# LEVEL OF DEPRESSION & ANXIETY AND ITS ASSOCIATION WITH FUNCTIONAL OUTCOME FOR THE PATIENTS WITH ISCHEMIC STROKE

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**"LEVEL OF DEPRESSION & ANXIETY AND ITS ASSOCIATION WITH FUNCTIONAL OUTCOME FOR THE PATIENTS WITH ISCHEMIC STROKE"**

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## Declaration

I declare that the work presented here is my own. All sources used have been cited appropriately. Any mistakes or inaccuracies are my own. I also declare that for any publication, presentation or dissemination of information of the study, I would be bound to take written consent from the Department of Physiotherapy of Bangladesh Health Professions Institute (BHPI).

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## Acronyms

**ADL** Activity of Daily Living

**AVM** Atriovenous Malformation

**BHPI** Bangladesh Health Professions Institute.

**BI** Barthel Index

**CRP** Centre for the Rehabilitation of the Paralysed

**CVA** Cerebrovascular Accident

**EFTA** European Free Trade Association

**GAD** Generalized Anxiety Disorder

**IRB** Institutional Review Board

**MBI** Modified Barthel Index

**PHQ** Patient Health Questionnaire

**PSA** Post Stroke Anxiety

**PSD** Post Stroke Depression

**QoL** Quality of Life

**SPSS** Statistical Package for the Social Science

**TIA** Transient Ischemic Attack

**WHO** World Health Organization

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# Abstract

***Purpose:*** The purpose of the study was to identify the level of depression & anxiety and functional outcome with their association among ischemic stroke patients. ***Objectives:*** To identify the level of depression and anxiety after ischemic stroke. To explore the Socio-demographic information of the participants. To discover the functional outcome. To find out association of various socio-demographic characteristics with depression and anxiety after ischemic stroke. To detect association between post stroke depression and post stroke anxiety among ischemic stroke patients. To determine association of post stroke depression and post stroke anxiety with the functional outcome for ischemic stroke patients. ***Methodology:*** The study was conducted by using cross sectional method. Total 105 samples were selected conveniently for this study from Neurology unit of Physiotherapy Department, CRP, Savar. All data were collected through face-to face interview by using a semi-structured research question technique. ***Results:*** Among 105 participants 12% of the participants had moderately severe to severe depression and 23% of the respondents had moderate to severe anxiety after 3 months of having ischemic stroke. Functional outcome was measured by Modified Barthel Index (SHAH VERSION) indicates that 50% of the participants had moderate dependency, 24% of the participants were severe dependent and 4% with total dependency in doing day to day task. There have no associations of age & gender that with post-stroke depression and post-stroke anxiety found in the study. Significant association of post-stroke depression and post-stroke anxiety was found in the study. Post-stroke depression and post-stroke anxiety were found to be associated with functional outcome indicating that post-stroke depression and post-stroke anxiety had negative impact on functional outcome during rehabilitation after 3 months following ischemic stroke. ***Conclusion:*** The results of the study suggest that depression and anxiety are commonly experienced after 3 months ischemic stroke and have a negative impact on patient's functional outcome. Found association of post-stroke depression and post-stroke anxiety expressing that post-stroke depression and post-stroke anxiety may share a similar pathophysiological mechanism. Assessment and intervention of post-stroke depression as well as post stroke anxiety following ischemic stroke may be useful for getting favorable functional outcomes.



*Key words:* Ischemic Stroke, Depression, Anxiety, Functional outcome

# CHAPTER- I INTRODUCTION

## 1.1 Background

Stroke is a devastating neurological condition that frequently results in severe physical disability or death (Mukherjee & Patil, 2011). Stroke is a leading cause of neurological disability, resulting in a variety of negative psychological effects such as depression, fatigue and anxiety (Lee et al., 2019).

Cerebrovascular accident is the leading cause of disability in adults, and millions of stroke patients have to adjust to a life with limitations in activities of daily living as a result of the cerebrovascular accident each year. Many stroke survivors will frequently rely on the continuous support of others to survive (Truelsen et al., 2006). Stroke can happen at any age, including childhood. Stroke occurs at the same rate in men and women, but women have more probability to die. Although men are more likely to be affected than women due to a younger age of onset, the gender gap narrows with age. Although approximately two-thirds of affected patients are over the age of 65, strokes can occur at any age, including very young children, and for a variety of reasons (Chowdhury et al., 2014).

Stroke is defined as a sudden loss of blood supply to the brain caused by thrombotic, embolic, or hemorrhagic events, which results in permanent damage of brain tissue. Almost 85 percent of strokes are ischemic, while 12 percent being hemorrhagic (Robinson & Jorge, 2016). The most prevalent type of stroke is ischemic stroke. The most common cause of ischemic stroke is hypo-perfusion, followed by embolism and thrombosis and these three are described as the main etiologies for ischemic stroke. Signs and symptoms of ischemic stroke patients may appear gradually over several hours, with varying degrees of severity. Paresis, ataxia, paralysis, vomiting, and eye gaze are some of the symptoms that can occur as a result of an ischemic stroke; however, the location of these symptoms depends on which part of the brain is affected by the suffering vessels. Immediate diagnosis and treatment can significantly reduce the rate of neurological impairment in stroke patients, and determining the type of stroke is extremely crucial in patient management and treatment (Ojaghihaghighi et al., 2017).

The occurrence of cerebrovascular accident rises with age, and the number of strokes is expected to rise as the elderly population grows, with a tripling in stroke deaths in the United States by 2030. Furthermore, the proportion of the aging population in Bangladesh is steadily increasing, bringing with it a slew of diseases associated with the aging process (Haque et al., 2012). According to the World Health Organization, 15 million people are affected by stroke each year, with 5 million dying and 5 million remaining completely disabled (Aydin et al., 2016). The prevalence of disability among stroke survivors ranges between 24 to 54 percent (Srivastava et al., 2010). Over two-thirds of stroke patients worldwide died in developing countries (Liu et al., 2007). Over the next two decades, the number of stroke-related burdens is expected to rise (Langhorne et al., 2011). Without a significant global public health response, the figure is expected to rise by 7.8 million by 2030 (Strong et al., 2007). There is a chance that the number of stroke patients will skyrocket by 2050. Within a year, 50% of patients require special assistance with daily living activities (Van der Riet et al., 2015).

Bangladesh has a population of 162.2 million people, with 26% living in urban areas and the majority (74%) living in rural areas. Stroke is the third leading cause of death in Bangladesh, following coronary heart disease and infectious diseases such as influenza and pneumonia (Islam et al., 2013). Stroke is a serious health problem in the new millennium. Because it is not only a major killer, but also one of the reasons for Bangladesh's inability to compete on a global scale (Mohammad et al., 2011). Stroke mortality increased from 6.00% in 2006 to 8.57% in 2011, with an age-adjusted mortality rate of 108.31 per 100 000 people in 2011. The World Health Organization (WHO) ranks stroke mortality in Bangladesh as 84th in the world (Islam et al., 2013).

A community study involving 15,627 participants aged 40 and older was used to estimate the prevalence of stroke in Bangladesh. For the age groups 40–49 years, 50–59 years, 60–69 years, 70–79 years, and 80 years and above, stroke prevalences were reported as 0.20 percent, 0.30 percent, 0.20 percent, 1.00 percent and 1.00 percent, respectively. The male and female patient ratio was 3.44: 2.41. The overall stroke prevalence was 0.30% (Mohammad et al., 2011). Disability is stabilized in the majority of stroke patients between 6-9 months and 5 years after the stroke. Within 6 months after a stroke, the elderly patients in Framingham studies experienced the following obstructions: 50% had some hemiparesis, 30% could not walk without assistance, 26% were reliant on activity on daily living (ADL), 19% had aphasia, 35% had depressive

symptoms and 26% lived in a nursing home (Carod & Egido, 2009). In the last few decades, the mortality rate has gradually decreased and residual impairments and disabilities have increased and decreased functional outcome and quality of life. Depression has the greatest impact on stroke patients' quality of life. One of the most common emotional complaints among stroke patients is post-stroke depression (PSD) (Srivastava et al., 2010).

The majority of research on mood disorders following stroke has concentrated on depression. The reported prevalence of post stroke depression varies widely, but most studies place the prevalence between 20 to 50%, and depression persists 3–6 months after stroke (Barker-Collo, 2007). Depression has been linked to physical disability and limitations in activities of daily living (ADL), as well as a lower quality of life (QOL) (Masskulpan et al., 2008). The effects of post-stroke depression on case fatality and rehabilitation (Whyte & Mulsant, 2002) and functional outcomes (Herrmann et al., 1998) are negative. Post-stroke depression (PSD) is a critical factor that can obstruct the therapeutic process and increase the risk of death later in life (Robinson, 2003). Psychiatrists have known about post-stroke depression (PSD) for over a century, but it wasn't until the 1970s that controlled studies were conducted (Robinson & Jorge, 2016). However, depression will affect more than half of stroke survivors at some point (Ayerbe et al., 2013). Depression is a common neuropsychiatric complication of stroke, and it has been shown to impede functional and cognitive recovery (Hama et al., 2011). Although anxiety and depression are common and known to influence stroke patients' outcomes, emotional symptoms encountered in stroke do not receive the same level of attention from the staff (Masskulpan et al., 2008).

Stroke is the world's second leading cause of death and the leading cause of long-term disability (Murray & Lopez, 1997). After a stroke, negative psychological outcomes are common, but the occurrence of anxiety disorders and symptoms is uncertain. In comparison to other psychological problems that occur after a stroke, anxiety has received far less attention (Burton et al., 2013). Anxiety disorders are the most common mental health issue worldwide (Kessler et al., 2009). Anxiety is functionally appropriate and even advantageous in some situations when it prompts protective health behavior and a certain level of anxiety considered a normal reaction to a life-threatening event such as stroke (Burton et al., 2013). Post-stroke anxiety (PSA) has only recently been studied, with prevalence estimates ranging from 4 to 28%. Post-stroke anxiety

(PSA), like Post-stroke depression (PSD), has been found to remain fairly constant up to 3 years after stroke. Post-stroke anxiety and Post-stroke depression co-morbidity is common, with up to 85% of people with generalized anxiety also having co-morbid depression three years after a stroke (Barker-Collo., 2007). Anxiety also had an impact on the physical disability and quality of life of stroke patients (Masskulpan et al., 2008). Anxiety affects one-quarter of stroke survivors (Wright et al., 2017).

A study was conducted that looked through databases up to March 2011. A total of 44 published studies with a total of 5,760 stroke patients were included. The overall pooled estimate of anxiety disorders assessed by clinical interview was 18%, while anxiety assessed by rating scale was 25%. The combined rate of anxiety after stroke was 20% within one month of stroke, 23% one to five months after stroke, and 24% six months or more after stroke (Burton et al., 2013).

Anxiety disorders and significantly elevated levels of anxiety symptoms are linked to a lower quality of life (Donnellan et al., 2010), increased healthcare utilization (Moser & Dracup, 1996), a higher risk of disabling health conditions, (Moser et al., 2007) and may even increase the risk of death (Martens et al., 2010). Another cross-sectional study conducted in 2014 on 13,283 potentially eligible stroke patients in the registry found that 29% had probable or possible anxiety and 24% for depression (Broomfield et al., 2014). Despite being common and important complications of stroke, post-stroke depression and post-stroke anxiety are often unnoticed, so its impact on functional outcome during rehabilitation often remains overlooked. This study is to determine the level of depression, anxiety and functional outcome with their association for ischemic stroke patients.

## 1.2 Rationale

Stroke is a common neurological condition. Every day, a broader range of stroke patients emerges. A stroke can cause a loss of ability to feel or move one side of the body, difficulty in understanding or speaking, the sense that the world is spinning, or loss of sight on one side of eye. Symptoms and signs of a stroke frequently appear soon after the event. Only medical care is insufficient for stroke patients. Rehabilitation is essential for stroke survivors to bring out best possible functional outcome and improve their quality of life. A rehabilitation team is typically multidisciplinary, consisting of staff with diverse skills working together to help the patient. These include rehabilitation medicine physicians, medical pharmacists, nursing staff, physiotherapists, occupational therapists, and speech and language therapists. Stroke rehabilitation should begin as soon as possible for the best possible outcome and it can last anywhere from a few days to more than a year. Physiotherapists play a major role in stroke rehabilitation.

Depression and anxiety are common neuropsychiatric consequences following a stroke. Post-stroke depression and anxiety are regarded as barriers for stroke patients during the recovery stage, as it has the possibility that they can hamper the therapeutic process and negatively impact on recovery. Post-stroke depression and anxiety are important factors for stroke patients that require more attention. In Bangladesh, the majority of stroke patients seek physiotherapy treatment at a later stage and their outcomes are unfavorable. If we can become aware of the specific barriers and focus on those specific barriers for the betterment of sufferers, they will obtain the most benefit from physiotherapy treatment.

Ischemic stroke differs from hemorrhagic stroke in terms of etiology and clinical features (Zhang et al., 2011). Ischemic stroke is ten times more common than hemorrhagic stroke (Andersen et al., 2009) and almost 85% of strokes are ischemic, while 12% being hemorrhagic (Robinson and Jorge, 2016). That is why I choose only ischemic stroke patients as my sample population because having data from homogenous sample gives better opportunity to generalize the results. Also there is no such study in Bangladesh that clarifies the occurrence of depression and anxiety among ischemic stroke patients, as well as how much post-stroke depression (PSD) and post stroke anxiety (PSA) affect the functional outcomes of ischemic stroke patients.

My study's goal is to assess the level of depression (via PHQ-9) and anxiety (via GAD-7) after ischemic stroke, as well as the association of post-stroke depression and anxiety with functional outcome (via Modified Barthel Index) during rehabilitation. I believe that early detection of level of post-stroke depression and post stroke anxiety, as well as treatment of depression and anxiety symptoms, may help to prevent more serious effects on recovery for stroke patients. After completing this study both the patients and rehabilitation professionals will be benefited because after that they will aware about the occurrence of post-stroke depression, post-stroke anxiety among ischemic stroke patients and its association with functional outcome. This study also will be helpful in making physiotherapist to aware about the different socio-demographic factors of the patients. It will assist to make current physiotherapy practice more holistic and effective for ischemic stroke patients. Physiotherapy plays a vital role in the rehabilitation for stroke patients. So it will also be helpful for physiotherapist in working in this area for delivering the best treatment service. This study will also be helpful for different institutes and rehabilitation centers for delivering a comprehensive rehabilitation service. As a result patients become more benefited. Finally, I hope that this study will raise awareness about the importance of detection of post-stroke depression, post-stroke anxiety among ischemic stroke patients and also proper management and counseling of post stroke depression and post stroke anxiety following ischemic stroke patients which will be helpful for the patients to get favorable functional outcome during rehabilitation.

## 1.3 Research Question

What are the levels of depression, anxiety and functional outcome with their association for ischemic stroke patients?

## 1.4 Aim of the study

To identify the level of depression, anxiety and functional outcome with their association among ischemic stroke patients.

## 1.5 Objectives

### 1.5.1 General objectives

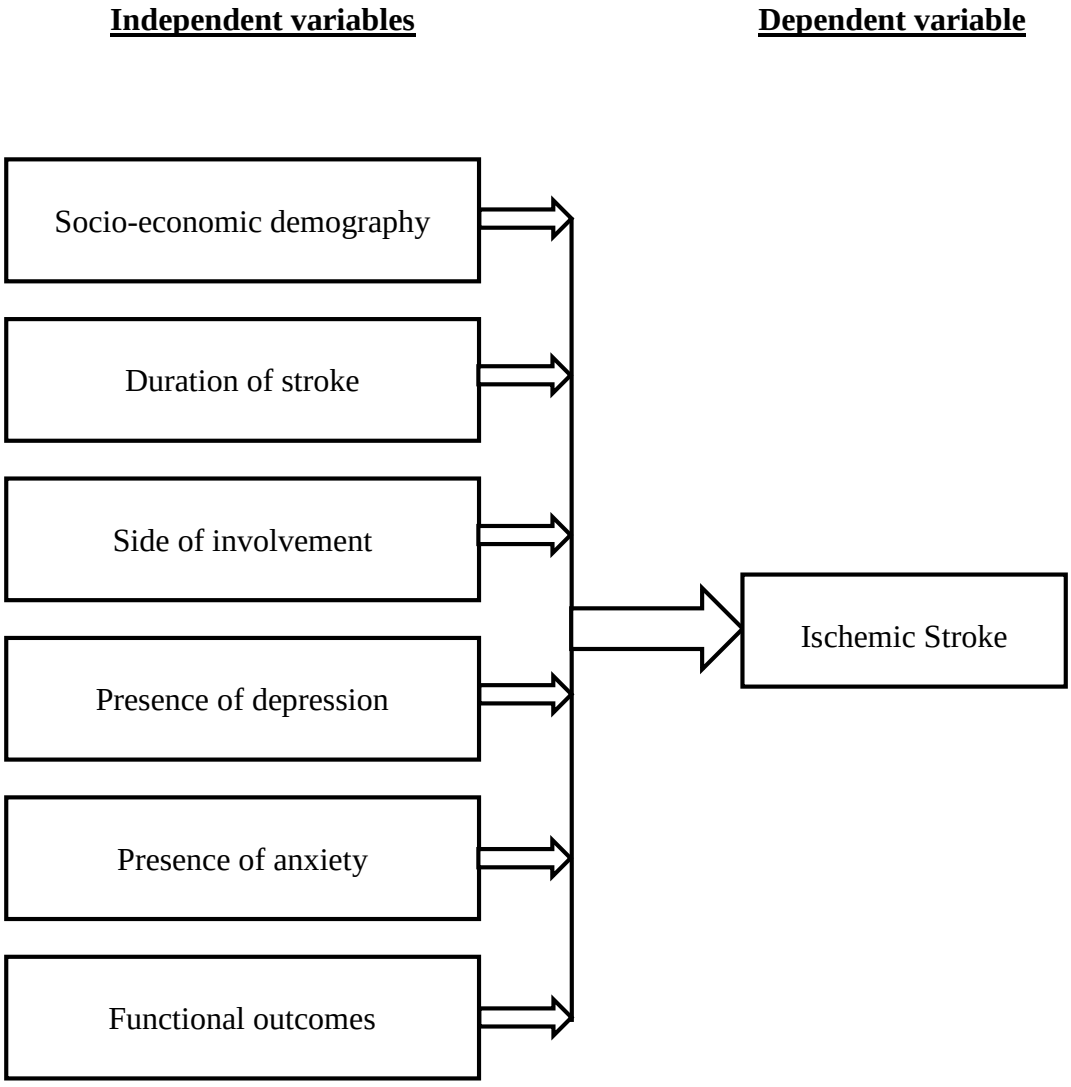
- To determine the level of depression & anxiety and its association with functional outcome for ischemic stroke patients.

### 1.5.2 Specific objectives

- To explore the Socio-demographic information of the participants.
- To identify the level of depression after ischemic stroke.
- To distinguish the level of anxiety after ischemic stroke.
- To discover the functional outcome.
- To find out association of various socio-demographic characteristics with depression and anxiety after ischemic stroke.
- To detect association between post stroke depression and post stroke anxiety among ischemic stroke patients.
- To determine association of post stroke depression and post stroke anxiety with the functional outcome for ischemic stroke patients.

