BBS). The purpose of this survey is to assess stroke patients' static and dynamic balance. The Berg Balance Scale, also known as the BBS, was developed by Katherine Berg and is a widely used clinical assessment tool for assessing an individual's static and dynamic balance (Berg et al., 1989). The 14-item BBS scale is used to quantify the degree of balance. The items are scored on a scale from 0 to 4, where 0 represents failure to complete the task and 4 represents achievement of the item on its own.

A total score is determined using the 56 available points. The points of the Berg Balance Scale (or BBS) are- Sitting to standing, Standing unsupported, Sitting with back unsupported Standing to sitting, Transfers, Standing unsupported with eye closed, Standing unsupported with feet together, Reaching forward with outstretched arm while standing, Pick up object from the floor from a standing position, Turning to look behind over left and right shoulders while standing, Turn 360 degrees, Place an alternative foot on a step or stool while standing unsupported, Standing unsupported on one foot in front and Standing on one leg.

Self-Structured Questionnaire: The self-structured questionnaire was designed to evaluate the social factors that are associated with disability.

3.14 Analysis

Microsoft Excel 2016 and the Statistical Package for Social Science (SPSS) version 22.0 were used to analyze the data. Every questionnaire had gone through a rigorous screening procedure to find any instances where information is unclear or missing. Data was input into the variable view of SPSS, including the variables' names, types, values, decimal points, labels, alignment, and measurement levels. Using SPSS, the next step is to open the data view. Following the entry of all data, the researcher carefully reviewed the data to confirm that the transcribing procedure from the questionnaire sheet to the SPSS data view was accurate. After that, the raw data was examined in the SPSS application.

3.15 Quality control & quality assurance

The supervisor aided the researcher as needed during the investigation. The results of the interview and data analysis are independent of the researcher's values, biases, or personal viewpoints. Throughout the entire research time, recipient information was kept private and carefully gathered. Regardless of whether a participant's response was correct or incorrect, the researcher accepted it. To ensure that the data entered into the SPSS files was accurate, the researcher double-checked every piece of information. The result's outcome is unaffected by displaying any subjective interpretation.

3.16 Data collection procedure

The participant was, in fact, informed at the outset by the researcher that they had complete authority to refuse or disregard any questions during the administration of the questionnaire. They were told that they might withdraw from the research at any moment or decline to take part in it. The researcher also explained the goal and aim of the study to each participant. Individuals have made an effort to ensure that no information about them would be published online. A demographic questionnaire was utilized to collect the complaint and demographic data from the participants after they had verbally consented to participate in the study. They asked inquiries that were exclusive to the Bangla questioning system. Face-to-face interviews were conducted by the researcher in an attempt to do the interview. Consideration was

paid to the physical surroundings with great care. To guarantee that the interviewee offers his or her whole attention, all potential distractions were removed. The subject was questioned one-on-one with consent since the researchers were worried that the interviewee's responses may occasionally be influenced by close relatives. Throughout the interview, the researcher made amiable introductions with the participants and gave clarifications when crafting questions. To learn more, the research conducts phone interviews and uses questionnaires. In order to help the patient provide an accurate response, the questions were occasionally presented using terms from the patient's native tongue, depending on the patient's comprehension level. The researcher manually managed every piece of data in order to completely rule out any chance of these kinds of mistakes.

3.17 Statistical Test

Descriptive statistics were used in the data analysis process. Information about the most typical parameters of a collection of findings can be presented using descriptive statistics (Hicks, 2009). Version 25.0 of the Statistical Package for the Social Sciences (SPSS) was used to conduct the statistical analysis of the data set. The researcher used a computer to construct a data definition record file, which comprises the list of variables arranged in order, after labeling the variables. The researcher entered the variables' names, kinds, values, decimal places, label alignment, and data measurement level in the variable view of SPSS. To ensure that all input data is accurately collected from the questionnaire sheet to the SPSS data view, additional data files must be prepared in order to review the input data set. Then, with the use of a computer tool called SPSS, the raw data were prepared for analysis. Frequency and contingency table details were acquired. Measurements of central tendency were performed for averages using the variable's mean plus standard deviation (SD). The Chi-square test was employed to evaluate the connection between two numerical variables. Descriptive statistics were utilized to describe the obtained data, which were then given as percentages. A table, bar graph, pie chart, and other presentation tools were used to show the results. Microsoft Office Excel 2015 was utilized to enhance the visual appeal of the pie charts and bar graphs. As a result, the study's conclusions, which consist of quantitative data, are as follows. Numerous pieces of information were obtained from this investigation.

3.18 Level of Significance

The "p" value computation was carried out in order to assess the study's significance. The study chose p= 0. 05/95% significance level, or 0.05, as the level of significance. According to this theorem, if the p value was equal to or less than the significance level, it was considered significant.

3.19 Ethical consideration:

The researcher got registration for the WHO clinical trial for the study. The research proposal, which includes the methodology, was submitted to the Institutional Review Board (IRB) of Bangladesh Health Professions Institute (BHPI). Before starting data collection, the researcher took permission from the head of the physiotherapy department to access patient data for study purposes. Permission was granted for the full involvement of physiotherapists who have been working in the Neurology, Physiotherapy department at CRP, Savar. The researcher committed to strict confidentiality to the participants' conditions and treatments. Consent was received from each participant in this study. Each participant provided a completed informed consent form. The study provided participants with the freedom to refuse to answer any questions, withdraw their consent, and stop their participation at any time. The participants' withdrawal from the study did not have any impact on their treatment in the physiotherapy department, ensuring that they continued to have access to the same facilities. The senior authority or administration of CRP gave each subject the opportunity to express their problems, and they received satisfactory answers to any questions they had.

3.20 Informed Consent

It is essential to get informed consent before beginning any research project. When obtaining informed consent, diversity was taken into consideration, and it is necessary to take into account a variety of elements, including people's race, gender, religious views, culture, language, degree of understanding, and so on. The researchers made sure to follow the permission form before beginning the data collection process. The researcher informed the participants that he would protect anonymity and stressed that participation in the study was entirely voluntary. He also said that participants had the opportunity to withdraw from the study at any moment.

Before doing research on children who are less than 18 years old, it is necessary to seek agreement or authorization from their parents. The individuals who took part in the research were made aware that they would not be eligible for any sort of monetary remuneration for their involvement in the study.

CHAPTER- IV RESULTS

For this research, a total of 120 participants with stroke were questioned. The results of this investigation are summarized in the following paragraphs.

4.1 Socio-demographic information of the participants

4.1.1 Age category of the participants

The chart shows the distribution of participants by age group. The two largest age groups are 45-54 and <45 age group which both account for 32% and 31% of participants respectively. The 55-64 age group makes up 19% of participants. The remaining four age groups each account for less than 15% of participants. From 65-75 years to >84 years and above the number of participants steadily declines.

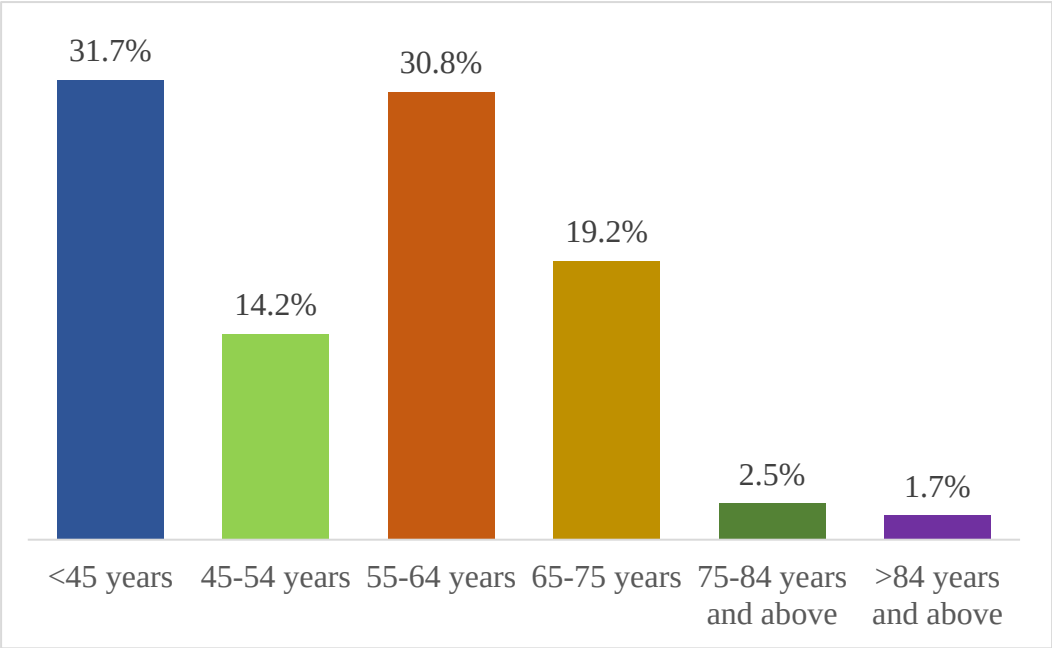


Figure 4.1: Age category of the participants

4.1.2 Gender

The following chart is a pie chart and shows the percentage of male and female participants. The larger slice, colored orange, is labeled "Male" and accounts for 75% of the total sample. The smaller slice, colored purple, is labeled "Female" and accounts for 25%.

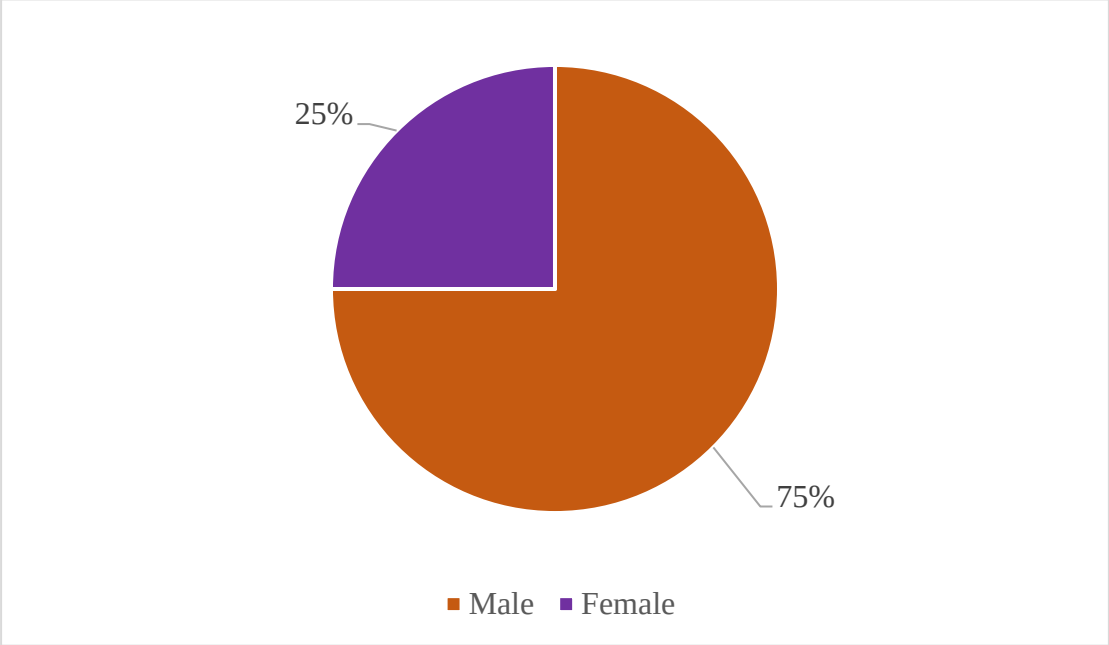


Figure 4.2: Gender of participants

4.1.3 Educational level of patients

19.9% of patients are classified as having at least a high school diploma (HSC), as revealed by analyzing the data. This indicates that the majority of patients have acquired this level of education. Those who have completed their high school education (20.5% of the total) come in a close second. The proportion of those who possess post-graduate degrees (6.6%) and SSC credentials (16.2%) are lower. There are only 15.4% of patients who have only completed their primary school, and only 6.6% of patients do not have any formal education.

