



Faculty of Medicine

University of Dhaka

**Effectiveness of Task Oriented Physiotherapy along with
Conventional Physiotherapy for Patients with Stroke**

By

Shahinoor Bente Khan

Master of Science in Physiotherapy

Registration no: 3088

Session: 2017-2018

Roll no: 121



Department of Physiotherapy

Bangladesh Health Professions Institute (BHPI)

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Submitted in Partial Fulfillment of the Requirements for the
Degree of Master of Science in Physiotherapy



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We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for acceptance of this thesis entitled, “**Effectiveness of Task Oriented Physiotherapy along with Conventional Physiotherapy for Patients with Stroke**”, submitted by Shahinoor Bente Khan for the partial fulfillment of the requirements for the degree of Master of Science in Physiotherapy.

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Supervisor's Statement

As supervisors of Shahinoor Bente Khan, M.Sc Thesis work, we certify that we consider her thesis **“Effectiveness of Task Oriented Physiotherapy along with Conventional Physiotherapy for Patients with Stroke”** to be suitable for Part-II M.Sc in Physiotherapy final examination.

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Declaration Form

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

This dissertation is being submitted in partial fulfillment of the requirements for the degree of M.Sc. in Physiotherapy.

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

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LIST OF ABBREVIATION

BBS	Berg Balance Scale
BHPI	Bangladesh Health Professions Institute
BMI	Body mass index
BMRC	Bangladesh Medical & Research Council
CM	Centimeter
CRP	Centre for the Rehabilitation of the Paralyzed
DM	Diabetes Mellitus
FPVF	Force Platform with Visual Feedback
FIM	Functional Independence Measurement
HTN	Hypertension
IRB	Institutional Review Board
KG	Kilogram
TOP	Task oriented Physiotherapy
TUG	Timed Up and Go
WT	Weight

Abstract

Background: Stroke is a disorder where brain is damaged either by blockage in the blood vessels or rupture of the blood vessels. It is the approximately number five leading cause of death. **Objectives:** To determine and compare balance, functional status and mobility improvement before and after application Task Oriented Physiotherapy along with Conventional Physiotherapy among patients with Stroke. **Methodology:** Classic experimental study design was used in this study. 30 patients with stroke were randomly assigned into two groups among them 15 patients were assigned into experimental group received Task Oriented Physiotherapy with Conventional Physiotherapy and another 15 into control group received only conventional physiotherapy. Total treatment sessions were twenty-four comprising of 3 sessions per week for 8 weeks. Single blinding procedure was used during data collection. **Outcome measurement tools:** Berg balance scale (BBS) has used to measure balance, functional independence measurement (FIM) has used to measure functional status and timed up and go (TUG) has used to measure mobility. **Analysis of data:** Inferential statistics such as Mann-Whitney U test, and Wilcoxon test was done for BBS and FIM. Besides unrelated t test and Paired t test was done for TUG by using SPSS version 22. **Results:** It was found that balance improved and functional status improved and mobility improved both between and within group results except standing unsupported one foot in front (0.01). **Conclusion:** This research showed that Task Oriented Physiotherapy along with Conventional physiotherapy was more effective than only conventional physiotherapy for patients with stroke.

Key words: Task oriented physiotherapy, Conventional physiotherapy, Stroke.

1.1 Background

Stroke is the disorder where brain is damaged either by blockage in the blood vessels or rupture of the blood vessels of the brain. There are so many risk factors of stroke including modifiable and non-modifiable factors. The risk factors predominantly are high cholesterol, diabetes, smoking, atrial fibrillation and lack of physical activity. The early and common signs include asymmetry in face, one side weakness, one side altered sensation and difficulties in speech (Jin, 2014).

American Stroke Association (2016) stated that, it is the approximately five number leading cause of death. It is also the leading cause of longer period disability as well as preventable cause of disability. African American people are more affected by stroke. As stroke affects the central nervous system especially when the brainstem, the vestibular system is more likely to be affected and can cause dizziness, vertigo eventually imbalance. Among the stroke survivors about 40 percent approximately experienced falling over ground in 1 year of stroke. Women stroke patients have some experience in difficulties to maintaining their balance during dressing were several times a day (American Heart and Stroke Association, 2015).

It is the approximately 3rd most leading cause of death globally where in UK it is the most important health problem. About 23% of people die within 30 days where 60-70% from the remaining die within 3 years. The morbid portion have prolonged stay in hospital, reduced quality of life due to extended time disability therefore it is also the secondary reason of disability and impairment in UK. This causes a big compromise

in the economic sector (Parmer, Sumaria & Hashi, 2011). The brain is an exciting area in neurology as it is complex in anatomy and in function. With the advance of age in addition to decay, the brain become more prone to get many complicated life frightening diseases, so it needs a proper timely connection. Stroke is a critical condition, which causes death and disability in the world as well in Bangladesh. Stroke treatment involves a multidisciplinary team. The team includes Physiatrist, Rehabilitation Nurses, and Physiotherapists, Speech therapist, Social Worker, Psychologist and Vocational councilor. Bangladesh is the most densely populated developing country in the world. Stroke isthe third most common cause of death and adult disability in Bangladesh (Islam et al.,2012).

There are so many impairments found in acute and chronic stroke patients including lower limb weakness which is second most affected part (72%), urinary incontinence, dysphasia, impaired consciousness, and cognitive impairment etc (Lwarence et al., 2001). Recently Lwarence, 2018 again examined that proper nursing and rehabilitation is needed to recovery of stroke impairments and disability in acute phase.

Stroke is the major cause for disability in worldwide and it is increasing day by day with high risk factors including modifiable and non-modifiable. So, it is a great concern about the burden of the society now days. Physiotherapy is playing a vital role for rehabilitation of the stroke patients and other neurological, musculoskeletal patients among the worldwide.

Physiotherapy is such a major component of medical science for rehabilitation of stroke patient (Daviason & Waters, 2000). It is used to assist patients for progress as much of their innovative body purpose as achievable (Gale, 2005).

Tsaih 2018 demonstrated that task oriented electro myographic biofeedback enhance the strength and balance of chronic stroke patients. Task related TA exercise enhanced affected TA muscle power in persistent stroke patients. Knox, Rewards & Rechard (2018), demonstrated that six hours' task training improve walking capacity of chronic stroke patients.

There are various approaches are used to treatment of stroke patients. Such as Task Oriented training program, Proprioceptive Neuromuscular Facilitation (PNF), Brunnstrom approach, Bobath approach and Motor Relearning Program, Functional Electrical Stimulating Program (FES), Constraint Induced Movement Therapy (CIMT), Cognitive Behavioral Therapy (CBT), Mirror Therapy and so many other evidences based approaches. There is general opinion that physiotherapy improves the function of stroke patients. But the benefits seem to be normally and statistically small and limited (Dobkin & Dorsch, 2013).

Another study conducted by Tyson et al, (2006) stated that balance and mobility limitations are more common in chronic stroke patients. So, balance and mobility limitations can be improved by exercise (Mikle, Alen & Macko, 2006). Task oriented training or task oriented physiotherapy has the capacity in case of improve balance and mobility (Yang et al, 2006). In Bangladesh, most of the patient come at later stage and their improvement are not satisfactory. It is thought, if we can identify the specific factors, then we can give concentration on those specific factors for the better outcome of the people who are suffering stroke and they will get maximum benefit from physiotherapy treatment (Islam, 2013).

Several studies have been explored the value of task specific physiotherapy program to get better the equilibrium ability of the stroke survivors. Balance problem is a major problem of stroke survivors. A study by Kim, Lee, Bae, Yu & Kim (2012) on 20 stroke patients found a significant improvement on chest control, stability and walk ability after a comprehensive series of task oriented training program. Task oriented circuit training on balance and gait ability has been proved significantly effective to improve balance and gait (Kim, Jung & Lee, 2017).

Stability training by force platform with visual feedback technique (FPVF) showed a significant development of sense of balance in persistent stroke patient (Srivastava, Taly, Gupta, Kumar & Murali, 2009). Functional rehabilitation strategies had been proven to be effective in the improvement of postural balance of the stroke patients (Cordun & Marinescu, 2014).

Many of the studies have been explored the effectiveness of physiotherapy to improve the balance ability of the stroke survivors. Balance training by biofeedback has been proved significantly effective to improve postural control (Yavuzer, Eser, Karakus, Karaoglan, & Stam, 2006). Functional rehabilitation strategies had been established to be effective in the improvement of postural stability of the stroke patients (Cordun & Marinescu, 2014).

A systematic review was conducted by Van-Duijnhoven et al., (2016) to find out the Effects of exercise therapy on balance performance in chronic stroke. 43 randomized control trials were included from 2000 to 2015. Similar area interest has been created and the aim is to explore the studies conducted after the year of 2000 to 2017.

The lack of evidence based practice is evident in several areas of physiotherapy practitioners in Bangladesh. Lack of time, resource, busy schedule, ignorance, poor skill, lack of knowledge about electronic search strategies etc. are the possible causes which have been identified from the personal communication by the investigator with the physiotherapy practitioners. Therefore, the study can help the practitioners in Evidence based practice and encourage the other to continue further investigation.

In case of achieving independent sit to stand additional exercise is effective for improvement of balance for stroke patients and the result found significant difference. (Barreca, Sigouin, Lambert, Ansely, 2004).

Another study conducted by Blennerhassett and Dite (2004) found that extra task-related perform improves mobility and upper limb function early after stroke. The tasks became increasingly more complicated and feedback was reduced over the training course. No significant between-group variation was found for knee flexion peak at any time of evaluation (Jonsdottir, Cattaneo, Recalcati, Regola, Rabuffetti, Ferrarin, & Casiraghi, 2010). Ischemic stroke is more common in younger people and 85% to 90% due to ischemic and 15% to 10% is caused by hemorrhage age in western world. In Asia constitute a large percentage (Hossain et al 2011).

Pellicer, Luser, Casanovas, & Ferrer (2017), demonstrated that study found effects on multimodal exercise on walking capacity and found improvement on functional ability of stroke patients.

1.2 Justification of the study

Stroke is the most important reason for death and most primary causes of grown-up disability with impairment in the world. One of the main purposes of the rehabilitative process is to help patients achieve as high a level of functional independence as possible within the limits of their impairments. Task related training (TRT) or task oriented physiotherapy is a treatment technique that involves the performance of repeated work; aim oriented, purposeful activities in a normal setting. And it tries to improve balance and functional level with mobility to do ADLs properly and reduce impairment related to balance functional status and mobility.

One of the most important impairment of stroke is balance. So, improving balance is essential part of daily activities through rehabilitation. Another important impairment of stroke is functional impairment and mobility. Most of the survivors are facing difficulties history of falling several times after having stroke. Recently Stroke is increasing day by day in developed and developing countries worldwide. In under developed countries like Bangladesh stroke also causes death where health supports system including is not available. Besides it will help to establish right guidelines of balance training, functional status and mobility for patients, and environment conditions which are mandatory for stroke patients. The identification of effectiveness of task oriented training program among the stroke patients gives proper education and idea of balance, functional status and mobility for stroke patients. It will help to discover the role and important of task oriented physiotherapy to improve balance, functional status and mobility and reduce as well as disability.

1.3 Operational definition

Stroke: Stroke may be defined as rapidly developing of clinical signs which lasting more than 24 hours with no apparent cause of vascular origin or leading to death. It is a clinical syndrome.

Task oriented physiotherapy: Task oriented training involves practicing real life tasks (such as walking or answering a telephone), with the intension of acquiring or requiring a skill (defined by consistency, flexibility and efficiency).

Conventional therapy: Conventional physiotherapy is a group of selected treatment techniques set by a physiotherapist on the basis of evidence that are widely used around the world for the treatment of specific disease (Kishner & Colby, 2007).

BMI: A consistent approximation of an individual's comparative body fat calculated from his or her height or weight. The formula for calculating BMI is weight in kilogram (kg) divided by height in meter (m) squared.

Functional independence measurement scale (FIM) The FIM instrument refers to a scale that is used to measure one's ability to function with independence. The FIM is used worldwide in medical rehabilitation units. The FIM score ranges from 1 to 7, with 1 (Total Assistance) being the lowest possible score and 7 (Complete Independence) being the maximum possible score.

1.4 Aim

To evaluate the effectiveness of task oriented physiotherapy along with conventional physiotherapy for the patients with stroke.

1.5 Objectives of the study

1.5.1 General objective

- To determine and compare the effectiveness of task oriented physiotherapy along with conventional physiotherapy for patients with stroke.

1.5.2 Specific objective

- To find out the socio demographic status and medical information of participants.
- To find out the effectiveness of the Task oriented physiotherapy between and within group along with conventional physiotherapy to improve balance for patients with stroke.
- To identify the effectiveness of task oriented physiotherapy between and within group along with conventional physiotherapy to improve functional status for the patients with stroke.
- To find out the effectiveness of task oriented physiotherapy between and within group along with conventional physiotherapy to improve mobility for the patients with stroke.

1.6 Null hypothesis ((H₀))

Task oriented physiotherapy along with conventional physiotherapy is no more effective than conventional therapy for the treatment of patients with stroke.

H₀: $\mu_1 - \mu_2 = 0$ or $\mu_1 = \mu_2$, where the experimental group and control group initial and final mean difference is same.

1.7 Alternative hypothesis

Task oriented physiotherapy along with conventional physiotherapy is more effective than only conventional therapy for the treatment of patients with stroke

H_a: $\mu_1 - \mu_2 \neq 0$ or $\mu_1 \neq \mu_2$, where the experimental group and control group initial and final mean difference is not same.

Stroke is a common neurological condition in worldwide and it is increasing day by day. There are so many causes behind this problem and so many treatment procedures to solve this problem. Stroke patients face many difficulties including hand function, balance problem, gait problem, and movement difficulties. A common neurological insufficiency characterized by the sudden development of a clinical sign of focal disturbance secondary to a vascular event and persists more than 24 hours may know as stroke (Gayer & Gomes, 2009). Now a day's stroke is the major familiar cause of impairment in (ADLs) activities of daily living and it is increasing worldwide (Hsieh & Sheu, 2001).

Stroke definition according to the World Health Organization (WHO) “A clinical syndrome consisting of rapidly developing clinical signs of focal (or global in case of coma) disturbance of cerebral function lasting more than 24 hours or leading to death with no apparent cause other than a vascular origin”.

According to Sym and Kim (2015) stated that there are so many causes that stroke patients have so many difficulties in their body function including upper extremity task, lower extremity task, balance problem, postural problem, and gait problem. They found there is no significant in two groups. On the ramp, there is gait training with stroke patient enhanced active balance ability and a high-quality result for other neurological condition.

Stroke is caused by the stoppage of blood supply to the brain when there is clot or bursting of the blood vessels. Suddenly feeling weakness paresthesia pain or lack of

sensation of the face area, upper limb or leg, the majority have frequently on one side of the body, uncertainty, problem facing in speaking or understanding speech, visualization, gait, faintness, loss of equilibrium or organization, severe headache, fainting or unconsciousness. This symptom varies according to the area of involvement and how severely it affects. Death of patient might occur in case of severe stroke (WHO, 2014). After stroke, clinical appearance including weak point on one side of body, Loss of feeling, dizziness, attentiveness problems, Perceptual problems, Neglect visualization problems, Ataxia, Side effects of medication, inner ear infections, migraines and confusion due to a urinary tract infection can cause balance problem (Stroke Association, 2017).

There are some risk factors of stroke as well as raising blood pressure HTN, DM, cardiac disease, smoking, age and sex, race, personal or family history, overweight, obesity, lack of physical activity, stress and depression, alcohol consumption, unhealthy diet etc. (stroke 2018).

There are so many or huge number of nerve cell is dependable for controlling a variety of parts and processes within the body. If the cells are not organized or stopped function properly, the body parts they are responsible for controlling also cannot functioning properly (Ryan, 2006). TIA is most common and concerning a mini stroke is diagnosed by transient ischemic attacks (TIA), or mild-strokes, that for the moment break off blood supply to the brain. While TIAs source related symptoms (such as visualization problem, or provisional weak point in a limb), sometimes weakness spread all over the body including limb face as quickly as a few minutes (Bruno, 2004).

There is no standardized classification of stroke subtypes. Stroke or cerebra vascular accident (CVA) can be classified according to pathological type or temporal factors or their course of progression and each type has different causes (Bierman, 1993). Ischemic stroke is the mainly familiar type of stroke. Ischemic stroke occurs when a brain artery is blocked for any reason. Approximately 80% of all strokes are Ischemic stroke. Brain cells cannot work if any artery is blocked for any unknown reason. The brain cell become dies if the artery is blocked for few minutes continuously (NINDS, 2004). When blood clot occurs or thrombus forms within the brain itself the stroke that means common type of stroke occurs. It may disturb the smooth blood flow through artery by the affected vessels. The term atherosclerosis of brain artery may cause by fatty deposit inside the blood vessels. The term Cerebral thrombosis which is occurs sudden at night or early in the morning and more common as TIA. By early diagnosis of TIA need urgent treatment and is very important for stroke prevention (Stroke Forum 2006). The word such French word “lacuna” meaning “gap” or “cavity”. A lacunars stroke is one type of stroke when thrombosis occurs in small-vessel involves one of the brains, yet deeper penetrating arteries commonly lacunar strokes produces purely motor deficits purely sensory deficits or a combination of motor and sensory deficits (Bierman, 1993).

Embolic stroke is caused by an embolus. Most often cerebral embolism resulting for embolus forms in a blood vessel but away from the brain it occurs. Then it travels through the blood in artery or in the brain and may block the blood flow to the brain from artery. When arterial fibrillation occurs, it may form blood clot and it is the common cause of emboli. The duration of embolism without including any warning may develop rapidly, between 10-20 seconds (Avillion, 2002).

A hemorrhagic stroke is also common for stroke survivors and it occurs when artery of brain rupture and blood spread out the normal brain tissue and stopped the blood delivery to the brain and totally stopped the normal function of the brain. Approximately 20% account for this type of all strokes. Hemorrhagic can occur in many ways. The most common causes are including bleeding aneurysm, a fragile or skinny spot on an artery wall; when arterial walls rupture open (NINDS 2004). In intra cerebral stroke, blood spreads into the subarachnoid space between the brain and cranium. As fluid builds up, force into the brain increases, impairing its function. Hypertension is a recurrent source of these types of strokes, but Vessel with pre-existing defects, such as an aneurysm, are also at risk of rupture. Aneurysms are most likely to split open when blood pressure is height, and controlling blood pressure is an important preventing strategy. Subarachnoid hemorrhage account for about 7% of all strokes (Stroke Forum 2006). Intra cerebral hemorrhage bleeding straight goes into the brain cell and creates large hematoma. Generally, it occurs in little arteries due to high blood pressure, injury, bleeding disorder etc. Intra Cranial Hemorrhage has a death rate of 44% after 30 days, which is higher than ischemic Stroke.

There are various approaches are used to rehabilitation of stroke patients. Such as Proprioceptive Neuromuscular Facilitation, Brunnstrom approach, Bobath approach and Motor Relearning Program. Physiotherapy improves the function of stroke patients. Physiotherapy professionals use different intervention approaches to treat the balance problem predominantly balance retraining exercise-intensive, task oriented training program, individual, functional, progressive, group exercise, tread mill exercise, gaze stabilization and training of use of different assistive device (Stroke Association, 2017).