## 1.6 List of Variables

**Conceptual Framework**



## 1.7 Operational Definition

### Cerebrovascular Accident (CVA) or Stroke

Rapidly developing clinical signs of focal (or global) disturbance of cerebral function, with symptoms lasting more than 24 hours (unless interrupted by surgery or death), with no apparent nonvascular cause.

### Ischemic Stroke

An ischemic stroke happens when blood flow through the artery that supplies oxygen-rich blood to the brain becomes blocked. They are caused by either a clot that blocks the blood vessel or by plaque buildup within the arteries, which narrows the vessel and results in a loss of blood flow to the brain.

### Stroke Rehabilitation

Stroke Rehabilitation is a progressive, dynamic, goal orientated process aimed at enabling a person with impairment to reach their optimal physical, cognitive, emotional, communicative, and social functional level.

### Depression

Depression is a mood disorder that causes a persistent feeling of sadness and loss of interest. Also called major depressive disorder or clinical depression, it affects how you feel, think and behave and can lead to a variety of emotional and physical problems.

### Anxiety

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.

### Functional Outcome

Functional outcomes define as results of care focused on the patient's physical ability. In rehabilitation therapy, functional outcome means a measurable goal that helps a patient perform specific activities of daily living.

# CHAPTER- II LITERATURE REVIEW

Stroke was first described by Hippocrates, the father of Western medicine, more than 24,000 years ago and narrated Stroke as a neurological condition characterized by the abrupt onset of muscle paralysis on one or both sides of the body (NINDS, 2004). Stroke is a clinical term that is synonymous with cerebrovascular accident (CVA). Stroke is defined by the World Health Organization (WHO) as a rapidly developing clinical sign of focal disturbance of cerebral function of presumed vascular origin lasting more than 24 hours. This definition excludes "transient ischemic attacks" (Stokes, 1998).

Transient Ischemic Attacks (TIAs) are brief incidences of stroke symptoms; the standard definition of timespan is 24 hours (Braunwald et al., 2003). It is the most common clinical manifestation of cerebral blood vessel malady. Cerebrovascular diseases include some of the most common and deadly disorders, including several types of stenosis, intracranial aneurysms and arteriovenous malformations (AVMs) which can lead to transient ischemic attacks, ischemic stroke, hemorrhagic stroke. Because of the complex anatomy of the brain and its vasculature, clinical manifestations of stroke are extremely variable (Boon et al., 1999).

A stroke, also known as a Cerebrovascular accident (CVA), is a sudden death of some of the brain cells caused by a lack of oxygen supply to the brain. Strokes are classified into two types-

- Ischemic stroke or cerebral infarct (which accounts for 80% of strokes) is caused by a blockage or reduction in blood flow in an artery that supplies the brain. They are caused by either a clot (thrombus) that blocks the blood vessel or by plaque buildup within the arteries, which narrows the vessel and results in a loss of blood flow.

- Haemorrhagic strokes are caused by the rupture of an artery within the brain, likely to result in an intracerebral haemorrhage (15%) or by the rupture of an aneurysm or AVM, resulting in subarachnoid haemorrhage (5% of strokes).

Ischemic stroke differs from hemorrhagic stroke in pathogenesis and clinical factors which are not the same and the incidence rate of ischemic stroke in East China was clearly higher than that of hemorrhagic stroke (Zhang et al., 2011). Pathophysiological terms can distinguish infarction from hemorrhage. An infraction affects approximately 80% of all stroke patients and is the most common, whereas a hemorrhage affects 20% of all stroke patients. Clinical presentation ranges from minor neurological symptoms to severe deficits depending on the location and size of the brain lesion (Hendricks, 2003).

Risk factors of stroke can be divided into two categories. There are two types of factors: modifiable or reversible factors and non-modifiable or irreversible factors. Age, gender (male > female except in the very young and very old), previous vascular events such as myocardial infarction, stroke, or peripheral embolism (Hossain et al., 2011), high fibrinogen, race (Afro-Caribbean> Asian > European) and heredity (Boon et al., 1999) are non-modifiable or irreversible factors. Modifiable or reversible risk factors include hypertension, diabetes, heart disease (atrial fibrillation, heart failure, endocarditis), hyperlipidemia, smoking, excessive alcohol consumption, polycythemia, and oral contraception (Hossain et al., 2011). Cigarette smoking and alcohol consumption have long been recognized as major risk factors for stroke. Their pathophysiological effects are multifactorial, involving systemic vasculature as well as blood rheology (Zhang et al., 2011).

Individuals who have had a Cerebrovascular Accident (CVA) may experience sensitive and cognitive impairments, but the most common are motor impairments such as muscular weakness, hypertonia, abnormal movement patterns, and physical deconditioning. Individuals with CVA have some musculoskeletal disorders that are considered significant impairments and usually determine limitations in performing functional and daily living activities such as gait, stair ascent and descent (Nascimento et al., 2011). Stroke can also cause language problems such as difficulty understanding speech or writing known as aphasia and knowing words but having difficulty saying them clearly known as dysarthria, problems with memory, thinking, attention, or learning, possible inability to comprehend objects, recognize body parts of the body that is affected or understand commands and trouble swallowing (Edwards, 1996). Other issues include bowel and bladder control, fatigue, depression, loss of body function, and reliance on others (Stokes, 1998).

Stroke is a medical emergency that necessitates immediate investigation and treatment (Amanullah et al., 2009). In the treatment of stroke, there is no cure. Stroke can be prevented by early detecting and reducing modifiable risk factors. This is critical in the context of our country, where healthcare facilities and resources are limited and the majority of the population lives below the poverty line (Hossain et al., 2011). Recovery after stroke is influenced by a number of biological and environmental factors and recovery profiles vary greatly between individuals (Hendricks, 2003).

Stroke is the leading cause of long-term disability in the Western world and functional outcomes are determined by the severity of the stroke. The estimated number of stroke survivors with incomplete recovery is 460 per 100,000, and one-third will be responsible for at least one of the activities of daily living (ADL). Between 50-70% of stroke survivors regain functional independence, but 15-30% are completely disabled, and 20% require institutional care after three months. At the start of a stroke, 85% of patients have loss of upper limb function (Carod & Egido, 2009). The goal of rehabilitation is to get the patient back home and to maximize recovery by providing a safe, progressive treatment that is tailored to the individual patient and implying that physical therapy use the unused neural pathways (Braunwald et al., 2003). Rehabilitation of stroke patients implies a thorough assessment of medical problems, impairments and disabilities, active physiological management, early mobilization and avoidance of bed rest, skilled nursing care, early organization of rehabilitation plans involving caregivers and early assessment and planning for discharge requires (Van Peppen et al., 2004). To provide impactful rehabilitation, assumptions about the patients' expected level of recovery must be made in order to plan appropriate therapeutic goals, develop effective treatment plans and promote discharge planning (Carr & Shepherd, 2003). Physiotherapy is an important part of the rehabilitation process. Exercise, manipulation, massage, skills training and treatment using electrical modalities are some of the techniques used to promote healing and recover movements. After a stroke, the main goal of physiotherapy is to help patients regain as much strength and movement as possible by learning to use both sides of their bodies again (Stroke association, 2012). The physiotherapist plays a significant role in the physical management of stroke by employing skills learned during education and professional development to assess and manage stroke problems based on scientific principles (Carr & Shepherd, 2003). Following a stroke, organized multidisciplinary care and

rehabilitation increase patient survival and self-determination while also shortening inpatient stays (Van Peppen et al., 2004). Because our brains are unable to regenerate new cells to replace those that have been damaged by a stroke, recovery is dependent on the brain's ability to reorganize its undamaged cells and compensate for what has been lost. Neuroplasticity refers to this phenomenon. To promote this phenomenon, physiotherapy can provide expert practical advice. Physiotherapists frequently collaborate with other members of the stroke team to ensure that they are capable of assisting with the wide range of problems that stroke can cause. Occupational therapists, speech and language therapists, doctors, nurses, social workers, and other specialists may be included in the team. The multidisciplinary stroke rehabilitation team is the name given to this team (Stroke association, 2012). Physiotherapy concepts are typically centered on regaining and improving motor control of the affected limb as well as postural control (Outermans et al., 2010).

Stroke deaths in low-income and middle-income countries accounted for 85.5% of all stroke deaths worldwide. Stroke affects one in every twenty adults (aged 14 and up) in developed countries, according to evidence. Despite the fact that stroke mortality and load rates widely vary among low-income countries (Feigin et al., 2009). Stroke is a long-term neurological condition, but studies have primarily focused on measuring short-term outcomes in the domains of impairments and disability. The World Health Organization (WHO) developed the international classification of impairments, disabilities, and handicaps in 1980. According to the results of 174 intense stroke tests, the number of deaths is 76%, the number of impairments is 76%, the number of disability is 42%, and the number of handicaps is only 2% (Patel et al., 2006).

Stroke is a leading cause of death in the United States, ranking third among women and fourth among men. Stroke rates are possibly a bit higher in men, but women have higher overall stroke death rates due to women's higher average age. Many studies have found that women who have had a stroke have less favorable outcomes than men. Women have more physical impairments and limitations in activities of daily living (ADL), which are the fundamental components of self-care (Gargano & Reeves, 2007). There are more than 700,000 strokes in the United States each year, resulting in more than 4.8 million stroke survivors today and there are more than 160,000 deaths. The age-adjusted stroke hospital increased by 18.6% between 1988 and 1997, while the total stroke hospital increased by 38.6%. Stroke costs were estimated to be $53.6 billion in

2004, with a life expectancy of $140,048 on average. Stroke is also one of the leading causes of functional impairments (Douglas et al., 2010).

Stroke is also a leading cause of illness and death in the United Kingdom. In England, approximately 110,000 strokes occur each year; according to recent studies, an incident occurred between 2002 and 2004 at a rate of 1.36 per 1000 people per year and 1.62 per 1000 people per year respectively. More than 46,000 people died in England and Wales in 2008 (9 percent of all deaths). The current UK health policy places a high priority on stroke prevention. These major risk factors, which include high blood pressure, high cholesterol, atrial fibrillation and diabetes must be better managed (Lee et al., 2011).

Every year, 200,000 people in Germany faced their first stroke and another 60,000 suffer a stroke after one or more pre-stroke events; in nearly five years almost anyone can suffer a stroke at any time in his or her life. Around 80% of strokes are ischemic, while 20% are hemorrhagic. More than one-quarter of stroke patients are under the age of 65. Risk factors (hypertension, smoking, lack of exercise, weight and other risk factors) are critical for the underlying vascular diseases (Knecht et al., 2011). According to regular mortality statistics, there are several differences in stroke deaths among European countries, with most east European countries faring much better. The projections for the European region are that the 65-year-old population ratio which can lead to the majority of stroke incidents, will increase to 35% in 2050 from 20% in 2000 and the middle-aged population will increase from 37.7 years in 2000 to 47.7 years in 2050 (Truelsen et al., 2006).

Stroke injury affects 4.03 percent of Singapore's population of 1.8 million people over the age of 50. Struggling with stroke is becoming more common in Singapore due to the city-rapid state's population growth, and stroke will exacerbate the outbreak of survivors. Almost 40% of stroke survivors have severe disabilities, which has a significant impact on social and health-related wellbeing. The Multidisciplinary team greatly enhances functional outcomes after a stroke of rehabilitation, with the possibility of institutionalization and a reduction in mortality (Ng et al., 2013). In 2017, the lifetime prevalence of stroke in China was 2.08%, resulting in 2.9 million stroke patients (Li et al., 2017). In Korea, stroke is the second most major cause of death (Yoo et al., 2007).

Stroke is the third leading cause of death in Thailand. Despite the initial resistance to progress, many of the consequences of stroke have worsened for survivors: Approximately half of 12-month stroke survivors rely on others for self-care and personal activity in day to day life. Through re-hospitalization, community support needs and rehabilitation organizations, it maintains a considerable demand for healthcare. Stroke patients must deal with the problem of strokes as well as functional limitations and reduced social interactions (Van der Riet et al., 2015).

A study conducted in the Netherlands in 2008 identified 26,556 patients who had their first stroke (20,798 hospitalized patients, 5758 out-of-hospital deaths). A total of 12,255 non-fatal, non-hospitalized first stroke patients were estimated. When the data was extrapolated to the entire Dutch population, it resulted in an estimate of approximately 41,000 patients suffering from their first stroke. Stroke incidence increased with age and was higher in men than in women, with the exception of the youngest (45 years) and oldest (> 85 years) age groups (Vaartjes et al., 2008). Based on WHO stroke estimates, population projections for the European Union and three selected European Free Trade Association (EFTA) countries assuming stable incidence rates, a 2% increase in incidence per 5 years, and a 2% decrease in rates per 5 years were found in a study conducted in Europe. Even if stable rates can be maintained, demographic changes in these countries will result in a significant increase in the number of stroke events from around 1.1 million per year in 2000 to more than 1.5 million per year in 2025 (Truelsen et al., 2006).

A study conducted in 2017 showed that the incidence of stroke in India ranged from 105 to 152/100,000 people per year, with the unsubtle prevalence of stroke ranging from 44.29 to 559/100,000 people in various parts of the country over the previous decade. These figures exceeded those of high-income countries (Kamalakannan et al., 2017).

For the years 2000 to 2016, Pakistan had a crude age-and-sex-adjusted stroke incidence of 95 per 100,000 people per year, with individuals aged 75 to 85 having the highest incidence of 584,000 out of 650,000 (Khan et al., 2019). A study conducted in Sri Lanka in 2015 selected a total of 2313 people from 782 households, yielding a response rate of 96.9 percent. 52.4 percent of them were females. Participants had an average age of 44.2 years, with a median age of 42 years. They represented the adult population in Sri

Lanka, with the majority being between the ages of 18 and 44 and only 12.8% being over the age of 65. In the study population, 24 people were identified as having had a stroke at some point in their lives, resulting in stroke prevalence of 10.4 per 1000 adults. It also revealed a 2:1 ratio of men (15 per 1000 men) to women (7 per 1000 women). The highest prevalence was found in men aged 65 to 74 years, while the highest prevalence was found in women aged 75 and up. In the age group of >65 years, the prevalence was 6-fold higher among men (62 per 1000 men) and 2-fold higher among women (18 per 1000 women) compared to the lowest-risk group (18–44 years) (Chang et al., 2015).

In Bangladesh, there is little data on stroke prevalence: one study found a total outbreak of three people per 1,000 people. The estimated number of stroke varies slightly across all South Asian countries. Afghanistan, Nepal, Bhutan, and the Maldives have provided no information (Wasay et al., 2014). The occurrence of stroke in Bangladesh has been estimated to be 0.20%, 0.30%, 0.20%, 1.00% and 1.00% for the age groups 40–49 years, 50–59 years, 60–69 years, 70–79 years and 80 years and older, respectively. The overall stroke prevalence was 0.30 percent, with a male-to-female ratio of 3.44: 2.41 patients (Islam et al., 2013).

In Western countries, ischemic stroke is ten times more common than hemorrhagic stroke. Hemorrhagic stroke is thought to have a higher risk of death than ischemic stroke. Previous research has shown that patients with hemorrhagic stroke have a higher risk of dying from a stroke. In March 2001, a nationwide Danish Stroke Registry was established with the goal of registering all patients admitted with severe stroke. In February 2007, the registry had 39,484 patients, 3993 of whom had hemorrhagic stroke. Some risk factors are shared by both hemorrhagic stroke and ischemic stroke. Diabetes and ischemic cardiovascular disease are well-known and well-established, but the relative importance of risk factors such as high blood pressure, smoking, and alcohol consumption is debatable (Andersen et al., 2009).

Estimation of World Health Organization showed that developing countries account for 86% of all stroke deaths worldwide. South Asia is thought to be the leading cause of stroke deaths in the world, accounting for more than 40% of all stroke deaths worldwide. Heart disease may be more prevalent in this region and stroke and heart disease affect people more than ten years before the rest of the globe. South Asian

countries have significant stroke population but are limited in terms of human resources (neuroscientists and stroke specialists) and financial resources (Wasay et al., 2014).

In the last few decades, the mortality rate has gradually decreased and remaining impairments and disabilities have increased and decreased functional outcome and quality of life. Depression has the greatest impact on stroke patients' quality of life. One of the most commonly experienced complaints among stroke patients is post-stroke depression (PSD) (Srivastava et al., 2010). Depression affects more than half of stroke survivors at some point (Ayerbe et al., 2013). Depression is a major neuropsychiatric potential problem of stroke, and it has been shown to inhibit functional and cognitive recovery (Hama et al., 2011). Stroke can hinder cognitive, emotional and social and physical functioning. It is the leading cause of long-term and severe disability. Depression is also one of the most common vulnerable neuro-cognitive features that occur following a stroke (Rabin et al., 2012).

A study conducted with available data up to March 2011. A total of 44 published studies with a total of 5,760 stroke patients have been included. The cumulative rate of anxiety after stroke was 20% within one month of stroke, 23% one to five months later and 24% six months or more later (Burton et al., 2013). In a cross-sectional study conducted in 2014, 29% of 13,283 potentially eligible stroke patients and found suggestive probability or possibility of presence of anxiety, while 24% with the presence of depression (Broomfield et al., 2014).

During the 15-year follow-up, the post-stroke incidence of depression ranged from 7% to 21% per year. The percentage of patients who were depressed three months after their stroke was 33%. The natural history of depression after a stroke is dynamic. More than half of all stroke patients experience depression at some point, with a stable prevalence of 30% up to 15 years after the stroke. The most important outcome associated with the progression of post stroke depression is certainly death (Ayerbe et al., 2013). In a study of 976 stroke patients, researchers discovered that patients with depression who were assessed three weeks after their stroke had a 50% higher mortality rate at one year than patients who were not depressed (Wade et al., 1987). The mortality rate among patients with acute in-hospital major or minor depression was 71% and 70%, respectively, among 103 acute stroke patients followed for ten years. Although the in-hospital background characteristics between the patients who died during follow-

up and those who survived were not markedly different, the rate of mortality among patients with acute in-hospital major or minor depression was 71% and 70%, respectively. This was significantly higher than the 10-year mortality rate for patients who did not have in-hospital depression, which was only 41%. When depression was present, the relative risk of death was 3.4 when compared to no depression. A logistic regression analysis of depression, social function, comorbid medical illness, age, gender, socioeconomic class, physical and cognitive impairment, and stroke size and location revealed that depression stayed an independent variable for death rate with an odds ratio of 3.7. Based on a large body of evidence, post stroke depression is associated with poorer outcomes in cognitive function, Functional abilities, and survivorship (Morris et al., 1993). However, early detection and treatment of post-stroke depression as well as post-stroke anxiety symptoms may prevent more profound consequences on functional outcomes for stroke patients (Masskulpan et al., 2008).

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# CHAPTER- III METHODOLOGY

## 3.1 Study design

Cross sectional study was selected for conducting the study. A cross-sectional study is a descriptive study in which disease and exposure status are measured concurrently in a given population and the main advantages are that it is quick and inexpensive (Bailey, 1997).

In a cross-sectional survey, a researcher collects data from a sample drawn from a predetermined population. This design entails identifying a group of people and then gathering the information that the researcher requires when they use a specific service. This type of data can be used to find out a population's level of depression & anxiety and assess their functional outcome. Survey research is one of the most common types of research that implies asking a huge numbers of people questions about a specific topic or issue that is of interest to the participant. A survey is a data collection method that involves measuring relevant sample variables (often using a questionnaire) without any manipulation or systemic interference. The survey idea typically approaches a sample of the intended group of interest, interviews them or asks them a questionnaire.