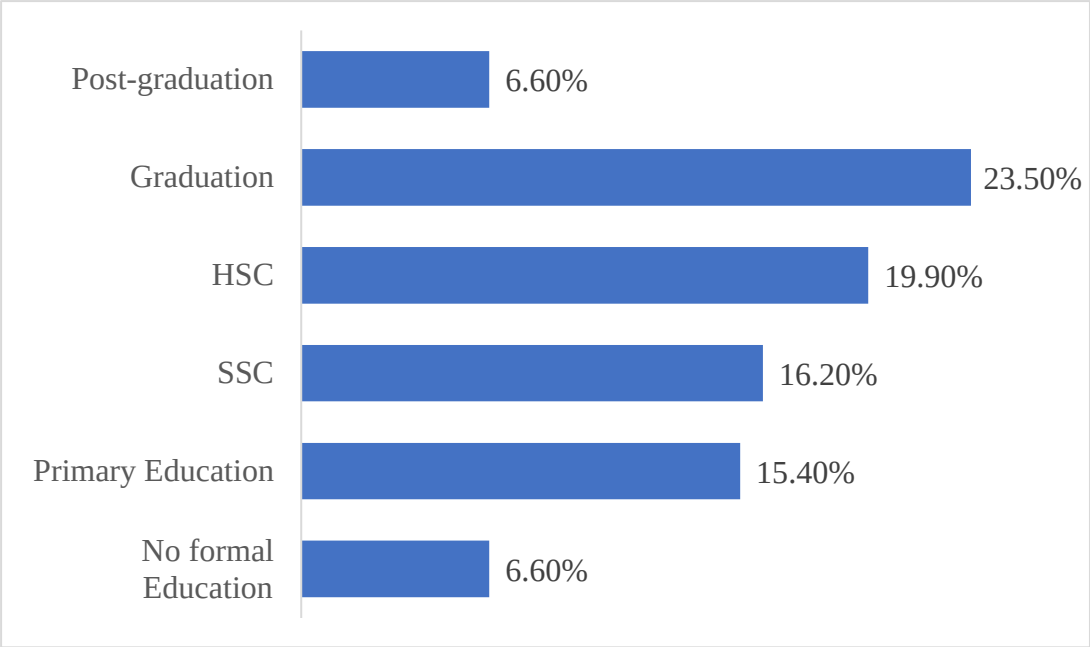


Figure 4.3: Educational level of participants

4.1.4 Occupational status

Variables	*Frequency (N)*	*Percentage(%)*
Farmers	12	8.8
Garments Workers	2	1.5
Driver	2	1.5
Day Labour	1	.7
Service holder	17	12.5
Businessman	25	18.4
Retired	6	4.4
Students	4	2.9
Others	51	37.5

It was found that the most prevalent profession was that of a businessman, which accounted for 18.4% of the total population. With 8.8% of the population, farmers are the second most prevalent category. People who are employed in the service sector make up 15.6% of the workforce, while those who are retired make up 4.4%, students make up 2.9%, drivers make up 1.5%, garment workers make up 1.5%, and day laborers make up 0.7%.

4.1.5 Monthly Income

28.7% of the population is classified as belonging to the income group that falls between 5,000 and 15,000 Taka. This is the most prevalent income bracket. Twenty percent of the second biggest group had a monthly income of less than five thousand Taka. The percentage of persons who have no income is much lower than the percentage of people who earn between 15,000 and 25,000 Taka (13.2%).

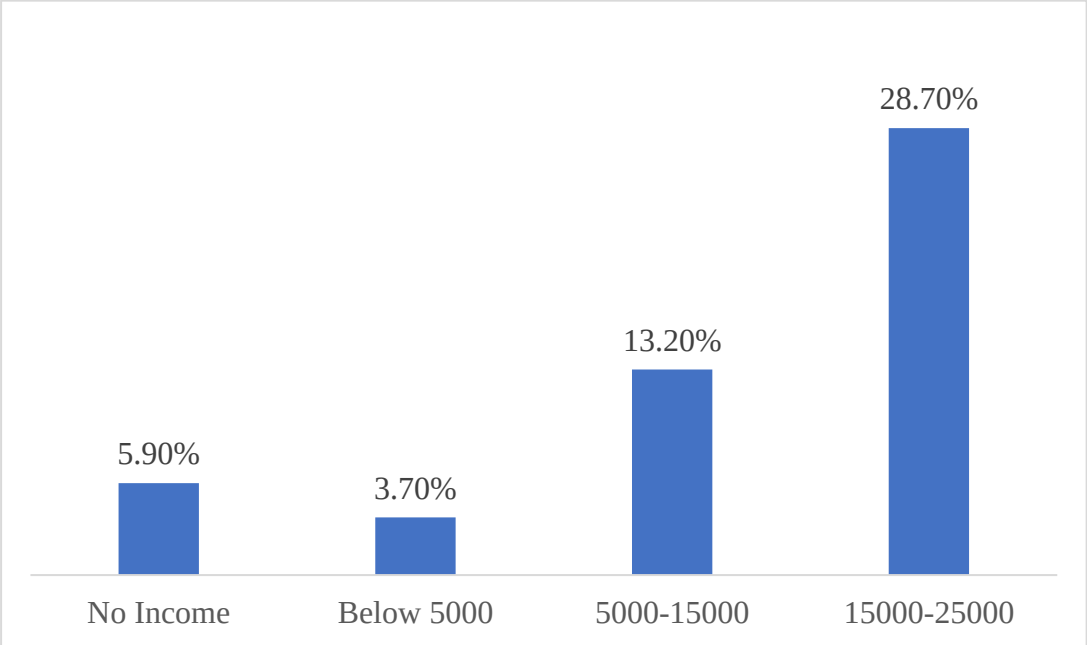


Figure 4.4: Monthly income of participants

4.2 Clinical information of the participants

4.2.1 Type of stroke

After analyzing 120 stroke survivors, the maximum of the stroke survivors were ischemic (65%) and the remaining were hemorrhagic (35%).

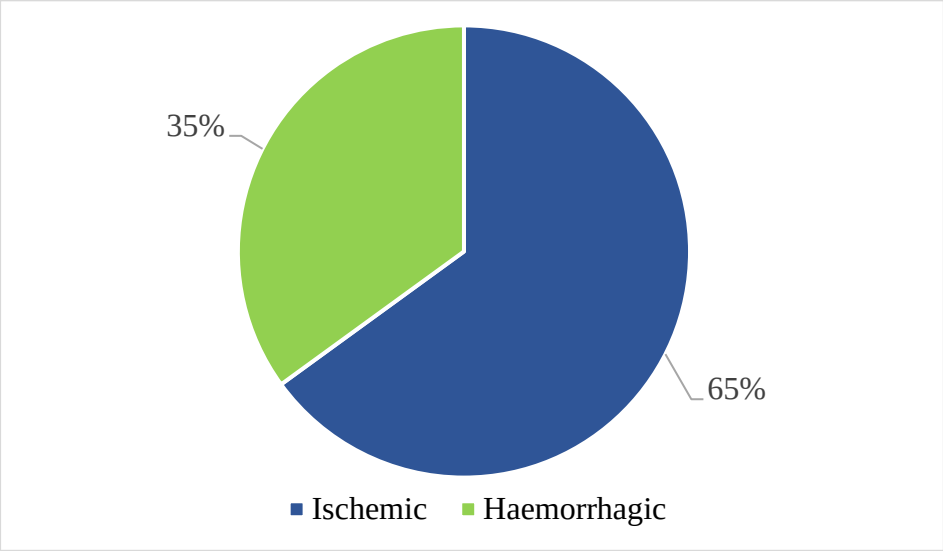


Figure 4.5: Type of strok

4.2.2 Affected side (Hemiplegic side) among participants

64% of the participants were affected on the left side, while the remaining 36% were affected on the right side. Most of the participants were affected on the left side.

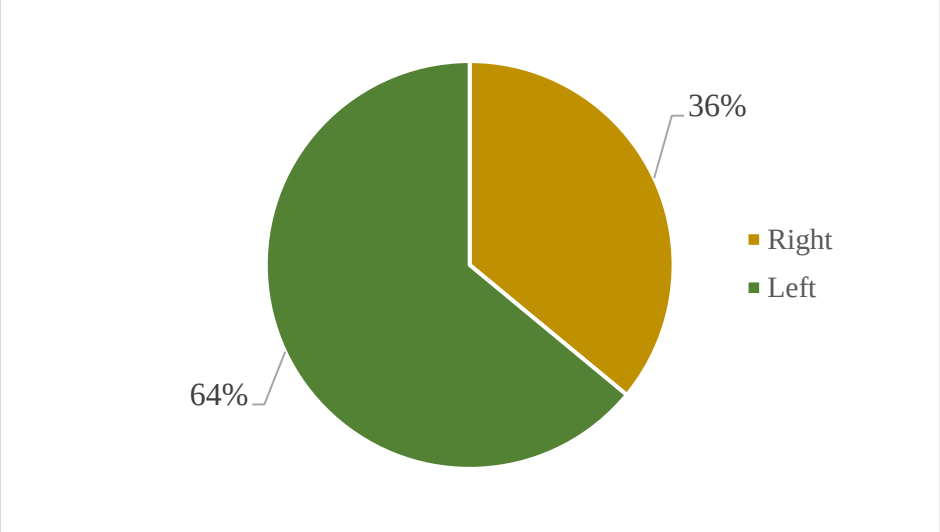


Fig 4.6: Affected side of brain

4.3 Fall related information

4.3.1 Frequency of fall in last 6 months

This pie chart shows responses regarding the frequency of falling in the last six months, where among 120 participants, 71.6% of the participants answered the history of fall 1-2 times, 26.7% of participants showed 3-5 times of fall and 1.67% of the participants responded more than 5 times fall history.