Roerdink et al. (2007) stated that coordination is an essential part of functioning people with stroke and some other neurological conditions so if gait coordination is impaired for due to stroke then functionally adaptive walking is impaired as well and this is evidence based for people with stroke and they found acoustically paced treadmill walking provides effective for the patient with stroke.

Moon & Park (2016) stated that, stroke is the most common disorder and it hampers the daily living activities. Good trunk stability is important for balance and coordination and it contributes to upper limb function. Treatment method including trunk stability exercise using (PNF) proprioceptive neuromuscular facilitation with different chair heights and they found the significant changes in gait velocity cadence stride length. That means the result indicated trunk stability exercise using proprioceptive neuromuscular facilitation were effective to improving gait velocity.

Timmerness et al, (2014) stated that, arm hand performance improved after task oriented robot training program on upper limb task movement, and superiority of life in constant stroke patients.

Measuring balance is an important for prescribing the most appropriate therapy, mobility aids, identifying safe and unsafe activities after the stroke and outcome measurement of the patient (Berg et al., 2008).

Aquatic exercise improves motor function, static and dynamic balance in people who suffered stroke (Lee, 2010). Lai et al. (2002) stated that there are constant impairments in doing various hand activities. New technology invented new technique and new ways to identify the efficacy of therapeutic management to understanding of the neural mechanisms for recovery of upper limb motor control for

stroke. The Task Oriented Approach is the abilities to doing normal function including motor control as a result from the interaction between demands of the task they performed (Shumway-Cook & Woollacott, 2001).

There are so many evidences to enhance the upper limb recovery by practicing repetitive task approaches (Higgins et al., 2006). Therapeutic intervention by using this approach enhances the target towards task training. This method influences active participation of repetitive task to the participants to enhance activity (Shumway-Cook & Woollacott, 2001). One study showed the application of task oriented approach including CIMT that means constraint induced movement therapy using the protocol of task practice; behavioral therapy severe only limb training with constrained to the unaffected extremity (Morris, Taub & Mark, 2006).

Effects of CIMT have been studied in individuals with acute sub-acute and chronic stroke including different severe condition of upper extremity motor impairment. Therapy including many types of repeated work like task specific movement affected limb or single joints and gradually complex joint or multi joints.

Frence et al., (2010) stated that recurring functional task program early after stroke enhance purpose full movement in lower part but not in upper limb function. Task activity included walking, smaller movements to facilitate activity. They used mixed intervention with some element of exercise. Kuberan, Kumar, Joshua, Misri, & Chakrapani (2010) demonstrated that task specific exercise with altered sensory input is effective in enhance dynamic balance and reduce fear of falling. Several researches proved that deficits of sensory motor integration are connected with balance measures subsequent stroke. Blennarashet & Dite (2004) stated that, additional task oriented training program enhance mobility and upper extremity function near the beginning

after stroke. Carr and Sheppared (2002) also found the efficacy of task oriented program during stroke rehabilitation to enhance ADLs such as walking, reaching to grasp object.

Another study conducted by Bayouk et al, stated that task specific training for balance shows significant improvement for stroke patients. They have found highly changed in TUG. Task oriented training and client centered training are effective to enhance functional recovery of arm after stroke. Result showed significant in client centered training but no statistically significant in upper extremity improvement (Kumar & Gupta, 2015).

Axelrod, Deniel, & Anca (2016), stated that there is some common impairment of stroke found that is hemi paresis. In that cases task, related training is useful for betterment of gait activities of acute sub-acute and chronic cases. Various kinds of task related training including as body weight supported treadmill training, circuit training, walk training, reaching task for developing balance and constraint induced movement therapy and upper extremity function. Task related presentation enhanced with repetition in both ischemic and hemorrhage stroke. However, the development was less during obstacle stepping.

A pilot study of the Bilateral Auditory Training Auditory Cuing by Whittall, McCombe Waller, Silver, & Macko, (2000) stated that significant improvement occur in motor function which was measured by the Fugl-Meyer upper extremity motor assessment and the Wolf Motor Function Test applied in 14 participants.

The study by Farqalit & Shahnawaz (2013), found the Asymmetrical foot positioning during sitting to standing training is more effective than symmetrical positioning. The

experimental group had STS training by positioning the affected foot behind the normal foot where the control group had the similar training with symmetrical foot position, 5 days a week for total 4 weeks. The training promotes weight bearing on the injured leg, make the function more efficient and thus prevent fall on ground (Camargos, Rodrigues &Teixeira, 2009). Weight-bearing asymmetry of hemiplegic patient decrease by performing repetitive task with the affected foot placed behind the unaffected foot. This foot placement cause to bear more weight on the affected side. The similar strategy used in task-specific training for improving STS in patients with sub-acute stroke (Brunt, Greenberg, Wankadia, Trimble & Shechtman, 2002).

The study by Cha, Shin and Kim (2017) found Bad Ragaz ring method along with comprehensive rehabilitation therapy is more effective than comprehensive rehabilitation therapy alone. This is a form of Aquatic therapy designed to improve balance and walking abilities. The physical characteristics such as viscosity, buoyancy, density, specific gravity, and hydrostatic pressure promote equal resistance to all muscle groups and increase sensory input. In addition, the hydrodynamic elements of water, including met centric effects and inertia, are essential for the maintenance and restoration of balance (Lambeck & Stanat, 2000). Jung, Kim, Chung & Hwang (2014) found Weight shifting training along with conventional therapy is beneficial than the conventional therapy alone. After stroke trunk muscle strength and weight-shift ability may be decreased. It is evident that reaching exercises in seated position improve sitting balance and gait speed in chronic hemiplegic patients (Dean et al. 2007). Yang, Kim & Lee, 2016 found Real-time Auditory Stimulation Feedback is an effective means on Balance and Gait ability of stroke patient. It is a software base intervention when patients make heel strike and foot flat on ground the software recorded the pressure and provided real-time auditory stimulation for the patients.

Ordahan et al. (2015) found exercise administered with balance trainer is effective to improve balance and postural control in stroke patients. This is a biofeedback system which is used in the development of standing balance and postural control. Sharma and Kaur (2017) identified Core stabilization along with pelvic PNF was more effective for improving trunk impairment, balance and gait of chronic stroke patient. The core muscles - transverse abdominis, multifidus, Para spinals, quadrates lumborum, and obliques were trained. The muscles of the trunk and pelvis are measured as core musculature that is dependable for maintaining balance (Kibler, Press & Sciascia, 2006).

Kyo and hayon 2015 stated that ramp gait exercise with PNF improves stroke patients dynamic balance ability and good outcome of a ramp gait. PNF is an important approach to therapeutic exercise that assemble functionally improve pattern of movement with techniques of neuromuscular facilitation to promote motor response neuromuscular control and function (Kisner & Colby, 2007). “Hallmarks of this approach to therapeutic exercise are the use of diagonal patterns and the application of sensory cues specifically proprioceptive, coetaneous, visual and auditory stimuli-to elicit motor response” (Kisner & Colby, 2007). Scapular PNF technique organizes functional patterns for performing the exercise and can be used to stretch or strengthen muscles selectively. These techniques also help the muscle to relearn the normal time of ingathering and amount of activation to maintain the balance between different groups of muscles. One of the technique exploited in PNF is hold relax technique. This hold relax technique is very effective, simple, and pain free technique which has dynamic to work up relaxation improve flexibility and reduce pain. The proprioceptive neuromuscular facilitation technique also elevates the trunk stability of stroke patients. Good trunk stability is essential for balance and upper extremity use

during daily living activities. Proprioceptive Neuro Muscular facilitation stimulates proprioceptors within the muscle and tendon thereby improving function and increasing muscle strength, reduces pain (Klein et al., 2002).

Muscles such as abdominal and multifidus are usually contract prior to the prime movers of the lower limb which is called the feed forward mechanism to stabilize the spine (Hodges and Richardson, 1997). Kall et al. 2017 found that long-term engagement in multimodal rehabilitation programs is effective for stroke patients. Multi modal therapy provides sensory-motor stimulation, the 3-dimensional movements of the horse mimic the normal individual gait pattern, is revealed to be effective for the stoke patient.

Llorens, Gomez, Alcaniz, Colomer and Noe, (2015) found Virtual reality based therapy combined with conventional therapy is effective to improve balance of stroke patient. This is a skill based rehab program which is effective and motivation tools. Lee, Lee & Lee (2013)found that gait training with Body Weight Support Treadmill Training improves gait and balance in chronic stroke patient. This is used for the patients who have difficulties in full weight bearing on their lower limbs. The remarked activities increase the function and walking capacity (Visintin, Barbeau, Korner-Bitensky, & Mayo, 1998). Cho, Kim & Lee (2012) found that balance and gait can improve by gait training with motor imagery training of chronic stroke patients significantly better than gait training alone. The motor imaginary practice improves learning ability. It is showed in some studies that the same parts of the brain are activated like the actual performance (Butler& Page, 2006). The studies that have been discussed above explored and presented some new effective treatment strategies to improve balance of chronic stroke patient and that was the aim of the current study.

Another study showed that task training with group therapy is a safe treatment and it is better when compared with another task training including individual task training of equal based dose. It is safe training program for self-reported mobility for the unable to walk independently stroke patients (Caroline, Jacqueline, Ricarda, Brandel, Kawkel & Hammelsheim, 2015).

Lee, Lee & Lee (2013) found that Intensive gait training with Body Weight Support Treadmill Training improves gait and balance in chronic stroke patient. This is used for the patients who have difficulties in full weight bearing on their lower limbs. Although another study said that initially it is not advised for poor walkers as intervention, also BWSTT may not reflect the task-related environment of over-ground training for motor learning (Dobkin, 2012).

Villager, Chandrasekhar & Welsh (2011) stated that Functional task-oriented training recently applied to patients with stroke is more effective than the conventional therapy. Recent studies have shown that task oriented training helps to enhance the functions of the upper extremity, but mostly in terms of balance with other body parts and balance while walking. Others have claimed that such training also helps patients take care of themselves Task-oriented mirror therapy is conventional, movement-oriented mirror therapy with addition of functional tasks (Arya, Verma, Garg, Sharma & Agarwal 2012). Achievement of positive effects of both the conventional and task-oriented therapies leads to optimum results of rehabilitation.

Another study proved that effects on static and dynamic balance of task oriented training are more effective for chronic stroke patients in water or on land. They provide strengthening exercise program for individuals with chronic stroke patients to improve the muscular weakness and inhibited the improvement to functions. Finally,

they got the result that in water exercise effectively improve on the balance of chronic stroke patients (Lee, Ko & Cho 2010).

Fayes et al, 1998 stated that specific intervention during acute phase after stroke improved motor recovery that was proved after 1 year of taking intervention. It is proved that task specific intervention is important for stroke patients and it is beneficial for the enhancement of upper limb motor recovery in later phase. Arm function recovery is poor in stroke patients found several studies but it helps to minimize the upper limb problem.

Recently a study was conducted by Liu et al (2018) stated that cognitive behavioral therapy and task oriented balance training helps to reduce fear of falling in chronic stroke patients. There are two major challenges for stroke patients like fear of falling and balance problem. So, they proved that combination of this therapy reduce the fear of falling and balance problem. They use as intervention including stepping up and down, heel raising exercise, semi squatting, standing on a dura, obstacles walking. Intervention was given twice a week for 8 weeks. Finally, the result founded that this is very effective, also cost effective to reduce the fear of falling and balance problem besides improve the quality of life of stroke patients. another study by using The Brief Self-Efficacy Scale Interdisciplinary Comprehensive Arm Rehabilitation Evaluation (ICARE) measure the participant's confidence when using the weaker arm. Intervention system was fixed and this encouraged specific practice in the home or societysetting (Winstein et al., 2013).

Recently another study was conducted by Liu et al (2019) stated that cognitive behavioral therapy and task oriented training reduce the fear of falling and balance problem. This study provides important new information about the efficacy of an 8-

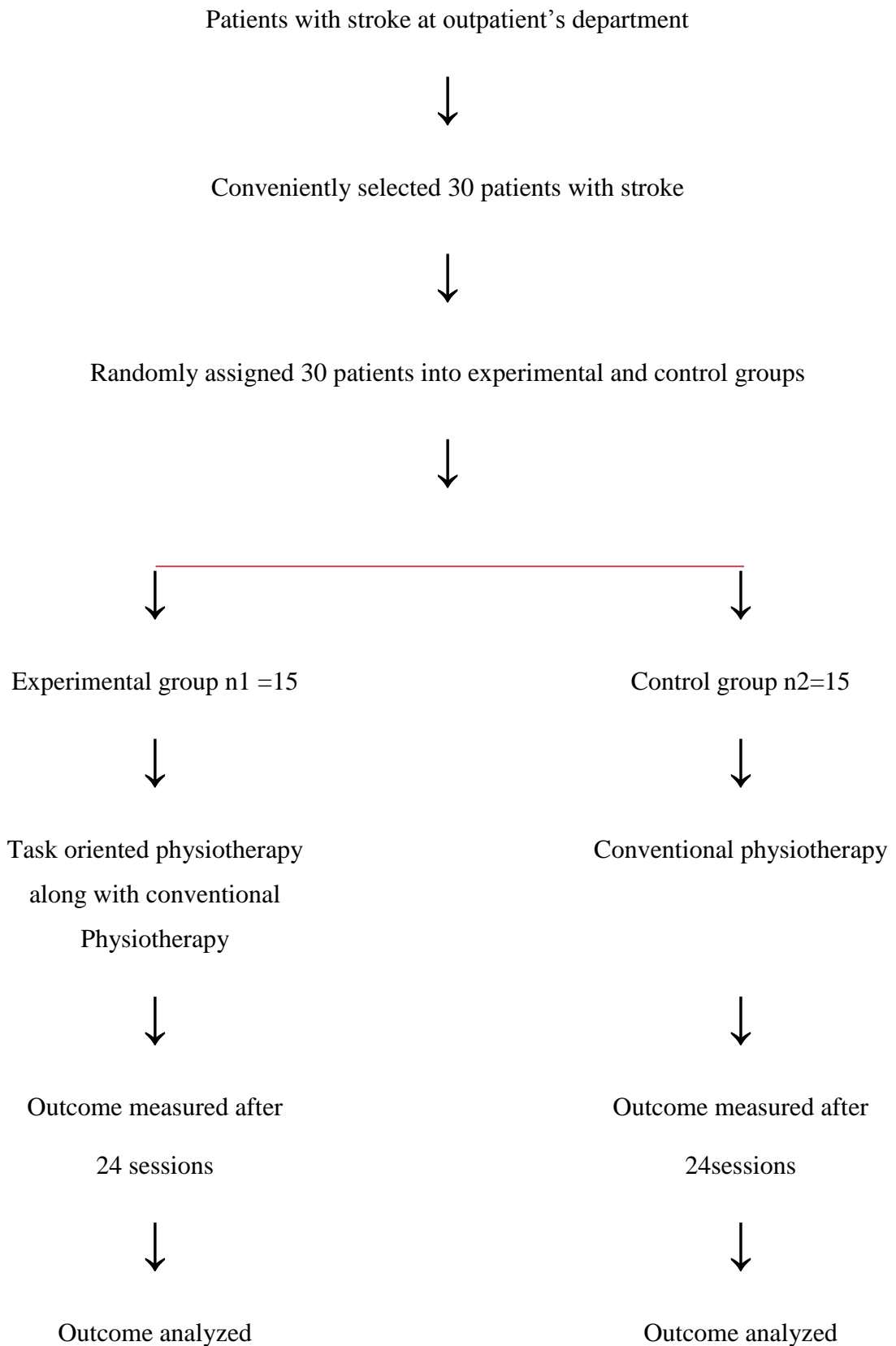
week,16-session Cognitive Behavioral Therapy with Task Oriented Training intervention that seems to reduce the fear of falling and fear-avoidance behavior and improve balance and independent daily living, with benefits maintained for 12 months after completing the intervention. Cognitive Behavioral Therapy seems to be a possible adjuvant therapy to supplement the treatment effects of usual physiotherapy in cognitively intact people with a history of stroke.

This thesis evaluated the effectiveness of task oriented physiotherapy along with conventional physiotherapy for the patients with stroke. To identify the effectiveness of this treatment regime, berg balance scale, functional independent measurement scale and time up and go test were used as measurement tools for measuring balance, functional status and mobility.

3.1 Study design

The study was a quantitative evaluation of classic experimental research design. Classic experimental research finding out the causal relationship between independent and dependent variables and infer the findings for generalization (Depoy and Giltin, 2015). In fact, the study was an experiment between different subject designs. Task oriented physiotherapy along with conventional physiotherapy applied to the treatment group and only conventional physiotherapy techniques applied to the control group. It was a single blinded study where the participant was blinded. A pretest before intervention and posttest after 24 sessions of intervention was administered with each subject of both groups to compare the functional improvement effects before and after the treatment.

Figure 1: Flow chart of the phases of Randomized Control Trial



3.2 Study Area

The study was conducted from outpatient, neurology physiotherapy unit of center for rehabilitation of the paralysed (CRP), Savar, and Dhaka 1343.

3.3 Study Site

This study was done in Centre for the rehabilitation of the paralysed (CRP), Chapain, and Savar, Dhaka 1343.

3.4 Study period

The duration of the study was 10 Month. This study was conducted from August 2018 to April 2019.

3.5 Study Population

The patient of the Hospital treated in Neurology Unit Outpatient of Physiotherapy Department. Patients was Diagnosed as Stroke or stroke.

3.6 Sample size

The patients who came to neurology unit of physiotherapy department, CRP, Savar from October 1 to December 30, 2018 and who met the inclusion criteria was selected for the study. And total 30 participants met the criteria was included in the study. Who did not meet the criteria was excluded. So, sample size for this thesis was 30. Among them 15 participants were in trial group and 15 participants in control group.

3.7 Sampling Technique

30 participants with stroke who met the inclusion criteria selected conveniently from outpatient neurological unit of physiotherapy department of CRP, Savar and Dhaka. All the participants had equal probability of assessing to any of two groups and 15 patients were randomly assigned to experimental group comprising of treatment approaches of task oriented physiotherapy along with conventional physiotherapy and 15 participants to control group treated by usual conventional therapy for this study. Single blinding procedure was followed in this study. The participants were assigned into experimental group and control group by using computed generated random number from 1 to 30. An initial randomization was done by computer to identify the participants of experimental and control group and the first participants came out in the experimental group.

3.8 Inclusion criteria

Subject selection from CRP: Subject was selected from outpatient Neurology unit, Physiotherapy Department, CRP at Savar, Dhaka.

Male and female both were included: Both male and female who had stroke were included because Sherrington, et al. (2016) showed that prevalence of male and female both are at high risk.

Patients diagnose as stroke: This type of stroke patients were included because physiotherapy favors most in terms of ischemic or hemorrhagic stroke based on MRI or CT scan (Winstein et al, 2016).

Ability to walk 10 meters: The researcher included this type of patients because this type of patients has shown effectiveness in previous study (Kim, Lee, Bae & Kim 2012)

Age range between 35 to 80 years: This age range was selected because most of the people suffering from stroke around the age range showed most vulnerable (Timmermans et al, 2014).

Suffering from stroke at least 6 months: Duration of stroke within 6 months after stroke (Kim, Jung & Lee 2017)

3.9 Exclusion criteria

Medically unstable patients, unstable cardiac disease (Kim, Jung & Lee 2017).