### 3.2.1 Study Site

Centre for the Rehabilitation of the Paralyzed (CRP) was chosen for this study. This place had chosen because it was suitable for the study and there had the samples which met inclusion and exclusion criteria of my study. At this place patient with Ischemic Stroke came for rehabilitation from different area of Bangladesh. As the Ischemic Stroke patients were available so that this place was selected.

### 3.2.2 Study area

Neurology Unit of Physiotherapy department was preferred to accomplish this study.

### 3.3 Sample size

The equation of sample size calculation are given below-

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

Here,

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

p = 0.3

q = 1-p

= 1-0.3

= 0.7

d = 0.05

Where,

n = Sample size

$Z\left(1-\frac{\alpha}{2}\right)$= linked to 95% confidence interval (use 1.96)

p = expected prevalence (as fraction of 1)

q = 1- p (expected non-prevalence)

d = margin of error at 5% (standard value of 0.05)

According to this equation the sample should be more than 323 people but due to lack of opportunity the study sample was 105 patients with ischemic stroke who had come to CRP for physiotherapy treatment.

## 3.4 Study sampling and population

The process of selecting subjects/individuals is referred to as sampling (Hicks, 1999). A population is the total number of people, events or observations used in a study. In this study, ischemic stroke patients were the sample population whom receiving rehabilitation intervention in Neurology Unit of Centre for the Rehabilitation of the paralysed (CRP), Savar, Dhaka.

## 3.5 Inclusion criteria

- Only Ischemic Stroke patients were included in the study (Wang et al., 2018)
- The patients receiving rehabilitation for 3 months at CRP, Savar, Dhaka (Barker-Collo, 2007)
- Participants with age between 40-70 years were taken part in the study (Li et al., 2019)
- Both male and female were included (Moon et al., 2018)
- Voluntary participants (Wang et al., 2018)

## 3.6 Exclusion criteria

- Patients who were medically unstable (Mudge et al., 2009)
- Participants who had speaking and hearing problem (Frimpong et al., 2016)
- Subject who had mental disorders (Mudge et al., 2009)
- Patients who had pathological disease (Lee et al., 2019)
- Perceptual or major cognitive deficits (Michaelsen et al., 2006)
- Patients who were unwillingness to participate (Wang et al., 2018)

## 3.7 Sampling technique

For this study convenience sampling technique are used due to the time limitation and also for the small size of population and as it was the one of the easiest, cheapest and

quicker method of sample selection. Samples were selected from Centre for the Rehabilitation of the paralyzed (CRP) at Savar, Dhaka by using inform consent. There are a lot of patients, from this population 105 samples were selected, according to the inclusion and exclusion criteria because it was not possible to study the total population within the time.

### 3.8 Data collection method

Data were collected by conducting an interview with a structured questionnaire paper. The questionnaire sought information on socio-demographic information, depression related questions, anxiety related questions and functional outcome related questions. Data were collected form 01-07-2021 to 30-09-2021. The English questionnaires were converted into Bengali to ask questions to the participants during interviews. Researcher must took permission from each volunteer participant by using a written consent form in Bengali.

### 3.9 Data collection tools

The tools were used for collecting data are Patient Health Questionnaire (PHQ-9), Generalized Anxiety Disorder (GAD-7) questionnaire, Modified Barthel Index (SHAH VERSION) questionnaire, pen, pencils, white paper, approved forms and consent forms, clip board and a bag for storing these tools.

### 3.10 Questionnaire

The questionnaire were structured type for collecting the data for the findings of the study.

### 3.11 Data Analysis

Data were analyzed by using Statistical Package for the Social Science (SPSS) version 20 software. The variables were labeled in a list and the researcher created a computer-based data definition record file that contained a list of variables in order. The researcher inputted the name of the variables and defined the types, values, decimal, label alignment and data measurement level in the variable view of SPSS. The next task was to check the inputted data set to confirm that all data had been correctly copied from the questionnaire paper to the SPSS data view. The raw data were then ready to

be analyzed in SPSS. Data were analyzed by descriptive statistics and calculated as percentages and presented by using tables, bar charts, column charts, pie charts etc. Microsoft office Excel 2013 was used to decorating the column charts, bar charts and pie charts. By this study a lot of information were collected. All results gave idea about level of depression & anxiety among ischemic stroke patients and also about their functional outcome. To find out the association among the different variables Chi-Square test was performed.

## Chi-Square ($x^2$) test

Chi-Square ($x^2$) test is the most popular discrete data hypothesis testing method. It is a nonparametric test of statistical significance for bivariate tabular analysis with a contingency table. Chi-Square test helps to analyze data come in the form of counts. This test can be applied to nominal or categorical data which can't be analyzed using the ranking technique.

## Calculation of Chi-Square

Chi square ($x^2$) is the sum of the square difference $(O —E)^2$ between observed (O) and the expected (E) data divided expected (E) in all possible data completing by the following equation-

$$\frac{(\text{Observed count} - \text{Expected count})^2}{\text{Expected count}}$$

$$(x^2) = \frac{(O-E)^2}{E}$$

The mathematical notation, the formula looks like this:

$$x^2 = \sum_{i=1}^{k} \frac{(O-E)^2}{E}$$

## 3.12 Ethical consideration

An oral dissertation presentation was presented in front of member of Institutional Review Board (IRB) of Bangladesh Health Professions Institute (BHPI). The research proposal was then submitted for approval to the Institutional Review Board (IRB). The ethical review board approved this research.

At first the researcher applied for official permission for the study to the authority of Bangladesh Health Professions Institute (BHPI) and Department of Physiotherapy (Clinical) to collect data from Neurology Unit of Physiotherapy department, CRP, Savar. During the course of this study, interested participants were given written consent forms and also they were informed about the purpose of the study and the consent form was explained to them verbally in Bengali. The participants were made aware that their participation was entirely voluntary and they had the unrestricted right to withdraw or discontinue at any time without any kind of hesitation. They were also ensured about maintaining confidentiality of their identity. The participants were informed that the information would be collected through a written questionnaire. The consent form and questionnaire were also checked by the supervisor. For this study researcher took permission from every interested participant with signature on a written consent form during interview. The participants were given information about their role in the study. Aim of the research and procedures involved in the study were also described to the participants. Participants were also informed that the informations they provided might be published but their personal identities like names and addresses would not be mentioned or used. The study information was only discussed with the supervisor and it was never shared with anyone else. These materials will be exposed of after completion of the study. Although the findings of the study may not have a direct impact on the participants but rehabilitation professionals may get benefit from it in the future.

# CHAPTER- IV RESULTS

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

## Socio demographical information

### 4.1 Age of the participants

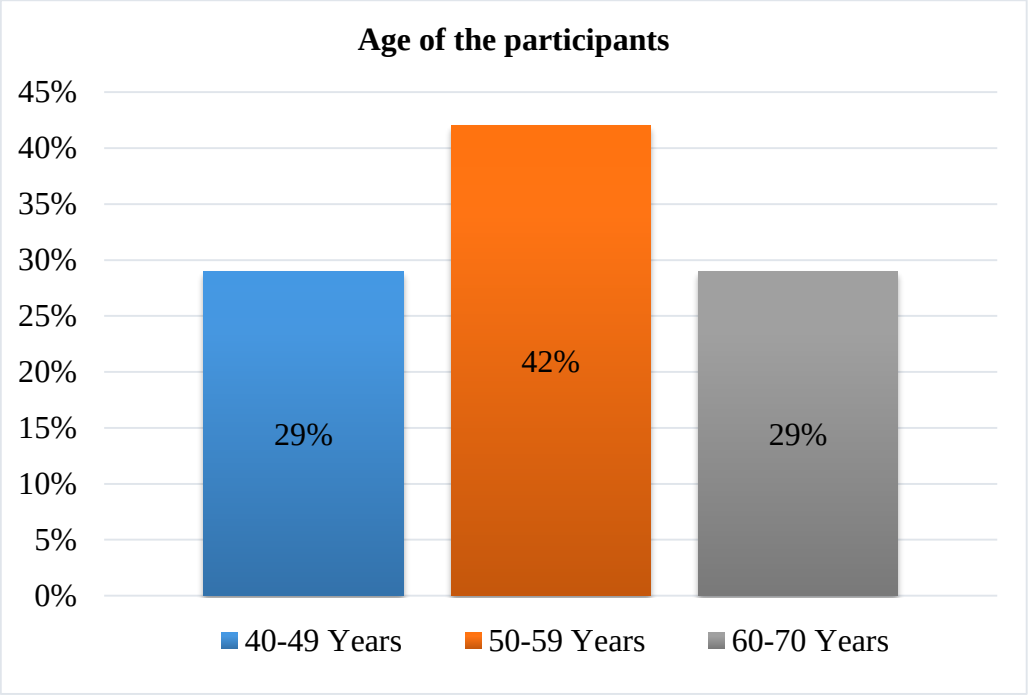


**Figure-4.1: Age range**

The study was conducted on 105 participants of having Ischemic Stroke. In the study the minimum age of a participant was 40 and maximum age of a participant was 70. Participants in between 40-49 years were found 29% (n=30), participants in between 50-59 years were found 42% (n=45), participants in between 60-70 years were found 29% (n=30).

## 4.2 Gender of the participants

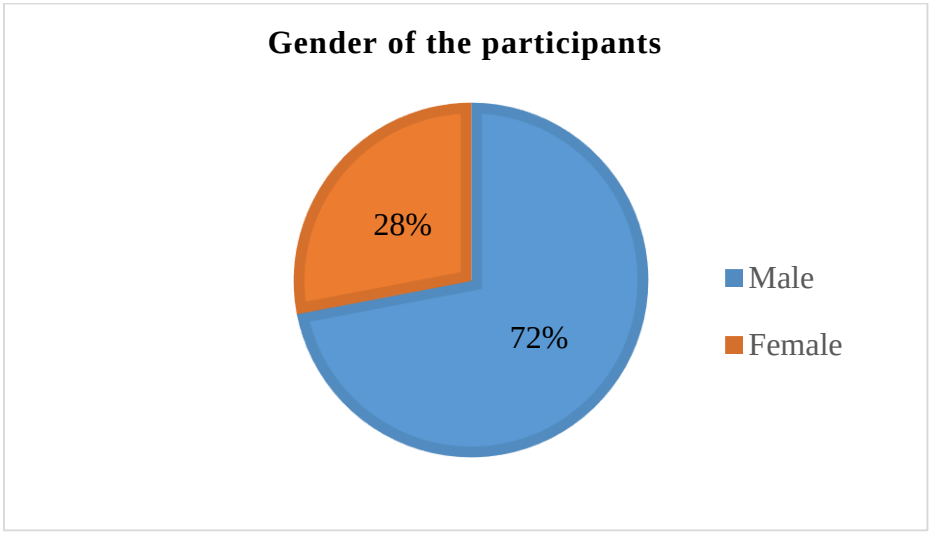


**Figure-4.2: Gender of the participants**

In my study male were more than female. Among the 105 participants 72% (n=76) were male and 28% (n=29) were female.

## 4.3 Residence of the participants

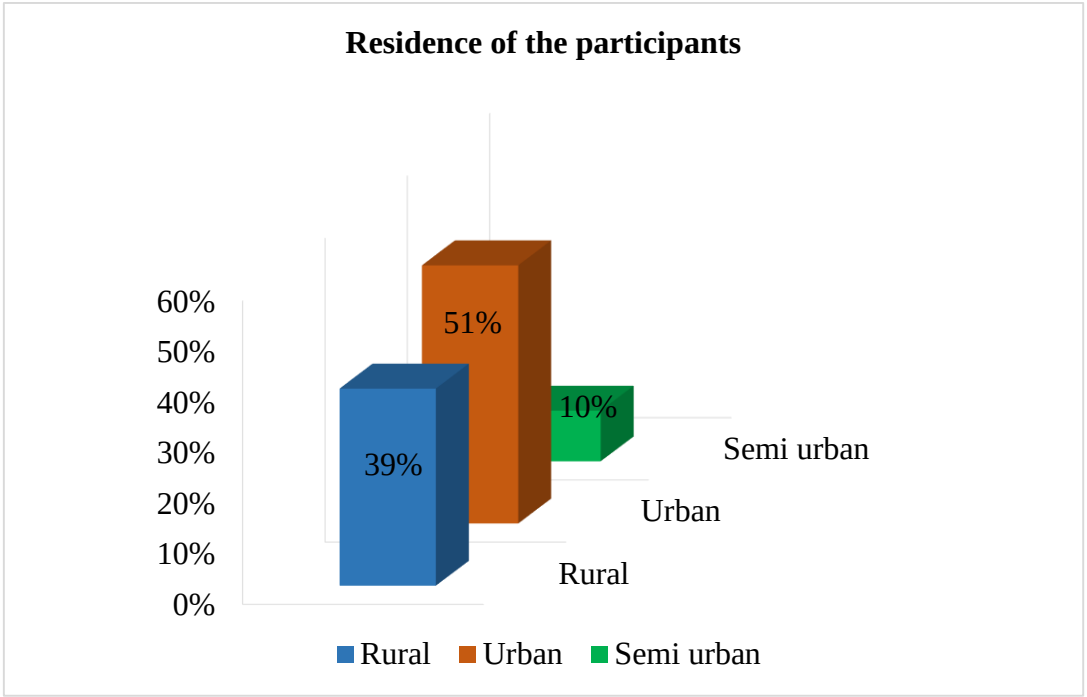


**Figure-4.3: Residence of the participants**

The column chart showed that among the 105 participants it was found that 51% (n=53) were lived in urban area, 39% (n=41) were lived in rural area and 10% (n=11) were lived in semi urban area.

## 4.4 Marital status of the participants

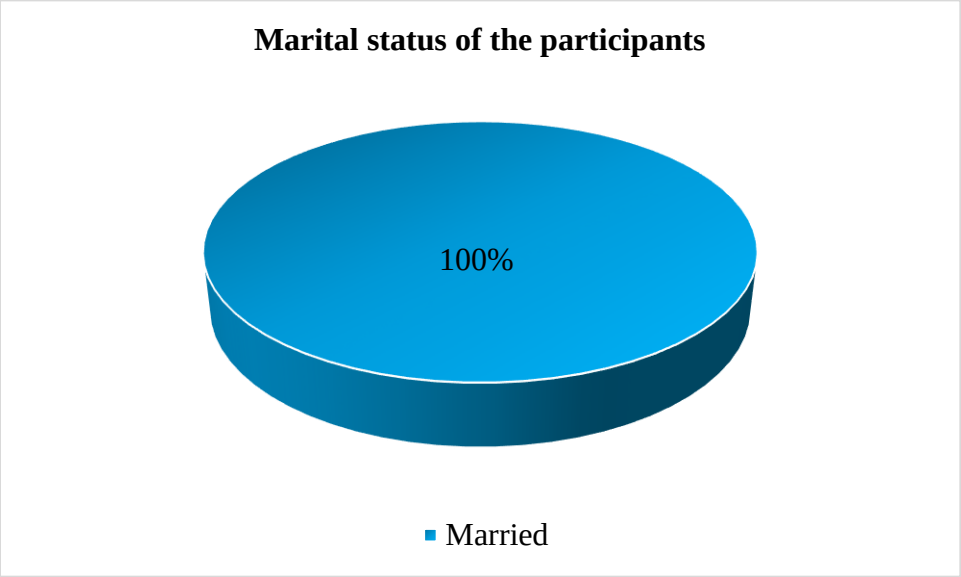


**Figure-4.4: Marital status of the participants**

Among the 105 participants 100% (n=105) participants were married, 0% (n=0) participants were single or divorced.

## 4.5 Religion of the participants

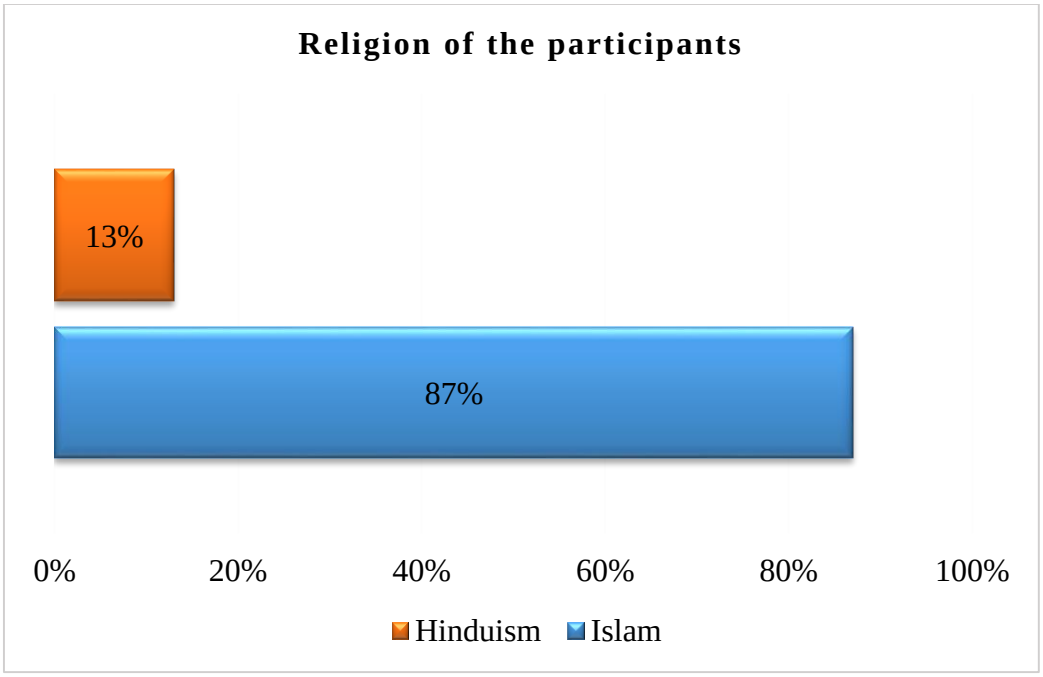


**Figure-4.5: Religion of the participants**

The bar chart showed that among 105 patients it was found that the religion of 87% (n=91) were Islam and 13% (n=14) were Hinduism.

## 4.6 Education

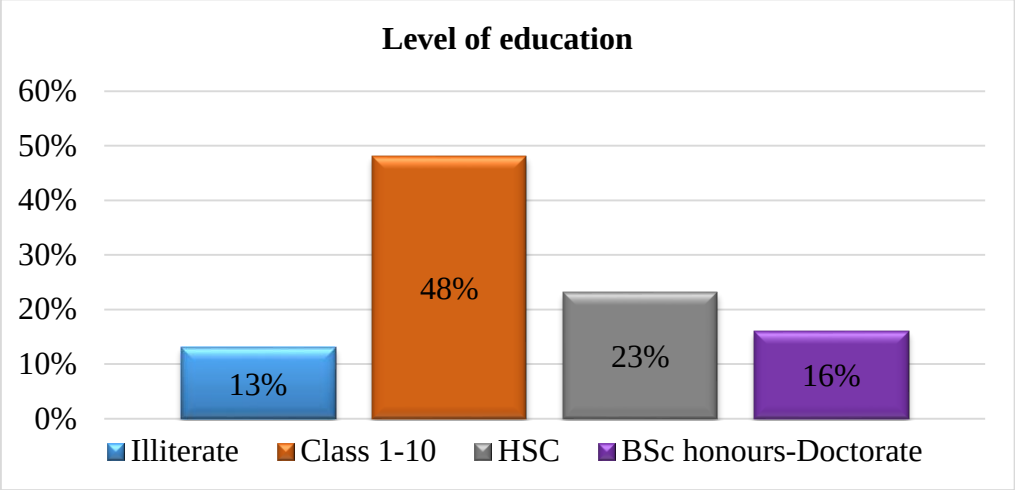


**Figure-4.6: Educational level of the participants**

Among the 105 participants 13% (n=14) participants were no formal schooling / illiterate, 48% (n=50) participants were primary or SSC completed, 23% (n=24) participants were HSC completed, 16% (n=17) participants have graduate completed or have Master's or doctorate degree completed.