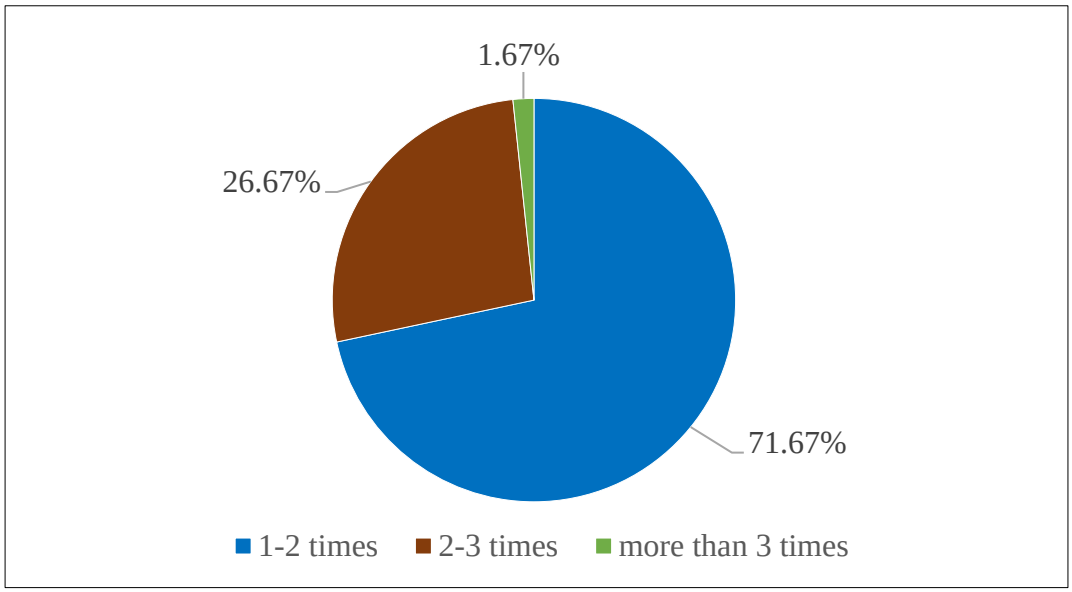


Fig 4.7: Fall frequency of participants

4.3.2 Risk of fall among the participants (Berg balance scale)

This bar chart shows responses regarding the risk of falling, where among 120 participants, 75% of the participants were at medium risk, 1.5% of participants showed “low risk” and 11.8% of the participants were at high risk.

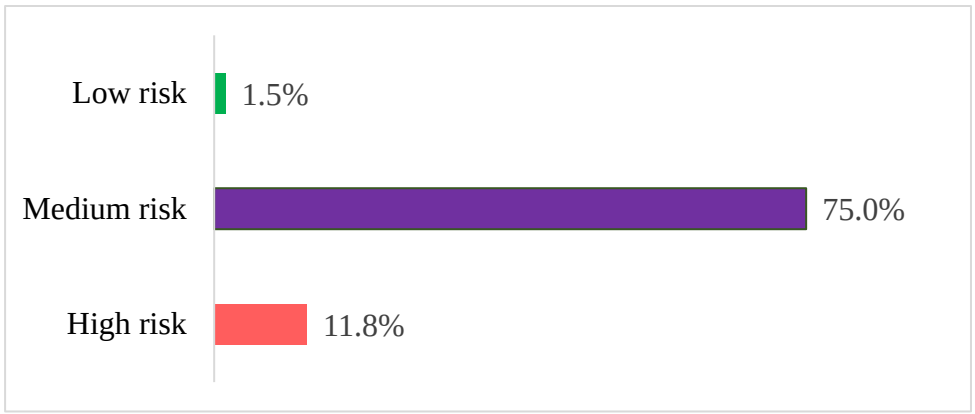


Fig 4.8: Risk of fall of participants

4.4 Association between socio-demographic factors and Risk of fall (BBS)

	Dependent variable: Risk of fall			
Independent Variables	**Test name**	**df**	**Test value**	**P-value**
Age overall	Chi-square	10	85.208	0.009*
Gender	Chi-square	2	7.551	0.023
Marital status	Chi-square	2	5.837	0.054
Educational status	Chi-square	10	40.084	0.001*
Occupation	Chi-square	16	15.168	0.512
Monthly income	Chi-square	8	38.705	0.086
Types of strokes	Chi-square	2	0.979	0.322
Hemiplegic side of stroke	Chi-square	2	.498	0.03*

*, significant value

The table summarizes the results of a chi-square analysis examining the relationship between various independent variables and the dependent variable, which is the risk of falls among individuals. Significant findings include age overall (Chi-square = 85.208, p = 0.009), indicating a significant association between age and fall risk. Gender also shows a significant association (Chi-square = 7.551, p = 0.023), suggesting differences in fall risk based on gender. Educational status is highly significant (Chi-square = 40.084, p = 0.001), indicating that education level influences fall risk. Marital status shows a trend towards significance (Chi-square = 5.837, p = 0.054), suggesting a potential relationship with fall risk. Occupation, monthly income, types of strokes, and hemiplegic side of stroke did not show

significant associations with fall risk based on their p-values. Overall, the findings highlight age, gender, and educational status as significant factors influencing the risk of falls among the studied population, underscoring the importance of these variables in fall prevention strategies and healthcare interventions.

4.5 Frequencies of psychological factors (DASS-21) and fall risk

4.5.1 Frequency of depression and fall risk

Table 1: Crosstabulation of depression and fall risk

Variable		Fall risk			Total
		High risk	Medium risk	Low risk	
Depression	Normal	7	32	0	39
	Mild	9	29	3	41
	Moderate	3	10	0	13
	Severe	3	10	0	13
	Extreme Severe	4	10	0	14

The table explores the correlation between answers on the DAAS-21 questionnaire and individuals' likelihood of falling. The participants' replies for depression parameter are classified into four categories: normal, moderate, severe, and very severe. The table provides a detailed breakdown of the number of persons in each group who reported being at high, medium, or low risk of falling. This enables the ability to compare different levels of depressional states. A maximum of the participants has showed normal level of depression. The table shows that most of the patients have reported mild depression level with a medium risk (n= 29) of falling. The risk of fall was assessed by BBS scale. Patients with a normal level indicating to little or no depression have also been found to be at a moderate level (n= 32) of risk of falling.

4.5.2 Frequency of stress and fall risk

Table 2: Crosstabulation of stress and fall risk

Variable		Fall risk			Total
		High risk	Medium risk	Low risk	
Stress	Normal	8	68	1	77
	Mild	1	9	2	12
	Moderate	2	4	0	6
	Severe	3	0	0	3
	Extreme Severe	12	10	0	22

The table explores the correlation between answers on the DAAS-21 questionnaire and individuals' likelihood of falling. The participants' replies for stress parameter and are classified into four categories: normal, moderate, severe, and very severe. The table provides a detailed breakdown of the number of persons in each group who reported being at high, medium, or low risk of falling. This enables the ability to compare different levels of stress. Most of the participants had a very mild or normal level of stress. Twelve participants who reported to have extreme stress (n= 12) have been assessed with high risk of falling. Participants suffering from very mild or normal psychology also have been found to be at moderate risk (n= 4) of falling. Coming to other levels of stress, patients with mild level of stress have reported to be in moderate level of risk of falling (n= 9).

4.5.3 Frequency of anxiety and fall risk

Table 3: Crosstabulation of anxiety and fall risk

Variable		Fall risk			Total
		High risk	Medium risk	Low risk	
Anxiety	Normal	2	13	2	17
	Mild	2	6	1	9
	Moderate	7	59	0	66
	Severe	3	3	0	6
	Extreme Severe	12	10	0	22

The table explores the correlation between answers on the DAAS-21 questionnaire and individuals' likelihood of falling. The participants' replies for depression parameter are classified into four categories: normal, moderate, severe, and very severe. The table provides a detailed breakdown of the number of persons in each group who reported being at high, medium, or low risk of falling. This enables the ability to compare different levels of depressional states. The maximum patients who have reported extreme level of anxiety were also found to be in high risk of falling. Patients in the moderate level of anxiety were mostly found to have moderate risk of falling (n= 59).

4.6 Association Between Psychological Factors (DASS-21) and Risk of Fall (BBS)

Variables	df	Chi-square value	p-value
Depression*Fall risk	8	79.423	.000*
Stress*Fall risk	8	42.377	.000*
Anxiety*Fall risk	8	33.45	.000*

**, Significant P-values.*

Among the 120 participants, a significant association ($p<0.05$) was found between all the psychological factors and risk of fall. This interprets us to an understanding that having any psychological disturbance increases the chances of falling. As falling was assessed using BBS scale it can also be said that there is a significant relationship between balance and psychological impairments of stroke participants.

4.7 Frequencies of Social factors and Fall Risk

Table 4: Crosstabulation of Social factors and fall risk

Variables	Frequency/Percentage				
	None	Mild	Moderate	Severe	Extreme
Problems faced to join social activities	6 (4.4%)	14 (10.3%)	73 (53.7%)	27 (19.9%)	0
Limitations faced due to environment	0	14 (10.3%)	71 (52.2%)	23 (16.9%)	12 (8.8%)
Problems faced because of negative attitude of neighbors	0	20 (14.7%)	48 (35.3%)	39 (28.7%)	13 (9.6%)
Effect on financial status due to health care expenses	0	11 (8.1%)	32 (23.5%)	70 (51.5%)	7 (5.1%)
Problems faced by family because of your disability	5 (8.9%)	20 (14.7%)	47 (34.6%)	34 (25.0%)	14 (10.3%)

Table 2 shows the descriptive statistics for social factors that has been analyzed by the researcher by a self-structured questionnaire. The questionnaire ranked the patient reported status of social factors in terms of order: no hindrance, mild hindrance, moderate hindrance, severe hindrance and extreme hindrance. The questionnaire evaluated the level of participation restriction of stroke survivors in social events and activities.

4.8 Association between Social factors and Risk of Fall (BBS)

Variable	df	Chi-square value	p-value
Problems faced to join social activities vs Fall risk	6	25.558	.006*
Limitations faced due to environment vs Fall risk	6	11.66	0.03*
Problems faced because of negative attitude of neighbors vs Fall risk	6	7.45	.281
Effect on financial status due to health care expenses vs Fall risk	6	5.911	.433
The problem faced by the family because of health problem vs Fall risk	6	1.819	.936

**Significant P-values*

The table shows that there is a relation of problems of social activity participation (p= 0.006), limitation due to environment (p=0.03) with risk of falling.

CHAPTER: V DISCUSSION

The findings from the study provide valuable insights into the socio-demographic characteristics, clinical profiles, and psychosocial status of stroke survivors. The primary objective of this study was to find the association between psychosocial factors and the risk of falls. In our study, we found that there was a significant association between psychological factors and the risk of falls which means the more a patient is psychologically vulnerable, they are at risk of falls.

Our findings align with the study of Kim & Byan, 2022. They found that Parkinson's patients tend to fall due to psychological factors. Findings of another study suggested different psychological factors, especially depression, were addressed to prevent falls in elderly patients with arthritis (Byun, Kim & Kim, 2020). The majority of participants are male (66.2%), married (83.1%), and have attained graduate-level education (23.5%). The average age is 52.82 years, with a standard deviation of 13.914, indicating a wide age range among the participants. These findings align with previous studies that have investigated the psychological impact of stroke on survivors.

A systematic review by Hackett and Pickles (2014) found that the prevalence of depression after stroke ranges from 29% to 33%, while the prevalence of anxiety ranges from 20% to 25 repo In the case of psychological status significant proportion of participants exhibit severe to extremely severe levels of depression (57.5%), anxiety (61.7%), and stress (57.5%).rted that the risk of depression is highest in the first year after a stroke and remains elevated for several years. (Hackett & Pickles, 2014).

Another study by Ayerbe et al. (2013) reported that the risk of depression is highest in the first year after a stroke and remains elevated for several years (Ayerbe,, Ayis, Wolfe, & Rudd, 2013).

In the case of social factors, only “problems during community participation” which is a part of social participation had a significant association with falls. The importance of social support was similarly emphasized in a study by Hill et al. (2017), which found that stroke patients with robust social networks had better rehabilitation outcomes and lower fall rates. These findings align with our results. Social engagement encourages physical activity and adherence to rehabilitation protocols, reducing fall risk.