Patient who had cognitive problem (Morich&Wijck,2012).

Participants who were unwilling to participate.

3.10 Data collection Tools

The interviewer was asked from the structured questionnaire which was designed to collect information on related. However, the questionnaire was comprised of five sections of items. The first section was included items of socio demographic characteristics and background information like- name, sex, age, educational qualification, height, weight, BMI etc. The second section was included items on medical information like Stroke types, duration, hypertension, diabetes mellitus, blood pressure, assistive device, history of fall experience etc. Third section included items on balance related information by Berg balance scale (BBS). Forth section included items on functional status related information by functional independent measurement (FIM) scale and lastly fifth section included items on mobility related information by timed up and go (TUG) test.

3.10.1Berg Balance Scale (BBS)

The Berg balance scale is used to objectively determine a patient's ability (or inability) to safely balance during a series of predetermined tasks. It is a 14-item list with each item 18 consisting of a five-point ordinal scale ranging from 0 to 4, with 0 indicating the lowest level of function and 4 the highest level of function and takes approximately 20 minutes to complete.

3.10.2 Functional Independent Measurement (FIM)

The Functional Independence Measure (FIM) is an assessment tool that aims to evaluate the functional status of patients throughout the rehabilitation process following a stroke, traumatic brain injury, spinal cord injury or cancer. FIM is comprised of 18 items, grouped into 2 subscales - motor and cognition. The motor subscale includes Eating, Grooming, Bathing, Dressing, upper body, dressing, lower body, Toileting, Bladder management, Bowel management, Transfers - bed/chair/wheel chair, Transfers – toilet, Transfers - bath/shower 17 Walk/wheelchair, Stairs, Walk/wheelchair, Stairs. The cognition subscale includes Comprehension, Expression, Social interaction, Problem solving, and Memory.

Each item is scored on a 7-point ordinal scale, ranging from a score of 1 to a score of 7. The higher the score, the more independent the patient is in performing the task associated with that item. 1 - Total assistance with helper, 2 - Maximal assistance with helper, 3 - Moderate assistance with helper, 3 - Moderate assistance with helper, 5 - Supervision or setup with helper, 5 - Supervision or setup with helper, 7 - Complete independence with no helper.

The total score for the FIM motor subscale (the sum of the individual motor subscale items) will be a value between 13 and 91.

The total score for the FIM cognition subscale (the sum of the individual cognition subscale items) will be a value between 5 and 35.

The total score for the FIM instrument (the sum of the motor and cognition subscale scores) will be a value between 18 and 126.

3.10.3 Timed Up and Go Test

Patients wear their regular footwear and can use a walking aid, if needed. Begin by having the patient sit back in a standard arm chair and identify a line 3 meters, or 10 feet away, on the floor.

3.11 Data collection procedure

The data collection procedure was conducted through assessing the patient, initial recording, treatment and final recording. After screening the patient at department, the patients were assessed by a graduate physiotherapist by the structured and close ended questionnaire with face to face interview. Twenty-four sessions of treatment were provided for every subject. Thirty subjects were chosen for data collection according to the inclusion criteria. The researcher divided all participants into two groups and coded (n=15) for control group and (n=15) for experimental group. Experimental group received conventional physiotherapy with task oriented physiotherapy and control group received only conventional physiotherapy.

Pretest was performed before beginning the treatment and the balance were noted with BBS, FIM, and TUG score on questionnaire form. The same procedure was performed to take post-test at the end of twenty-four session of treatment. Researcher gave the assessment form to each subject before starting treatment and after six sessions of treatment and instructed to put tick mark on the subjective part and objective part like BBS, FIM and TUG questionnaire according to their balance, functional status and mobility performance. The data collector collected the data both in experimental and control group in front of the qualified physiotherapist to reduce the biasness.

3.12 Intervention regimen



Step up



Balance board exercise



Kicking a ball



Stand and walk



Obstacle course



Walk and carry



Stairs

3.13 Questionnaire

The questionnaire was developed under the advice and permission of the supervisor following certain guidelines. There were seven close ended questions with socio demographic information and six another question for medical information, fourteen questions for measuring berg balance scale, nineteen questions for measuring functional independence measurement scale, and lastly one question for measuring time up and go test. First seven questions were formulated to identify the socio demographic status of the stroke patients. Six another question for medical information. Another Fourteen questions for balance, nineteen questions for functional status and one question for mobility. All questions were related to balance, functions and mobility of stroke patients.

3. 14 Data analysis

Statistical analysis was performed by using statistical package for social science (SPSS) version 22.

3.14.1 Statistical test

Statistical analysis refers to the well-defined organization and interpretations of the data by systemic and mathematical procedure and rules (DePoy and Gitlin, 2015). Mann-Whitney *U*-test was used for between group's analysis of balance and functional status. Within group analysis of balance and functional status was analyzed by Wilcoxon signed rank test (Hicks, 2009). Unrelated test and paired t test for between and within group analysis of mobility.

3.14.2 Level of Significance

To find out the significance of the study, the “p” value was calculated. The p values refer to the probability of the results for experimental study. The word probability refers to the accuracy of the findings. The level of significant was set at 95% ($p < 0.05$). A p value is called level of significance for an experiment and a p value of < 0.05 was accepted as significant result for health service research. If the p value is equal or smaller than the significant level, the results are said to be significant (DePoy and Gitlin, 2015).

3.14.3 Treatment Regime

Three physiotherapists who were expert in treatment of neurological patient were involved in treatment of patients. All the physiotherapists have the experience of more than three years in the aspect of neurological physiotherapy. Among them, four were male and two was female physiotherapist. Protocol for conventional physiotherapy was obtained from head of physiotherapy department, Centre for the rehabilitation of the paralysed (CRP) (Appendix- F). An in-service training was arranged to share the information with practical demonstration regarding task oriented physiotherapy including patient position, number of task, dose, rest interval and repetition of task (Appendix- G) with conventional physiotherapy.

3.15 Quality control and assurance

The investigator had enough knowledge in the designed study, hence the study area and underneath issues had been keenly explored by him. The format of the questionnaire was purely structural, thus it enabled a definitive answer. The questionnaire was developed according to the literature search. Follow the international accepted questionnaire and peer reviewed for reliable questionnaire. The investigator tried to avoid selection bias due to strictly maintained inclusion and exclusion criteria. The study was avoided conflict the selection of participants.

3.16 Ethical consideration

The whole process of this research project was done by following the Bangladesh Medical Research Council (BMRC) guidelines and World Health Organization (WHO) Research guidelines. Thesis proposal was submitted for approval to the administrative bodies of ethical committee of CRP and permission was taken from the ethical committee Institutional Review Board (IRB) of Bangladesh Health Profession Institute (BHPI) (Appendix-A). Permission was taken from the Head of the Physiotherapy Department, CRP, Savar, before starting data collection before starting the data collection (Appendix-C). Informed consent was taken individually from all participants and strictly maintained the confidentiality (Appendix-D). Every participant had to right to proceed or withdrawal from the study anytime.

Table 1: Comparison of baseline characteristics of the participants

Variable	Control group	Experimental group	P
Age, mean (SD), years	58.53 ±15.491	49.60 ±8.903	0.06
Gender	Male=7 (46.7%)	Male=6 (40%)	0.52
Height (cm), mean(SD)	157.82±7.366	158.50±5.581	0.50
Weight(kg), mean(SD)	63.07±9.231	62.73±7.401	0.43
BMI (kg/m ²), mean(SD)	25.35±3.608	24.90±1.927	0.13
TUG mean(SD), pretest	19.87±8.015	17.87±4.838	0.00

Table 1 compares the base line characteristics of participants between control and experimental group. In addition, two groups did not show significant differences at baseline regarding demographic characteristics instead of TUG test 0.00. In control group the mean age (\pm SD) of the participants was 58.53 (\pm 15.491) years and in experimental group 49.60 (\pm 8.903) years. In control and experimental group, male female ratio was (Male: Female=1:2). In addition, mean height was in control group 5.19 (\pm .252) cm and 5.24 (\pm .220) cm in experimental group. Mean weight was 63.07 (\pm 9.231) kg in control group and 62.73(\pm 7.401) kg in experimental group. Mean BMI was 25.33 (\pm 3.586) in control group and 24.80 (\pm 1.905) in experimental group. Mean (\pm SD) pretest TUG score was in control group was 19.87 \pm 8.015 and in contrast mean (\pm SD) in experimental group was 17.87 \pm 4.838.

4.1. socio-demographic Information

4.1.1. Age range distribution among participants

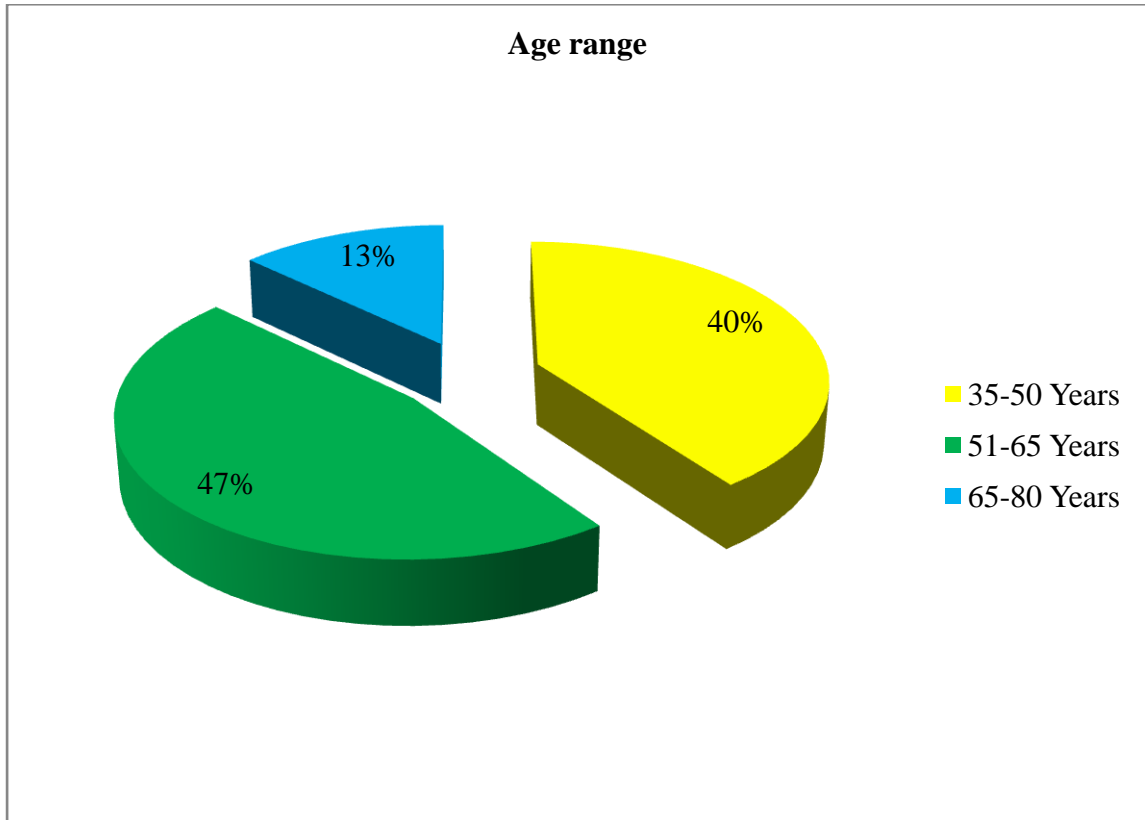


Figure 2: Age range distribution among participants

Figure 2 described that among the 30 participants, age ranges were grouped into 3 categories such as 35-50 years were 12 (40%), 51-65 years were 12 (47%), and 65-80 years were 6(13%).

4.1.2. Gender Distribution among participants

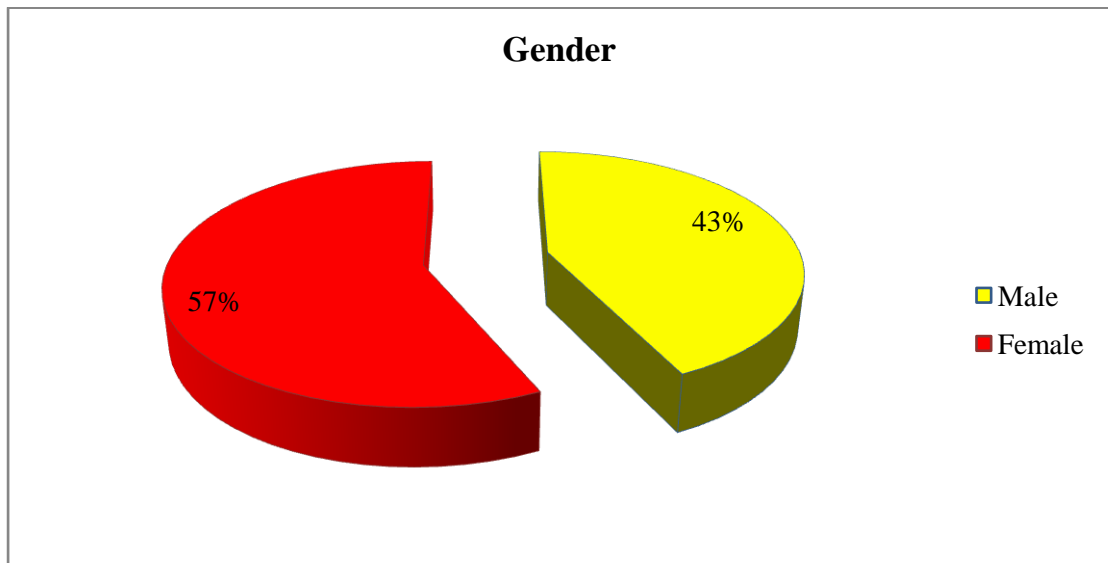


Figure 3: Gender distribution among participants

Figure 3 described that among 30 participants, 13 (43%) participants were male and 17 (57%) participants were female. In control group male participants were 46.67% and female participants were 53.33%. In experimental group male participants were 40% and female participants were 60%.

4.1.4. Educational qualification distribution among participants

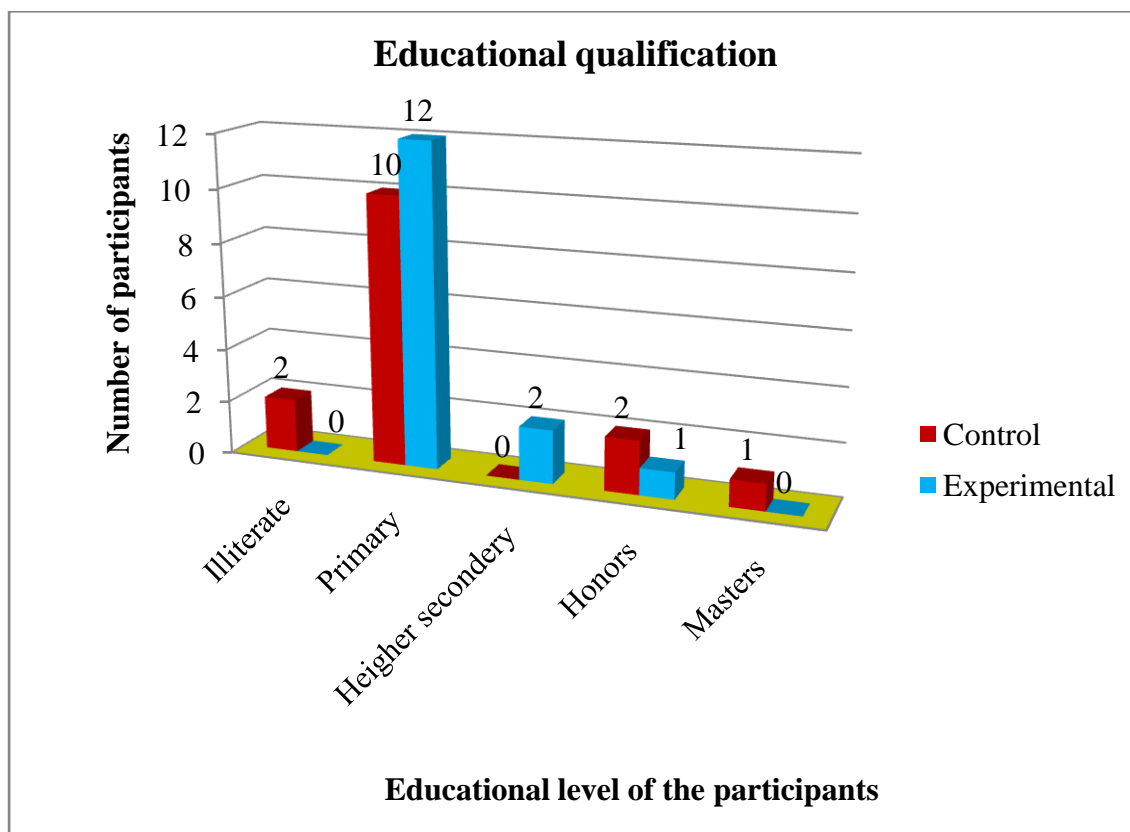


Figure 4: Educational qualification of participants

In this study, among the 30 participants 6% (n=2) were illiterate (0% in experimental group and 6% in control group), 73% (n=12) had completed primary studies (7% in experimental group and 66% in control group), 7% (n=2) has completed Higher secondary level (7% in experimental group and 0% in control group, and 10% (n=3) has completed Honors level (3% in experimental group and 7% in control group), and 4% (n=1) has completed Masters Level (0% in experimental group and 4% in control group).

4.1.5. Height range distribution among participants

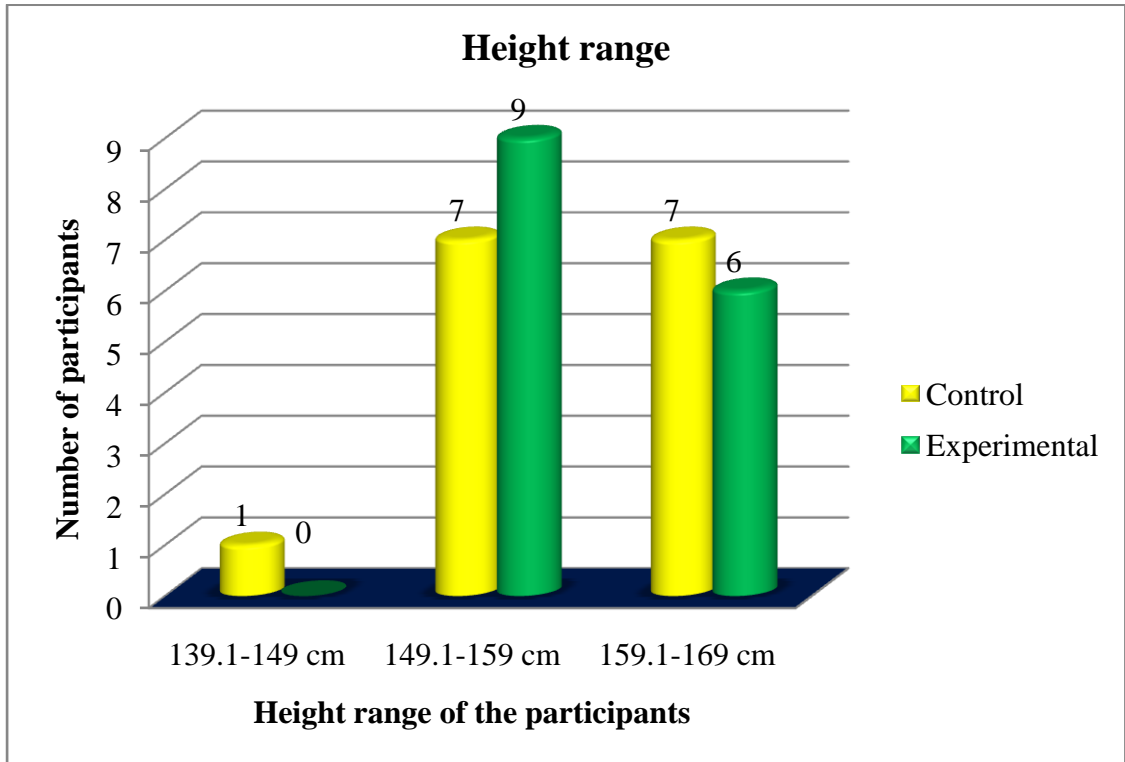


Figure 5: Height range Distribution among participants

Figure 5 narrated that among 15 participants in experimental group height range between 139.1-149 cm were 3 participants and in control group were 5 participants. Height range between 149.1-159 cm in experimental group were 10 participants and control group were 8 participants, height range between 159.1-169 cm were in experimental group were 2 participants and in control group were 2 participants.