## 4.7 Occupation

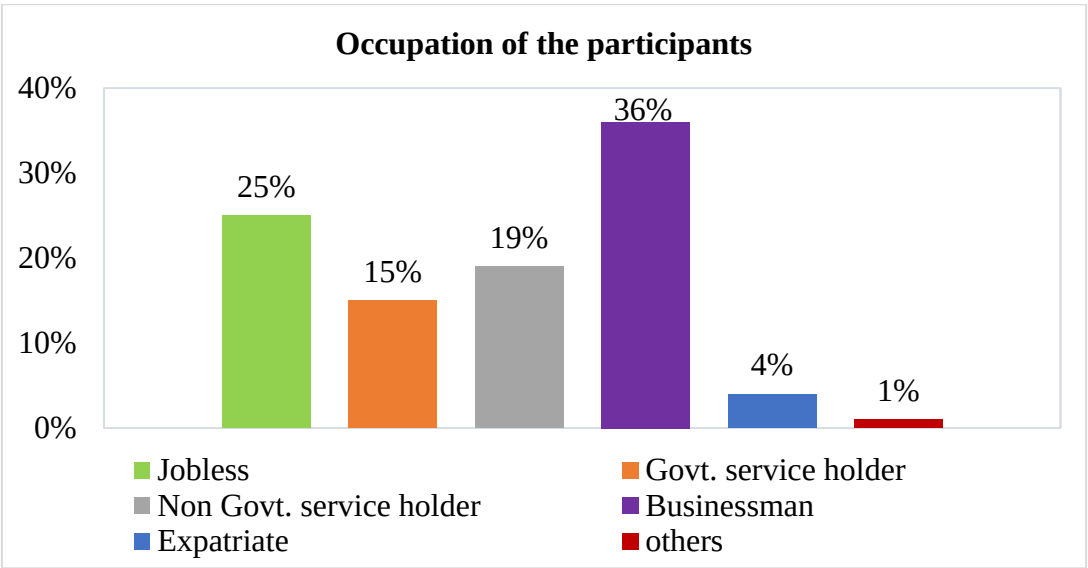


**Figure-4.7: Occupation**

Among the participants a highest number of respondents 36% (n=38) found those were businessman, 25% (n=26) participants were jobless, 19% (n=20) respondents were non govt. service holder, 15% (n=16) were govt. service holder and 4% (n=4) participants were expatriate and 1% (n=1) had found with other professions.

## 4.8 Total number of family member

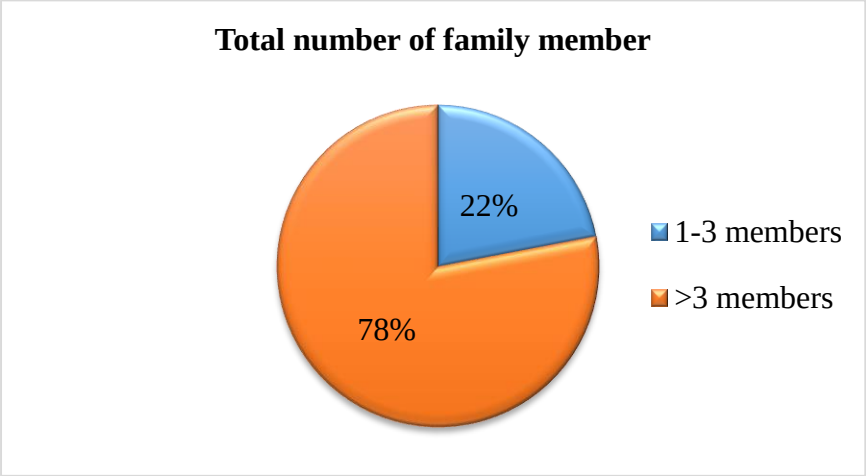


**Figure-4.8: Total number of family member**

In my study it was found that 78% (n=82) of the participants have family member of more than three persons and 22% (n=23) of the participants have family member of between one and three.

## 4.9 Total number of earning member

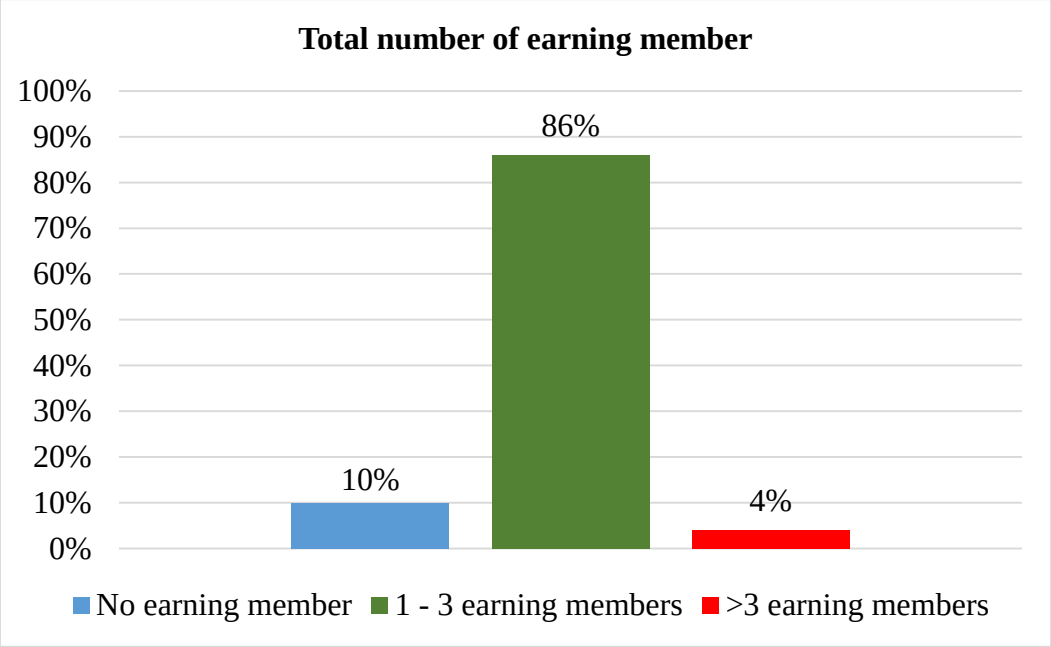


**Figure-4.9: Total number of earning member**

The column chart showed that among 105 participants there were 86% (n=90) participants had earning member of 1 to 3 in their family, 10% (n=11) had no earing member in their family and 4% (n=4) had more than three earning member in their family.

## 4.10 Family type of the participants

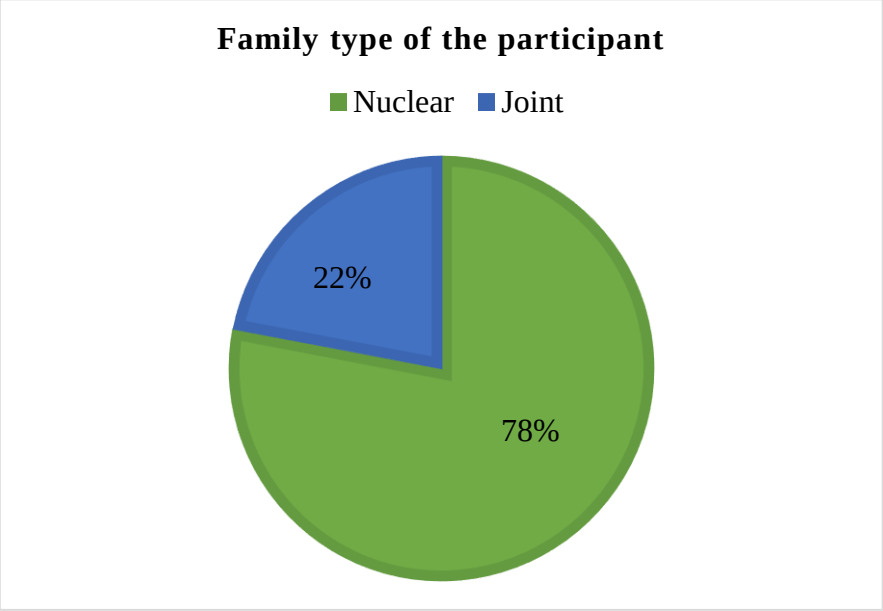


**Figure-4.10: Family type of the participants**

Among the 105 participants it was found that the number of nuclear family is greater than joint family. In where 78% (n=82) of the respondents have nuclear family and 22% (n=23) of the respondents have joint family.

## 4.11 Expected Family support

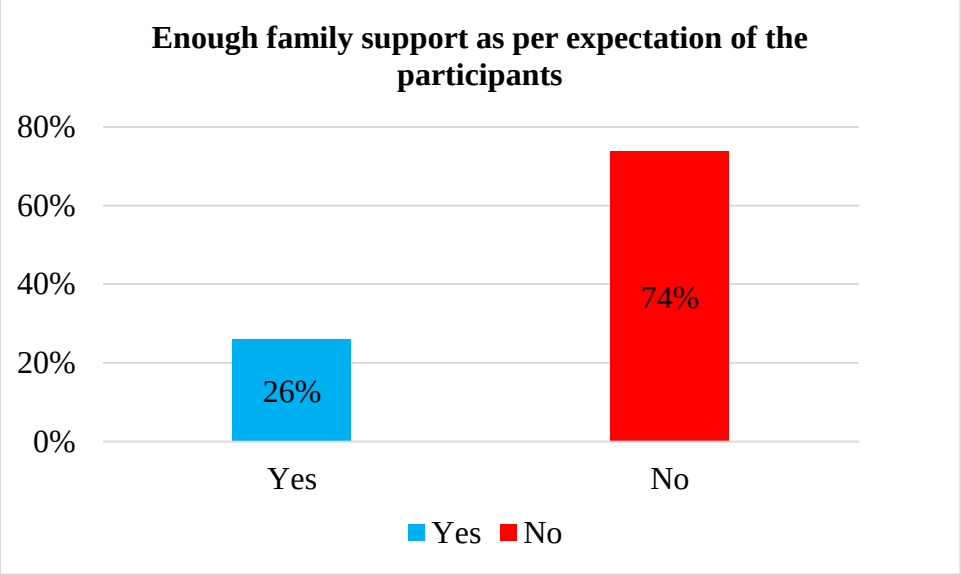


**Figure-4.11: Expected family support**

It is found in my study that among 105 participants 26% (n=28) of them have enough family support as expected but 74% (n=77) of the respondents didn't have enough family support as per their expectation.

## 4.12 Average monthly income

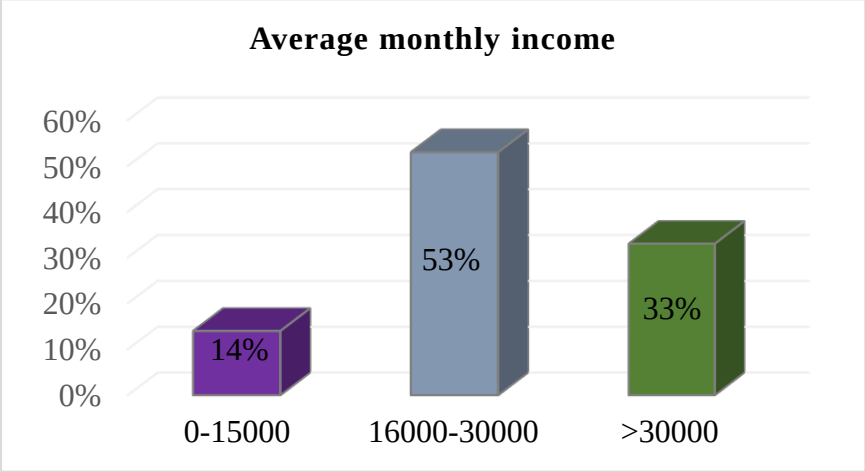


**Figure-4.12: Average monthly income**

In my study it was found that among 105 participants 53% (n=55) of the respondents have their total family income in average 16000 to 30000 taka monthly, 33% (n=35) of the respondents have their total family income in average above 30000 taka monthly and 14% (n=15) of the respondents have their total family income in average 0 to 15000 taka monthly.

## 4.13 Average monthly expenditure

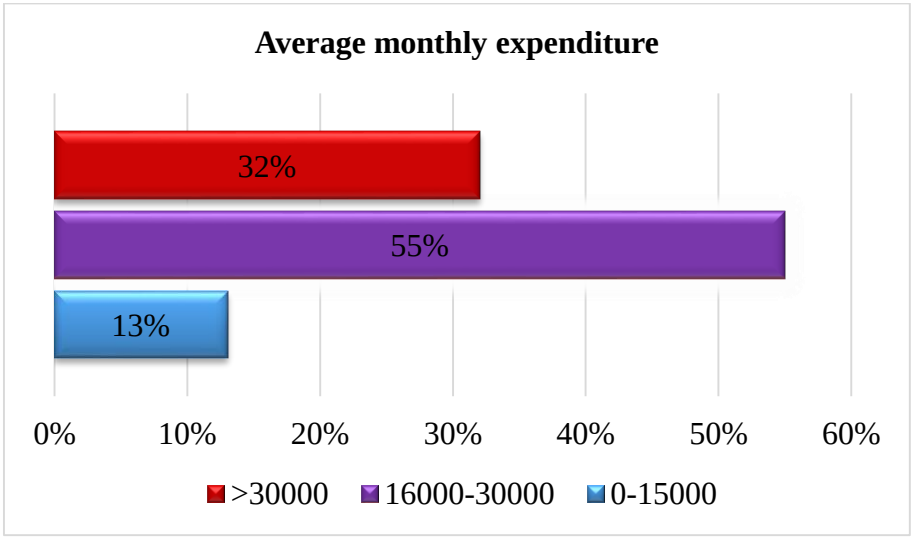


**Figure-4.13: Average monthly expenditure**

Among the 105 participants 55% (n=58) of the respondents have their total monthly expenditure in average 16000 to 30000 taka, 32% (n=33) of the respondents have their total monthly expenditure in average above 30000 taka and 13% (n=14) of the respondents have their total expenditure in average 0 to 15000 taka monthly.

## 4.14 Status of self-reported general health

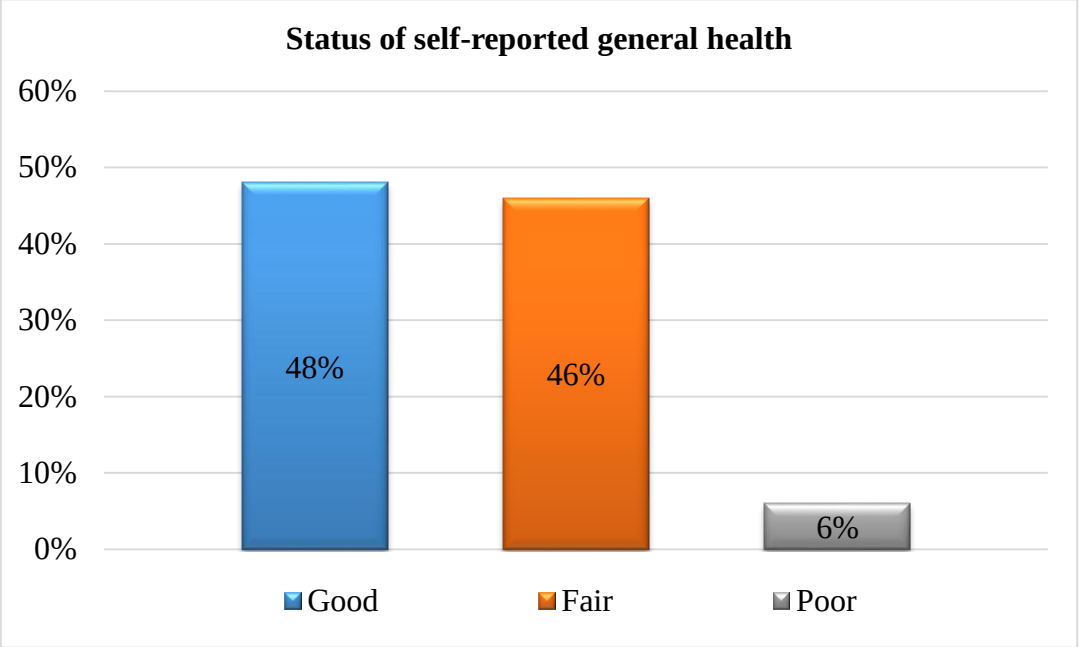


**Figure-4.14: Status of self-reported general health**

Among the 105 respondents 48% (n=51) participants reported their general health was good by him/herself, 46% (n=48) participants reported their general health was fair by him/herself and 6% (n=6) reported their general health was poor.

## 4.15 Patient Health Questionnaire (PHQ) total score

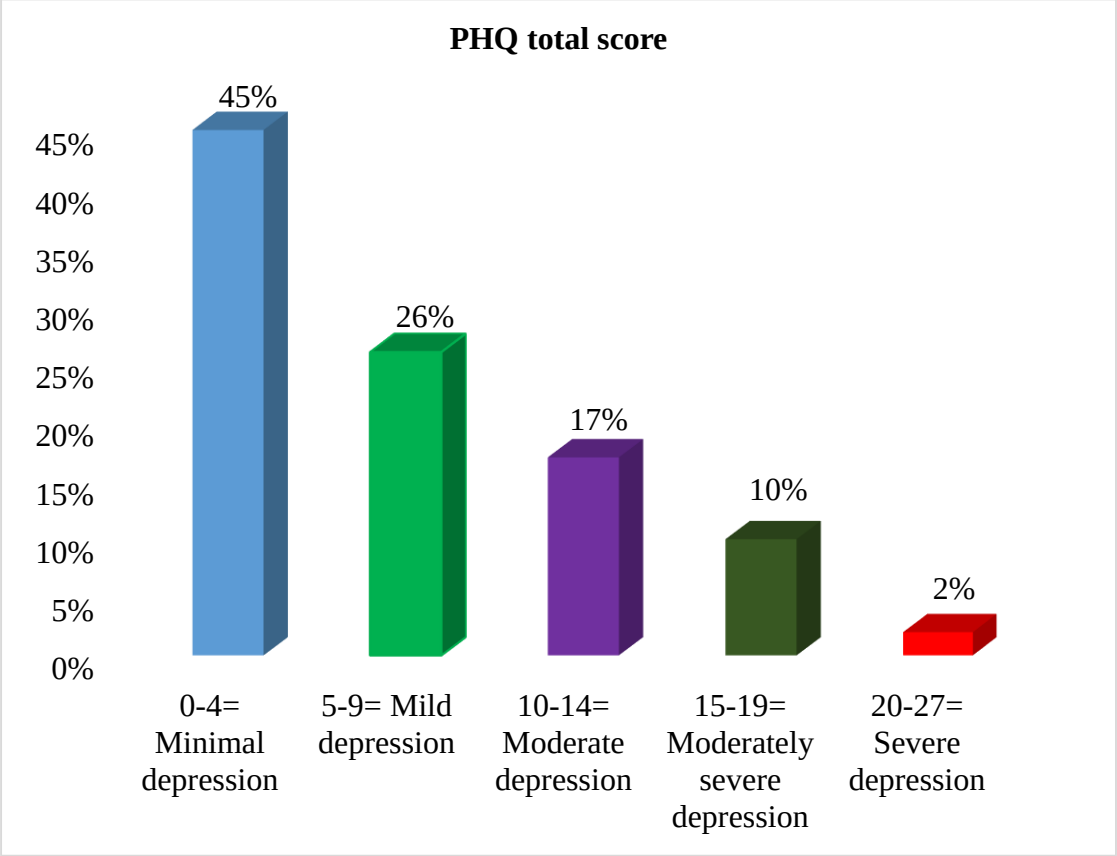


**Figure-4.15: PHQ total score**

Among 105 participants it was found that 45% (n=47) of the participants had minimal depression, 26% (n=27) participants had mild depression, 17% (n=18) participants had moderate depression, 10% (n=11) participants had moderately severe depression and 2% (n=2) participants had severe depression.