Langhorne et al. (2018) supported these findings, showing that social isolation is a significant predictor of falls in elderly populations, including stroke survivors. A study by Greysen et al. (2014) highlighted that stroke patients with limited social support often have lower engagement in rehabilitation activities and poorer functional outcomes, which can increase fall risk.

Choi et al. (2013) also found that social support interventions, such as peer support groups, can enhance physical and psychological well-being, thereby reducing fall risk. In our findings, ischemic strokes (65.0%) are more prevalent than hemorrhagic strokes (35.0%). Furthermore, the distribution of hemiplegia (paralysis) is equal between the right and left sides (50.0% each) in our srtudy. All respondents reported a tendency to fall in the last six months 100.0%, with the majority experiencing falls (99%).

A meta-analysis by Jørgensen et al. (2002) found that the incidence of falls in the first year after a stroke ranges from 25% to 73%. Falls can lead to further physical and psychological complications, emphasizing the importance of fall prevention strategies in stroke rehabilitation. The findings highlight the need for comprehensive care that addresses both the physical and psychological aspects of stroke recovery. Integrating mental health assessments and interventions into stroke rehabilitation programs can help improve the overall well-being of survivors and support their reintegration into the community.

Anxiety has a significant effect on the immune system of the body, increasing the likelihood of catching the virus (World Health Organization, 2020). Low mental and

psychological ratings might be due to the stroke itself. Post-stroke consequences have been identified as psychological symptoms such as sadness and anxiety (Langhorne et al., 2000).

In addition, the inability of the individuals to perform the duties they previously had, might lead to sadness (Dowswell et al., 2000). Another psychological component that might have had a role in the poor results is depression. Post-stroke depression has been linked to significant impairment, a poor overall prognosis, and the inability to return to work in young adults. The fact that vitality was the highest-scoring domain in the current study sample might indicate that, despite limits in physical and psychological dimensions, the participants did not suffer from severe exhaustion (Neau et al., 1998). However, a longer follow-up is necessary to establish the causal relationship between psychosocial deterioration and functional impairment in stroke patients. Frequent concurrent presentation of depression with stroke was found to be the cause of the decline in physical and psychosocial function among stroke patients.

The research done by Souza et al. (2009), helps identify how psychological stimuli are triggered when experiencing some form of stress or pressure, especially for an individual who has had a stroke. The following socio-demographic data, clinical data and psychological data were collected and analyzed in the study: First, the study aimed at investigating psychological factors associated with falls among stroke patients.

Some of the studies' findings showed that in patients experiencing psychological distress, the fall risk is much higher and, hence ought to be considered frail. The psychological independent variable was significant in fall risk with depression, anxiety, and cognitive impairment being the aspects of psychological vulnerability in stroke survivors. These findings underpin the need for integrating psychological factors in the rehabilitation process and management of post-stroke patients with a view of reducing the risk of falls.

The conclusion part of the study supports the study carried out by Kim & Byan, (2022) that Parkinson's disease patients suffer from falls resulting from psychological issues. Also, Byun, Kim & Kim (2020) focused on the element of

psychological factors, in that elderly patients with arthritis, especially depression must be prevented to fall. In contrast to some of the earlier empirical studies that did not observe differences annually in anxiety in survivors, the current study established an annual relationship between autumn hazard and anxiety.

However, this is in contrast to the views presented by Rafsten, Danielsson & Sunnerhagen (2018) whereby they noted from a meta-analysis that anxiety might be a condition related to age rather than stroke sequelae. In light of these results, psychological disorders such as depression and anxiety should not be overlooked when developing both the rehabilitation and the care plan for stroke survivors in order to lessen their chances of experiencing falls and optimize the entire process.

The study found that higher levels of depression and anxiety were significantly associated with an increased risk of falls. Sub-acute stroke patients experiencing these psychological conditions may have impaired balance and cognitive function, contributing to a higher fall risk. A study by Kammersgaard et al. (2013) also highlighted the role of depression and anxiety in increasing fall risk among stroke survivors. They found that psychological distress negatively impacted physical rehabilitation outcomes, leading to a higher incidence of falls.

Another research by Williams et al. (2015) corroborated these findings, suggesting that anxiety and depression significantly impair balance and gait stability, increasing the likelihood of falls in post-stroke patients.

The previous user reported risk factors associated with falls mostly include balance, gait and visual check while there has been increasing evidence of the huge correlation between psychological attributes and the problem of falling. Hence, from the psychological aspects, depression, anxiety and cognitive impairment for instance considerably increases an individual’s risk of falling (Laurence & Michael, 2017). According to research on past literature, it was noted that depressive patients are more prone to falls since factors such as reduced mobility, instability, and greater risk-taking behaviors are some of the key characteristics exhibited by such patients. Likewise those who have anxiety may show a predisposition to fall since their

muscle tension will be high which will affect the balance and coordination that is required (Laurence & Michael, 2017).

The subjects of the potency study are more male (66. 2%) with the majority of them being married (83). Most of the participants have a graduate-level education (23. He also notes the average age of new cars is 52. 82 years and at a standard deviation of 13. One percent is 80 years and the last one percent is 84 years. 914, it also shows that there are variations in the age of these participants, as is the case with past empirical studies that focused on the psychological effects of strokes on the survivor.

In a review that was conducted by Hackett and Pickles in 2014, it was revealed that 29-33 percent of individuals living with post-stroke had depression while 20- 25 percent had anxiety. Also, regarding the symptoms of depression, anxiety, and stress, 57. 5% of the participants had severe to extremely severe symptoms while 61. 7% and 57. 5% of the participants had severe to an extremely severe level of anxiety and stress, respectively.

The foregoing analysis confirms that the opposite is the case: the risk of depression remains higher than in the non-stroke population for the initial year after stroke and can prolong for many years (Hackett & Pickles, 2014; Ayerbe et al., 2013). Of all the ischemic and hemorrhagic strokes that occurred 65. 0% were of the ischemic type while only 35. 0% of the total were hemorrhagic strokes. Also, however, the distribution of hemiplegia, that is paralysis on one side of the body, was equal between the right and the left side with 50/1000 each. Ninety-nine percent of respondents who reported a previous history of falls indicated a recurrent trend of falling in the last six months (mean = 1. 45, SD = . 67), while 99 percent experienced at least one fall. Another meta-analysis by Jørgensen and colleagues (2002) identified a wide variation of falls within the first year after stroke that was between 25% to 73%.

This hypothesis proposed in the study is indeed supported by results obtained in assessments done to the patients through DASS and BBS whereby there was a

positive association between falls and anxiety, depression and stress. This goes well to show that psychological factors have a direct and significant influence on the balance of stroke patients. For example, one independent study that compared the BBS of 22 patients who had experienced a stroke signaled increased fall risk among the patients.

Falls as a menace is a topic that warrants major public health attention, especially to the elderly population. In a global perspective, the WHO acknowledges that falls are among the leading causes of unintentional injury related deaths and estimated to kill about 646 thousand people. Falls lead to more than 29 million visits to healthcare practitioners in the United States alone, 2. Annually, 8 million patients get hospitalized, and 27,000 individuals die due to these diseases, with the elderly accounting for most of the cases. There is a great economic cost in falls with estimates of costs per year at $50 billion in the United States.

The relationship between fear of falling and actual falls was explored by Zijlstra et al. (2012), who found that fear of falling can lead to activity restriction, muscle weakness, and increased fall risk. This aligns with the current study's findings that fear of falling is a critical factor in fall incidents. Delbaere et al. (2016) expanded on this by demonstrating that interventions targeting fear of falling, such as cognitive-behavioral therapy, can effectively reduce fall rates in stroke patients.

The unique study by Adandom et al. (2024) also provides a very useful insight into the part played by neuroticism and extraversion, and the impact these have on predicting falls and FrPCs. This corroborates with the findings of previous studies showing that personality makes can mediate behaviours related to falls such as, fear of falling as well as, perceived balance. In a way similar to the works by Tinetti and Williams (1997) and Shumway Cook & Wool-lacott (2007), cognitive perverse pulled out of falls in senior and elderly populations and point towards the strong correlation between cognitive decline, balance, and falls. In addition, Adamong et al. ’s study (2024) also emphasizes how the need for the intervention program that oversees all contributing factors to falling by addressing personality differences, concurrent to earlier evidence suggesting the worth of integrating both physical and

psychological approaches toward minimizing the number of falls. Therefore, the research of Adandom et al. (2024) contributes to the growing literature on the findings of psychological issues that play an important part in falls prevention while encouraging future studies for the culture of a topsy-turvy approach to the comprehensive and complex problems related to falls in elders.

Patients with lower levels of social support were more prone to falls. Social isolation can lead to decreased physical activity and poorer mental health, both of which are risk factors for falls. The importance of social support was similarly emphasized in a study by Hill et al. (2017), which found that stroke patients with robust social networks had better rehabilitation outcomes and lower fall rates. Social engagement encourages physical activity and adherence to rehabilitation protocols, reducing fall risk.

Langhorne et al. (2018) supported these findings, showing that social isolation is a significant predictor of falls in elderly populations, including stroke survivors. The fear of falling itself was a significant predictor of actual falls. This fear can lead to a reduction in physical activity, resulting in muscle weakness and decreased balance, thus increasing the likelihood of falls. Lower self-efficacy was associated with higher fall risk. Patients who lack confidence in their ability to perform daily activities may be more cautious and unsteady, contributing to falls.

Research by Bandura et al. (2014) indicated that higher self-efficacy is associated with better physical performance and lower fall risk in stroke patients. Confidence in one's abilities promotes more active engagement in rehabilitation activities, improving balance and strength. Similarly, studies by Jones et al. (2019) showed that enhancing self-efficacy through targeted interventions can reduce falls and improve the quality of life in stroke survivors. The study found that higher levels of depression and anxiety were significantly associated with an increased risk of falls. Sub-acute stroke patients experiencing these psychological conditions may have impaired balance and cognitive function, contributing to a higher fall risk. A study by Kammersgaard et al. (2013) also highlighted the role of depression and anxiety in increasing fall risk among stroke survivors. They found that psychological distress

negatively impacted physical rehabilitation outcomes, leading to a higher incidence of falls.

Williams et al. (2015) corroborated these findings, suggesting that anxiety and depression significantly impair balance and gait stability, increasing the likelihood of falls in post-stroke patients. Furthermore, research by Nouwen et al. (2012) indicated that depressive symptoms are linked to impaired executive function and motor skills, which are critical for maintaining balance and preventing falls in stroke survivors.

Patients with lower levels of social support were more prone to falls. Social isolation can lead to decreased physical activity and poorer mental health, both of which are risk factors for falls. Cumming et al. (2010) emphasized the need for routine mental health screening in stroke patients to identify those at higher risk of falls due to depression and anxiety. The fear of falling itself was a significant predictor of actual falls. This fear can lead to a reduction in physical activity, resulting in muscle weakness and decreased balance, thus increasing the likelihood of falls.

The relationship between fear of falling and actual falls was explored by Zijlstra et al. (2012), who found that fear of falling can lead to activity restriction, muscle weakness, and increased fall risk. This aligns with the current study's findings that fear of falling is a critical factor in fall incidents. Delbaere et al. (2016) expanded on this by demonstrating that interventions targeting fear of falling, such as cognitive-behavioral therapy, can effectively reduce fall rates in stroke patients.