4.1.6. Weight range distribution among participants

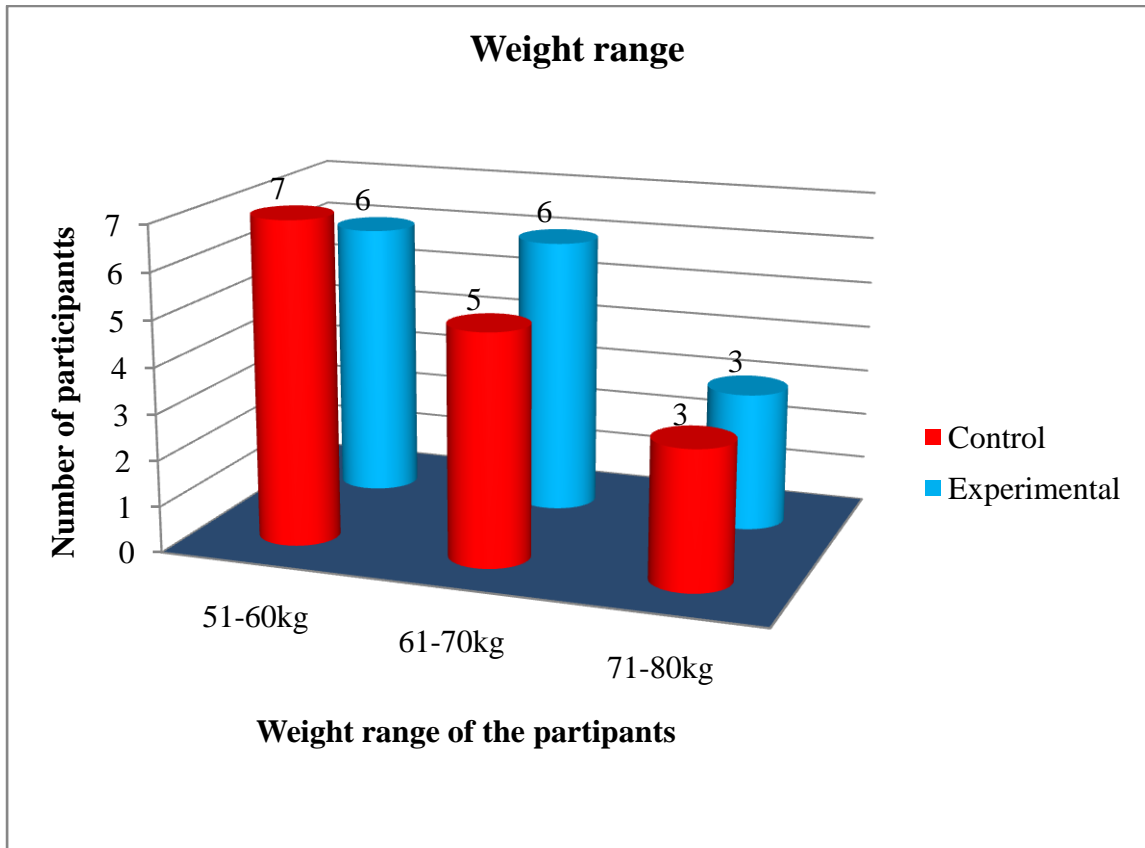


Figure 6: Weight range of the participants

Among the 30 participants weight were grouped into 3 categories such as 50-60kg (n=13) 43% among them in control group were 7 participants and experimental group were 6 participants, 61-70 kg (n=11) 37% in experimental group were 6 participants, control group were 5 participants and 71-80kg (n= 6) 20% in experimental group were 3 participants and in control group were 3 participants.

4.1.7 Religion distribution among participants

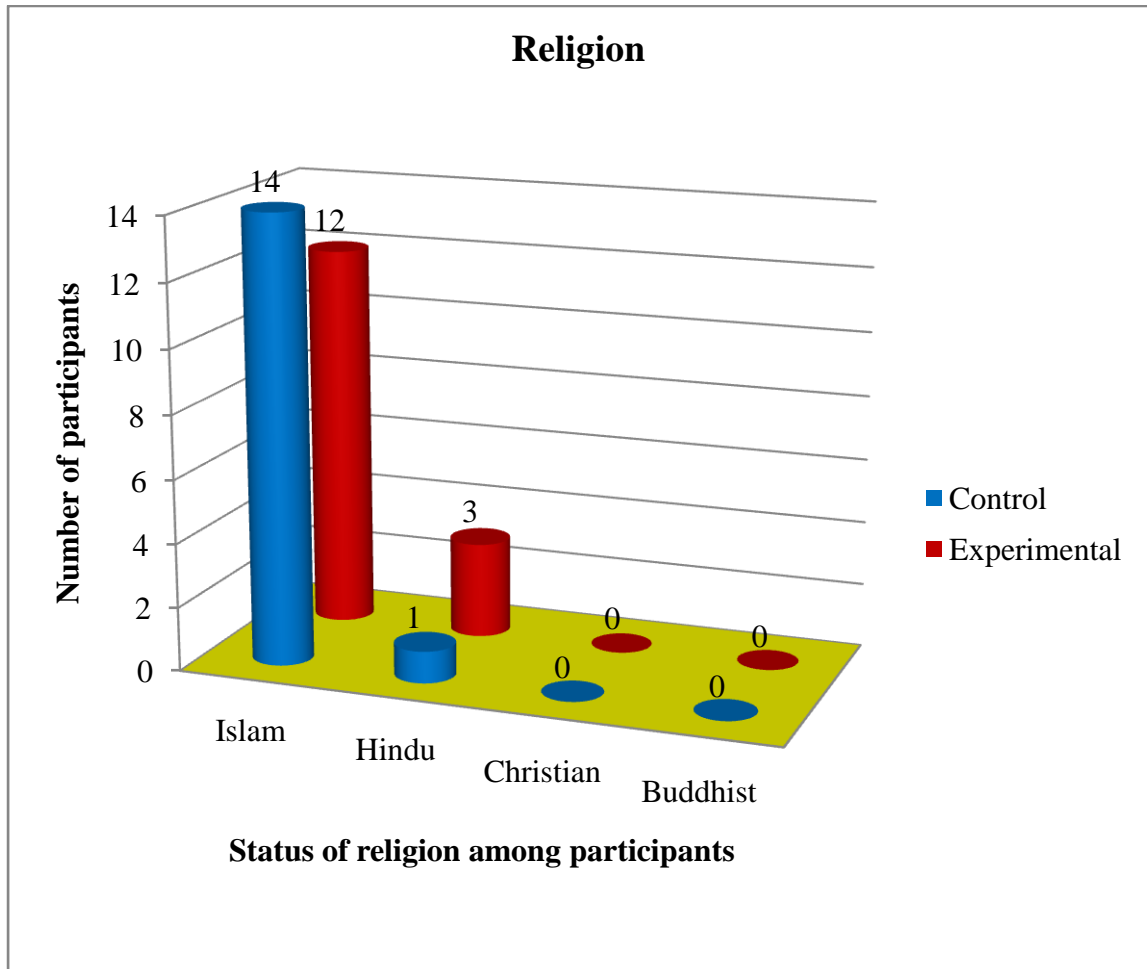


Figure 7: Religion Distribution among participants

Table shows among 30 respondents, most of the respondents were Muslim 26 (86.7%) followed by Hindu 4 (13.3%). Among them 14 Muslim participants were in control group and 12 in experimental group. And 1 Hindu participant in control group and 3 were in experimental group. No Christian and no Buddhist and others religion.

4.1.8. BMI distribution among participants

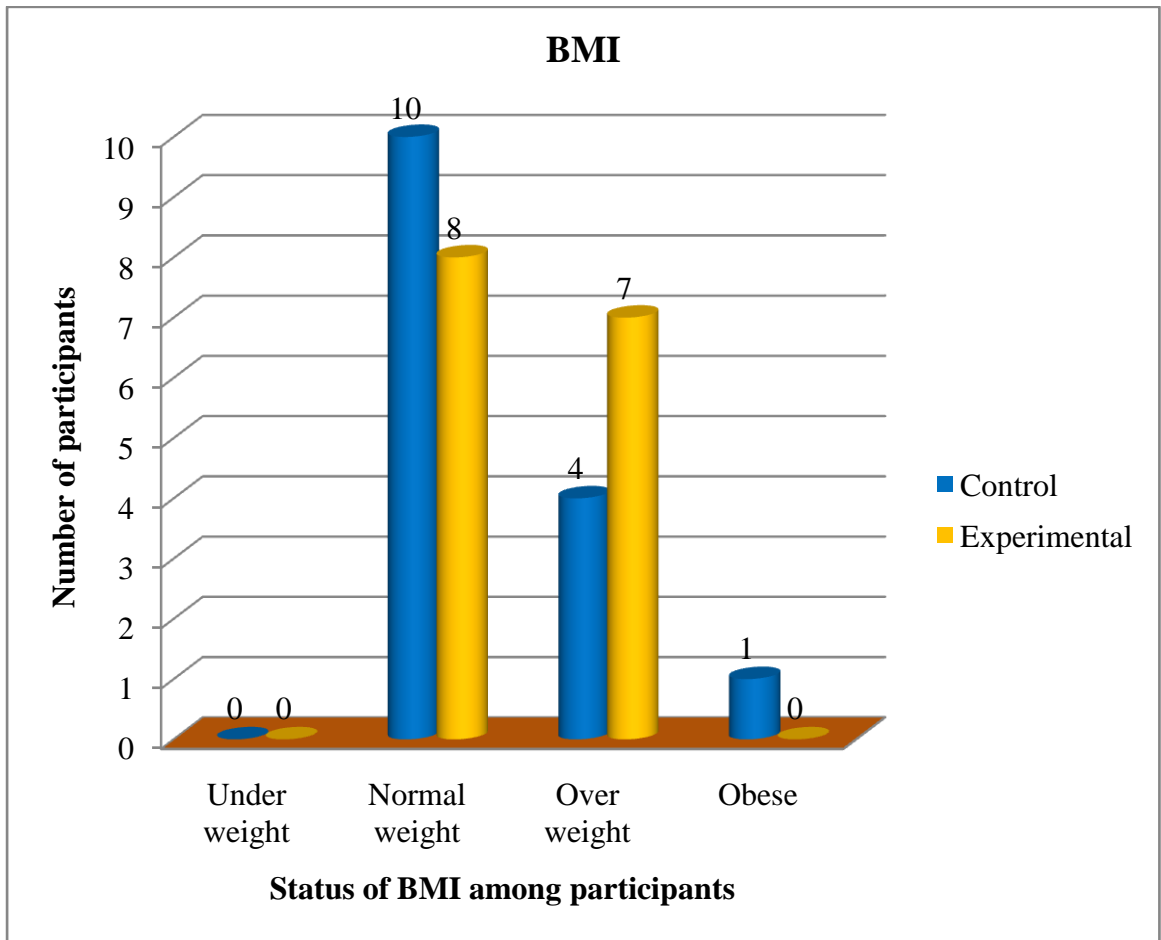


Figure 8: Distribution of the respondents by BMI

Figure 8 demonstrated that among 15 participants in the control group no participants (0%) was under weight, 10 participants in normal weight, 6 participants overweight and 1 participants was obese. In contrast, among 15 participants in experimental group, no participants were underweight (0%), 8 participants was normal weight as well as overweight was 7 participants and 0 participants was obese.

4.2. Medical information

4.2.1. Hypertension among participants

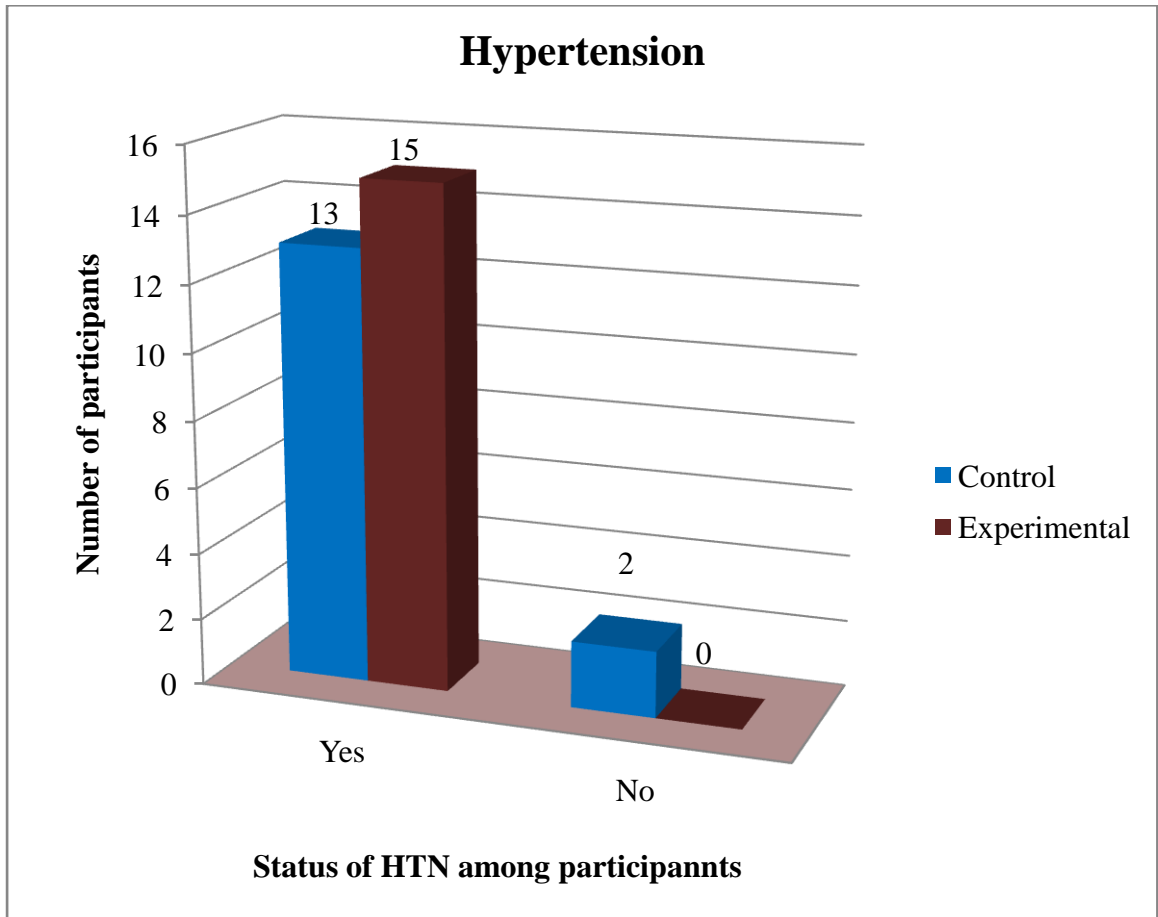


Figure 9: Distribution of the respondents by Hypertension

Figure 9 disclosed that among 15 participants of control group (n=13) 86.7% knew that they had been suffering from hypertension, (n=2) 13.3% did not have hypertension. On the other hand, among 15 participants in experimental group (n=15) 100% were aware about their hypertension.

4.2.2. Distribution of the respondents by having DM

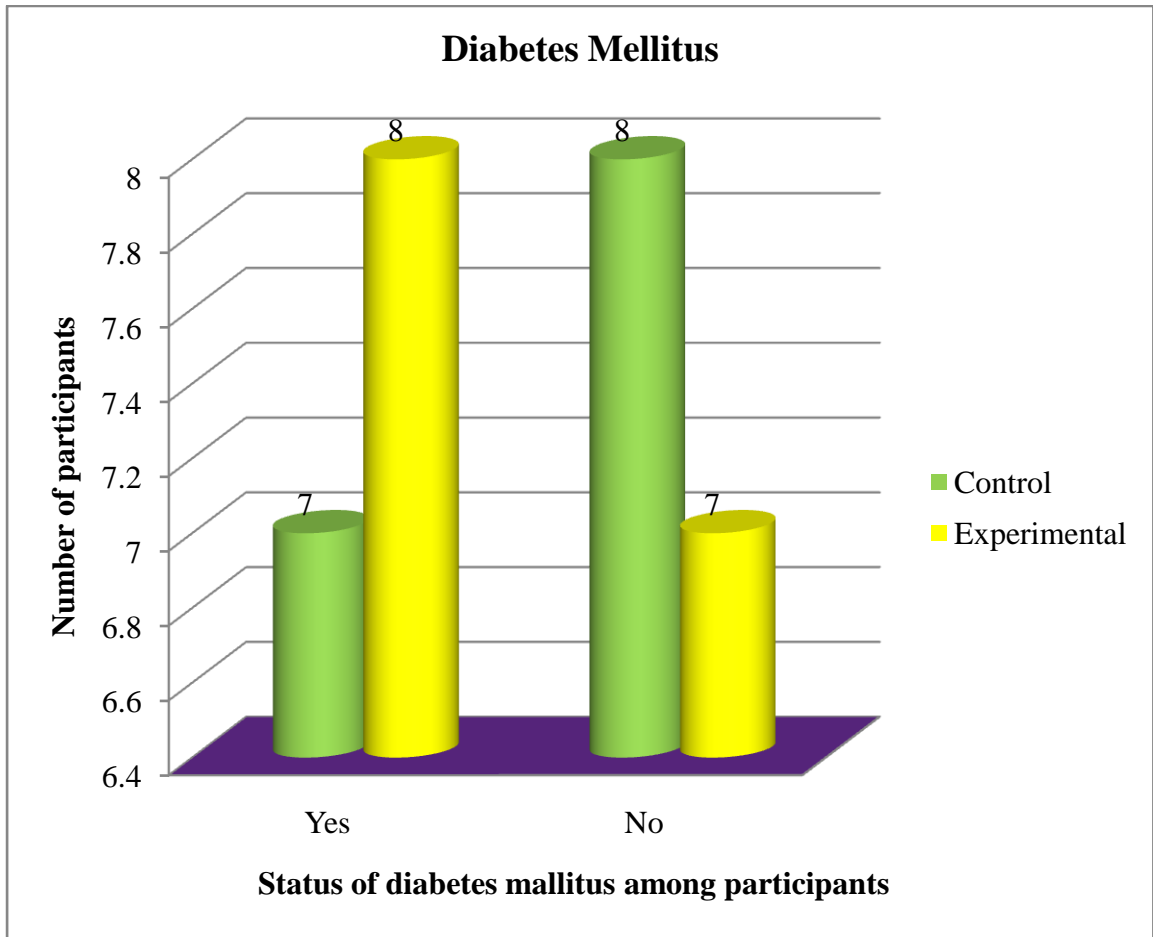


Figure 10: Distribution of the respondents by Diabetes Mellitus.