### 4.16 Generalized Anxiety Disorder (GAD) total score

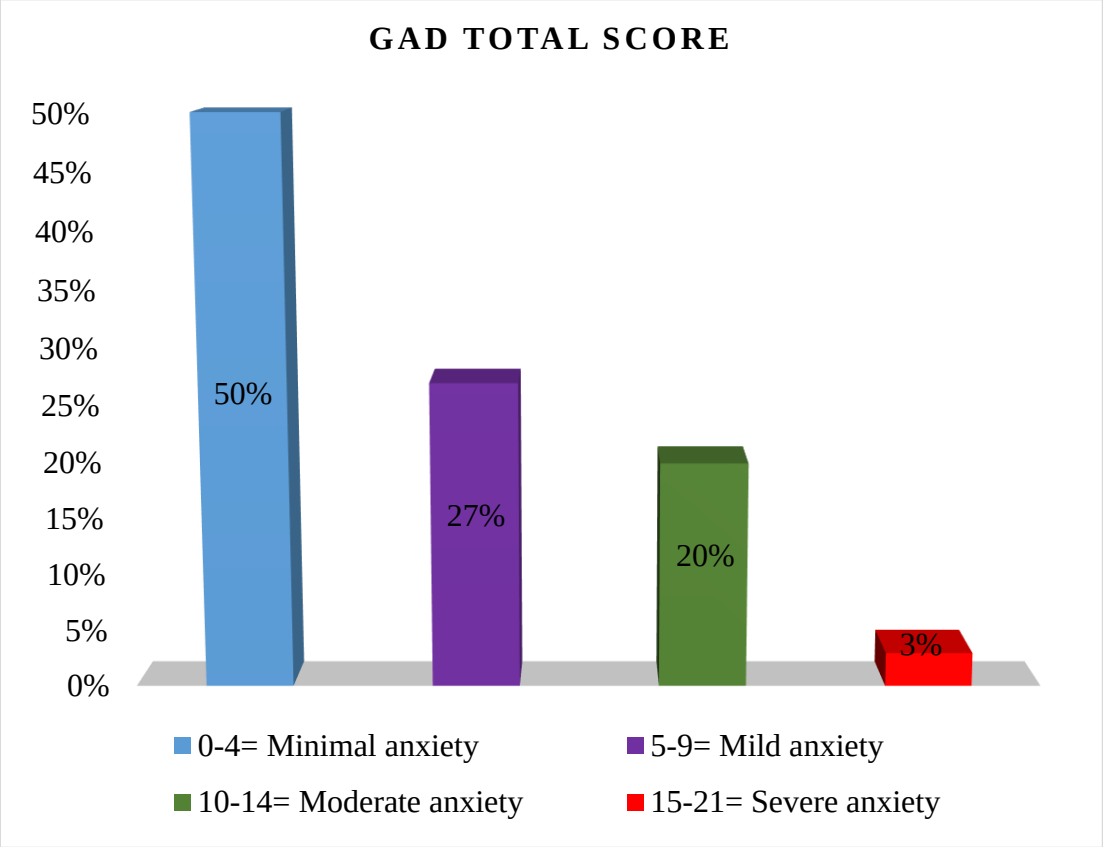


**Figure-4.16: GAD total score**

The column chart showed that among 105 respondents there were 50% (n=53) of the respondents who had minimal anxiety, 27% (n=28) of the respondents had mild anxiety, 20% (n=21) of the respondents had moderate anxiety and 3% (n=03) of the respondents had severe anxiety.

## Results of Modified Barthel Index (SHAH VERSION)

### 4.17 Personal hygiene

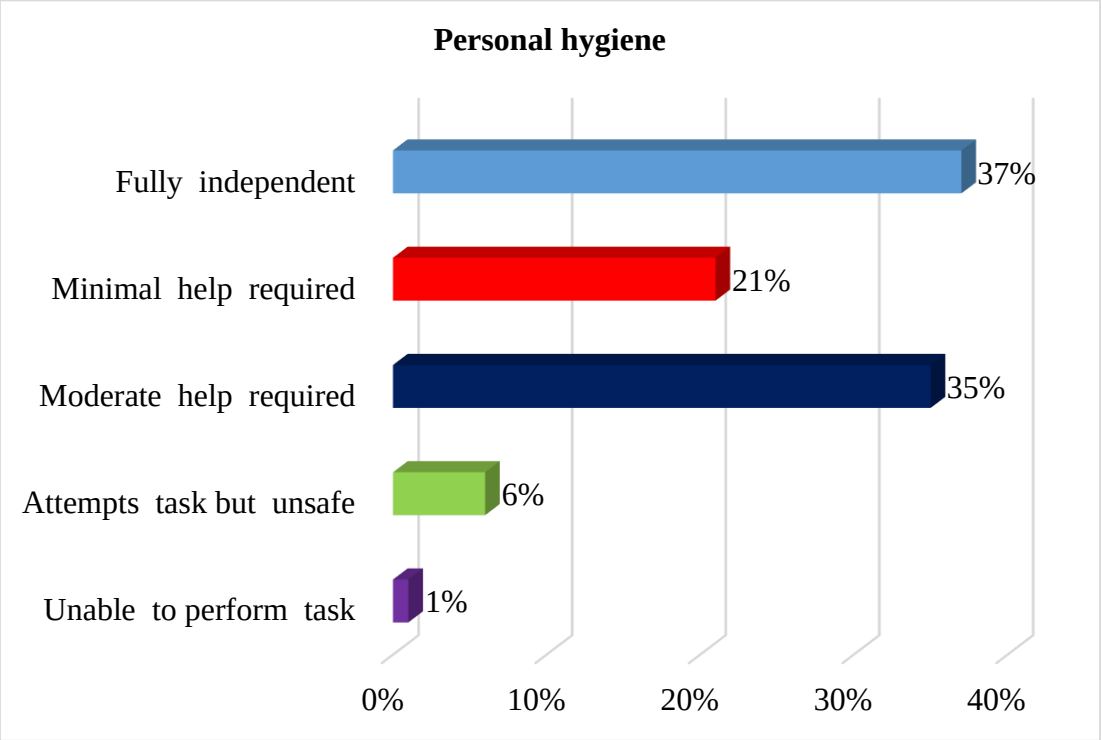


**Figure-4.17: Personal hygiene**

In my study it was found that among all 105 participants there were 37% (n=39) of participants who were fully independent in doing their personal hygiene, 21% (n=22) of the participants whom required minimal help in doing their personal hygiene, 35% (n=37) of the participants whom needed moderate help to do their personal hygiene, 6%(n=06) of the participants did attempt to do the task but felt unsafe and there were 1% (n=01) of the participants who were unable to perform task to do their personal hygiene.

## 4.18 Bathing self

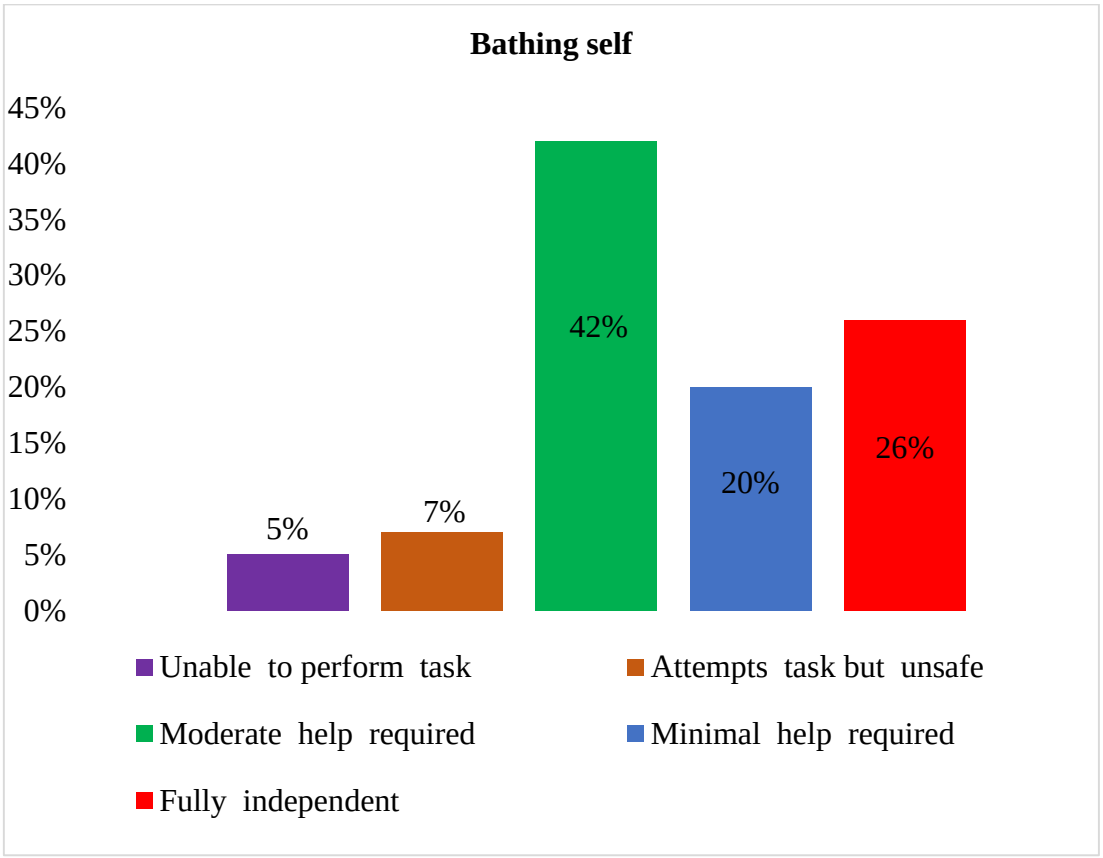


**Figure-4.18: Bathing self**

Among the 105 participants it was found that 26% (n=28) of participants who were fully independent in doing their own bath, 20% (n=21) of the participants required minimal help in doing self-bathing, 42% (n=44) of the participants whom needed moderate help to do self-bathing, 7% (n=07) of the participants did attempt to perform the task but felt unsafe and there were 5% (n=05) of the participants who were unable to perform the task.

## 4.19 Feeding

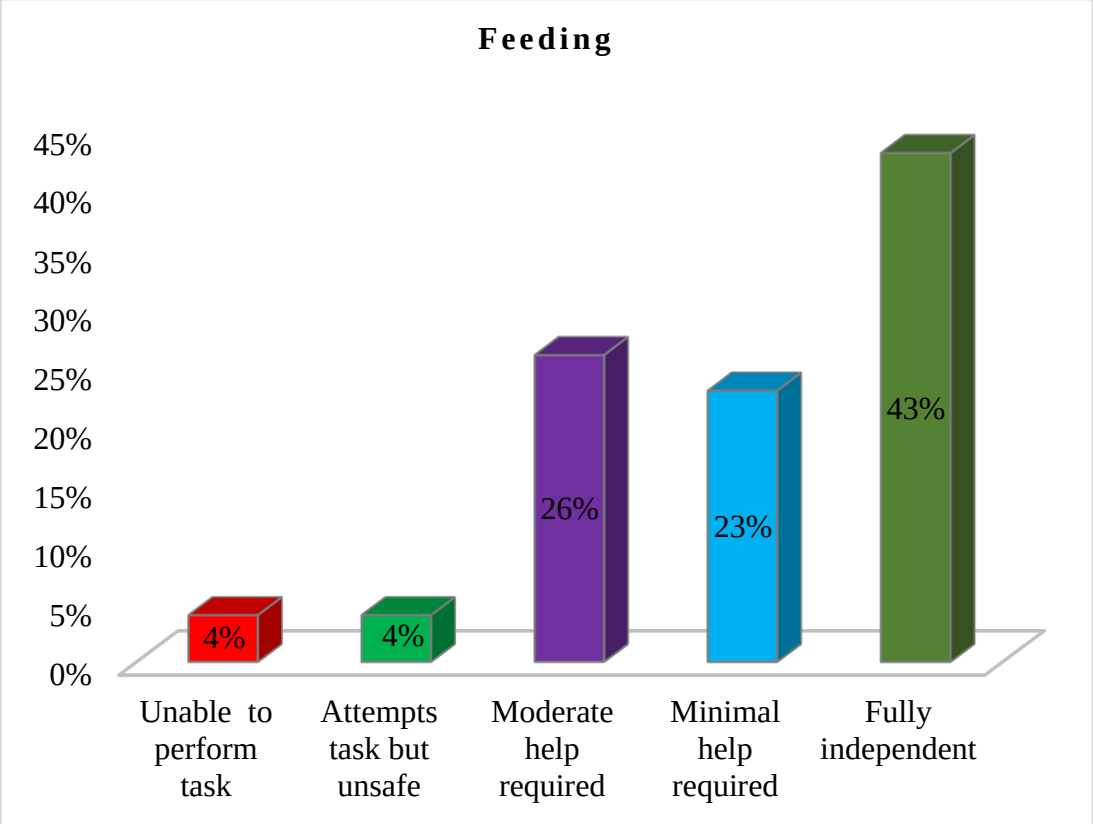


**Figure-4.19: Feeding**

The column chart showed that among all of the 105 participants 43% (n=45) of participants were fully independent in feeding by him/ herself, 23% (n=24) of the participants required minimal help in doing the task, 26% (n=28) of the participants needed moderate help to perform the task, 4% (n=04) of the participants did attempt to perform the task but felt unsafe and there were 4% (n=04) of the participants who were unable to feed by themselves.

## 4.20 Toilet

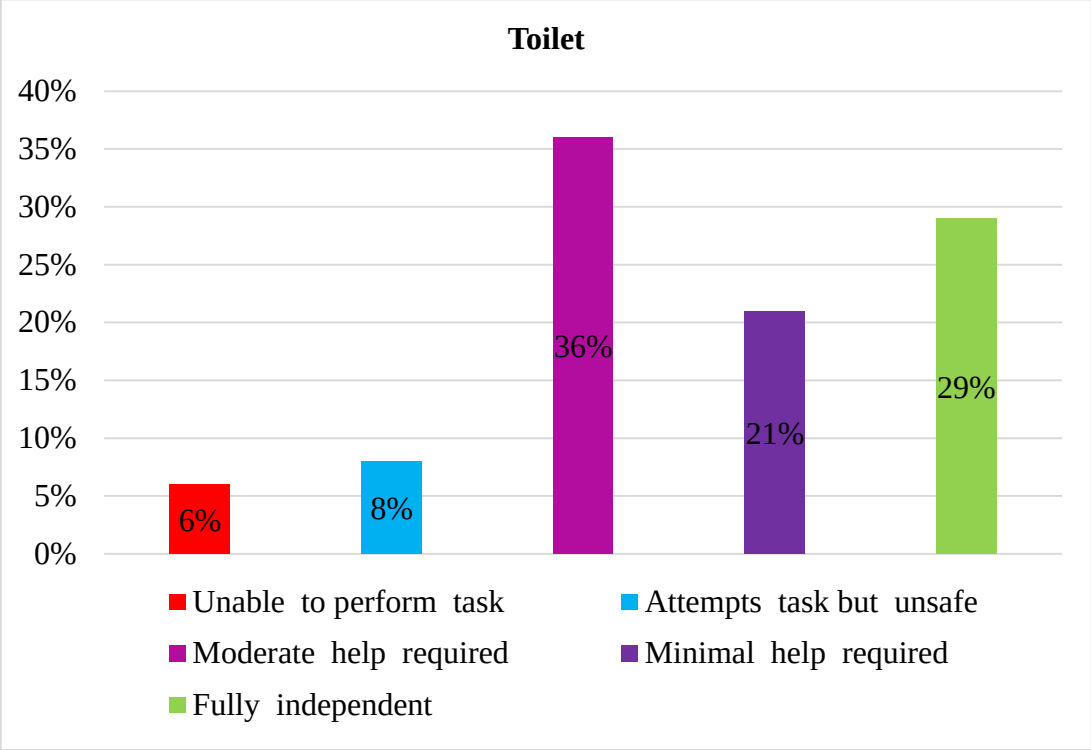


**Figure-4.20: Toilet**

Among the 105 participants 29% (n=31) of participants were fully self-independent in this task, 21% (n=22) of the participants required minimal help in doing the task, 36% (n=38) of the participants needed moderate help to perform the task, 8% (n=08) of the participants did attempt to perform the task but felt unsafe and 6% (n=06) of the participants were unable to perform the task.

## 4.21 Stair climbing

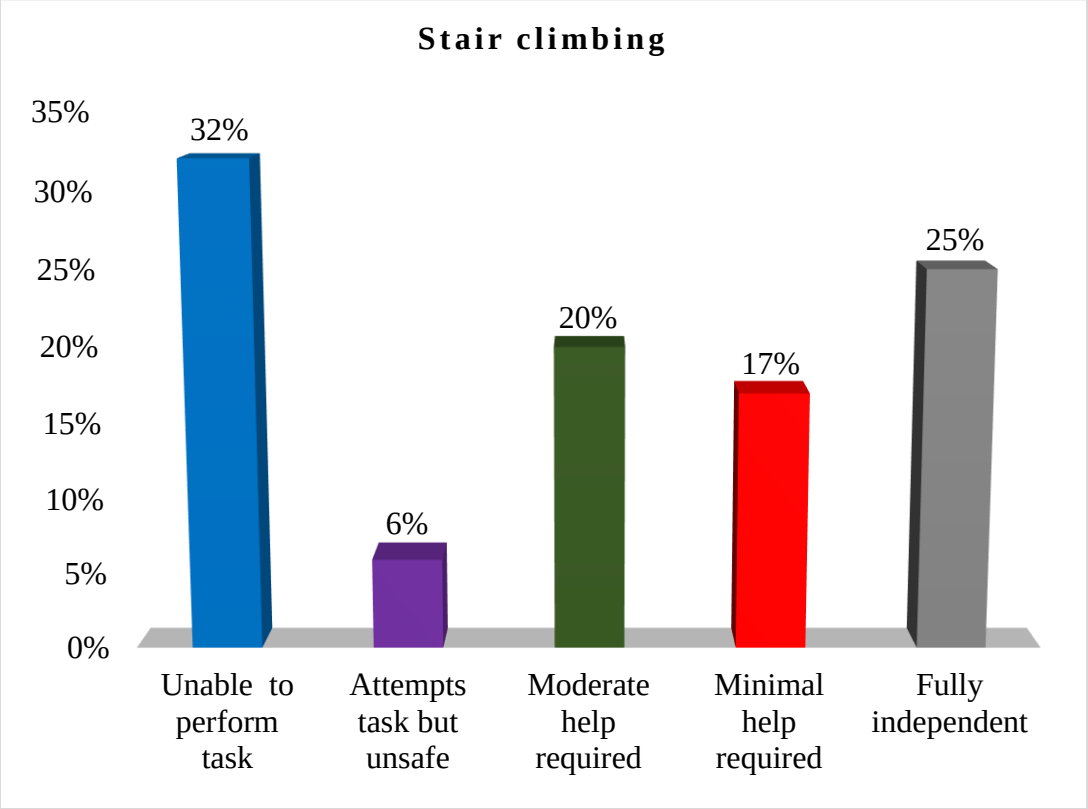


**Figure-4.21: Stair climbing**

In my study it was found that among the 105 participants there were 25% (n=26) of participants who were fully independent in stair climbing, 17% (n=18) of the participants whom required minimal help in doing the task, 20% (n=21) of the participants needed moderate help to perform stair climbing, 6%(n=06) of the participants did attempt to do the task but felt unsafe and there were 32% (n=34) of the participants were unable to perform stair climbing.