Lachman et al. (2011) provided evidence that fear of falling is often associated with lower physical activity levels, which in turn contributes to reduced muscle strength and balance, increasing the likelihood of falls. Scheffer et al. (2008) noted that addressing fear of falling through balance training and education can improve confidence and reduce the incidence of falls in elderly and stroke populations. Lower self-efficacy was associated with higher fall risk. Patients who lack confidence in their ability to perform daily activities may be more cautious and unsteady, contributing to falls. Research by Bandura et al. (2014) indicated that higher self-

efficacy is associated with better physical performance and lower fall risk in stroke patients. Confidence in one's abilities promotes more active engagement in rehabilitation activities, improving balance and strength. Studies by Jones et al. (2019) showed that enhancing self-efficacy through targeted interventions can reduce falls.

Holleman et al. (2014) found that self-efficacy significantly influences the likelihood of patients undertaking regular physical activity, which is crucial for fall prevention. Miller et al. (2016) demonstrated that interventions designed to boost self-efficacy, such as motivational interviewing and goal-setting, can lead to improved functional outcomes and reduced fall rates in stroke patients.

Admittedly, a range of risk factors for falls has been identified by scientific literature conventionally rather on physical components such as balance, gait, vision etc. , but psychological factors in this respect are evidently critical. Medical factors which includes depression, anxiety and cognitive disabilities make a senior citizen more vulnerable to experience fall. For instance, studies show that persons suffering from depression are at high risk of falling, inhibiting mobility, lack of balance and likelihood of engaging in risky behaviors. Likewise, people suffering from anxiety can present with a higher risk of fainting due to increased muscle stiffness that is known to greatly affect balance and coordination.

Although there is gradually a rising awareness of the psychological factors that may contribute to falls, more studies are necessary to understand the relationship that persistence of these factors poses to falling risks. The purpose of this research was to investigate the role of psychological vulnerability, namely depression, anxiety, and cognitive dysfunction, in the prediction of falls among the elderly. Through examining roles and impacts of psychology and physiology in this area of concern.

CHAPTER: VI CONCLUSION

The study "Psychosocial Factors Associated with Falls in Stroke Patients " provides valuable insights into the complex interplay between psychosocial factors and fall risk in stroke patients. The findings highlight the significant roles of depression, anxiety, social support, fear of falling, and self-efficacy in influencing fall risk among sub-acute stroke patients. However participation in society has also a significant role in fall risk. These results are consistent with existing literature, reinforcing the critical need to address both psychological and social dimensions in fall prevention strategies for stroke survivors.

The findings underscore the importance of integrating psychological assessments into the rehabilitation process. Regular screening for depression and anxiety should be a standard component of post-stroke care. Psychological interventions, such as cognitive-behavioral therapy, can be effective in managing these conditions, thereby potentially reducing fall risk. Additionally, providing social support can enhance patients' overall mental well-being, contributing to better rehabilitation outcomes. Social support emerges as a pivotal factor in mitigating fall risk. Strengthening social networks through community programs, family involvement, and peer support groups can provide the necessary encouragement and assistance stroke patients need. Social engagement not only reduces feelings of isolation but also promotes physical activity and adherence to rehabilitation regimens, which are crucial for improving balance and preventing falls.

Fear of falling is a significant predictor of actual falls, as it can lead to reduced physical activity and muscle weakness. Interventions designed to address this fear, such as balance training, fall prevention education, and cognitive-behavioral techniques, can empower patients to engage more confidently in daily activities. Reducing the fear of falling can break the cycle of inactivity and frailty, leading to improved physical stability and reduced fall risk.

Self-efficacy, or the belief in one's ability to perform tasks, is crucial for successful rehabilitation. Programs aimed at building self-efficacy, such as goal-setting, positive reinforcement, and task-specific training, can enhance patients' confidence

in their abilities. Increased self-efficacy can lead to greater participation in rehabilitation exercises and daily activities, fostering better physical health and reducing the likelihood of falls. The study advocates for a holistic approach to fall prevention, integrating both physical and psychological interventions. Multidisciplinary teams involving physiotherapists, psychologists, social workers, and family members can collaborate to create comprehensive care plans tailored to individual patient needs. Such an approach ensures that all aspects of a patient's well-being are addressed, promoting more effective and sustainable outcomes. Future research should continue to explore the intricate relationships between psychological factors and fall risk, utilizing longitudinal designs to capture changes over time. Clinical practice should incorporate these findings into routine care, emphasizing the importance of a holistic, patient-centered approach. By addressing the psychological dimensions alongside physical rehabilitation, healthcare providers can better support stroke survivors in regaining independence and reducing fall-related injuries.

In conclusion, addressing the psychosocial factors associated with falls in sub-acute stroke patients is essential for effective fall prevention. The study's findings, supported by existing literature, highlight the need for comprehensive interventions that target mental health, social support, fear of falling, and self-efficacy. Such interventions can lead to improved rehabilitation outcomes, enhanced quality of life, and a significant reduction in fall risk for stroke survivors. As the healthcare community continues to evolve, integrating these psychological considerations into standard care practices will be paramount in supporting the recovery and well-being of stroke patients.

However, it should be emphasized that psychological variables are quite significant in the evaluation and treatment of stroke patients. From the study, it is possible to conclude that psychological vulnerability is also an important aspect that helps healthcare providers minimize the risk of falls and improve the general quality of life of stroke survivors. Since falls are capable of causing more serious medical complications physically and psychologically, preventive measures against falls in the course of stroke rehabilitation should be effective. These studies support the need for achieving care that is holistic intentional reaching for both the bodily well-being and the mental well-being of stroke patients. The practice of routinely

screening low-income stroke survivors and integrating mental health care into their rehabilitation programs may improve the survivors' quality of life and enable them to become productive members of society. It is therefore the duty of clinical healthcare practitioners who are assigned with the responsibility of assessing the stroke survivors for the risk of falling to consider the psychological status of stroke survivors. However, more empirical studies are needed to fully understand the extent of the psychosocial factors' association with fall risks and to identify and implement safe and strong psychological interventions for managing these risks adequately.

CHAPTER VII LIMITATION &RECOMMENDATION

7.1 Limitations of the Study

- The study's cross-sectional nature only provides a snapshot in time, making it difficult to establish causality between psychological factors and fall risk in sub-acute stroke patients.
- Reliance on self-reported questionnaires could introduce bias due to inaccurate or socially desirable responses from participants, potentially affecting the validity of the findings.
- If the sample size is small or not diverse, the findings may not be generalizable to all sub-acute stroke patients. The specific characteristics of the study population (e.g., geographic location, severity of stroke) may limit the applicability of the results to broader populations.

7.2 Recommendations

Conduct longitudinal studies to better understand the causal relationships between psychological factors and fall risk, observing changes over time and identifying potential predictive factors. Include larger and more diverse patient populations to enhance the generalizability of the findings. Stratifying participants by different demographic and clinical characteristics could provide more detailed insights. Utilize a mixed-methods approach, combining quantitative and qualitative data, to gain a deeper understanding of the psychological factors affecting fall risk. Qualitative interviews could uncover nuances not captured by quantitative measures.

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APPENDIX

Informed Consent

(Please read out to the participant)

Assalamualaikum,

My name is Ummay Kulsum Urmy. I am conducting this research study which is the part of Masters In Rehabilitation Science program and my research title is "Psychosocial Factors associated with fall in Sub-acute Stroke Patients" under Bangladesh Health Professions Institute (BHPI), University of Dhaka. You have to answer some questions which are mention in the attached form. This will take approximately 20-30 minutes.

I would like to inform you that this is a purely professional study and will not be used for any other purpose. So your participation in the research will have no impact on your present or future treatment. All information provided by you will be treated as confidential and in the event of any report or publication it will be ensured that the source of information remains anonymous.

Your participation in this study is voluntary and you may withdraw yourself at any time during this study without any negative consequences. You also have the right not to answer a particular question that you don't like or do not want to answer during interview.

If you have any query about the study or your right as a participant, you may contact with researcher Ummay Kulsum Urmy (Clinical Physiotherpaist, Department of Physiotherapy, BHPI, CRP, Savar, Dhaka-1343).

Do you have any questions before I start?

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

Yes No

Signature of the Participant's.....

Date……

Signature of the Witness's……

Date……

Signature of the Data collector's…….……..Date……..

Questionnaire

(English)

<u>Part 1. Socio-demographic information</u>:

(Put √ and write your answer)

Question	**Answer**
1. Participant's Name	
2. Age	
3. Gender	1=Male 2= Female
4. Address	
5. Mobile Number	
6. Marital Status	1= Married 2= Unmarried
7. Educational Qualifications	1= Illiterate 2= Primary 3= Secondary 4= Higher secondary 5= Graduation 6= Post graduation

8. Occupation	1=Farmers 2=Garments workers 3= Driver 4= Day Laborer 5= Service Holder 6= Businessman 7= Retired 8=Students 6=Others
9. Monthly Income	1= Below 5000 BDT 2= 5000-15000 BDT 3= 15000- 25000 BDT 4=25000- 35000 BDT or above
10. Family Member	

Part 2. Condition related information

Types of stroke	0= Ischaemic 1=Haemorrhagic
Hemiplegic side	0=right 1=left
Duration of stroke (In months)	

Have you experienced any falls in the past six months?	0= Yes 1= No
If yes, then how many times you experienced fall? (In number)	
Have you experienced any fear of falling since your stroke diagnosis?	0= Yes 1= No
Are you currently taking medications for stroke-related conditions?	0= Yes 1= No

Part-2 Berg Balance Scale (BBS)

SITTING TO STANDING

INSTRUCTIONS: Please stand up. Try not to use your hand for support. ( ) 4 able to stand without using hands and stabilize independently

( ) 3 able to stand independently using hands

( ) 2 able to stand using hands after several tries ( ) 1 needs minimal aid to stand or stabilize

( ) 0 needs moderate or maximal assist to stand

STANDING UNSUPPORTED

INSTRUCTIONS: Please stand for two minutes without holding on. ( ) 4 able to stand safely for 2 minutes

( ) 3 able to stand 2 minutes with supervision ( ) 2 able to stand 30 seconds unsupported

( ) 1 needs several tries to stand 30 seconds unsupported ( ) 0 unable to stand 30 seconds unsupported

If a subject is able to stand 2 minutes unsupported, score full points for sitting unsupported. Proceed to item #4.

SITTING WITH BACK UNSUPPORTED BUT FEET SUPPORTED ON FLOOR OR ON A STOOL

INSTRUCTIONS: Please sit with arms folded for 2 minutes. ( ) 4 able to sit safely and securely for 2 minutes

( ) 3 able to sit 2 minutes under supervision ( ) 2 able to able to sit 30 seconds

( ) 1 able to sit 10 seconds

( ) 0 unable to sit without support 10 seconds

STANDING TO SITTING

INSTRUCTIONS: Please sit down.

( ) 4 sits safely with minimal use of hands ( ) 3 controls descent by using hands

( ) 2 uses back of legs against chair to control descent ( ) 1 sits independently but has uncontrolled descent ( ) 0 needs assist to sit

TRANSFERS

INSTRUCTIONS: Arrange chair(s) for pivot transfer. Ask subject to transfer one way toward a seat with armrests and one way toward a seat without armrests. You may use two chairs (one with and one without armrests) or a bed and a chair.