Figure 10 showed that among the total 15 participants in control group (n=7) 46.7% participants knew that they had been suffering from diabetes, (n= 8) 53.3% did not have the knowledge of existence diabetes at themselves. On the other hand, among 15 participants of experimental group (n=8) 53.3% participants were aware about their diabetes and (n=7) 46.7% did not have prior knowledge diabetes.

4.2.3. Distribution of the respondents by type of stroke

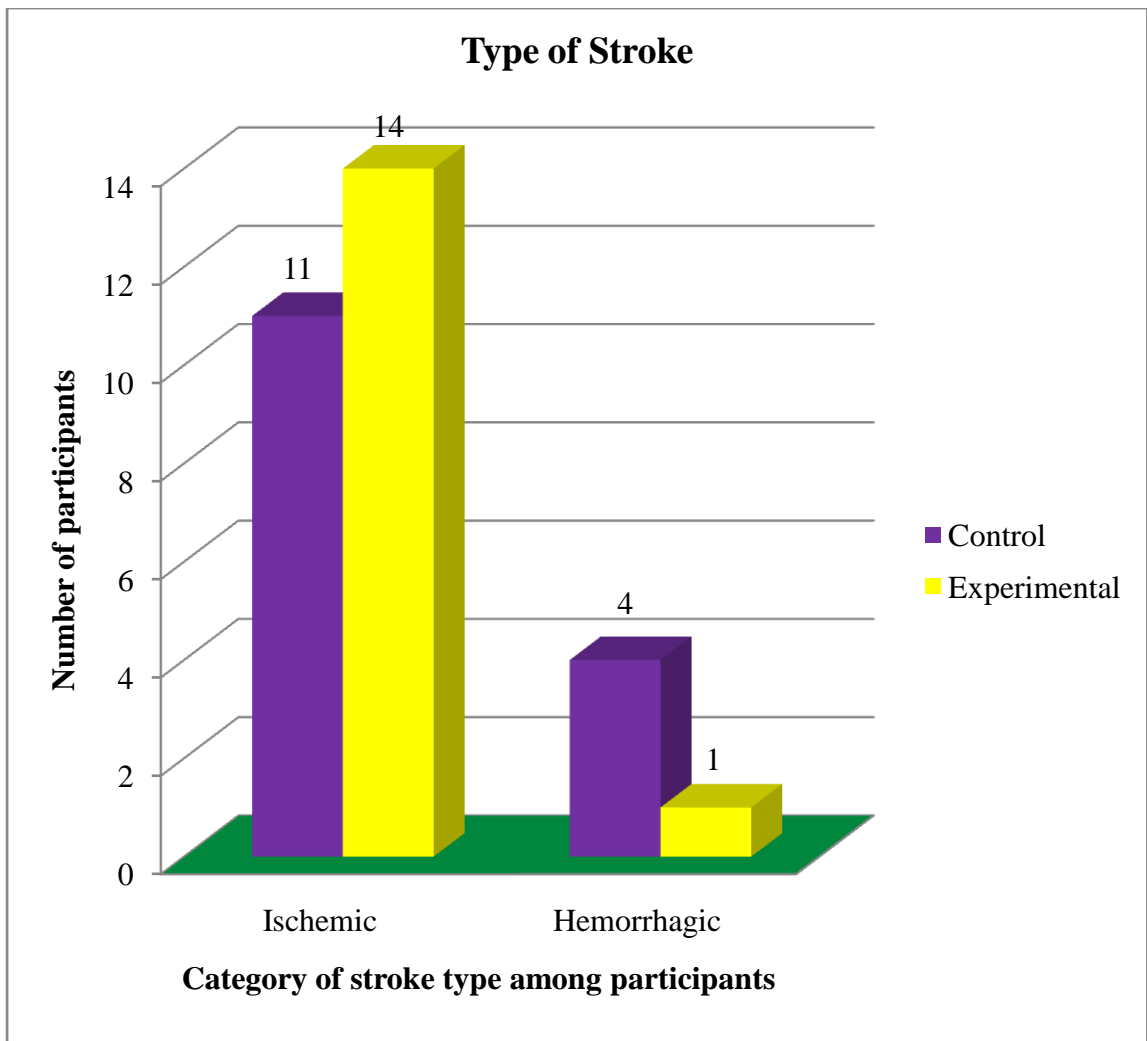


Figure 11: Distribution of the respondents by type of stroke

Among the all 30 participants ischemic type was 83% and hemorrhagic type was 17%. In control group, ischemic type was (n=11) 73.3% and hemorrhagic type was (n=4) 26.7%. On the other hand, in experimental group, ischemic type was (n=14) 93%, hemorrhagic type was (n=1) 6.7%.

4.2.4. Distribution of the respondents by using assistive device

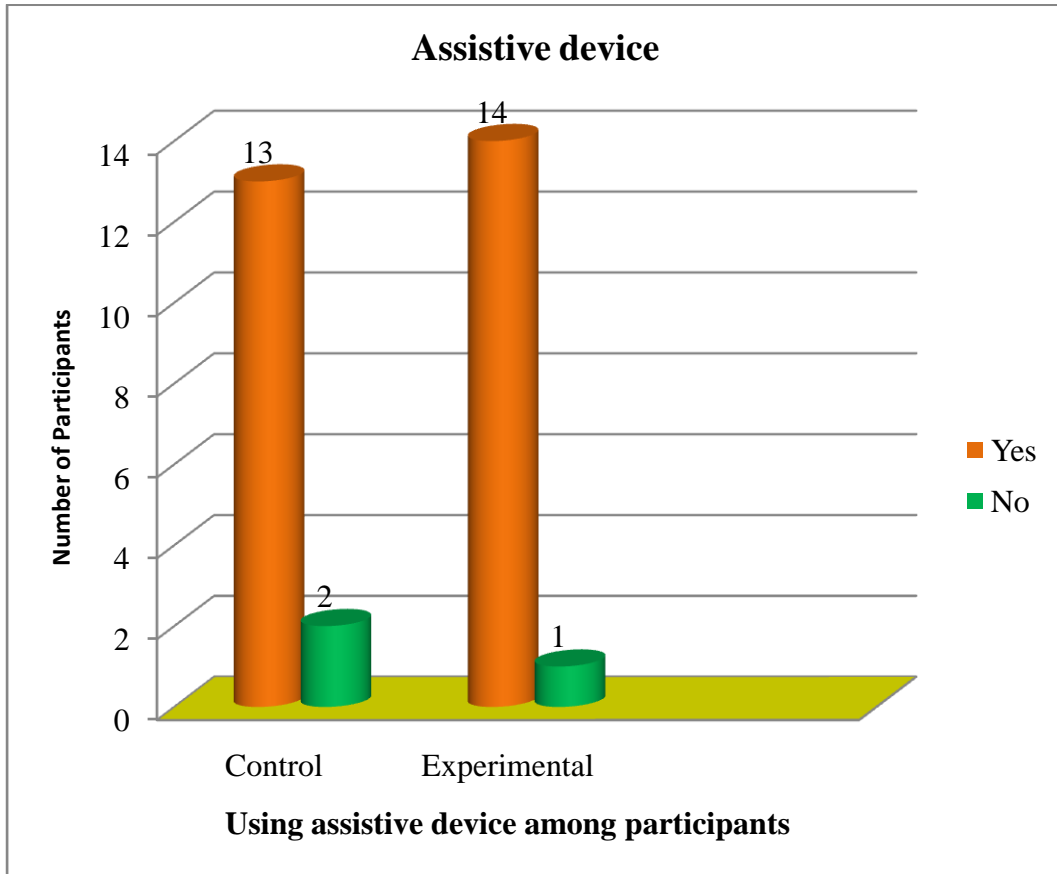


Figure 12: Distribution of the respondents by using assistive device

Among the all 30 participants using assistive device were 90% (n=27) and not using assistive device were 10% (n=3). In control group, using assistive device participants were 87% (n=13) and not using assistive device participants 13% (n=2). In experimental group, using assistive device participants were 93% (n=14) and not using assistive device participants 7% (n=1)

4.2.5. Distribution of the respondents by fall experience

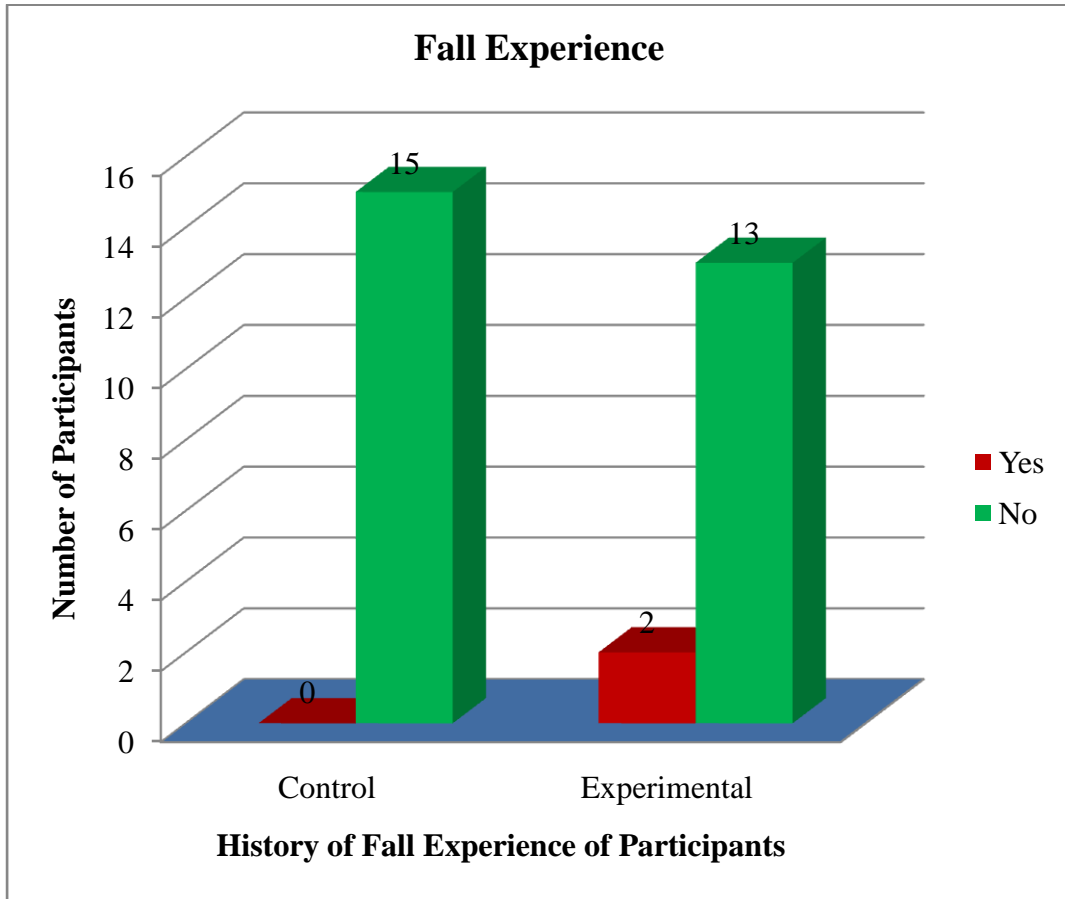


Figure 13: Distribution of the respondents by history of fall experience.

Among the all 30 participants history of fall experience were 7% (n=2) and no history of fall experience were 93% (n=28). In control group, history of fall experience was 0% (n=0) and no history of fall experience 100% (n=15). In experimental group, history of fall experience was 13% (n=2) and no history of fall experience 87% (n=13)

4.3. Balance related information:

4.3.1 Pretest and posttest of total BBS score

Table 2: Total score of the participants in BBS scale (Pretest and posttest).

Control				Experimental			
Variable	Pre	Post	Difference	Variable	Pre	Post	Difference
C1	13	33	20	E1	14	43	29
C2	41	47	06	E2	2	31	29
C3	06	29	23	E3	39	46	7
C4	41	42	01	E4	26	42	16
C5	10	29	19	E5	23	41	18
C6	8	27	19	E6	24	38	14
C7	37	42	05	E7	27	40	13
C8	08	21	13	E8	23	42	19
C9	09	27	18	E9	38	45	7
C10	14	24	10	E10	2	32	30
C11	36	42	06	E11	32	44	12
C12	03	30	27	E12	40	46	6
C13	30	41	11	E13	17	42	25
C14	04	36	32	E14	20	42	22
C15	11	26	15	E15	21	42	21
Total	271	496	225	Total	348	616	268
Mean	18.06	33.06	15 mean difference	Mean	23.2	41.6	17.86 mean difference

Table 2 showed that the level of pretest and posttest BBS score between control and experimental group. Mean pretest score was 18.06 and post test score was 33.06 with a mean difference of 15.00 in the control group. Mean pretest score was 23.2 and post test score was 41.6 with a mean difference 17.86 in the experimental group.

4.3.2. Mann Whitney U test

Table 3: Mann Whitney U test for between group analysis for total BBS

Difference between Berg Balance Scale	Category of participants	N	Mean of posttest BBS	Mean rank	Mann Whitney U score	P
	Experimental	15	42.40	20.10	43	.003
	Control	15	33.07	10.90		
	Total	30				

The result showed that the calculated value of U is 43 for berg balance scale. From the calculated value (U=43), it was clear that U value between experimental and control groups had an associated probability. The level of significance is .003 which is less than 0.05. Therefore, the result is significant for one tailed hypothesis. Since the p value is less than 0.05, the result is significant and the null hypothesis (no relationship) is now rejected and the alternative hypothesis is accepted. So, it can conclude that task oriented physiotherapy along with conventional physiotherapy is more effective than only conventional therapy between group analysis of individual variables to improve balance for the patients with stroke in terms of balance.

4.3.3. Between group analyses

Table 4: Between group analysis by Mann Whitney U test for individual variable of BBS

No	Variables	Observed U value	P value	Comment
1	Sitting to standing	74	.049	Significant
2	Standing unsupported	40	.002	Significant
3	Sitting unsupported	82	.035	Significant
4	Standing to sitting	70	.045	Significant
5	Transfer	59	.008	Significant
6	Standing unsupported with eye	55	.007	Significant
7	Standing unsupported with feet	69	.045	Significant
8	Reaching forward	59	.008	Significant
9	Pick up object from floor	55	.008	Significant
10	Turning to look behind	78	.045	significant
11	Turn 360 degrees	57	.009	Significant
12	Place alternate foot on step	52	.004	Significant
13	Standing unsupported one foot in front	61	.019	Significant
14	Standing on one leg	49	.003	Significant

Table 4 showed U score of each individual variable between control and experimental group of BBS is significant difference in all variables.

4.3.4. Wilcoxon signed rank test

Table 5: Within group analysis by Wilcoxon signed rank test for individual variable of BBS

No	Variables	Control group		Experimental group	
		P value	Comment	P value	Comment
1	Sitting to standing	.006	Significant	.003	Significant
2	Standing unsupported	.003	Significant	.002	Significant
3	Sitting unsupported	.003	Significant	.000	Significant
4	Standing to sitting	.008	Significant	.033	Significant
5	Transfer	.005	Significant	.003	Significant
6	Standing unsupported with eye closed	.002	Significant	.001	Significant
7	Standing unsupported with feet together	.001	Significant	.001	Significant
8	Reaching forward	.004	Significant	.002	Significant
9	Pick up object from the floor from a standing position	.001	Significant	.002	Significant
10	Turning to look	.004	Significant	.003	Significant
11	Turn 360 degrees	.001	Significant	.001	Significant
12	Place alternate foot on step	.002	Significant	.001	Significant
13	Standing unsupported one foot in front	.002	Significant	.001	Significant
14	Standing on one leg	.001	Significant	.001	Significant

Table 5 showed that difference between the distributions of ranks in the BBS test is significant. So, the result shows significant in BBS.

4.3.4. Mann Whitney U test

Table 6: Test statistics of BBS in each variable between group analysis

Variables	Mann Whitney U Score
	P
Sitting to standing	.049
Standing unsupported	.002
Sitting unsupported	.035
Standing to sitting	.045
Transfer	.008
Standing unsupported with eye closed	.007
Standing unsupported with feet together	.045
Reaching forward	.008
Pick up object from the floor	.008
Turning to look behind	.048
Turn 360 degrees	.009
Place alternate foot on step	.004
Standing unsupported one foot in front	.019
Standing on one leg	.003

Table proved that between groups analysis in each components of BBS showed significant improvement occurred in all variables. It indicated that task oriented physiotherapy along with conventional physiotherapy found effective treatment for patient with stroke in terms of improving balance capacity.

4.4 Functional status related information (FIM)

4.4.1. Intergroup statistical comparison

Table7: Mann Whitney U test for between group analysis for total FIM

Difference between functional independence measurement score(FIM)	Category of participants	N	Mean of post test	Mean rank	Mann Whitney U score	P
	Control	15	96.00	10.47	37	.002
	Experimental	15	109.47	20.53		
	Total	30				

The result showed that Mann Whitney U test score for FIM is 37. And observed p value is .002 which is less than 0.05. So, we conclude that there is a significant difference between the distribution ranks in the FIM that is the exists significant difference in recalling the item between control post FIM and experimental post of FIM. So, the test is significant for functional status and the null hypothesis is rejected and alternative hypothesis is accepted. Patients who were taken task oriented physiotherapy along with conventional therapy showed effectiveness in functional status rather than patients who were only taken between group of individual tasks.

4.4.2. Mann Whitney U test

Table 8: Mann Whitney U for between group analysis for individual variable of Functional independence measurement score (FIM)

No	Variable	Observed U value	P value	Comment
1	Eating	38	.001	Significant
2	Grooming	37	.001	Significant
3	Bathing	37	.001	Significant
4	Dressing-upper body	46	.003	Significant
5	Dressing-lower body	46	.003	Significant
6	Bladder Management	75	.016	Significant
7	Bowel Management	81	.065	Not Significant
8	Bed, Chair, Wheelchair	63	.005	Significant
9	Toilet	52	.004	Significant
10	Tub, Shower	46	.002	Significant
11	Walk/wheelchair	49	.003	Significant
12	Stairs	64	.022	Significant
13	Comprehension	75	.016	Significant
14	Expression	73	.052	Not Significant
15	Social interaction	41	.001	Significant
16	Problem solving	47	.002	Significant
17	Memory	74	.032	Significant

Table 8 proved that between groups analysis in each component of FIM showed significant improvement occurred in all variables except Bowel Management, Expression ($p > 0.05$).