## 4.22 Dressing

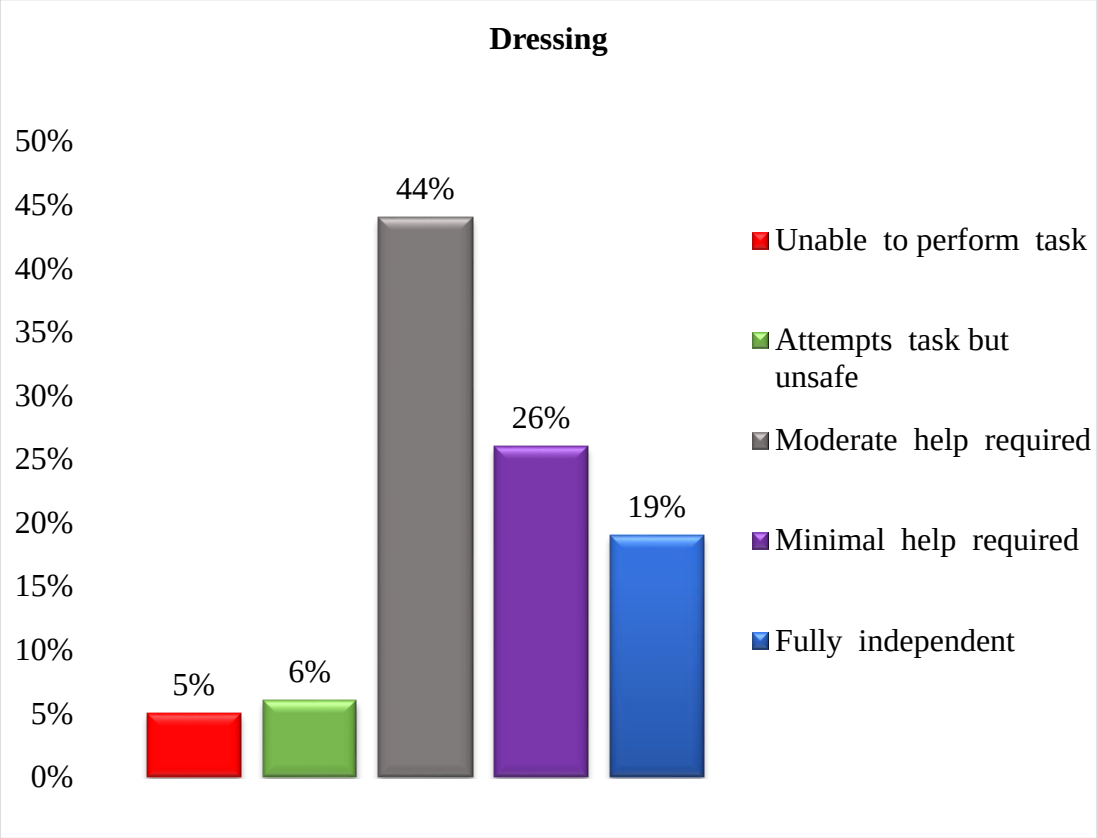


**Figure-4.22: Dressing**

The column chart showed that among the 105 participants 19% (n=20) of participants were fully independent in performing their dressing, 26% (n=28) of the participants required minimal help in doing their dressing, 44% (n=46) of the participants needed moderate help to be dressed up, 6% (n=06) of the participants did attempt to perform the task but felt unsafe and 5% (n=05) of the participants were unable to perform the task.

## 4.23 Bowel control

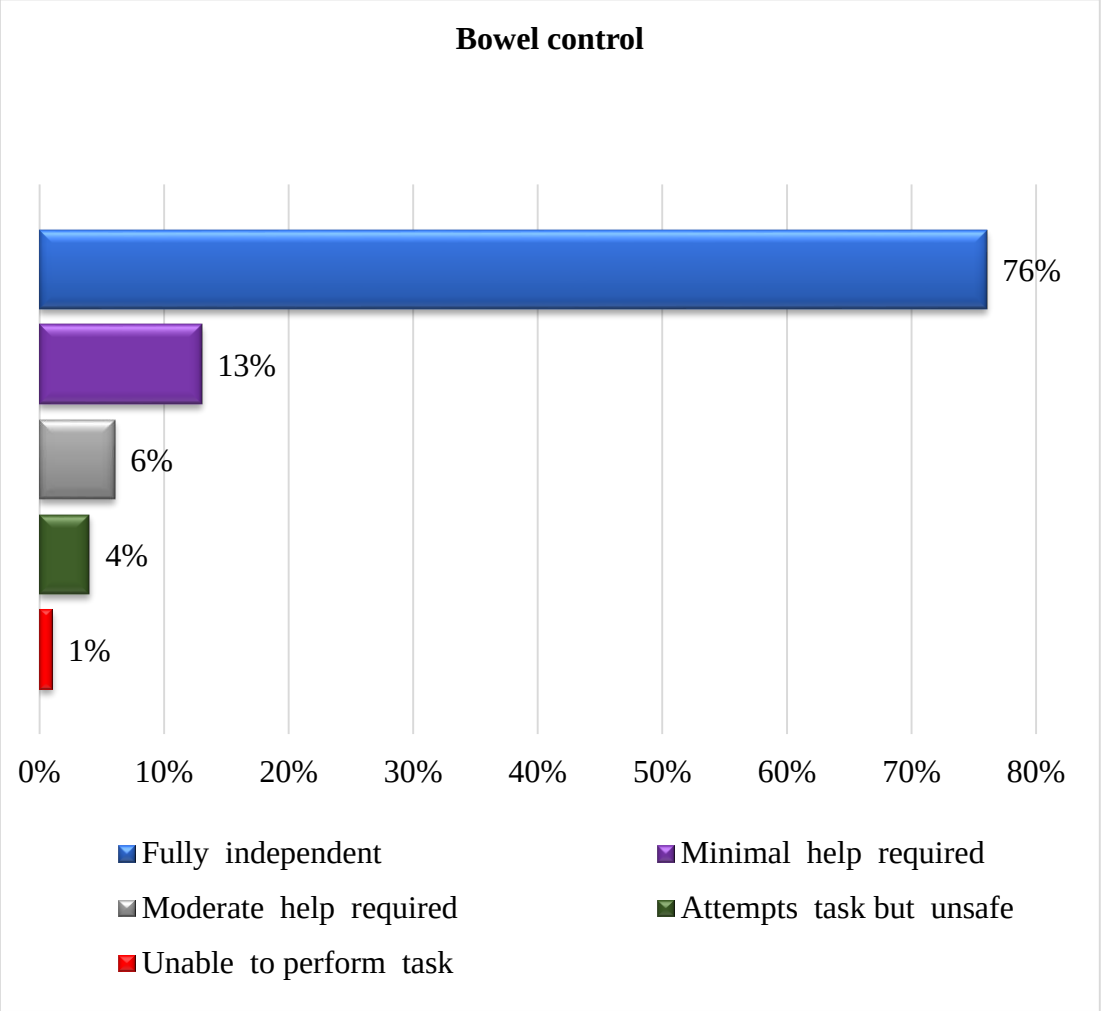


**Figure-4.23: Bowel control**

The bar chart showed that among the 105 participants 76% (n=80) of participants were fully self-independent in this task, 13% (n=14) of the participants required minimal help in doing the task, 6% (n=06) of the participants needed moderate help to perform the task, 4% (n=04) of the participants did attempt to perform the task but felt unsafe and 1% (n=01) of the participants were unable to perform the task.

## 4.24 Bladder control

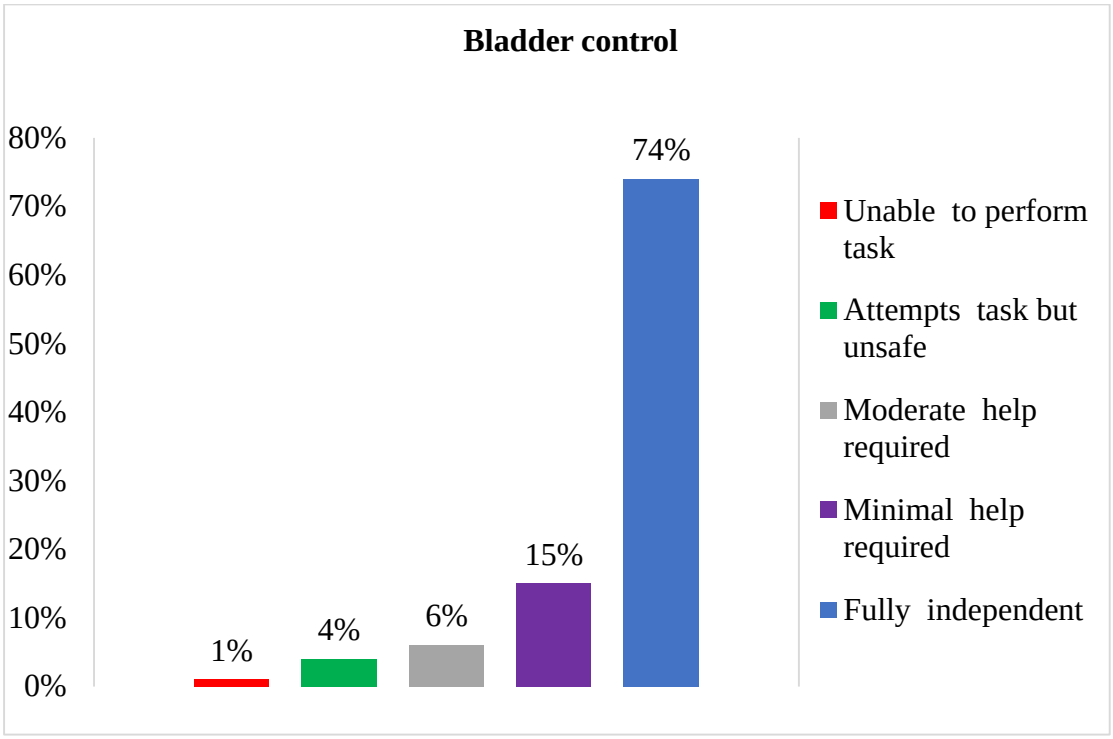


**Figure-4.24: Bladder control**

The column chart showed that among the 105 participants 74% (n=78) of participants were fully independent in bladder control, 15% (n=16) of the participants required minimal help in doing the task, 6% (n=06) of the participants needed moderate help for the task, 4% (n=04) of the participants did attempt to perform the task but felt unsafe and 1% (n=01) of the participants were unable to perform the task.

## 4.25 Ambulation

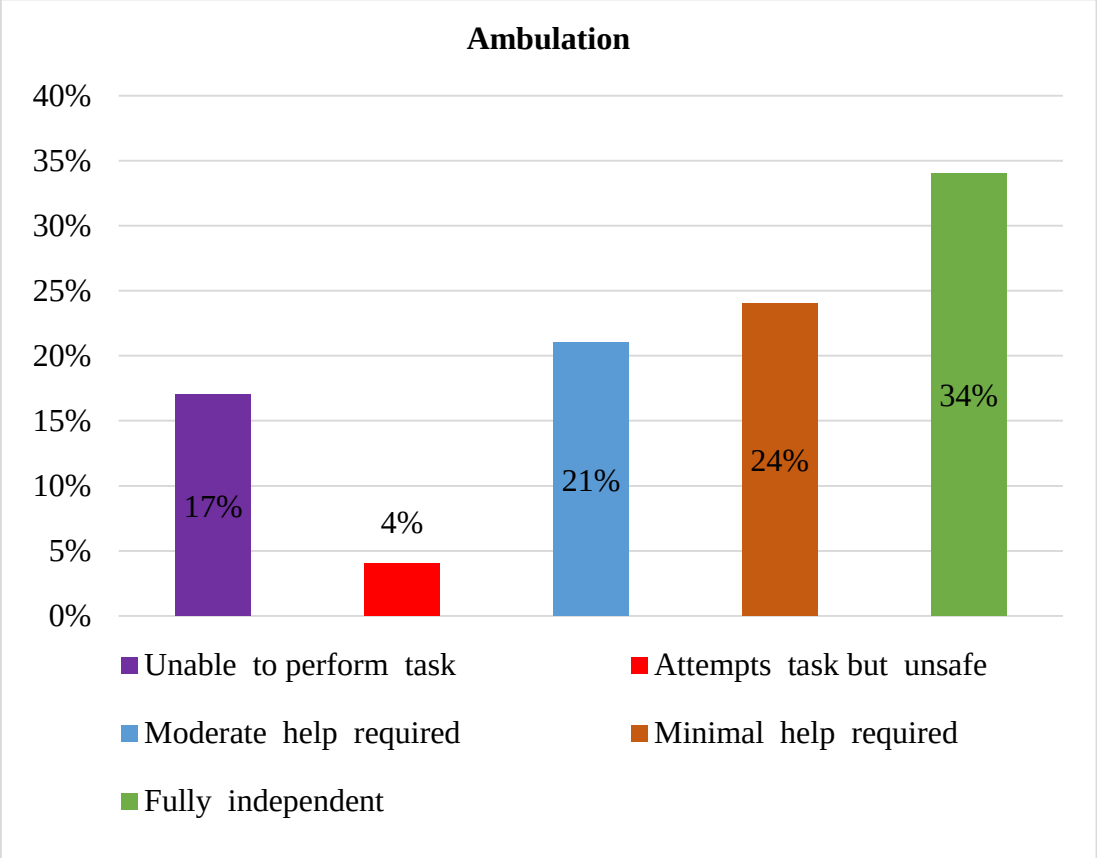


**Figure-4.25: Ambulation**

In my study it was found that among the 105 participants there were 34% (n=36) of participants who were fully independent in ambulation, 24% (n=25) of the participants required minimal help in doing the task, 21% (n=22) of the participants needed moderate help to perform ambulation, 4%(n=04) of the participants did attempt to do the task but felt unsafe and there were 17% (n=18) of the participants were unable to perform ambulation.

## 4.26 Wheelchair

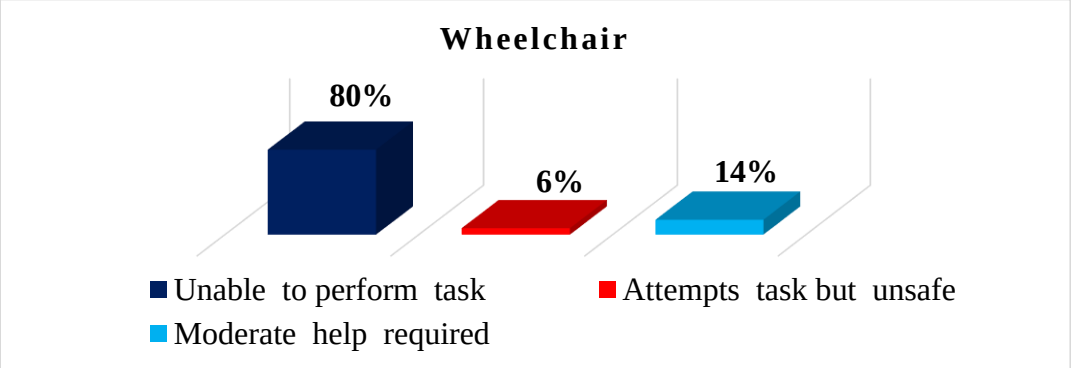


**Figure-4.26: Wheelchair**

This was the special point in Modified Barthel Index to carry out performance level of the participants who were unable to perform ambulation task. For this case from the previous column chart it was found that 18 participants were unable to perform the task of ambulation. Among those 18 participants there were 80% (n=14) of the participants were unable to perform the task of wheelchair, 6% (n=01) of the participants were attempted to do the task but they were unsafe and 14% (n=03) of the participants needed moderate help to perform the task.

## 4.27 Chair/ bed transfer

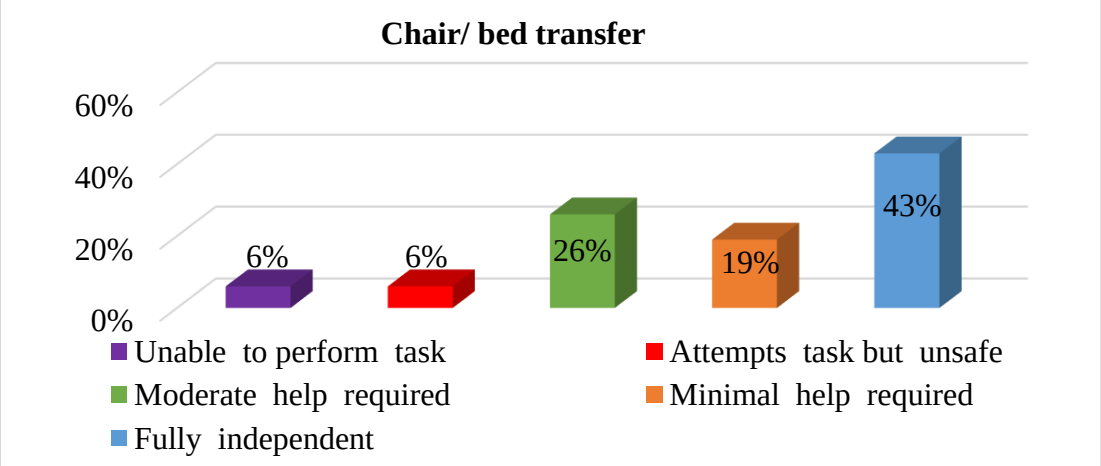


**Figure-4.27: Chair/ bed transfer**

The column chart showed that among the 105 participants 43% (n=45) of participants were fully independent in chair/ bed transfer, 19% (n=20) of the participants required minimal help in doing the task, 26% (n=28) of the participants needed moderate help for the task, 6% (n=06) of the participants did attempt to perform the task but felt unsafe and 6% (n=06) of the participants were unable to perform the task.