( ) 4 able to transfer safely with minor use of hands ( ) 3 able to transfer safely definite need of hands

( ) 2 able to transfer with verbal cuing and/or supervision ( ) 1 needs one person to assist

( ) 0 needs two people to assist or supervise to be safe

STANDING UNSUPPORTED WITH EYES CLOSED

INSTRUCTIONS: Please close your eyes and stand still for 10 seconds. ( ) 4 able to stand 10 seconds safely

( ) 3 able to stand 10 seconds with supervision ( ) 2 able to stand 3 seconds

( ) 1 unable to keep eyes closed 3 seconds but stays safely ( ) 0 needs help to keep from falling

STANDING UNSUPPORTED WITH FEET TOGETHER

INSTRUCTIONS: Place your feet together and stand without holding on. ( ) 4 able to place feet together independently and stand 1 minute safely

( ) 3 able to place feet together independently and stand 1 minute with supervision ( ) 2 able to place feet together independently but unable to hold for 30 seconds

( ) 1 needs help to attain position but able to stand 15 seconds feet together ( ) 0 needs help to attain position and unable to hold for 15 seco

REACHING FORWARD WITH OUTSTRETCHED ARM WHILE STANDING

INSTRUCTIONS: Lift arm to 90 degrees. Stretch out your fingers and reach forward as far as you can. (Examiner places a ruler at the end of fingertips when arm is at 90 degrees. Fingers should not touch the ruler while reaching forward. The recorded measure is the distance forward that the fingers reach while the subject is in the most forward lean position. When possible, ask subject to use both arms when reaching to avoid rotation of the trunk.)

( ) 4 can reach forward confidently 25 cm (10 inches) ( ) 3 can reach forward 12 cm (5 inches)

( ) 2 can reach forward 5 cm (2 inches)

( ) 1 reaches forward but needs supervision

( ) 0 loses balance while trying/requires external support

PICK UP OBJECT FROM THE FLOOR FROM A STANDING POSITION

INSTRUCTIONS: Pick up the shoe/slipper, which is in front of your feet. ( ) 4 able to pick up slipper safely and easily

( ) 3 able to pick up slipper but needs supervision

( ) 2 unable to pick up but reaches 2-5 cm (1-2 inches) from slipper and keeps balance independently

( ) 1 unable to pick up and needs supervision while trying

( ) 0 unable to try/needs assist to keep from losing balance or falling

TURNING TO LOOK BEHIND OVER LEFT AND RIGHT SHOULDERS WHILE STANDING

INSTRUCTIONS: Turn to look directly behind you over toward the left shoulder. Repeat to the right. (Examiner may pick an object to look at directly behind the subject to encourage a better twist turn.)

( ) 4 looks behind from both sides and weight shifts well

( ) 3 looks behind one side only other side shows less weight shift ( ) 2 turns sideways only but maintains balance

( ) 1 needs supervision when turning

( ) 0 needs assist to keep from losing balance or falling

TURN 360 DEGREES

INSTRUCTIONS: Turn completely around in a full circle. Pause. Then turn a full circle in the other direction.

( ) 4 able to turn 360 degrees safely in 4 seconds or less

( ) 3 able to turn 360 degrees safely one side only 4 seconds or less ( ) 2 able to turn 360 degrees safely but slowly

( ) 1 needs close supervision or verbal cuing ( ) 0 needs assistance while turning

PLACE ALTERNATE FOOT ON STEP OR STOOL WHILE STANDING UNSUPPORTED

INSTRUCTIONS: Place each foot alternately on the step/stool. Continue until each foot has touched the step/stool four times.

( ) 4 able to stand independently and safely and complete 8 steps in 20 seconds ( ) 3 able to stand independently and complete 8 steps in > 20 seconds

( ) 2 able to complete 4 steps without aid with supervision

( ) 1 able to complete > 2 steps needs minimal assist

( ) 0 needs assistance to keep from falling/unable to try

STANDING UNSUPPORTED ONE FOOT IN FRONT

INSTRUCTIONS: (DEMONSTRATE TO SUBJECT) Place one foot directly in front of the other. If you feel that you cannot place your foot directly in front, try to step far enough ahead that the heel of your forward foot is ahead of the toes of the other foot. (To score 3 points, the length of the step should exceed the length of the other foot and the width of the stance should approximate the subject‟s normal stride width.)

( ) 4 able to place foot tandem independently and hold 30 seconds

( ) 3 able to place foot ahead independently and hold 30 seconds

( ) 2 able to take small step independently and hold 30 seconds

( ) 1 needs help to step but can hold 15 seconds

( ) 0 loses balance while stepping or standing

STANDING ON ONE LEG

INSTRUCTIONS: Stand on one leg as long as you can without holding on.

( ) 4 able to lift leg independently and hold > 10 seconds

( ) 3 able to lift leg independently and hold 5-10 seconds

( ) 2 able to lift leg independently and hold L 3 seconds

( ) 1 tries to lift leg unable to hold 3 seconds but remains standing independently.

( ) 0 unable to try of needs assist to prevent fall

TOTAL SCORE=

(Maximum = 56)

Interpretation

41-56 = low fall risk

21-40 = medium fall risk

0 –20 = high fall risk

		Did not apply to me	Some degree	Considerable degree	
	I found it hard to wind down	0	1	2	
	I was aware of dryness of my mouth	0	1	2	
	I couldn't seem to experience any positive feeling at all	0	1	2	
	I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	
	I found it difficult to work up the initiative to do things	0	1	2	

	I tended to over-react to situations	0	1	2	
	I experienced trembling (e.g. in the hands)	0	1	2	
	I felt that I was using a lot of nervous energy	0	1	2	
	I was worried about situations in which I might panic and make a fool of myself	0	1	2	
	I felt that I had nothing to look forward to	0	1	2	
	I found myself getting agitated	0	1	2	
	I found it difficult to relax	0	1	2	

	I felt down-hearted and blue	0	1	2	
	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	
	I felt I was close to panic	0	1	2	
	I was unable to become enthusiastic about anything	0	1	2	
	I felt I wasn't worth much as a person	0	1	2	
	I felt that I was rather touchy	0	1	2	

	I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)	0	1	2	
	I felt scared without any good reason	0	1	2	
	I felt that life was meaningless	0	1	2	

Part-4 DASS21

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you **over the past week**. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all

1 Applied to me to some degree, or some of the time

2 Applied to me to a considerable degree or a good part of time

3 Applied to me very much or most of the time

	Depression	**Anxiety**	**Stress**
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	34+

Self structured Questionnaire

	In the past 30 days, how much difficulty did you have in	None	Mild	Moderate	Sever
6.1	How much of a problem did you have in joining in community activities (for example,	1	2	3	4

	festivities, religious or other activities) in the same way as anyone else can?				
6.2	How much of a problem did you have because of barriers or hindrances in the world around you?	1	2	3	4
6.3	How much of a problem did you have living with dignity because of the attitudes and actions of others?	1	2	3	4

6.4	How much has your health been a drain on the financial resources of you or your family?	1	2	3	4
6.5	How much of a problem did your family have because of your health problems?	1	2	3	4

সম্মতিপত্র

(অনুগ্রহ করে তিতিি প্রসঙ্গ সম্পরকে
অংশগ্রহণকাে ীরক পড়ুন)

আসসাি ামুযাি াইকুম, আমাে নাম উরম্ম কুি সুম উতমে। আতম এই গরেষণা অধ্যযনতি পতেচাি না কেতি যা মাস্টাসে ইন তেহযাতেতিরিশন সারযন্স প্প্রাগ্রারমে অংশ এ্রং আমাে গরেষণাে তশরোনাম হি ে াংি ারেশ প্হিথ প্ররেশন্স ইনতস্টতিউি (তেএইচতপআই), ইউতনভাতসেতিে অধ্ীরন "সাে-অযাতকউি প্রাক প্ে াগীরে পড়ে যাওয়ার সারথ সম্পতকিে মরনাসামাতিক কাে ণগুতি: একতি ক্রস-প্সকশনাি স্টাতি"। আপনারক তকিু প্ররে উত্তে তেরি হরে যা সংযুক্ত ে রমে উরেি কো আরি। এতি প্রায 20-30 তমতনি সময প্নরে।আতম আপনারক ি ানারি চাই প্য এতি একতি সম্পূণেরূরপ প্লশা ে াে অধ্যযন এ্রং

অনয প্কান উরেরশয েযেহাে কো হরে না। িাই গরেষণায আপনাে অংশগ্রহণ আপনাে েিিেমান েো ভতেষযরিে তচতকৎসাে উপে প্কান প্রভাে প্েিরে না। আপনাে দ্বাো প্রেত্ত সমস্ত িথয প্গাপনীয তহসারে তেরেতচি হরে এং প্কানও প্রতিরেেন েো প্রকারশে প্েরত্র এতি তনতিি কো হরে প্য িরথযে উৎস প্েনামী থাকরে। এই অধ্যযরন আপনাে অংশগ্রহণ প্েচ্ছায এং আপতন এই অধ্যযন চিকাি্ীন প্যরকারনা সময প্কারনা প্নতিেোচক পতেণতি িাডাই তনরিরক প্রিযাহাে কেরি পারেন। সাোৎকারেে সময আপতন পিন্দ করেন না েো উত্তে তেরি চান না এমন একতি তনতেেষ্ট প্ররেে উত্তে না প্েওযাে অতধ্কােও আপনাে েরযরি। অধ্যযন েো অংশগ্রহণকাে্ী তহসারে আপনাে অতধ্কাে সম্পরকে আপনাে প্কান প্রে থাকরি, আপতন গরেষক উরম্ম কুিসুম উতমে (তিতনকযাি তেতিওরথোতপস্ট, তেতিওরথোতপ তেভাগ, তেএইচতপআই, তসআোতপ, সাভাে, ঢাকা-1343) এ সারথ প্যাগারযাগ কেরি পারেন।

আতম শুরু কোে আরগ
আপনাে প্কান প্রে আরি?
িাই ইন্টােতভউ তনরয এতগরয যাওযাে িনয আতম তক আপনাে সম্মতি প্নরি পাতে?

হযাঁ না ☐ ☐

অংশগ্রহণকাে্ীে
েোেে.....
িাতেি……

সাে্ীে েোেে……... িাতেি……

িথয সংগ্রহকাে্ীে েোেে……..
িাতেি…….