4.4.3. Within group analysis

Table 9: Wilcoxon sign rank test for individual variable of FIM

No	Variables	Control group		Experimental group	
		P value	Comment	P value	Comment
1	Eating	.001	Significant	.001	Significant
2	Grooming	.001	Significant	.000	Significant
3	Bathing	.001	Significant	.000	Significant
4	Dressing-upper body	.000	Significant	.000	Significant
5	Dressing-lower body	.000	Significant	.000	Significant
6	Bladder Management	.001	Significant	.039	Significant
7	Bowel Management	.001	Significant	.078	Not Significant
8	Bed, Chair, Wheelchair	.001	Significant	.001	Significant
9	Toilet	.001	Significant	.000	Significant
10	Tub, Shower	.000	Significant	.000	Significant
11	Walk/wheelchair	.001	Significant	.000	Significant
12	Stairs	.001	Significant	.000	Significant
13	Comprehension	.001	Significant	.000	Significant
14	Expression	.001	Significant	.000	Significant
15	Social interaction	.000	Significant	.001	Significant
16	Problem solving	.000	Significant	.000	Significant
17	Memory	.001	Significant	.000	Significant

Table 9 proved that within groups analysis in each component of FIM showed significant improvement occurred in all variables in control group and in experimental group showed significant and highly significant in all variables except Bowel Management ($p > 0.05$). Highly significant found in grooming, bathing, dressing upper body, dressing lower body, toilet, tub, stair, comprehension, problem solving, and memory.

4.4.4. Functional independence measurement scale between and within group in each variable

Table 10: Test statistics of FIM in each variable between and within control and experimental group

Variables	Mann Whitney U score
	P
Eating	.001
Grooming	.001
Bathing	.001
Dressing-upper body	.003
Dressing-lower body	.003
Bladder Management	.016
Bowel Management	.065
Bed, Chair, Wheelchair	.005
Toilet	.004
Tub, Shower	.002
Walk/wheelchair	.003
Stairs	.022
Comprehension	.016
Expression	.052
Social interaction	.001
Problem solving	.002
Memory	.032

Table proved that between groups analysis in each component of FIM showed significant improvement occurred in all variables except bowel management, expression, ($p>0.05$). It indicated that task oriented physiotherapy along with conventional physiotherapy found effective treatment for patient with stroke in terms of minimizing functional disability.

4.5. Mobility related information

4.5.1. Mean difference of TUG test

Table 11: Mean difference of TUG test in the Control group

Control group	Pretest (seconds)	Posttest (seconds)
C1	11.0	8.0
C2	10.0	10.0
C3	30.0	20.0
C4	10.0	8.0
C5	30.0	20.0
C6	25.0	18.0
C7	15.0	10.0
C8	28.0	20.0
C9	22.0	17.0
C10	23.0	18.0
C11	18.0	13.0
C12	28.0	20.0
C13	10.0	10.0
C14	10.0	10.0
C15	25.0	20.0
Mean Deference	19.67 seconds	14.18 seconds

4.5.2. Pretest and posttest comparison of TUG test (seconds) in control group

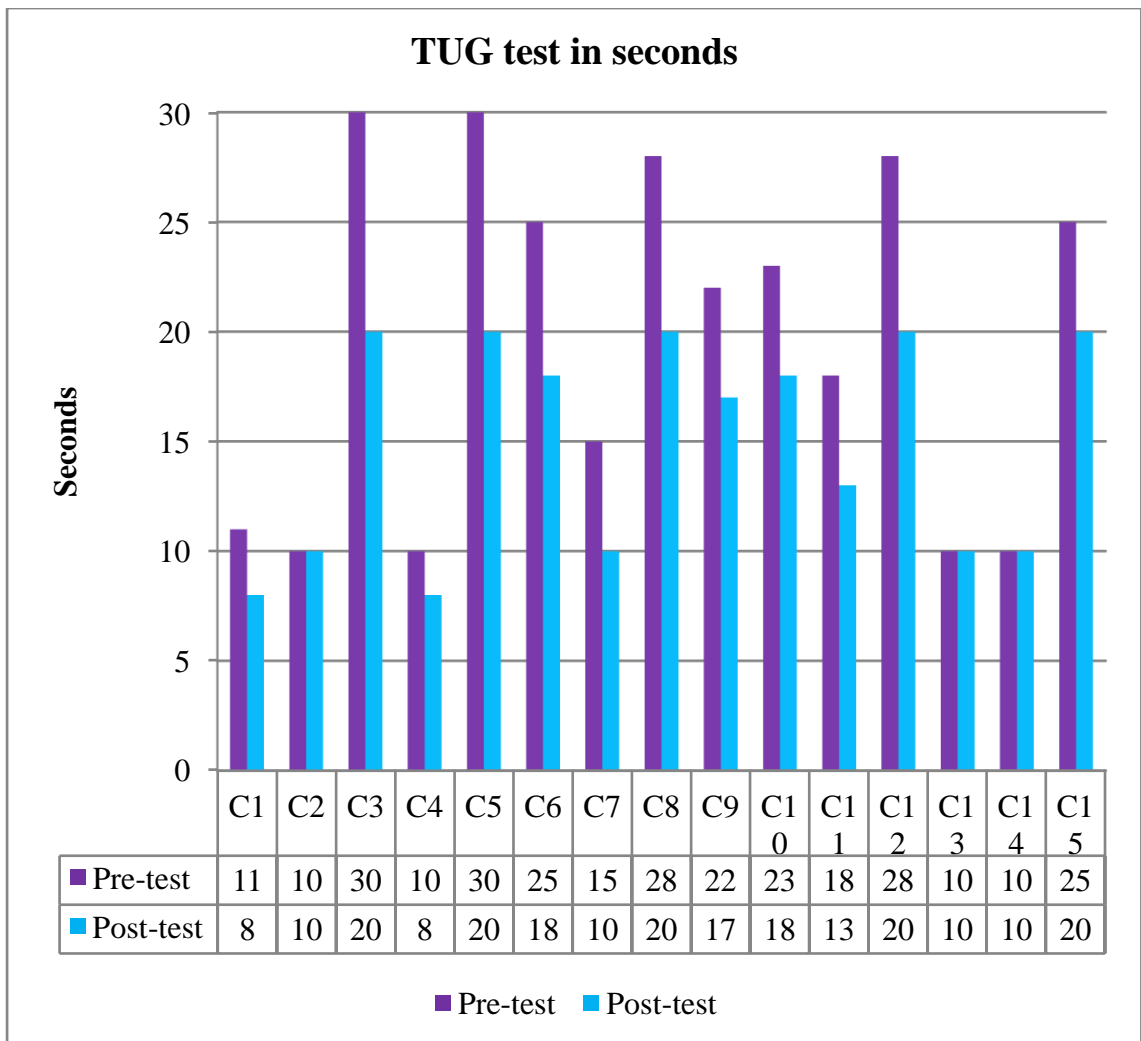


Figure-14: Pretest and posttest comparison of TUG test (seconds) in control group

4.5.3. Mean difference of TUG test

Table 12: Mean difference of TUG test in the Experimental group

Experimental group	Pretest (seconds)	Posttest (seconds)
E1	13.0	8.0
E2	28.0	18.0
E3	10.0	7.0
E4	15.0	10.0
E5	22.0	12.0
E6	25.0	15.0
E7	15.0	11.0
E8	20.0	12.0
E9	16.0	10.0
E10	20.0	13.0
E11	16.0	10.0
E12	12.0	8.0
E13	20.0	10.0
E14	18.0	10.0
E15	18.0	10.0
Mean	17.87 seconds	10.93 seconds

4.5.4. Pretest and posttest comparison of TUG test (seconds) in experimental group

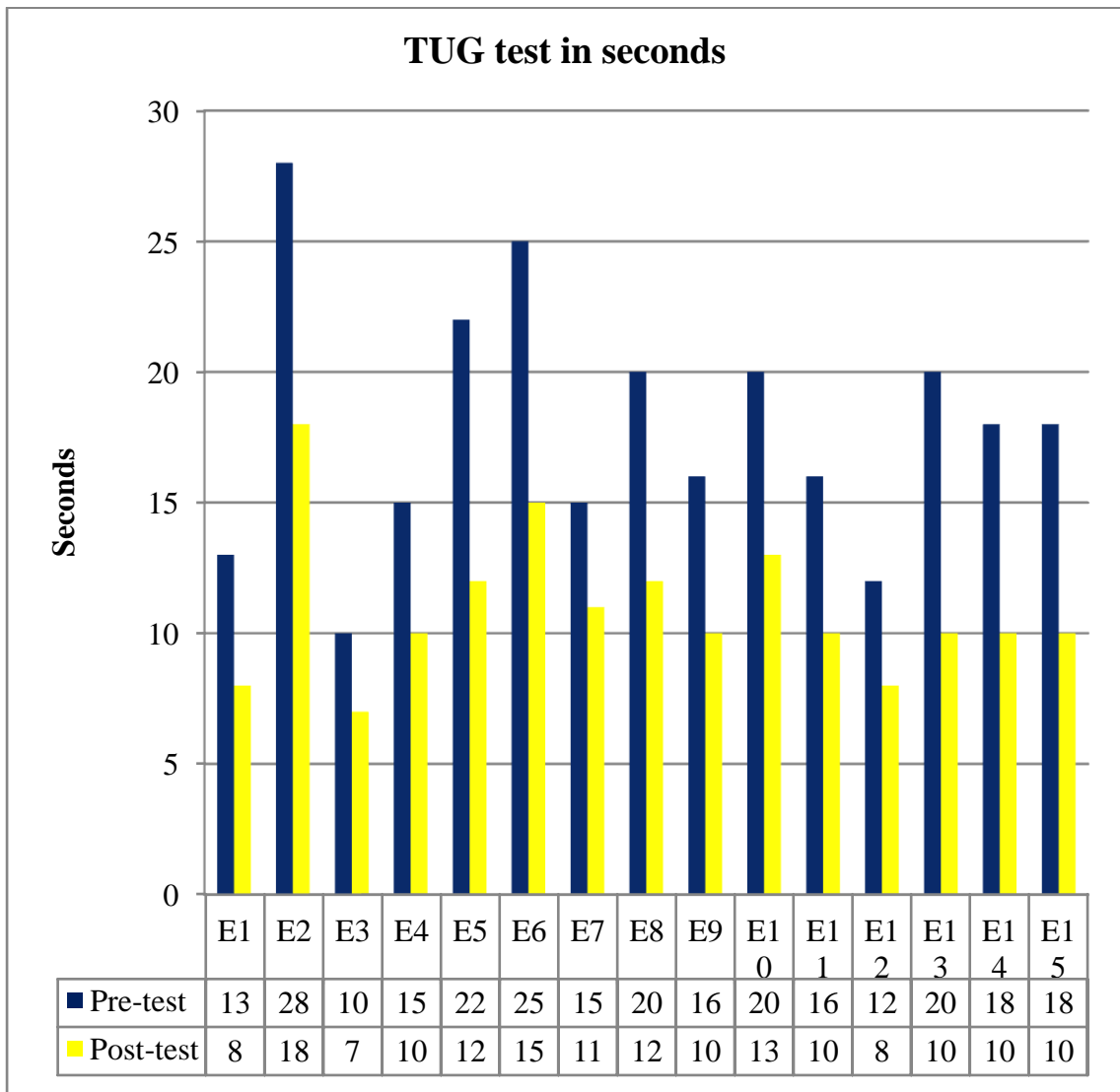


Figure-15: Pretest and posttest comparison of TUG test (seconds) in experimental group

4.5.5. Between group analysis

Table 13: Between group analysis by Unrelated *t* test for in control and experimental group for TUG test

Variables	t value	df	P value	95% Confidence Interval	
				Lower	Upper
Difference between control and experimental group in TUG test	2.614	28	0.016	0.800	6.933

The result showed Unrelated/independent *t* test in between group at 5% level of significant described that the calculated *t* value is 2.614 and for *df*= 28, the calculated *t* value is smaller that has an associated probability level of .16%. This means that the probability of random error being responsible for the outcome of this experiment is in 0.16. As the usual cut- off point for claiming support for the experimental hypothesis was 16% and it could be said that the result was significant. Thus, task oriented physiotherapy along with conventional therapy for the patients with stroke was more effective than conventional physiotherapy alone for the patients with stroke.

4.5.6. Within group analysis

Table 14: Within group analysis by Paired t test for individual variable of TUG

Variables	Mean	SD	95% CI		Paired t	df	P value
			Lower	Upper			
TUG test Difference within control group	4.867	3.378	2.996	6.737	5.580	14	0.000
TUG test Difference within experimental group	6.933	2.434	5.585	8.281	11.033	14	0.000

This study found that in timed up and go test observed t value was 5.580 (4.867±3.378) in the control group at two tailed paired t test while this same variable for experimental group observed value was 11.033 (6.93±2.434). 5% level of significant at 14(fourteen) degrees of freedom standard t value was 10.500. The observed t value in experimental was more than the standard t value, so null hypothesis was rejected and alternative hypothesis was accepted, that indicated that task oriented physiotherapy is effective for the patients with stroke. The observed t value in control group was less than standard t value that means null hypothesis was accepted and alternative hypothesis was rejected in the between group. Table showed that within group analysis of TUG test the improvement of Time up and go test was highly significant and in fact in control group (p= 0.000) and trial group (p= 0.000).

The purpose of the study was to find out the effects of task oriented physiotherapy along with conventional physiotherapy for stroke rehabilitation. The result of the study shown that combined task oriented physiotherapy training was found more beneficial in comparison to only conventional physiotherapy alone to improve the balance, functional status and mobility performance in ambulant stroke subjects. The baseline characteristics of all the subjects were similar in both experimental and control group. The study showed significant difference in both group and following 8 weeks' task oriented physiotherapy intervention session there was a significant improvement in balance and functional status.

In this study, it was found that among the Participants the age distribution of 30 participants, ages were grouped into 3 categories such as 35-50 years were (n=12) 40%, 51-65 years were (n=12) 47%, and 65-80 years were (n=6)13%. The mean age for experimental group was 49.60 and SD was ± 8.903 years and control group was 58.53 and SD was ± 15.491 years where Islam et al., (2012) reported that 0.20%, 0.30%, 0.20%, 1.00%, and 1.00% for the age range 40–49 years, 50–59 years, 60-69 years, 70–79 years, and approximately 80 years and above in that order.

The result showed that among the stroke patients about 43% were male and 57% were female, where all the female participants were housewife. In contrast an epidemiological study in Bangladesh showed that 74% were male patients and 26% were female patients (Islam et al., 2012). So, it could be male are more affected than female in stroke but in our study, female participants were more than male.

Result showed that among 30 participants, 2 participants was illiterate in the control group and no participants was in experimental group, 10 participants of control group was in primary level and 12 participants was in experimental group. Higher secondary was no participant in control group whereas 2 participants in experimental group. There were 2 participants was in honors level in control group and 1 participant was in experimental group. In Masters Level 1 participants was from control group and no participant from experimental group. In compare a study by Hossain et al. (2011) in Bangladesh found that approximately received schooling patients were 31%, collage education received were 19%, university going or like similar institution patients were 13% and patients who were not attend school or others was 37%. Among the 30 participants weight are grouped into 3 categories such 50-60kg (n=13) 43% among them in control were 7 and experimental were 6 participants, 61-70 kg (n=11) 37% in experimental were 6, control were 5 participants and 71-80kg (n= 6) 20% in experimental were 3 and control were 3 participants.

The result found that 43% (n=13) were between 51-60 kg, 37% (n=11) were between 61-70 kg and 20% (n=6) were between 71-80 kg and the mean weight for the control group was 63.07 kg and for the experimental group was 62.73 kg.

The study also showed that the stroke was Ischemic type in 83% of the participants Where hemorrhagic type in 17%. In control group, ischemic was (n=11) 73.3% and hemorrhagic was (n=4) 26.7%. In experimental group, ischemic type was (n=14) 93%, hemorrhagic type was (n=1) 6.7%. In an epidemiological study, it was found that the greater part (61.18%) patients suffered from an Ischemic and others had intracerebral hemorrhage (29.40%), subarachnoid hemorrhage (8.24%), or aneurysm (1.18%) (Islam et al., 2012). In this study, it was found that Ischemic and

Hemorrhagic stroke ratio was 4:1. In compare a study showed that 71.29% participant was ischemic and 28.70% participants was hemorrhagic stroke patient (Sheffer, 2012)

Among the total 30 participants (n=13) 86.7% had hypertension, (n=2) 13.3% had no HTN in control group, in experimental group (n=15) 100% had HTN. Another study by Mondol et al. (2012) found that 56.7% were affected by hypertension, diabetics was the next common entry 23%, ischemic heart disease was 17.7%, dyslipidemia was 5.1%, rheumatologic condition 6.6%, respiratory disease 3.6% chronic kidney disease 2.4%, electric imbalance 1.2%, dementia 1.2% and malignancy 0.2%. Most of the studies seem the most of the high rank percentage patients irregularly treated because of lack of knowledge or adequate motivation for long time management of hypertension.

The study showed among the total 30 participants in control group n=7 (46.7%) participants has DM and n= 8 (53.3%) has no DM. In experimental group n=8 (53.3%) participants have DM and n=7 (46.7%) has no DM. In another study Hossain, et al. (2011) mentioned that 63% HTN, 21% were diabetics and 12% were serum cholesterol problem.

In terms of BMI, majority of the participants in the experimental group were normal weight (50%) followed by overweight (35.72%), obese 14.28% and in contrast control group had similar 42.85% normal weight and overweight participants separately and 14.3% obese participants. In another study showed that 56.8% participants BMI was less than 25 and 34.3% participants BMI was more than 25 (Choo et al., 2009).

In the study 10 % participant were not used assistive device and 90 % participants were used assistive device. In contrast another study showed that 9% participants

were using walker, 45% participant were using cane and 46% participant were not used any assistive device (Salbach et al., 2006).

The mean difference indicates that balance more improved in Experimental group than Control group. Pre-test mean difference was 15 and post-test mean difference was 17.86. Statistically the study was analyzed by Mann Whitney U test where the U value was 43. The critical value of U at ($p \leq .05$) was 28. Therefore, the result was significant at ($p \leq .05$) at one-tailed hypothesis. Most of the variables indicated that the result was significant, although some variables indicated not significant result. So, the overall result was statistically significant.

In this study the mean pretest BBS score was 41.06 with a mean after 8-week rehabilitation of 59.06. This balance gain is highly significant ($p < 0.001$). In compare a study the admission mean BBS was 35.75 ± 11.55 . All the patients were chronic (Srivastava et al., 2010). In this study in pretest score of BBS was 15(50%) were wheelchair bound, 12(40%) were walking with assistance and 3(10%) were independent. After 8-week intervention study found there were no wheelchair bound, 12(33.3%) were walking with assistance and 18(60%) were independent. Rehabilitation decreases the disability and improves balance. Another study showed that among stroke patients taken physiotherapy session on average 13.6 days average number of therapy session per day was 1.5 and average time of per session was 38.1 minutes (Jette et al., 2005).

The result showed for TUG test calculated by Unrelated/independent t test in between group at 5% level of significant described that the calculated t value is 2.614 and paired t test for TUG test observed t value was 5.580 (4.867 ± 3.378) in the control group at two tailed paired t test while this same variable for experimental group observed value was 11.033 (6.93 ± 2.434). 5% level of significant at 14(fourteen) degrees of freedom standard t value was 10.500. This indicated that task oriented physiotherapy treatment approach was more effective for improving functional status for the patients with stroke. In this study mobility improved significantly. In comparison with another study proved that high intensity task oriented training can improve mobility early after stroke (Outermense et al, 2010).