## 4.28 Modified Barthel Index (MBI) Score

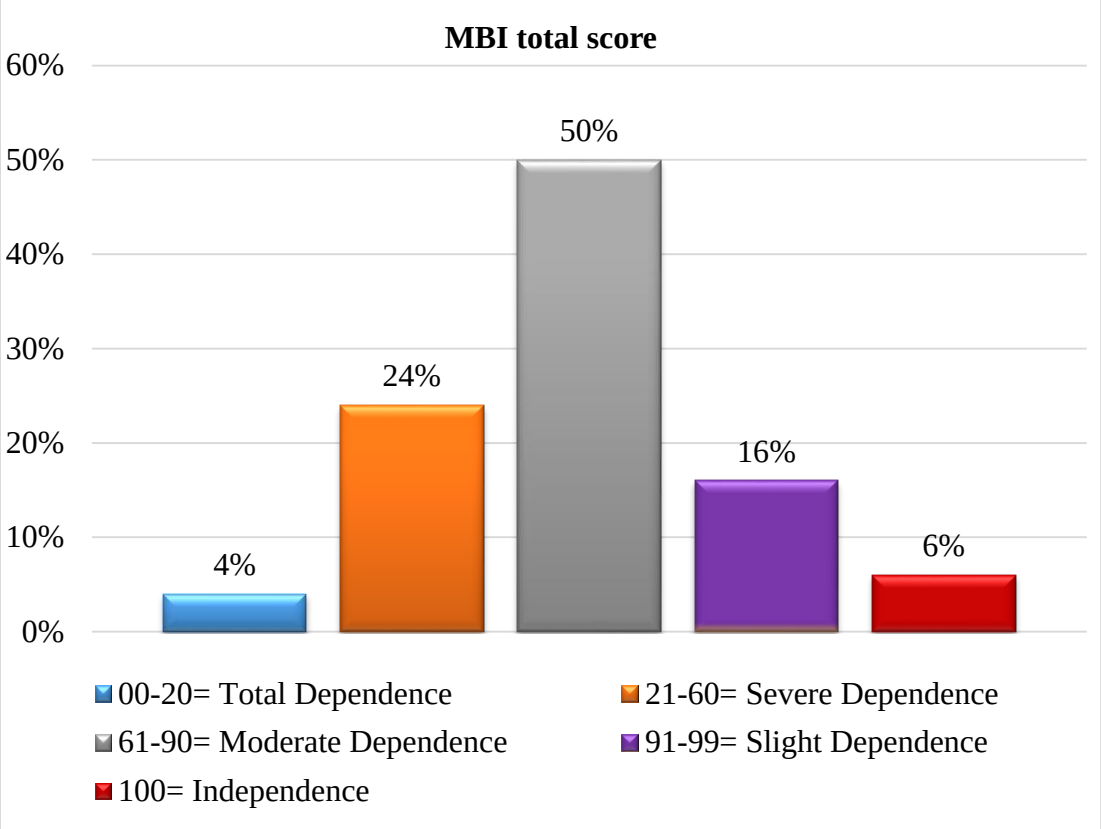


**Figure-4.28: Modified Barthel Index Score**

In my study it was found that among the 105 participants there were 6% (n=06) of participants who were fully independent in doing day to day task, 16% (n=17) of the participants were slight dependent, 50% (n=53) of the participants with moderate dependency in performing day to day task, 24% (n=25) of the participants were severe dependent and there were 4% (n=04) of the participants with total dependency in doing day to day task.

## 4.29 Analysis between subjects for association

In Chi-square test we see the association. If the P-value is <0.05 then the result is significant which means there is association between the variables.

**Table 4.29.1: Association of age and Patient Health Questionnaire (PHQ) total score**

| Age and Patient Health Questionnaire (PHQ) total score | Chi-Square | P-Value |
|---|---|---|
| | 12.533 | 0.129 |

For association of age and Patient Health Questionnaire (PHQ) total score, P-value is 0.129 which is more than 0.05. So the result is not significant that indicates there is no association between age and Patient Health Questionnaire (PHQ) total score.

**Table 4.29.2: Association of age and Generalized Anxiety Disorder (GAD) total score**

| Age and Generalized Anxiety Disorder (GAD) total score | Chi-Square | P-Value |
|---|---|---|
| | 7.252 | 0.298 |

The observed P-value for association of age and Generalized Anxiety Disorder (GAD) total score is 0.298. So the result is not significant that means there is no association between age and Generalized Anxiety Disorder (GAD) total score.

**Table 4.29.3: Association of gender and Patient Health Questionnaire (PHQ) total score**

| Gender and Patient Health Questionnaire (PHQ) total score | Chi-Square | P-Value |
|---|---|---|
| | 2.560 | 0.634 |

The observed P-value for association of gender and Patient Health Questionnaire (PHQ) total score is 0.634. So the result is not significant that indicates there is no association between gender and Patient Health Questionnaire (PHQ) total score.

**Table 4.29.4: Association of gender and Generalized Anxiety Disorder (GAD) total score**

| Gender and Generalized Anxiety Disorder (GAD) total score | Chi-Square | P-Value |
|---|---|---|
| | 1.265 | 0.738 |

For association of gender and Generalized Anxiety Disorder (GAD) total score, P-value is 0.738 which is >0.05 that means the result is not significant which points out that there is no association between gender and Generalized Anxiety Disorder (GAD) total score.

**Table 4.29.5: Association of enough family support as expectation and Patient Health Questionnaire (PHQ) total score**

| Enough family support as expectation and Patient Health Questionnaire (PHQ) total score | Chi-Square | P-Value |
|---|---|---|
| | 10.442 | 0.034 |

The observed P-value for association of enough family support as expectation and Patient Health Questionnaire (PHQ) total score is 0.034 which is less than 0.05 that indicates there is association of enough family support as expectation and Patient Health Questionnaire (PHQ) total score.

**Table 4.29.6: Association of Patient Health Questionnaire (PHQ) total score and Generalized Anxiety Disorder (GAD) total score**

| Patient Health Questionnaire (PHQ) total score and Generalized Anxiety Disorder (GAD) total score | Chi-Square | P-Value |
|---|---|---|
| | 82.510 | 0.00 |

There is strong association of Patient Health Questionnaire (PHQ) total score and Generalized Anxiety Disorder (GAD) total score as their found P-value is 0.00 which is <0.05.

**Table 4.29.7: Association of Modified Barthel Index (MBI) total score and Patient Health Questionnaire (PHQ) total score**

| Modified Barthel Index (MBI) total score and Patient Health Questionnaire (PHQ) total score | Chi-Square | P-Value |
|---|---|---|
| | 93.742 | 0.00 |

The observed P-value for association of Modified Barthel Index (MBI) total score and Patient Health Questionnaire (PHQ) total score is 0.00 which is less than 0.05 that indicates the result is significant which means there is strong association between Modified Barthel Index (MBI) total score and Patient Health Questionnaire (PHQ) total score.

**Table 4.29.8: Association of Modified Barthel Index (MBI) total score and Generalized Anxiety Disorder (GAD) total score**

| Modified Barthel Index (MBI) total score and Generalized Anxiety Disorder (GAD) total score | Chi-Square | P-Value |
|---|---|---|
| | 45.413 | 0.00 |

For association of Modified Barthel Index (MBI) total score and Generalized Anxiety Disorder (GAD) total score, P-value is 0.00 which is <0.05. So the result is significant that indicates there is association between Modified Barthel Index (MBI) total score and Generalized Anxiety Disorder (GAD) total score.

**Table 4.29.9: Association of Ambulation and Patient Health Questionnaire (PHQ) total score**

| Ambulation and Patient Health Questionnaire (PHQ) total score | Chi-Square | P-Value |
|---|---|---|
| | 44.429 | 0.00 |

There is association of ambulation and Patient Health Questionnaire (PHQ) total score because their P-value is 0.00 which is less than 0.05.

# CHAPTER- V DISCUSSION

The purpose of the analysis and discussion is to locate previously published research and determine their relevance to the collected data. This chapter represents the discussion of the results of the study in relation to the research questions and objectives of the study. The discussion is focused on identifying the level of depression, anxiety and functional outcome with their association for patients with ischemic stroke.

In my study, 105 participants were selected who were 3 months post stroke onset and had ischemic stroke where 72% (n=76) were male and 28% (n=29) were female. The age range of the participants were 40-70 years and their mean age was 53.9. The highest number (42%) of the participants were aged between 50-59 years. A prospective cohort study was conducted in the Stroke Centre of Beijing Tiantan Hospital between April 2014 and October 2015. A total of 270 patients who fulfilled entry criteria and provided written informed consent were the study population. Ischemic stroke patients were recruited only and the duration of ischemic stroke was 3 months (Wang et al., 2018). Another prospective study was conducted in New Zealand in the year of 2007, the study was involved 73 participants who were 3 months post stroke onset where majority (n = 58; 79.5%) had suffered ischemic stroke and among all participants there were more male than female with a mean age of 51.7 years (Barker-Collo, 2007) which shows both of the study has similarity with my study.

Among 105 participants in my study it was found that 88% of the participants had minimal to moderate depression and 12% of the participants had moderately severe to severe depression. According to Rabi Zikic et al., (2014) found in their study was very similar to my study that among 30 post-stroke depression cases minor depression was found in 86.7% and major depression in 13.3% of patients.

In my study among 105 respondents there were 77% of the respondents who had minimal to mild anxiety, 23% of the respondents had moderate to severe anxiety. According to Barker-Collo., (2007) found in the study that among 73 individuals of 3 months post stroke where most of the participants (n = 58; 79.5%) were suffered from ischemic stroke there was prevalence of moderate to severe anxiety were 21.1% which is very much similar to my study.

The Chi-square value between post stroke depression and age observed was 12.533 and P value was 0.129 (>0.05), that means the result was not significant that indicate there didn't have strong association of post stroke depression and age. This finding is contradictory to that of Berg et al., (2001) who found that in acute post stroke phase age is the single most important determinant of depressive symptoms: older patients were more often depressive than relatively younger patients (Berg et al., 2001). Because my study was conducted with short number of participants of 105 and there were age limitation of 40-70 years, it is possible that the importance of age emerges more clearly if large number of participants and younger age group were included in the study. On the other hand this finding of my study is consistent with a study conducted in Department of Psychology, The University of Auckland found that found that there was no association of post-stroke depression and age (Barker-Collo, 2007). In my study it was also indicated that there was no significant association of post stroke anxiety and age as found Chi-square value was 7.252 and P value was 0.298 (>0.05). Among 105 participants it was found in my study that there was no significant association of post stroke depression and gender and also there was no significant association between post stroke anxiety and gender where found P value were 0.634 (>0.05) and 0.738 (>0.05) respectively. Barker-Collo (2007) stated that there were no significant association of post stroke depression & gender and also there were no association of post stroke anxiety that with the age and gender.

In my study for association of enough family support as expectation and post stroke depression there observed Chi-square value was 10.442 and P value was 0.034 (<0.05) meaning that the result was significant that indicate there have association of enough family support as expectation and post stroke depression, respectively it was found in this study that among all the participants who were suffering from post-stroke depression there were 78% of them from nuclear family. Literature displays that stroke patients who were supported by a family caregiver had significantly fewer depression symptoms. Furthermore, such patients demonstrated positive functional outcomes. Because the majority of stroke patients are either dependent, disabled or both, the findings suggest that family members play important roles in providing emotional support and assisting with adherence to therapeutic instructions (Ahn et al., 2015).

For association of post stroke depression and post stroke anxiety observed Chi-square value was 82.510 and P value was 0.000 (<0.05). That means the result was significant

that indicate there have strong association of post stroke depression and post stroke anxiety. A study with 219 ischemic stroke patients discovered that patients with post-stroke anxiety (PSA) were more likely to have severe depressive symptoms than patients without post-stroke anxiety. Post-stroke depression (PSD) was found to be significantly associated with post-stroke anxiety (PSA) both in the acute stage and three months after stroke indicating that post-stroke depression (PSD) and post-stroke anxiety (PSA) may share a common pathophysiological mechanism (Wright el al., 2017).

The Chi-square value for the association of post-stroke depression and functional outcome in my study was 93.742 and P value was 0.000 (<0.05). That means the result was significant and there have strong association of post stroke depression and functional outcome. A prospective study conducted at the Department of Neurology, Clinical Center of Vojvodina, Novi Sad, Serbia, including 60 patients of both male and female genders over 18 years of age, who were treated for their first clinical stroke where one group comprised of patients not diagnosed with depression in the acute phase of stroke (n=30) and the other group comprised of patients who were diagnosed with depression two weeks after stroke onset (n=30). Functional status was expressed using Barthel Index (BI) was assessed six weeks after stroke onset. Results showed that in the group without post-stroke depression (PSD), most patients had minimal disability (56.7%). In the group with post-stroke depression (PSD), moderate disability (33.3%) and significant disability (30%) were most frequent, whereas maximum disability was found in 13.3%. The difference in disability between the two groups of patients was statistically highly significant ($p<0.001$) and the mean Barthel Index (BI) scores were significantly higher in patients without post-stroke depression than in those with post-stroke depression at both two and six weeks after stroke ($p<0.001$) (Rabi Zikic et al., 2014) that indicates that there have strong association between post stoke depression and functional outcome which shows similar association found in my study.

In my study the observed Chi-square value for the association of post-stroke anxiety and functional outcome was 45.413 and P value was 0.000 (<0.05). That means the result was significant that indicate there have strong association of post stroke anxiety and functional outcome. Anxiety and impairment in activity in daily living (ADL) were found to be associated in a study during the acute stage of ischemic stroke (Schultz et al., 1997). Literature indicated that patients with post-stroke anxiety (PSA) in the

acute stage were more likely to have poorer activity in daily living (ADL) performance three months after stroke. Post-stroke anxiety (PSA) patients may have difficulty adhering to rehabilitative efforts due to a significant decrease in both physical and mental energy, which, in turn, impairs activity in daily living (ADL) performance. The severity of post-stroke anxiety (PSA) in the acute stage was found to be a significant contributor to poorer performance of activity of daily living (ADL) 3 months after stroke in the study. Post-stroke anxiety may lower physical and mental energy, motivation and activity which has an adverse effect on functional outcome (Li et al., 2019).

In my study for association of post stroke depression and ambulation where observed Chi-square value was 44.429 and P value was 0.000 (<0.05). That means the result was significant and there have strong association of post stroke depression and ambulation.

A prospective study included 60 stroke patients, with one group consisting of patients who were not diagnosed with depression during the acute phase of stroke (n=30), and the other group consisting of patients who were diagnosed with depression two weeks after stroke onset (n=30). After six weeks, the results revealed a statistically significant difference between the two groups in terms of ambulation alone ($p<0.001$). The findings confirm the association of post-stroke depression and functional disability in stroke patients (Rabi Zikic et al., 2014).

## 5.1 Limitations:

Regarding this study there were some situational limitation or barriers to consider the result of the study. The limitations are as below:

The study had small sample size. Only 105 samples were taken in this study. Only 105 samples do not represent the condition of entire country's ischemic stroke patients. It would be more effective if a large number of samples were taken. Time was one of the major limitation. I had a short period of time to complete the research so that large number of sample couldn't be managed for the study. The sample was collected only from CRP, Savar, Dhaka. If it was collected from other many institutes and rehabilitation center across the country, the result would be more reliable and appropriate and also give a clear impression about the level of post stroke depression and post stroke anxiety and its association with functional outcome among ischemic stroke patients in Bangladesh. As it was the first research of the researcher so there might be some mistakes that should be overlooked by the supervisor and the honorable teachers.

# CHAPTER- VI CONCLUSION AND RECOMMENDATION

## 6.1 Conclusion

The researcher explored the level of depression and anxiety following ischemic stroke and also search for association of post stroke depression and anxiety with functional outcome. The results of the study suggest that depression and anxiety are commonly experienced after 3 months ischemic stroke. Researcher didn't find any associations of age & gender with post-stroke depression and anxiety. In the study it was found that there was strong association of post-stroke depression & functional outcome ($P<0.05$) and also there was association among post-stroke anxiety and functional outcome ($P<0.05$). So depression and anxiety are prevalent in ischemic stroke patients and have a negative impact on patient's functional outcome. Researcher also found strong association of post-stroke depression with post stroke anxiety as observed P-value was 0.00 ($P<0.05$). Post-stroke anxiety patients are more likely to have severe depressive symptoms. Post-stroke depression was found to be significantly associated with Post stroke anxiety in three months after ischemic stroke, implying that Post-stroke depression and Post-stroke anxiety may share a similar pathophysiological mechanism. A post-stroke depressed patient may lack motivation to push himself/ herself during rehabilitation, whereas a Post-stroke anxiety patient may have poor adherence to rehabilitative efforts due to a significant decrease in both physical and mental energy, both of which degrade activity in daily livings (ADL) performance and also the anticipated functional outcome in time of rehabilitation.

Because depression and anxiety are treatable conditions, it is extremely crucial that efforts be made to provide early identification and support in order to assist this large proportion of patients in optimizing rehabilitation. Assessment and intervention of Post-stroke depression as well as Post stroke anxiety following ischemic stroke may be useful in predicting outcomes of functional status. Patients with Post-stroke depression and Post-stroke anxiety may have the same potential for functional recovery, though the outcome is worse in their case. Early and effective assessment, diagnosis, treatment, counselling and stroke rehabilitation may give them proper mental and physical strength to stand against depression and anxiety following ischemic stroke and ease the way of getting best possible functional outcomes during rehabilitation.

## 6.2 Recommendation

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

Should take more samples for generating the result and make more valid and reliable. Sample should collect from different institutes and rehabilitation center in different districts of Bangladesh to generalize the result. To find out an effective and efficient result in generalized form, other measurement scales should be used in consideration. A larger sample size may increase the statistical significance of some of the results. A long-term follow-up examination may provide the long-term effect of depression and anxiety over functional outcome following ischemic stroke. There were some limitations of this study mentioned at the relevant section and it is recommended to overcome those limitations during further study.

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# APPENDIX

## Appendix-1 (A)

Permission Letter

Date: 10-02-2021
Head
Department of Physiotherapy
Centre for the Rehabilitation of the Paralysed (CRP)
Chapain, Savar, Dhaka-1343.
Through: Head, Department of Physiotherapy, BHPI.

**Subject:Prayer for seeking permission to collect data for conducting research project.**

Sir,
With due respect and humble submission to state that I am Shahriar Sarkar, a student of 4th year B.Sc in Physiotherapy at Bangladesh Health Profession Institute (BHPI). The Ethical committee has approved my research project **"Level of depression & anxiety and its association with functional outcome for the patients with CVA"**under the supervision of Farjana Sharmin, Junior consultant and outpatient incharge, Lecturer of BHPI. I want to collect data for my research project from the Department of Physiotherapy at CRP. So, I need permission for data collection from Neurology unit of Physiotherapy Department at CRP (CRP, Savar, Dhaka-1343). I would like to assure that anything of the study will not be harmful for the participants.

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

**Your Faithfully,**

shahriar

**Shahriar Sarkar**
4th year
B.Sc. in Physiotherapy
Class Roll: 15, Session: 2015-16
Bangladesh Health Professions Institute (BHPI)
(An academic Institution of CRP)
CRP-Chapain, Savar, Dhaka-1343.