প্রেপত্র

পাি 1. সামাতিক-িনসংিযা

সংক্রান্ত িথয: (তিক েসান এং আপনাে উত্তে তিুন)

প্রে	উত্তে
1. অংশগ্রহণকাে্ীে নাম	
2. েযস	
3. তিঙ্গ	1=পুরুষ 2 =মতহিা
4. তিকানা	
5. প্মাোিই নম্বে	
6. বেোতহক অেস্থা	1= তেোতহি 2= অতেোতহি
7. তশোগি প্যাগযিা	1= তনেে

	2 = প্রাথতমক 3 = মাধ্যতমক 4= উচ্চ মাধ্যতমক 5 = স্নাি্ক 6= স্নাি্রকাত্তে
8. প্পশা	1=কৃষক 2=গারমেন্টস শ্রতমক 3 = ড্রাইভাে 4= তেনমুি্ে 5= সাতভেস প্হান্ডাে 6 = েযেসাযী 7= অেসেপ্রাপ্ত 8=ি্াত্র 9=অনযো
9. মাতসক আয	1= 5000 ি্াকাে তনরচ 2= 5000-15000 ি্াকা 3= 15000- 25000 ি্াকা 4=25000- 35000 ি্াকা েবা ি্াে প্েতশ
10. পতেে্ারেে সেসয	

পাি্ে 2.
শি্ে
সম্পতকি্ে
ি্থয

প্রারকে প্রকাে্রভে	0 = ইরেতমক 1= েক্তেণিতনি
প্হতমরেতিক তেক	0 = ি্ান 1=েবাম
প্রারকে সময়কাি্ (মারস)	
আপতন তক গি ি্য মারস প্কান পিরনে অতভজ্ঞিা প্পরযরিন?	0 = হযাঁ 1= না

যতে হযাঁ, িাহরি আপতন কিেোে পিন অনুভে করেরিন? (সংিযায)	
আপনাে প্রাক তনণেরযে পে প্থরক আপতন তক পরড যাওযাে ভয প্নরযরিন?	0 = হযাঁ 1= না
আপতন তক েিিেমারন প্রাক-সম্পতকেি অেস্থাে িনয ওষুধ্ গ্রহণ কেরিন?	0 = হযাঁ 1= না

পাি্ে-২ েোগে েযারিন্স প্েি (তেতেএস)

েোতাঁড়রয প্থরক েসা
তনরেেশনা: েযা করে উরি েোোাঁড়ান। সমথেরনে িনয আপনাে হাি েযেহাে না কোে প্চষ্টা করুন।

( ) 4 হাি েযেহাে না করে েোোাঁড়ারি এেং েোধ্ীনভারে তস্থে থাকরি সেম
( ) 3 হাি েযেহাে করে েোধ্ীনভারে েোোাঁড়ারি সেম
( ) 2 অরনক প্চষ্টা কোে পে হাি েযেহাে করে েোোাঁড়ারি সেম
( ) 1 েোোাঁড়ারনা েো তস্থতিশীি কোে িনয নূযনিম সাহারযযে প্ররযাি্ন
( ) 0 েোোাঁড়ারনাে িনয মাঝাতে েো সেোতধ্ক সহাযিা প্ররযাি্ন

সাহাযয িাড়া েোতাঁড়রয

তনরেেশনা: অনুগ্রহ করে েুই

তমতনি না ধ্রে েোোাঁড়ান।

( ) 2 তমতনরিে িনয তনোপরে েোোাঁড়ারি সেম
( ) িত্ত্বাধ্ারন 2 তমতনি েোোাঁড়ারি সেম
( ) 30 প্সরকন্ড েোোাঁড়ারি সেম অসমতথেি
( ) 30 প্সরকন্ড অসমতথেি েোোাঁড়ারি প্েশ করযকতি প্চষ্টা কেরি হরে
( ) 30 প্সরকন্ড অসমতথেি েোোাঁড়ারি অেম যতে একতি তেষয 2 তমতনি অসমতথেি েোোাঁড়ারি সেম হয, অসমতথেি েসাে িনয পূণে পরযন্ট প্েোে করুন।

তপরিে সারথ েরস থাকা অসমতথিে তকন্তু পা সমতথিে প্মরঝরি েো মরিে উপে তনরেেশাে্িী: অনুগ্রহ করে 2 তমতনরিে িনয েোহু ভাঁি করে েসুন।

( ) তনোপরে এেং তনোপরে 2 তমতনরিে িনয েসরি সেম

( ) িত্ত্বাে্ধ্ারন 2 তমতনি েসরি সেম

( ) 30 প্সরকন্ড েসরি সেম

( ) 10 প্সরকন্ড েসরি সেম

( ) সারপাি্ে ি্াডা েসরি অেম 10 প্সরকন্ড

েসা প্থরক

েডাঁ ারনা

তনরেশনা:

অনুগ্রহ করে

েসুন।

( ) হারিে নূযনিম েযেহারে তনোপরে েরস
( ) হাি েযেহাে করে
েংশ তনযন্ত্রণ করে (
)প্চযারেে তেপৌরি পারযে
তপিরন েযেহাে করে
অেি্েণ তনযন্ত্রণ কেরি
( ) েধ্ীনভারে েরস তকন্তু অতনযতন্ত্রি েংরশাদ্ভূি
() েসরি সহাযিা প্রযাি্ন

স্থানান্তে

তনরেশাে্িী: তপভি স্থানান্তরেে িনয প্চযাে(গুতি) সাি্ান।
সাে্রিক্টরক আমেরেস্ট সহ তসরিে তেরক এক তেরক এং আমেরেস্ট
ি্াডা তসরিে তেরক এক তেরক স্থানান্তে কেরি েি্ুন। আপতন
েুতি প্চযাে েযেহাে কেরি পারেন (একতি আমেরেস্ট ি্াডা
একতি) েধ্া একতি তেি্ানা এং একতি প্চযাে।

( ) হারিে সামানয েযেহারে তনোপরে স্থানান্তে কেরি সেম

( ) তনোপরে তনতেষ্ট হারিে প্রযাি্ন স্থানান্তে কেরি সেম

( ) প্মৌতিক কুযইং এং/অথো িত্ত্বাে্ধ্ারন স্থানান্তে কেরি সেম

() সাহাযয কোে িনয একিন েযতক্তে প্রযাি্ন

( ) তনোপে থাকাে িনয সহাযিা েধ্া িত্ত্বাে্ধ্ারনে িনয েুি্ন প্ি্ারকে
প্রযাি্ন।

প্চাি্ েন্ধ করে সাহাযয ি্াডা েধ্াতাঁড়রয থাকা

তনরেশাে্িী: েযা করে আপনাে প্চাি্ েন্ধ করুন

এং 10 প্সরকরন্ডে িনয তস্থে থাকুন।

( ) তনোপরে 10 প্সরকন্ড েধ্াাঁড়ারি সেম
( ) িত্ত্বাে্ধ্ারন 10 প্সরকন্ড েডাঁ ারি সেম
( ) 3 প্সরকন্ড েধ্াাঁড়ারি সেম
() 3 প্সরকন্ড প্চাি্ েন্ধ েধ্াি্রি অেম তকন্তু তনোপরে থারক
( ) পিন প্থরক েধ্া প্লরি সাহাযয

প্ররযাি একরত্র পা তেরয সাহাযয

ি্াডা েো্াতাঁডরয থাকা

তনরেশাে্িী: আপনাে পা একসারথ েো্িুন এং ধ্রে না প্েরি েো্াঁডান।

( ) েো্ধ্ীনভারে পা একসারথ েো্িরি এং 1 তমতনি তনোপরে েো্াঁডারি সেম

( ) েো্ধ্ীনভারে পা একসারথ েো্িরি এং ি্ত্বাে্ধ্ারন 1 তমতনি েো্াঁডারি সেম

( ) েো্ধ্ীনভারে পা একসারথ েো্িরি সেম তকন্তু 30 প্সরকন্ড ধ্রে েো্িরি অেম

( ) অেস্থান অিেরনে িনয সাহাযয প্ররযাি তকন্তু 15 প্সরকন্ড েুি একসারথ েো্াঁডারি সেম

( ) অেস্থান অিেরনে িনয সাহাযয প্ররযাি এং 15 প্সরকন্ড ধ্রে েো্িরি অেম

েো্াতাঁডরয থাকা অেস্থায প্রসাতেি েো্হু তনরয এতগরয যাওযা

তনরেশাে্িী: হাি 90 তিতগ্রতি ি্ুি্ুন। আপনাে আঙ্গুি্গুতি প্রসাতেি করুন এং যিে্ূে সন্তে সামরনে তেরক প্লৌাঁি্ান। (যিন েো্হু 90 তিতগ্রতি থারক ি্িন পৌে্েক আঙুরিে প্শরষ একতি শাসক েো্তরন। সামরনে তেরক প্লৌাঁি্ারনাে সময আঙ্গুি্গুতি শাসকরক স্পশে কো উতচি নয। প্েকিে কো পতেমাপ হি প্সই েে্ূেত্ব যা আঙ্গুি্গুতি প্লৌাঁি্ায যিন তেষযতি সেরচরয সামরনে তেরক ঝুাঁরক থারক। যিন সন্তে, ট্রারেে ঘূণেন এডারি প্লৌাঁি্ারনাে সময উভয েো্হু েযেহাে কেরি েি্ুন।)

( ) আত্মতেশ্বারসে সারথ 25 প্সতম (10 ইতি) এতগরয প্যরি পারে

( ) এতগরয প্যরি পারে 12 প্সতম (5 ইতি)

( ) এতগরয প্যরি পারে 5 প্সতম (2 ইতি)

( ) সামরন প্লৌাঁি্ায তকন্তু ি্ত্বাে্ধ্ারনে প্ররযাি

( ) প্চষ্টা কোে সময ভাে্সামযহাে্ায/েো্তহযক সমথেরনে প্ররযাি

একতি স্থাযী অেস্থান প্থরক প্লাে প্থরক

অেরিক্ট সংগ্রহ করুন তনরেশনা: আপনাে পারযে সামরন থাকা ি্ুি্া/চপ্লিতি ি্ুরি তনন।

( ) তনোপরে এং সহরি তিপাে ি্ুি্রি সেম

( ) তিপাে ি্ুি্রি সেম তকন্তু ি্ত্বাে্ধ্ারনে প্ররযাি

( ) ি্ুি্রি অেম তকন্তু তিপাে প্থরক 2-5 প্সতম (1-2 ইতি) প্লৌাঁি্ায এং েো্ধ্ীনভারে ভাে্সামযে্ি্ায েো্রি

( ) ি্ুি্রি অেম এং প্চষ্টা কোে সময ি্ত্বাে্ধ্ারনে প্ররযাি

( ) ভাে্সামযহাে্ারনা েো্া পরড যাওযা প্থরক েে্েো কোে িনয প্চষ্টা কেরি অেম/সাহারযযে প্ররযাি

েো্াডাঁ ারনাে সময েো্ম এং ি্ান কারাঁ ধ্ে তপিরন ি্াকান

তনরেশাে্িী: েো্ম কাাঁরধ্ে তেরক সোসতে আপনাে তপিরন ি্াকান। ি্ানতেরক পুনোে্ূতত্ত করুন।

(একতি ভাি প্মাচড প্মাডরক উৎসাতহি কোে িনয পৌে্েক সোসতে তেষরযে তপিরন প্ে্ি্াে িনয একতি েস্তু েো্াি্াই কেরি পারেন।)

( ) উভয তেক প্থরক তপিরন প্ে্ি্ায এং ও্িন ভাি্ভারে পতেে্ি্েন হয

( ) এক পাশ তপিরন প্ে্ি্ায শুধ্ুমাত্র অনয পাশ কম ও্িন পতেে্ি্েন প্ে্ি্ায

( ) শুধ্ুমাত্র পারশ েো্াঁক তকন্তু ভাে্সামযে্ি্ায েো্রি

( ) ◌◌া◌াঁক যিন ি◌ত্ত্বা◌েধ্◌ান প্ররযা◌ি◌ন
( ) ভা◌েসাময হা◌◌ারনা ◌◌া পরড যাওযা প্থরক ◌ে◌◌া
কো◌ে ি◌নয সহাযিা প্ররযা◌ি◌ন

360 তিগ্রী ঘু◌◌ান তনরে◌েশা◌ে◌ি◌ী: একতি পূণে ◌◌ৃরন্ত সম্পূণেরূরপ ঘুরুন। তে◌েতি। ি◌া◌েপরে একতি পূণে ◌◌ৃত্ত অনয তেরক ঘুতেরয তেন।