The present study determined the effects of task oriented physiotherapy along with conventional physiotherapy for improving balance, mobility and functional status of patients with cerebro vascular disease or as well as stroke. Some studies have found that task oriented physiotherapy is effective for stroke patients. In comparison with one study conducted by Liu et al, 2019 stated that task oriented training and cognitive behavior therapy is decreased the fear of falling of the stroke survivors.

In contrast another study found the effects of Oculomotor and Gaze Stability Exercise on Balance after Stroke (Pimenta, Correia, Alves, & Virella, 2017).

In this study sample size was 30 in comparison to another study conducted by Blennerhassett and Dite (2004) found that extra task-related practice can change the performance of patients to improve mobility and upper limb function early after stroke, a randomized controlled trial. The sample size was thirty diagnosed as sub-acute stroke into two group one group was mobility group $n=15$ and upper limb group (control) $n=15$. It was a movement science approach like task oriented training. They

received standard rehabilitation program of extra training including five times per one-hour session per day for total four weeks. Mobility group were receiving training like stationary bikes, treadmills and task training including sit to stand, step up, obstacle course walking, standing balance stretching strengthening exercise. After 6 months' outcome were measured. Outcome measurement tools were the Jebsen Taylor Hand Function Test, Motor assessment scale, 6MWT, TUG test. Only significance was found for the 6MWT and the TUG in favor of the Mobility Group.

In this study intervention duration was 3 times per day for 45 min per day for total 8 weeks. In contrast another study conducted by Knox, Stewart and Richard (2018), showed six hour of task oriented training improve walking competency in post stroke patients. Their intervention period was 12 weeks which support our study intervention period approximately 8 weeks. Another study also stated that task oriented motor rehabilitation therapy improves performance in motor tasks (Amky, Baumgartner, Bracko, Luft & Wegener, 2017). In comparison a study conducted by Dean Richerd and Mallouin, 2000 found that Task-related circuit training program improves performance of locomotor tasks for the patients with chronic stroke: A randomized, controlled pilot trial. The sample size was nine and in experimental group was 5(n=5) who were participated in task oriented training based on exercise circuit. On the other hand, control group 4 participants (n=4) was received circuit training intervention. Total 10 exercises mainly focused to improve functional abilities. The duration of exercise was one hour per day, 3 times per week for 4 weeks. Participants were encouraged to do more complex tasks with more repetitions. Outcomes were measured at base guideline and after 4 weeks and at 2 months. Measurement tools were 6MWT, 10MWT, TUG test. Significant group difference was found in walking

speed, walking endurance and ability to balance. No other between group difference whereon instead off sit to stand. Stand, but only at the 4-week time point.

In this study no follow up session was conducted but in contrast other study they had follow up session of 6 months. Participants were 20 patients with chronic stroke. Task-oriented training with biofeedback (n=10) and or usual rehabilitation care (UC) (n=10). Duration of treatment was 3 times per for 45 min, total 6 weeks' sessions. The outcome of the study was taken at baseline and after 6 weeks. And 6 months follows up. It involved gait-training using feedback from an acoustic signal to indicate the amount of muscle contraction used during walking. The result of the study was no significant between-group difference was found for knee flexion peak at any time of assessment (Jonsdottir, Cattaneo, Recalcati, Regola, Rabuffetti, Ferrarin, & Casiraghi, 2010).

There are so many evidences to support upper extremity training by via functional task approach (Higgins et al., 2006). Therapeutic intervention by using this approach enhances the goal towards task practice in training. This approach influences active participation of repetitive task to the participants to enhance activity (Shumway-Cook & Woollacott, 2001). One study showed the application of task oriented approach including CIMT that means constraint induced movement therapy using the protocol of task practice; behavioral therapy severe single limb training with constrained to the unaffected limb (Morris, Taub & Mark, 2006).

Effects of CIMT have been studied in individuals with acute sub-acute and chronic stroke including different severe condition of upper extremity motor impairment. A Cochrane review by Sirtori and colleagues (2009) found total 19 studies including 619 participants and they concluded that CIMT resulted in "moderate reduction in

disability,” but six-month benefit is not clear. Again, they conduct another randomized control trial for a Cochrane review in 2010 including total 674 participants. (Corbetta, Sirtori, Moja, & Gatti, 2010). They concluded that CIMT resulted in “modest improvement in arm motor function” and that it has “no evidence of benefit on disability.” Shweta and Shuvarna stated that task oriented rehabilitation after stroke is effective and relevant for stroke practice. The probable mechanism for effectiveness of task related training may be assumed that to an improvement of pre-synaptic inhibition of the hyperactive stretch reflexes in spastic muscles, decrease in the co contraction of spastic antagonists, and disinhibition of downward controlled instructions to the motor neurons of paretic influence.

Another study stated that task oriented training with cognitive behavior therapy decrease the fear of falling in chronic stroke patients (Liu, Yf, Chung & Ng, 2019). It can support our study which is mobility improvement and decrease the risk of falling in stroke patients.

Another study was conducted by Outermans, Peppen, Wittink, Takken, & Kwakkel, found the Effects of a high-intensity task-oriented training on gait performance early after stroke: a pilot study. The sample size was 44 patients diagnosed by sub-acute stroke and they were randomized into two group. One is high-intensity task-oriented training for mobility (n=23) or low intensity standard therapy (n=21). Training period was 3 times per week for total 4 weeks with 45 min per sessions. They included 10 standard tasks mainly focusing on improving walking competency using functional mobility tasks. Outcome measure was Berg Balance Scale (BBS), 6-Minute Walk Test (6 MWT), Functional Reach Test (FRT). Outcome measure was collected at baseline and 4 week later. In the high intensity group, more repetitions were added; in

the low intensity group, the motor control challenge of each task was enhanced. No significant between-group differences were found for the BBS or the FRT.

In compare to our study another study was found and they had Twenty-seven patients diagnosed as acute stroke were randomly assigned into three groups. In experimental group, they received intensive gait-focused task-oriented training and in control group they received physical therapy containing old general approaches for 5 weeks. All groups received conventional hospital care. Outcomes measurement were assessed pre-intervention, post-intervention including Fugl-Meyer Assessment, Berg Balance Scale, Barthel Index, 6-meter walk test, electro goniometer. After completion of 6 weeks' intervention they found non-significant between-group difference. There were no other significant between-group differences.

Therapy for the hemi paretic arm might begin with single-joint attempts at movement before proceeding gradually to more complex, multi-joint actions, then task-specific practice such as reaching to grasp a coffee cup, a process known as shaping. Facilitation of skilled motor practice for the upper extremity can take several forms, including shaping plus constraint induced movement therapy (CIMT). This technique includes 6 hours a day of progressive task-related practice with restraint of the unaffected limb all day for 2 weeks. Increased use and faster skilled movements of the affected limb may result and persist for up to two years (Wolf et al., 2008). However, the intervention has shown efficacy only in patients who can partially extend the wrist and fingers, meaning they have fair motor control and at least modest corticospinal tract sparing. Extensive restraint may not be as critical to gains as the high intensity of practice with a therapist; gains have been seen with just 2 hours of daily practice and without restraining the unaffected hand all day (Smania et al. 2012).

A study conducted by Salbach, Mayo, Hanley, Richard, Cote, (2004) found that task-orientated intervention enhances walking distance and speed in the first-year post stroke: a randomized controlled trial. The sample size was 91 patients diagnosed as stroke. They were randomized into two group like intervention group 44 patients who received task-oriented mobility training including different category functional tasks for lower extremities and improve walking balance, distance and speed, and besides to a control group including 47 patients that received upper extremity task-oriented training such as writing or typing on a keyboard. Duration of training was 3 times a week for 6 weeks. Outcomes were assessed at baseline and immediately following intervention after 6 weeks and measurement tools was Six-minute Walk Test, Berg Balance Scale, Timed Up and Go test. The study found at post-intervention there was a significant between-group difference in favor of the intervention group for the following outcomes.

However, in contrast another randomized controlled clinical study with 60 participants the researchers did not find a significant difference between post-stroke gait training using treadmill with partial body weight support and on ground motor relearning gait training (Nilsson, Carlsson, Danielsson, Fugl-Meyer, Hellstrom, Kristensen, et al., 2001). Both groups were significantly improved on Functional Independence Measure (FIM), walking velocity, Functional Ambulation Classification (FAC) and Berg's Balance Scale.

There are so many studies found for upper extremity and only few studies found for lower extremities. Although the lower extremity showed good prognosis instead of upper extremity. Some studies demonstrated that approximately 80% stroke patients survive the acute phase with walking ability and 30% to 66% have facing arm

disability (Kwakkel, Kollen & Wagenaar, 1990). The upper extremity recovery procedure is almost slower than the lower extremity recovery process (Kwakkel, Wagenaar, Kollen, & Lankhorst, 1996).

Ghazal & Amjad (2016) stated that task oriented training improves the balance as well as balance outcome of stroke patients with diabetes. It also played an important role to reducing fall risk in diabetic population. Another study found the effects of activity repetition training who were doing Salat prayer compare with task oriented training program. They found effectiveness and proved improve in functional outcome (Ghous, Malik, Amjad, & Kanwal, 2017).

Pimenta, Correia, Alves, & Virella, (2017) Effects of Oculomotor and Gaze Stability Exercise on Balance after Stroke: Clinical Trail Protocol. *Porto Biomedical Journal*, 2 (3), 76-80.

The study has several limitations. The sample size was very small, so the result is difficult to generalize among whole population. Researcher has taken help from one assessor for data collection purpose, it may vary result. Data was collected one clinical setting CRP Savar, it can influence the result. Sometimes treatment sessions were interrupted due to public holiday mistaken in appointment schedule may interrupt the result. 6% participants were illiterate; it may give data error way. Therefore, the duration of the effect after the experimental intervention is unknown. Also, further research is needed to confirm the effectiveness of task oriented physiotherapy along with conventional physiotherapy for patients with stroke. The rehabilitation period was small only 8 weeks for total 24 sessions of intervention for the two groups that experimental group and control group. Similar studies with longer intervention time are required for conclusive results. However, the present study is meaningful because it suggests that simple task oriented physiotherapy routine can improve balance, functional status and mobility of patients with stroke. Owing to limitations of the present study further studies are needed.

Physiotherapy is a modern scientific treatment approach which is evidenced based. So, people are more concern about their disease and management. They are more aware about evidence based physiotherapy treatment. Day by day it covers a vast area of medical science. For stroke patients, there are so many effective approaches are used worldwide. Among them task oriented physiotherapy was a popular approach. It has a vital component of the post stroke balance, mobility and functional rehabilitation protocol. It helped in improving balance, mobility and functional outcome of patients with stroke. It encouraged the patients to willing participate in the treatment session and dramatically outcome can be observed. The result of the study has shown that the effectiveness of task oriented physiotherapy along with conventional physiotherapy is superior to the conventional physiotherapy alone after twenty-four sessions of treatment for patients with stroke. Considering the final assessment, the all variables of balance has been improved in both groups instead of some variables while comparing to the initial assessment where task oriented physiotherapy along with conventional physiotherapy treatment group has found a greater benefit of the participants.

The aim and objectives of this study has been fulfilled and the null hypothesis was rejected favoring the task oriented physiotherapy along with conventional physiotherapy for stroke patients. This study highlighted the significant improvement of the stroke patients on balance, functional status and mobility. The stroke patients getting the functional improvement, balance improvement and mobility improvement and the result were significant. Last of all, this study “Effectiveness of task oriented

physiotherapy along with conventional physiotherapy for the patients with stroke” tried to represent the strong evidence of the effectiveness of task oriented physiotherapy with conventional physiotherapy among the stroke patients. By conducting this thesis researcher found effectiveness of task oriented physiotherapy along with conventional physiotherapy among the stroke patients at CRP’s neurology unit of physiotherapy department.

Some further steps that might be taken for future research. A double blinded randomized control trial is recommended with large sample size. And the researcher recommended the following things will cover future research. Regarding this area upper extremity functional outcome should be included. Follow up session should be involved in future studies. Future research on task oriented physiotherapy exercise should asses these quality related phenomena. However, the instruments to do so are still lacking. Research should therefore focus on the use of other sensors additional and advance data analysis methods to provide information about the performance of specific and the quality of use. Further study should be done in more specific treatment or placebo treatment in control group compared with task oriented physiotherapy treatment approach for stroke patients. There were no upper extremity measurement tools, no follow up sessions. As will be discussed above the upper extremity related articles used in this study may have been inadequate, and future studies should use measure more specific and sensitive to the intervention. In addition, no follow-up session was conducted.

Reference:

Adams, R. W., Gandevia, S. C., & Skuse, N. F. (1990). The Distribution of Muscle Weakness in Upper Motor Neuron Lesions Affecting the Lower Limb. *Brain*, *113*(5), 1459-1476.

Adler, S., Beckers, D., & Buck, M. (2008). *PNF in practice an illustrated Guide*. Germany: Springer Medizin Verlag Heidelberg.

American Heart and Stroke Association. (2015, March). *Keeping your balance after stroke*. Retrieved on 22 January, 2018, <http://www.strokeassociation.org>

American Stroke association (2016), High blood pressure guidelines. Retrieved on 16th January, <http://www.strokeassociation.org>

American Stroke Association. (2017, November). High Blood Pressure and Stroke. Retrieved on 16 January, 2017, [http:// www.strokeassociation.org](http://www.strokeassociation.org)

Barreca, S., Sigouin, C. S., Lambert, C., & Ansley, B. (2004). Effects of extra training on the ability of stroke survivors to perform an independent sit-to-stand: a randomized controlled trial. *Journal of Geriatric Physical Therapy*, *27*(2), 59.

Barreca, S., Wolf, S. L., Fasoli, S., & Bohannon, R. (2003). Treatment interventions for the paretic upper limb of stroke survivors: a critical review. *Neurorehabilitation and Neural Repair*, *17*(4), 220-226.

Bayona, N. A., Bitensky, J., Salter, K., & Teasell, R. (2005). The role of task-specific training in rehabilitation therapies. *Topics in stroke rehabilitation*, *12*(3), 58-65.

Bayouk, J. F., Boucher, J. P., & Leroux, A. (2006). Balance training following stroke: effects of task-oriented exercises with and without altered sensory input. *International Journal of Rehabilitation Research*, 29(1), 51-59.

Blehert, D. S., Hicks, A. C., Behr, M., Meteyer, C. U., Berlowski-Zier, B. M., Buckles, E. L., ... & Okoniewski, J. C. (2009). Bat white-nose syndrome: an emerging fungal pathogen?. *Science*, 323(5911), 227-227.

Blennerhassett, J., & Dite, W. (2004). Additional task-related practice improves mobility and upper limb function early after stroke: a randomised controlled trial. *Australian Journal of Physiotherapy*, 50(4), 219-224.

Bosch, J., O'Donnell, M. J., Barreca, S., Thabane, L., & Wishart, L. (2014). Does task-oriented practice improve upper extremity motor recovery after stroke? A systematic review. *ISRN 2014*.

Brauer, S. G., Woollacott, M., & Shumway-Cook, A. (2001). The interacting effects of cognitive demand and recovery of postural stability in balance-impaired elderly persons. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, 56(8), M489-M496.

Bruno, A. A. (2004). Motor Recovery in Stroke, Health on the Net Foundation.

Brunt, D., Greenberg, B., Wankadia, S., Trimble, M. A., & Shechtman, O. (2002). The effect of foot placement on sit to stand in healthy young subjects and patients with hemiplegia. *Archives of Physical Medicine and Rehabilitation*, 83, 924-929.

Bunketorp-Käll, L., Lundgren-Nilsson, Å. Samuelsson, H., Pekny, T., Blomvé, K., Pekna, M., ... & Nilsson, M. (2017). Long-term improvements after multimodal rehabilitation in late phase after stroke: a randomized controlled trial. *Stroke*, *48*(7), 1916-1924.

Butler, A. J & Page, S. J. (2006). Mental practice with motor imagery: Evidence for motor recovery and cortical reorganization after stroke. *Archives of Physical Medicine and Rehabilitation* .87, 2–11.

Camargos, A., Rodrigues. P. G. & Teixeira. (2009).The effects of foot position on the performance of the sit-to-stand movement with chronic stroke subjects. *Archives of Physical Medicine and Rehabilitation*.90, 314-319.

Carr, J., Shephered, R., (2003). *Stroke Rehabilitation*, 2nd ed., China: Elsevier.

Carrico, C., Chelette, K. C., Westgate, P. M., Powell, E., Nichols, L., Fleischer, A., &Sawaki, L. (2016). Nerve stimulation enhances task-oriented training in chronic, severe motor deficit after stroke: a randomized trial. *Stroke*, *47*(7), 1879-1884.

Cha, H. G., Shin, Y. J., & Kim, M. K. (2017). Effects of the Bad Ragaz Ring Method on Muscle Activation of the Lower Limbs and Balance Ability in Chronic Stroke. A Randomized Control Trail. *Hong Kong Physiotherapy Journal*, *37*, 39-45.

Cheitlin, M. D., Alpert, J. S., Armstrong, W. F., Aurigemma, G. P., Beller, G. A., Bierman, F. Z., ... & Lewis, R. P. (1997). ACC/AHA guidelines for the clinical application of echocardiography: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines

(Committee on Clinical Application of Echocardiography) developed in collaboration with the American Society of Echocardiography. *Circulation*, 95(6), 1686-1744.

Cho, H., Kim, J., & Lee, G. (2012). Effects of motor imagery training on balance and gait abilities in post-stroke patients: a randomized controlled trial. *Clinical Rehabilitation*, 0, 1-6. doi: 10.1177/0269215512464702.

Choi, J. U., & Kang, S. H. (2015). The effects of patient-centered task-oriented training on balance activities of daily living and self-efficacy following stroke. *Journal of physical therapy science*, 27(9), 2985-2988.

Choo, W. S., Foo, S., Tan, E., Thayaparan, F. S. T., Chung, Y. Y., Raman, S., ... & Chin, S. P. (2009). Acute stroke patients with high BMI are less likely to have severe disability at initial presentation. *Med J Malaysia*, 64(1), 34-6.

Cordun, M., & Marinescu, A. (2014). Functional rehabilitation strategies for the improvement of balance in patients with hemiplegia after an ischemic stroke. *Procedia Social and behavioral Science*, 117, 575-580.

Cunha, R. G., Da-Silva, P. J. G., Paz, C. C. D. S. C., da Silva Ferreira, A. C., & Tierra-Criollo, C. J. (2017). Influence of functional task-oriented mental practice on the gait of transtibial amputees: a randomized, clinical trial. *Journal of neuroengineering and rehabilitation*, 14(1), 28.

Davidson, I., & Waters, K. (2000). Physiotherapists working with stroke patients: a national survey. *Physiotherapy*, 86(2), 69-80.

Dean, C. M., Richards, C. L., & Malouin, F. (2000). Task-related circuit training improves performance of locomotor tasks in chronic stroke: a randomized, controlled pilot trial. *Archives of physical medicine and rehabilitation*, 81(4), 409-417.

Depoy, E., and Gitlin, L.N., (2013). Introduction to research: Understanding and applying multiple strategies. 4th ed., Philadelphia: Elsevier Health Sciences.

Dobkin, B. H., & Duncan, P. W. (2012). Should body weight-supported treadmill training and robotic-assistive steppers for locomotor training trot back to the starting gate? *Neurorehabilitation and neural repair*, 26(4), 308-317.