Recommended from BHPI
Shofiq
15.06.21
Md. Shofiqul Islam
Associate Professor & Head
Department of Physiotherapy
Bangladesh Health Professions Institute (BHPI)
CRP, Chapain, Savar, Dhaka-1343

Farjana Sharmin
FARJANA SHARMIN
Junior Consultant and OPD Incharge
Physiotherapy Department
CRP, Savar, Dhaka

Approved
MUHAMMAD ANWAR HOSSAIN
Senior Consultant &
Head of Physiotherapy Dept
Associate Professor, BHPI
CRP Savar, Dhaka-1343

## Appendix-1 (B)

BANGLADESH HEALTH PROFESSIONS INSTITUTE

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

Ref: Date:

CRP/BHPI/MRS/02/2021/442

10th February 2021

Shahriar Sarkar
B.Sc. in Physiotherapy
Session: 2015-16, Student ID:112150286
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: Approval of the thesis proposal **"Level of depression & anxiety and its association with functional outcome for the patients with CVA"** by ethics committee.

Dear Shahriar Sarkar,
Congratulations,
The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application to conduct the above-mentioned dissertation, with yourself, as the Principal investigator. The Following documentshave been reviewed and approved:

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

The purpose of the study is to find out the level of depression and anxiety and its association with functional outcome for the patients with CVA. The study involves use of a questionnaire that may take 15 to 20 minutes to answer and there is no likelihood of any harm to the participants. Data collectors will receive informed consents from all participants. Any data collected will be kept confidential. The members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at 8:30AM on 1st March, 2020 at BHPI (23rd IRB Meeting).

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

Best regards,

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

CRP-Chapain, Savar, Dhaka-1343, Tel : 7745464-5, 7741404
E-mail : principal-bhpi@crp-bangladesh.org, Web: bhpi.edu.bd, www.crp-bangladesh.org

## Appendix-2 (A)

### সম্মতিপত্র

**(অংশগ্রহণকারীকে পড়ে শোনাতে হবে)**

আসসালামু আলাইকুম,

আমার নাম শাহরিয়ার সরকার, আমি বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (বি এইচ পি আই) এর চতুর্থ বর্ষের একজন শিক্ষার্থী। আমি "ইস্কেমিক স্ট্রোক রোগীদের জন্য হতাশা এবং উদ্বেগের স্তর এবং এর কার্যকরী ফলাফলের সাথে সম্পর্কিত" শিরোনামে একটি গবেষণা করছি যা আমার অধ্যয়নের অন্তর্গত। সে কারণে আমি কিছু ব্যক্তিগত এবং অন্যান্য সম্পর্কিত তথ্য জানতে চাই। এটি প্রায় ১৫-২০ মিনিট সময় নেবে।

আমি আপনাকে জানাতে চাই যে এটি নিখুঁতভাবে পেশাদার গবেষণা এবং এটি অন্য কোনও উদ্দেশ্যে ব্যবহৃত হবে না। আপনার প্রদত্ত সমস্ত তথ্যকে গোপনীয় হিসাবে বিবেচনা করা হবে এবং কোনও প্রতিবেদন বা প্রকাশের ক্ষেত্রে এটি নিশ্চিত করা হবে যে তথ্যের উৎস বেনামী।

এই গবেষণায় আপনার অংশগ্রহণ স্বেচ্ছাসেবী এবং আপনি এই অধ্যয়নের যে কোনও সময় কোন নেতিবাচক পরিণতি ছাড়াই নিজেকে প্রত্যাহার করতে পারেন। সাক্ষাৎকারের সময় আপনি পছন্দ করেন না বা উত্তর দিতে চান না এমন কোন নির্দিষ্ট প্রশ্নের উত্তর না দেওয়ারও অধিকার আপনার রয়েছে।

আপনার যদি অংশগ্রহণকারী হিসাবে অধ্যয়ন বা আপনার অধিকার সম্পর্কে কোনও প্রশ্ন থাকে তবে আপনি আমার সাথে বা আমার সুপারভাইজার ফারজানা শারমিন, আউটপেশেন্ট ইনচার্জ এবং কনসালট্যান্ট, ফিজিওথেরাপি বিভাগ, সিআরপি, সাভার, ঢাকা -১৩৪৩, এর সাথে যোগাযোগ করতে পারেন।

সাক্ষাৎকার শুরু করার আগে আপনার কোন প্রশ্ন আছে?

আমি কি এই সাক্ষাৎকার শুরু করতে পারি?

হ্যাঁ ☐ না ☐

সাক্ষাৎকার প্রদানকারীর স্বাক্ষর..... তারিখ.....

সাক্ষাৎকার গ্রহণকারীর স্বাক্ষর..... তারিখ.....

**Appendix-2 (B)**

Informed consent

(Please read out to the participant)

Assalamu Alaikum,

My name is Shahriar Sarkar. I am conducting this research study which is the part of B.Sc. in Physiotherapy program and my research title is "Level of depression & anxiety and its association with functional outcome for the patients with Ischemic Stroke" under Bangladesh Health Professions Institute (BHPI), University of Dhaka. Because of that I would like to know about some personal and other related information. This will take approximately 15-20 minutes.

I would like to inform you that this is a purely professional study and will not be used for any other purpose. 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 me or my supervisor Farjana Sharmin, OPD in charge and Consultant, Department of Physiotherapy, 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 Data collector's…… Date…….

## Appendix-3 (A)

## Questionnaire- বাংলা

পর্ব- ১: রোগীর সামাজিক-জনসংখ্যাতাত্ত্বিক তথ্য

| প্রশ্নের নম্বর | প্রশ্ন এবং ফিল্টার | কোডিং বিভাগসমূহ | কোড নং. |
|---|---|---|---|
| ১.১ | বয়স | আপনার সম্পূর্ণ বয়স | ☐ বছর |
| ১.২ | লিঙ্গ | ১= পুরুষ<br>২= মহিলা | ☐ |
| ১.৩ | সাধারণত বসবাস | ১= গ্রামীণ<br>২= নগর<br>৩= আধা শহুরে | ☐ |
| ১.৪ | বৈবাহিক অবস্থা | ১= বিবাহিত ২= অবিবাহিত<br>৩= বিধবা ৪= পৃথক<br>৫= তালাকপ্রাপ্ত ৬= বিপত্নীক | ☐ |
| ১.৫ | ধর্ম | ১= ইসলাম ২= হিন্দু ধর্ম<br>৩= খ্রিস্টান ৪= বৌদ্ধধর্ম | ☐ |
| ১.৬ | শিক্ষার স্তর | ১= নিরক্ষর<br>২= শ্রেণী ১-১০<br>৩= এইচএসসি<br>৪= স্নাতক-ডক্টরেট | ☐ |
| ১.৭ | পেশা | ১ = বেকার<br>২ = সরকারি সার্ভিস হোল্ডার<br>৩ = বেসরকারি সার্ভিস হোল্ডার<br>৪ = ব্যবসায়ী<br>৫ = প্রবাসী<br>৬ = অন্যান্য | ☐ |
| ১.৮ | আপনার পরিবারে কতজন সদস্য আছেন? | ১ = ০ জন<br>২ = ১-৩ জন<br>৩ = >৩ জন | ☐ |

| | | | |
|---|---|---|---|
| ১.৯ | আপনার পরিবারে কতজন উপার্জনক্ষম সদস্য আছেন? | ১ = ০ জন<br>২ = ১-৩ জন<br>৩ = >৩ জন | ☐ |
| ১.১০ | আপনার পরিবারের ধরণ কি? | ১= ক্ষুদ্র<br>২= যৌথ | ☐ |
| ১.১১ | আপনি কি প্রত্যাশা অনুযায়ী এই পরিস্থিতিতে যথেষ্ট পারিবারিক সহায়তা পাচ্ছেন? | ১ = হ্যাঁ<br>২= না | ☐ |
| ১.১২ | আপনার পরিবারের গড় মাসিক আয় কত? | ১= ০- ১৫০০০ টাকা<br>২= ১৬০০০- ৩০০০০ টাকা<br>৩= > ৩০০০০ টাকা | ☐ |
| ১.১৩ | আপনার মাসিক পারিবারিক ব্যয় গড়ে কত? | ১= ০- ১৫০০০ টাকা<br>২= ১৬০০০- ৩০০০০ টাকা<br>৩= > ৩০০০০ টাকা | ☐ |
| ১.১৪ | স্ব-রিপোর্ট করা সাধারণ স্বাস্থ্যের স্থিতি | ১= ভাল<br>২= মোটামোটি<br>৩= দরিদ্র | ☐ |

পার্ট -২: রোগীর স্বাস্থ্য প্রশ্নপত্র (পিএইচকিউ- ৯) দ্বারা বিষণ্ণতা পরিমাপ করা হয়েছিল

নয়টি লক্ষণের তালিকা:

নাম _____ তারিখ _____

| গত ২ সপ্তাহের মধ্যে, আপনি নীচের যে কোনও সমস্যার দ্বারা কতবার বিরক্ত হয়েছেন? | একদমই না | বেশ কিছু দিন | দিনের অর্ধেকেরও বেশি | প্রায় প্রতিদিন |
|---|---|---|---|---|
| ১. কাজ করতে খুব আগ্রহ বা আনন্দ | ০ | ১ | ২ | ৩ |
| ২. হতাশ, হতাশা বা নিরাশা | ০ | ১ | ২ | ৩ |
| ৩. পড়ে যাওয়া বা ঘুমিয়ে থাকতে সমস্যা, বা খুব বেশি ঘুমানো | ০ | ১ | ২ | ৩ |
| ৪. ক্লান্ত বোধ করা বা অল্প শক্তি আছে | ০ | ১ | ২ | ৩ |
| ৫. কম ক্ষুধা বা অতিরিক্ত খাওয়া | ০ | ১ | ২ | ৩ |
| ৬. নিজের সম্পর্কে খারাপ লাগা - বা নিজেকে ব্যর্থ মনে করা অথবা নিজেকে বা আপনার পরিবারকে হতাশ করেছেন মনে হওয়া | ০ | ১ | ২ | ৩ |
| ৭. সংবাদপত্র পড়া বা টেলিভিশন দেখার মতো বিষয়গুলিতে মনোনিবেশ করতে সমস্যা | ০ | ১ | ২ | ৩ |
| ৮. এত আস্তে আস্তে চলা বা কথা বলা যাতে অন্য লোকেরা খেয়াল করতে পারে? বা বিপরীতে- এতটা অধৈর্য বা অস্থির যে আপনি স্বাভাবিকের চেয়ে অনেক বেশি এলোমেলোভাবে ঘুরছেন | ০ | ১ | ২ | ৩ |
| ৯. আপনি মরে যাওয়াই ভালো বা কোনওভাবে নিজেকে আঘাত করাই ভাল- এমন ধারণা | ০ | ১ | ২ | ৩ |

(অফিস কোডিংয়ের জন্য: মোট স্কোর _____= _____+ _____+_____)

পার্ট- ৩: সাধারণ উদ্বেগজনিত ব্যাধি- ৭ (জিএডি- ৭) দ্বারা উদ্বেগ পরিমাপ করা হয়েছিল

| গত ২ সপ্তাহে আপনি কতবার নিম্নলিখিত সমস্যাগুলি নিয়ে বিরক্ত হয়েছেন? | মোটেও নিশ্চিত নয় | বেশ কিছু দিন | অর্ধেক দিন ধরে | প্রায় প্রতিদিন |
|---|---|---|---|---|
| ১. বিচলিত, উদ্বিগ্ন বা প্রান্তে অনুভব করা | ০ | ১ | ২ | ৩ |
| ২. উদ্বেগ থামাতে বা নিয়ন্ত্রণ করতে সক্ষম না হওয়া | ০ | ১ | ২ | ৩ |
| ৩. বিভিন্ন জিনিস নিয়ে খুব বেশি চিন্তিত | ০ | ১ | ২ | ৩ |
| ৪. আরাম নিতে সমস্যা | ০ | ১ | ২ | ৩ |
| ৫. এত অস্থির হওয়া যে চুপ করে বসে থাকা কঠিন | ০ | ১ | ২ | ৩ |
| ৬. সহজে বিরক্ত বা খিটখিটে হয়ে উঠা | ০ | ১ | ২ | ৩ |
| ৭. ভয় লাগছে যেন ভয়ঙ্কর কিছু ঘটতে পারে | ০ | ১ | ২ | ৩ |
| প্রতিটি কলামের স্কোর যোগ করুন = | | + | + | + |
| মোট স্কোর (আপনার কলামের স্কোর যোগ করুন) = | | | | |

## পার্ট - ৪: পরিবর্তিত বার্থেল সূচক (শাহ সংস্করণ)

### বার্থেল সূচকের পরিবর্তিত স্কোরিং

| বিষয় | কোড | | | | |
|---|---|---|---|---|---|
| | ১<br>কাজটি করতে অক্ষম | ২<br>কাজের চেষ্টা করে তবে অনিরাপদ | ৩<br>মাঝারি সাহায্য প্রয়োজন | ৪<br>সামান্যতম সহায়তা প্রয়োজন | ৫<br>সম্পূর্ণ স্বাধীন |
| ব্যক্তিগত স্বাস্থ্যবিধি/ পরিচ্ছন্নতা | ০ | ১ | ৩ | ৪ | ৫ |
| স্ব স্নান | ০ | ১ | ৩ | ৪ | ৫ |
| ভোজন | ০ | ২ | ৫ | ৮ | ১০ |
| টয়লেট | ০ | ২ | ৫ | ৮ | ১০ |
| সিঁড়ি চড়া | ০ | ২ | ৫ | ৮ | ১০ |
| পোশাক পরিধান | ০ | ২ | ৫ | ৮ | ১০ |
| আন্ত্রিক নিয়ন্ত্রণ | ০ | ২ | ৫ | ৮ | ১০ |
| মূত্রাশয় নিয়ন্ত্রণ | ০ | ২ | ৫ | ৮ | ১০ |
| চলনশীলতা | ০ | ৩ | ৮ | ১২ | ১৫ |
| *হুইলচেয়ার | ০ | ১ | ৩ | ৪ | ৫ |
| চেয়ার / বিছানা স্থানান্তর | ০ | ৩ | ৮ | ১২ | ১৫ |
| পরিসর | ০.....১০০ | | | | |

* চলনশীলতা "১" কোড করে এবং হুইলচেয়ার ব্যবস্থাপনায় রোগী প্রশিক্ষিত হলেই স্কোর করুন।

**Appendix-3 (B)**

**Questionnaire- English**

**Part- 1: Patient's Socio-demographic Information**

| Question Number | Questions/ Information on | Coding categories | Code no. |
|---|---|---|---|
| 1.1 | Age | Age in completed yours | ☐ Years |
| 1.2 | Sex | 1=Male<br>2=Female | ☐ |
| 1.3 | Usually reside | 1=Rural<br>2=Urban<br>3=semi urban | ☐ |
| 1.4 | Marital status | 1=Married 2=Single<br>3=Widow 4=Separated<br>5=Divorced 6=widower | ☐ |
| 1.5 | Region | 1=Islam<br>2=Hinduism<br>3=Christianity<br>4=Buddhism | ☐ |
| 1.6 | Level of education | 1= Illiterate<br>2= Class 1-10<br>3= HSC<br>4= Graduation-Doctorate | ☐ |
| 1.7 | Occupation | 1= Jobless<br>2= Govt. Service holder<br>3= Non Govt. service holder<br>4= Businessman<br>5= Expatriate<br>6= Others | ☐ |
| 1.8 | How many members are there in your family? | 1= 0<br>2= 1 to 3<br>3= >3 | ☐ |

| | | | |
|---|---|---|---|
| 1.9 | How man earning members are there in your family? | 1= 0<br>2= 1-3<br>3= >3 | |
| 1.10 | What is your family type? | 1=Nuclear<br>2=joint | |
| 1.11 | Are you getting enough family support in this situation as you expected? | 1= Yes<br>2= No | |
| 1.12 | What is the average monthly income of your household? | 1= 0-15000 tk<br>2= 16000-30000 tk<br>3= >30000 tk | |
| 1.13 | How much on average is your monthly family expenditure? | 1= 0-15000 tk<br>2= 16000-30000 tk<br>3= >30000 tk | |
| 1.14 | Status of self-reported general health | 1=Good<br>2=Fair<br>3=Poor | |

**Part-2: Depression was measured by The Patient Health Questionnaire (PHQ-9)**

Nine-symptom Checklist:

Name _____ Date _____

| **Over the last 2 weeks, how often have you been bothered by any of the following problems?** | **Not at all** | **Several days** | **More than half the days** | **Nearly every day** |
|---|---|---|---|---|
| 1. Little interest or pleasure in doing things | 0 | 1 | 2 | 3 |
| 2. Feeling down, depressed, or hopeless | 0 | 1 | 2 | 3 |
| 3. Trouble falling or staying asleep, or sleeping too much | 0 | 1 | 2 | 3 |
| 4. Feeling tired or having little energy | 0 | 1 | 2 | 3 |
| 5. Poor appetite or overeating | 0 | 1 | 2 | 3 |
| 6. Feeling bad about yourself—or that you are a failure or have let yourself or your family down | 0 | 1 | 2 | 3 |
| 7. Trouble concentrating on things, such as reading the newspaper or watching television | 0 | 1 | 2 | 3 |
| 8. Moving or speaking so slowly that other people could have noticed? Or the opposite- being so fidgety or restless that you have been moving around a lot more than usual | 0 | 1 | 2 | 3 |
| 9. Thoughts that you would be better off dead or of hurting yourself in some way | 0 | 1 | 2 | 3 |
| **(For office coding: Total Score _____ = _____ + _____ + _____+ _____)** | | | | |

**Part-3: Anxiety was measured by Generalized Anxiety Disorder-7 (GAD-7)**

| **Over the last 2 weeks, how often have you been bothered by the following problems?** | **Not at all sure** | **Several days** | **Over half the days** | **Nearly every day** |
|---|---|---|---|---|
| 1. Feeling nervous, anxious, or on edge | 0 | 1 | 2 | 3 |
| 2. Not being able to stop or control worrying | 0 | 1 | 2 | 3 |
| 3. Worrying too much about different things | 0 | 1 | 2 | 3 |
| 4. Trouble relaxing | 0 | 1 | 2 | 3 |
| 5. Being so restless that it's hard to sit still | 0 | 1 | 2 | 3 |
| 6. Becoming easily annoyed or irritable | 0 | 1 | 2 | 3 |
| 7. Feeling afraid as if something awful might happen | 0 | 1 | 2 | 3 |
| Add the score for each column = | | + | + | + |
| Total Score (add your column scores) = | | | | |

## Part- 4: Modified Barthel Index (SHAH VERSION)

Modified scoring for the Barthel Index

| Items | Code | | | | |
|---|---|---|---|---|---|
| | **1 Unable to perform task** | **2 Attempts task but unsafe** | **3 Moderate help required** | **4 Minimal help required** | **5 Fully independent** |
| Personal hygiene | 0 | 1 | 3 | 4 | 5 |
| Bathing self | 0 | 1 | 3 | 4 | 5 |
| Feeding | 0 | 2 | 5 | 8 | 10 |
| Toilet | 0 | 2 | 5 | 8 | 10 |
| Stair climbing | 0 | 2 | 5 | 8 | 10 |
| Dressing | 0 | 2 | 5 | 8 | 10 |
| Bowel control | 0 | 2 | 5 | 8 | 10 |
| Bladder control | 0 | 2 | 5 | 8 | 10 |
| Ambulation | 0 | 3 | 8 | 12 | 15 |
| **Wheelchair*** | 0 | 1 | 3 | 4 | 5 |
| Chair/bed transfers | 0 | 3 | 8 | 12 | 15 |
| Range 0……..……..…….100 | | | | | |

*Score only if Ambulation coded “1” and patient trained in wheelchair management.