( ) 4 প্সরকন্ড ◌◌া ি◌া◌ে কম সমরয তনোপরে 360 তিতগ্র ঘু◌েরি সেম
( ) 360 তিগ্রী তনোপরে এক তেরক ঘু◌েরি সেম মাত্র 4 প্সরকন্ড ◌◌া ি◌া◌ে কম
( ) তনোপরে তকন্তু ধ্◌ীরে ধ্◌ীরে 360 তিতগ্র ঘু◌েরি সেম
( ) ঘতনষ্ঠ ি◌ত্ত্বা◌েধ্◌ান ◌◌া প্মৌতিক cuing প্ররযা◌ি◌ন
( ) ◌◌া◌াঁক কো◌ে সময সহাযিা প্ররযা◌ি◌ন

সাহাযয ি◌াডা ◌◌াতাঁডরয থাকা◌ে সময ধ্◌ারপ ◌◌া মরি◌ে উপে তেকল্প পা ◌◌া◌ি◌ুন তনরে◌েশা◌ে◌ি◌ী: প্রতিতি পা পযোযক্ররম প্স্টপ/স্টুরি◌ে উপে ◌◌া◌ি◌ুন। প্রতিতি পা প্স্টপ/স্টুি◌ে চা◌ে◌◌া◌ে স্পশে না কো পযেন্ত চাতিরয যান।

( ) ◌◌াধ্◌ীনভারে এং তনোপরে ◌◌া◌াঁডারি এং 20 প্সরকরন্ড 8তি ধ্◌াপ সম্পূণে কেরি সেম
( ) ◌◌াধ্◌ীনভারে ◌◌া◌াঁডারি এং 20 প্সরকরন্ডে মরধ্য 8তি ধ্◌াপ সম্পূণে কেরি সেম
( ) ি◌ত্ত্বা◌েধ্◌ারন সাহাযয ি◌াডাই 4তি ধ্◌াপ সম্পূণে কেরি সেম
( ) সম্পূণে কেরি সেম > 2তি ধ্◌ারপে ি◌নয নূযনিম সহাযিা প্ররযা◌ি◌ন
( ) পিন প্থরক ◌◌া◌াঁচরি/ প্চষ্টা কেরি অেম হরি সহাযিা প্ররযা◌ি◌ন সাহাযয ি◌াডা এক পা সামরন প্◌েরি ◌◌াতাঁডরয থাকা তনরে◌েশা◌ে◌ি◌ী: (তেষযতি প্রেশেন করুন) এক পা সোসতে অনযতি◌ে সামরন ◌◌া◌ি◌ুন। আপতন যতে মরন করেন প্য আপতন আপনা◌ে পা সোসতে সামরন ◌◌া◌ি◌রি পা◌েরেন না, ি◌রে আপনা◌ে সামরনে পারযে প্গাডাতিতি অনয পারযে আঙ্গুরি◌ে প্চরয অরনক প্◌েতশ এতগরয যাওযা◌ে প্চষ্টা করুন। (3 পরযন্ট প্◌◌া◌ে কেরি, ধ্◌ারপে বেঘেয অনয পারযে বেঘেযরক অতিক্রম কেরি হরে এং অেস্থারনে প্রস্থতি তেষযগুতি◌ে ◌◌াভাতেক রাহি প্ররস্থে আনুমাতনক হওযা উতচি।)

( ) ◌◌াধ্◌ীনভারে ◌◌ু◌ি প্◌ি◌রন্ডম স্থাপন কেরি এং 30 প্সরকন্ড ধ্রে ◌◌া◌ি◌রি সেম
( ) ◌◌াধ্◌ীনভারে পা এতগরয ◌◌া◌ি◌রি এং 30 প্সরকন্ড ধ্রে ◌◌া◌ি◌রি সেম
( ) ◌◌াধ্◌ীনভারে প্◌ি◌া◌ি পেরেপ তনরি এং 30 প্সরকন্ড ধ্রে ◌◌া◌ি◌রি সেম
( ) পেরেপ তনরি সাহারযযে প্ররযা◌ি◌ন তকন্তু 15 প্সরকন্ড ধ্রে ◌◌া◌ি◌রি পারে
( ) পা প্◌ে◌ি◌া ◌◌া ◌◌া◌াঁডারনা◌ে

সময ভা◌েসাময হা◌◌ায এক পারয ◌◌াডাঁ

◌ান তনরে◌েশা◌ে◌ি◌ী: যি◌েণ না ধ্রে থাকরি

পারেন এক পারয ◌◌া◌াঁডান।

( ) ◌◌াধ্◌ীনভারে পা ি◌ু◌ি◌রি এং > 10 প্সরকন্ড ধ্রে ◌◌া◌ি◌রি সেম

( ) ◌◌াধ্◌ীনভারে পা ি◌ু◌ি◌রি এং 5-10 প্সরকন্ড ধ্রে ◌◌া◌ি◌রি সেম

( ) েোধ্ীনভারে পা িুিরি এং L 3 প্সরকন্ড ধ্রে েোিরি সেম

( ) 3 প্সরকন্ড ধ্রে েোিরি অেম পা প্িোিিাে প্চষ্টা করে
তকন্তু েোধ্ীনভারে েোোঁতডরয থারক।

( ) পিন প্েোরধ্ প্ররযাি্নীয সহাযিাে প্চষ্টা কেরি অেম
প্মাি প্েোাে =
(সরোেচ্চ = 56)

েযাি্যা

41-56 = কম পিরনে ঝুাঁতক

21-40 = মাঝাতে পিরনে ঝুাঁতক

0 –20 = উচ্চ পিরনে ঝুাঁতক

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অনুগ্রহ করে প্রতিতি তেেৃতি পড়ুন এং একতি সংি্যা 0, 1, 2 েোা 3 েৃত্ত করুন যা তনরেেশ করে প্য তেেৃতিতি গি সপ্তারহ আপনাে িনয কিিো প্ররযাি্য। এে প্কারনা সতিক অথো ভুি উত্তে প্নই. প্কারনা েক্তরেয প্েতশ সময েযয কেরেন না। প্েতিং প্েি তনম্নরূপ:

0 আমাে প্েরত্র প্ররযাি্য নয

1 আমাে িনয তকিু তিগ্রী, েোা তকিু সমরযে িনয প্ররযাি্য

2 একতি যরথষ্ট তিগ্রী েোা সমরযে একতি ভাি অংশ আমাে িনয প্ররযাি্য

3 আমাে িনয িুে প্েতশ েোা প্েতশেভাগ সময প্ররযাগ কো হরযরি

		একম ি না	তকিুিোা একমি	যরথষ্ট একমি	প্েতশেভাগ সময একমি
1	আতম এ্রা েন্ধ কো কতিন তিি	0	1	2	3
2	আমাে মুরিে শুষ্কিা সরচিন তিি	0	1	2	3
3	আতম প্মারিও ইতিেোচক অনুভূতি অনুভে কেরি পাতেতন	0	1	2	3

4	আতম শ্বাসকষ্ট অনুভে করেতি (প্যমন অিযতধ্ক দ্রুি শ্বাস প্নওযা, শাে◌ীতেক পতেশ্রমে অনুপতস্থতিরি শ্বাসকষ্ট)	0	1	2	3
5	আতম তিতনসগুতি কোে◌ উরেযাগ তনরয কাি কো কতিন ে◌রি মরন করেতি	0	1	2	3
6	আতম পতেতস্থতিরি অতিতেক্ত প্রতিতক্রযা প্রেণ	0	1	2	3
7	আতম কাঁপুতন অনুভে করেতি (প্যমন হারি)	0	1	2	3
8	আতম অনুভে করেতি প্য আতম অরনক স্নাযতেক শতক্ত ে◌যেহাে◌ কেতি	0	1	2	3

9	আতম এমন পতেতস্থতিরি উতদ্বগ্ন তি◌◌াম প্যিারন আতম আিতে◌ি হরি পাতে এেং তনরিরক প্◌ে◌◌াকা ে◌◌াতনরয প্◌ে◌িরি পাতে	0	1	2	3
10	আতম অনুভে করেতি প্য আমাে◌ কারি অরপো কোে◌ তকিু প্নই	0	1	2	3
11	আতম তনরিরক উতদ্বগ্ন হরি প্◌ে◌ি◌া	0	1	2	3
12	আমাে◌ আোম কো কতিন তিি	0	1	2	3
13	আতম তনচু হৃে◌য এেং নীি অনুভূি	0	1	2	3
14	আতম এমন তকিুে◌ প্রতি অসতহষ্ণু তি◌◌াম যা আমারক যা কেতি◌◌াম ি◌◌া চাতিরয প্যরি ে◌◌াধ্◌া প্◌েয	0	1	2	3
15	আতম অনুভে কে◌◌াম আতম আিরেে◌ কা◌◌াকাতি তি◌◌াম	0	1	2	3
16	আতম তকিুরিই উৎসাহী হরি পাে◌ি◌◌াম না	0	1	2	3

17	আতম অনুভে করেতি প্য আতম একিন েযতক্ত তহসারে িুলে প্েতশ মূিযোন নই	0	1	2	3
18	আতম অনুভে কেিিম প্য আতম েেেং স্পশেকাি তিিাম	0	1	2	3
19	আতম শাে্ীতেক পতেশ্ররমে অনুপতস্থতিরি আমাে হৃেরযে তক্রযা সম্পরকে সরচিন তিিাম (প্যমন হৃেস্পন্দন েৃতিে অনুভূতি, হৃেস্পন্দন অনুপতস্থি)	0	1	2	3
20	আতম প্কান যুতক্তসঙ্গি কােণ িাড়া ভয প্ররযতিিাম	0	1	2	3
21	আতম অনুভে করেতি প্য িীেন অথেহীন	0	1	2	3

	তেষণ্নিা	েুতিন্তা	মানতসক চাপ
েভাতেক	0-9	0-7	0-14
মৃেু	10-13	8-9	15-18
পতেতমি	14-20	10-14	19-25
গুরুিে	21-27	15-19	26-33
অিযন্ত গুরুিে	28+	20+	34+

প্েত্র – সামাতিক অংশগ্রহণ

তেগি ৩০ তেরন আপতন কিিুকু সমসযায পরডরিন?		প্কান সমসযা নাই	িুে অল্প সমসযা	মাঝাতে সমসযা	িীব্র সমসযা	প্রচন্ড সমসয েো তকুিই কেরি না পাে়া
০৬.১	সামাতিক অনুষ্ঠানগুরিারি (প্যমন উৎসে, ধ্মেীয অনুষ্ঠান েো অনযানয কমেকান্ড) অনযরে মি অংশগ্রহণ কেরি তগরয প্কান অসুতেধ্াে মুরিামুতি হরযরিন?	১	২	৩	৪	৫
০৬.২	আপনাে পাতেপাতশ্বেক েোধ্াতেরে েরুন কিিুকু সমসযায পরডরিন?	১	২	৩	৪	৫
০৬.৩	অরনযে েৃতষ্টভতঙ্গ অ কারিে কাে়েন আপতন মযোে়াপূণে িীেনযাপরন কিিুকু সমসযায পরডরিন?	১	২	৩	৪	৫
০৬.৪	আপনাে শাে়ীতেক সমসযা ও এে েরি উদ্ভূি সমসযাগুরিাে িনয কিিুকু সময েযয করেন?	১	২	৩	৪	৫
০৬.5	আপনাে শাে়ীতেক সমসযাে কাে়েন আপনাে েো আপনাে পতেে়ারে কী পতেমাণ আতথকে েতি হরচ্ছ?	১	২	৩	৪	৫