Dordevic, M., Hökelmann, A., Müller, P., Rehfeld, K., & Müller, N. G. (2017). Improvements in orientation and balancing abilities in response to one month of intensive slackline-training. a randomized controlled feasibility study. *Frontiers in human neuroscience*, 11, 55.

Duncan, P., Richards, L., Wallace, D., Stoker-Yates, J., Pohl, P., Luchies, C., ... & Studenski, S. (1998). A randomized, controlled pilot study of a home-based exercise program for individuals with mild and moderate stroke. *Stroke*, 29(10), 2055-2060.

Duncan, P.W., (1994). Stroke disability. *Journal of the American physical therapy association*, 74:399-407.

El Amki, M., Baumgartner, P., Bracko, O., Luft, A. R., & Wegener, S. (2017). Task-specific motor rehabilitation therapy after stroke improves performance in a different motor task: translational evidence. *Translational stroke research*, 8(4), 347-350.

Elyas, D. M., Rahman, A., Mohammad, Q. D., Mondol, B. A., Hossain, S., Islam, S. S., ... & Sarker, M. A. S. (2012). Comparative study of risk factors between lacunar and non-lacunar ischemic strokes. *Bangladesh Journal of Neuroscience*, 28(2), 88-95.

Farqalit, R., & Shahnawaz, A. (2013). Effects of Foot Position during Sit to Stand Training on Balance and Upright Mobility in Patients with Chronic Stroke. *Hong Kong Physiotherapy Journal*, 31, 75-80.

Feys, H. M., De Weerd, W. J., Selz, B. E., Cox Steck, G. A., Spichiger, R., Vereeck, L. E., ... & Van Hoydonck, G. A. (1998). Effect of a therapeutic intervention for the hemiplegic upper limb in the acute phase after stroke: a single-blind, randomized, controlled multicenter trial. *Stroke*, 29(4), 785-792.

French, B., Thomas, L., Leathley, M., Sutton, C., McAdam, J., Forster, A., ... & Watkins, C. (2010). Does repetitive task training improve functional activity after stroke? A Cochrane systematic review and meta-analysis. *Journal of rehabilitation medicine*, 42(1), 9-15.

Gale T, 2005, Stroke, available: <http://www.faqs.org/health/SickV4/Stroke.html>, [Retrieved December 06, 2006].

Gayer, J. D., & Gomes, C. R. (2009). *Stroke A Practical approach*. New York London: Lippincott Williams and Wilkins.

Ghazal, J., Malik, A. N., & Amjad, I. (2016). Task oriented training improves the balance outcome & reducing fall risk in diabetic population. *Pakistan journal of medical sciences*, 32(4), 983.

Ghous, M., Malik, A. N., Amjad, M. I., & Kanwal, M. (2017). Effects of activity repetition training with Salat (prayer) versus task oriented training on functional outcomes of stroke. *JPMA. The Journal of the Pakistan Medical Association*, 67(7), 1091-1093.

Hassett, L., van den Berg, M., Lindley, R. I., Crotty, M., McCluskey, A., van der Ploeg, H. P., ... & Howard, K. (2016). Effect of affordable technology on physical activity levels and mobility outcomes in rehabilitation: a protocol for the Activity and MObilityUsiNg Technology (AMOUNT) rehabilitation trial. *BMJ open*, 6(6), e012074.

Hawng, W. T., Jeong, Y. J., Kim, S. Y., & Jeong, Y.G. (2016). Effects of proprioceptive neuromuscular facilitation stretching and deep breathing exercise on upper extremity lymph edema in stroke patients. *Physical therapy science*, 28, 3276-3278. doi: [10.1589/jpts.28.3276](https://doi.org/10.1589/jpts.28.3276).

Higgins, J. P., & Green, S. (2006). *Cochrane handbook for systematic reviews of interventions*.

Hill, K., Ellis, P., Barnhardt, J., Maggs, P., & Hull, S. (1997). Balance and mobility outcomes for stroke patients: a comprehensive audit. *Australian Journal of Physiotherapy*, 43 (3), 173-180.

Hodges, P. W., & Richardson, C. A. (1997). Contraction of the abdominal muscles associated with movement of the lower limb. *Physical therapy*, 77(2), 132-142.

Hossain, A.M., Ahmed, N.U., Rahman, M., Islam, M.R., Sadhya, G. and Fatema, K., (2011). Analysis of sociodemographic and clinical factors associated with hospitalized stroke patients of Bangladesh. *Faridpur Medical College Journal*, 6(1):19-23.

Hsieh, C. L., Sheu, C. F., Hsueh, I. P., & Wang, C. H. (2002). Trunk control as an early predictor of comprehensive activities of daily living function in stroke patients. *American Heart Association*, 33, 2626-2630.

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

Jette, D. U., Latham, N. K., Smout, R. J., Gassaway, J., Slavin, M. D., & Horn, S. D. (2005). Physical therapy interventions for patients with stroke in inpatient rehabilitation facilities. *Physical therapy*, 85(3), 238-248.

Jin, J. (2014). Warning Signs of a Stroke. *Journal of the American Medical Association*, 311(16), 1704. doi:10.1001/jama.2014.2296.

Johnson, M. L., Taub, E., Harper, L. H., Wade, J. T., Bowman, M. H., Bishop-McKay, S., ... & Uswatte, G. (2014). An enhanced protocol for constraint-induced aphasia therapy II: A case series. *American Journal of Speech-Language Pathology*.

Jonsdottir, J., Cattaneo, D., Recalcati, M., Regola, A., Rabuffetti, M., Ferrarin, M., & Casiraghi, A. (2010). Task-oriented biofeedback to improve gait in individuals with chronic stroke: motor learning approach. *Neurorehabilitation and neural repair*, 24(5), 478-485.

Jung, K., Kim, Y., & Hwang, S. (2014). Weight Shift Training Improves Trunk Control, Proprioception and Balance in Patients with Chronic Hemiparetic Stroke. *The Tohoku Journal of Experimental Medicine*, 232, 195-199.

Käll, L. B., Nilsson, A. L., Samuelsson, H., Pekny, T., Blomvé, K., Pekna, M., .. Nilsson, M. (2017). Long-Term Improvements after Multimodal Rehabilitation in Late Phase after Stroke- A Randomized Controlled Trial Stroke. *Stroke*, 48. doi: 10.1161/STROKEAHA.116.016433.

Kawahira, K., Shimodozono, M., Etoh, S., Kamada, K., Noma, T., & Tanaka, N. (2010). Effects of intensive repetition of a new facilitation technique on motor functional recovery of the hemiplegic upper limb and hand. *Brain Injury*, 24(10), 1202-1213. doi: [10.3109/02699052.2010.506855](https://doi.org/10.3109/02699052.2010.506855).

Kelly, L. P., Devasahayam, A. J., Chaves, A. R., Wallack, E. M., McCarthy, J., Basset, F. A., & Ploughman, M. (2017). Intensifying functional task practice to meet aerobic training guidelines in stroke survivors. *Frontiers in physiology*, 8, 809.

Kibler, W. B., Press, J., & Sciascia. (2006). The role of core stability in athletic function. *Sports Med* 36, 189-198.

Kim, B. H., Lee, S. M., Bae, Y. H., Yu, J. H., & Kim, T. H. (2012). The effect of a task-oriented training on trunk control ability, balance and gait of stroke patients. *Journal of Physical Therapy Science*, 24(6), 519-522.

- Kim, B., Park, Y., Seo, Y., Park, S., Cho, H., Moon, H., ... & Yu, J. (2016). Effects of individualized versus group task-oriented circuit training on balance ability and gait endurance in chronic stroke inpatients. *Journal of physical therapy science*, 28(6), 1872-1875.
- Kim, C. Y., & Kim, H. D. (2018). Effect of Crossed-Education Using a Tilt Table Task-Oriented Approach in Subjects with Post-Stroke Hemiplegia: A Randomized Controlled Trial. *Journal of rehabilitation medicine*, 50(9), 792-799.
- Kim, J. I., Cho, K. S., Sim, H. S., Lee, E. N., Lee, I. O., Eun, Y., ... & Lee, J. H. (2011). Analysis of studies on the effect of aquatic exercise program. *Journal of muscle and joint health*, 18(2), 257-269.
- Kim, K., Jung, S. I., & Lee, D. K. (2017). Effects of task-oriented circuit training on balance and gait ability in subacute stroke patients: a randomized controlled trial. *Journal of physical therapy science*, 29(6), 989-992.
- Kim, K., Lee, D. K., & Jung, S. (2015). Effects of co ordination movement using proprioceptive neuromuscular facilitation pattern under water on the balance and gait of stroke patients. *Physical therapy science*, 27, 3699-3701. doi: [10.1589/jpts.27.3699](https://doi.org/10.1589/jpts.27.3699).
- Kisner, C., & Colby, L. A. (2007). *Therapeutic Exercise Foundation and Techniques*. United States of America: F. A. Davis Company.
- Klein, D. A., Stone, W. J., Phillips, W. T., Gangi, J., & Hartman, S. (2002). PNF training and physical function in assisted-living older adults. *Journal of aging and physical activity*, 10(4), 476-488.

Knox, M., Stewart, A., & Richards, C. L. (2018). Six hours of task-oriented training optimizes walking competency post stroke: a randomized controlled trial in the public health-care system of South Africa. *Clinical rehabilitation*, 32(8), 1057-1068.

Kuberan, P., Kumar, V., Joshua, A. M., Misri, Z. K., & Chakrapani, M. (2017). Effects of Task Oriented Exercises with Altered Sensory Input on Balance and Functional Mobility in Chronic Stroke: A Pilot Randomized Controlled Trial. *Bangladesh Journal of Medical Science*, 16(2), 307-313.

Kumar, V. K., Chakrapani, M., & Kedambadi, R. (2016). Motor imagery training on muscle strength and gait performance in ambulant stroke subjects-a randomized clinical trial. *Journal of clinical and diagnostic research: JCDR*, 10(3), YC01.

Kwakkel, G., Kollen, B. J., & Wagenaar, R. C. (2002). Long term effects of intensity of upper and lower limb training after stroke: a randomised trial. *Journal of Neurology, Neurosurgery & Psychiatry*, 72(4), 473-479.

Lambeck, J., & Stanat, F. C. (2002). The Halliwick concept Part I. *Journal of Aquatic Theory Physio Therapy*. 2, 7-12

Lawrence, E. S., Coshall, C., Dundas, R., Stewart, J., Rudd, A. G., Howard, R., & Wolfe, C. D. (2001). Estimates of the prevalence of acute stroke impairments and disability in a multiethnic population. *Stroke*, 32(6), 1279-1284.

Lee, B. J., Lee, H. J., & Lee, W. H. (2013). The Effects of Intensive Gait Training with Body Weight Support Treadmill Training on Gait and Balance in Stroke Disability Patients: A Randomized Control Trail. *Physical Therapy Rehabilitation Science*, 2, 104-110.

Lee, M. K., Yun, T.W., & Kim, Y.H. (2012). Effect of gait training using PNF on balance and walking ability in person with chronic stroke. *Korean Proprioceptive Neuromuscular Facilitation Association, 10*, 43-52.

Lewthwaite, R., Winstein, C. J., Lane, C. J., Blanton, S., Wagenheim, B. R., Nelsen, M. A., ... & Wolf, S. L. (2018). Accelerating stroke recovery: body structures and functions, activities, participation, and quality of life outcomes from a large rehabilitation trial. *Neurorehabilitation and neural repair, 32*(2), 150-165.

Liu, T. W., Ng, G. Y., & Ng, S. S. (2018). Effectiveness of a combination of cognitive behavioral therapy and task-oriented balance training in reducing the fear of falling in patients with chronic stroke: study protocol for a randomized controlled trial. *Trials, 19*(1), 168.

Liu, T. W., Ng, G. Y., Chung, R. C., & Ng, S. S. (2019). Decreasing fear of falling in chronic stroke survivors through cognitive behavior therapy and task-oriented training. *Stroke, 50*(1), 148-154.

Lorens, R., Gómez, J. A., Alcaniz1, M. Colomer, C., & Noe. E. (2015). Improvement in balance using a virtual reality-based stepping exercise: a randomized controlled trial involving individuals with chronic stroke. *Clinical Rehabilitation. 29*(3), 261-268. doi: 10.1177/0269215514543333

Mather, C. G., Sherrington, C., Herbert, R. D., Moseley, A. M., & Elkins, M. (2003). Reliability of the PEDro scale for rating quality of randomized controlled trials. *Physio therapy. 83*, 713-721.

Merriam Webster Dictionary Science 1828. Retrieved on January 20, 2018, from <https://www.merriam-webster.com>

Mondol, B.A., Chowdhury, R.N., Rahman, K.M., Khan, S.U., Haque, M.A., Haque, B., Khan, M.Z.R., Habib, M., and Mohammad, Q.D., (2012). Major comorbidities in stroke patients: a hospital based study in Bangladesh. *Journal of Dhaka Medical Collage*, 21(1):16-22

Moon, J. H., Park, K. Y., Kim, H. J., & Na, C. H. (2018). The Effects of Task-Oriented Circuit Training Using Rehabilitation Tools on the Upper-Extremity Functions and Daily Activities of Patients with Acute Stroke: A Randomized Controlled Pilot Trial. *Osong public health and research perspectives*, 9(5), 225.

Morris, J. H., & Van Wijck, F. (2012). Responses of the less affected arm to bilateral upper limb task training in early rehabilitation after stroke: a randomized controlled trial. *Archives of physical medicine and rehabilitation*, 93(7), 1129-1137.

National Institute of Neurological Disorders and Stroke (NINDS), 2004, Stroke: Hope Through Research, available: <http://www.ninds.nih.gov/disorders/stroke/stroke.html>, [Retrieved July 11, 2006].

Nilsson, L., Carlsson, J., Danielsson, A., Fugl-Meyer, A., Hellström, K., Kristensen, L., ... & Grimby, G. (2001). Walking training of patients with hemiparesis at an early stage after stroke: a comparison of walking training on a treadmill with body weight support and walking training on the ground. *Clinical Rehabilitation*, 15(5), 515-527.

Ordahan, B., Karahan, A. Y., Basaran, A., Turkoglu, G., Kucuksarac, M., Tekin, L., &Kuran, B. (2015). Impact of Exercises Administered to Stroke Patients with Balance Trainer on Rehabilitation Results: A Randomized Control Study. *Hippokratia*, 19, 125-130.

Outermans, J. C., van Peppen, R. P., Wittink, H., Takken, T., &Kwakkel, G. (2010). Effects of a high-intensity task-oriented training on gait performance early after stroke: a pilot study. *Clinical rehabilitation*, 24(11), 979-987.

Park, S. E., & Moon, S. H. (2016). Effects of trunk stability exercise using proprioceptive neuromuscular facilitation with changes in chair height on the gait of patients who had a stroke. *Physical therapy science*, 28, 2014-2018. doi: [10.1589/jpts.28.2014](https://doi.org/10.1589/jpts.28.2014).

Parmer, P., Sumaria, S., &Hashi, S. (2011). Stroke: Classification and Diagnosis. The Pharmaceutical Journal. Retrieved on January 16, 2011, from <https://www.pharmaceutical-journal.com>

Pellicer, M. G., Luser, A. C., Casanovas, J. M., & Ferrer, B. C. S. (2017). Effectiveness of a multimodal exercise rehabilitation program on walking capacity and functionality after a stroke. *Journal of exercise rehabilitation*, 13(6), 666.

Pimenta, C., Correia, A., Alves, M., &Virella, D. (2017). Effects of Oculomotor and Gaze Stability Exercise on Balance after Stroke: Clinical Trail Protocol. *Porto Biomedical Journal*, 2 (3), 76-80.

Pollock, A. S., Durward, B. R., Rowe, P. J., & Paul, J. P. (2000). What is balance? *Clinical Rehabilitation*, 14,402-406. <https://doi.org/10.1191/0269215500cr342oa>

Rahman, K. M., Selim, H., & Karim, R. (2002). Study on Neurological disease in 7689 Hospital admitted patients-A Restropective Study in Mymensingh Medical Collage Hospital Bangladesh. *Bangladesh Journal Of Neuroscience*, 18(1/2), 28-31.

Renner, C. I., Outermans, J., Ludwig, R., Brendel, C., Kwakkel, G., &Hummelsheim, H. (2016). Group therapy task training versus individual task training during inpatient stroke rehabilitation: A randomised controlled trial. *Clinical rehabilitation*, 30(7), 637-648.

Rensink, M., Schuurmans, M., Lindeman, E., &Hafsteinsdottir, T. (2009). Task-oriented training in rehabilitation after stroke: systematic review. *Journal of advanced nursing*, 65(4), 737-754.

Richardson, J., DePaul, V., Officer, A., Wilkins, S., Letts, L., Bosch, J., & Wishart, L. (2015). Development and evaluation of Self-management and Task-oriented Approach to Rehabilitation Training (START) in the home: Case report. *Physical therapy*, 95(6), 934-943.

Ryan, T., Enderby, P., & Rigby, A. S. (2006). A randomized controlled trial to evaluate intensity of community-based rehabilitation provision following stroke or hip fracture in old age. *Clinical Rehabilitation*, 20(2), 123-131.

Salbach, N. M., Mayo, N. E., Robichaud-Ekstrand, S., Hanley, J. A., Richards, C. L., & Wood-Dauphinee, S. (2006). Balance self-efficacy and its relevance to physical function and perceived health status after stroke. *Archives of physical medicine and rehabilitation*, 87(3), 364-370.

Seo, K. C., & Kim, H. A. (2015). The effects of ramp gait exercise with Proprioceptive neuromuscular facilitation on stroke patient's dynamic balance. *Physical therapy science*, 27, 1447-1749. doi: [10.1589/jpts.27.1747](https://doi.org/10.1589/jpts.27.1747).

Sharma, V &Kaur, J. (2017). Effect of core strengthening with pelvic proprioceptive neuromuscular facilitation on trunk, balance, gait, and function in chronic stroke. *Journal of Exercise Rehabilitation*.13, 200-205.<https://doi.org/10.12965/jer.1734892.446>

Lee, D., Ko, T., & Cho, Y. (2010). Effects on static and dynamic balance of task-oriented training for patients in water or on land. *Journal of physical therapy science*, 22(3), 331-336.

Sheffler, L. R., Knutson, J. S., Gunzler, D., &Chae, J. (2012). Relationship between body mass index and rehabilitation outcomes in chronic stroke. *American journal of physical medicine & rehabilitation/Association of Academic Physiatrists*, 91(11), 951.

Sherrington, C., Fairhall, N., Kirkham, C., Clemson, L., Howard, K., Vogler, C., ... &Sonnabend, D. (2016). Exercise and fall prevention self-management to reduce mobility-related disability and falls after fall-related lower limb fracture in older people: protocol for the RESTORE (Recovery Exercises and STEpping On afterRfracturE) randomised controlled trial. *BMC geriatrics*, 16(1), 34.

Skrastins, O., Tsotsos, S., Aqeel, H., Qiang, A., Renton, J., Howe, J. A., ... &Salbach, N. M. (2019). Fitness coordinators' and fitness instructors' perspectives on implementing a task-oriented community exercise program within a healthcare-recreation partnership for people with balance and mobility limitations: a qualitative study. *Disability and Rehabilitation*, 1-9.

Smania, N., Gandolfi, M., Paolucci, S., Iosa, M., Ianes, P., Recchia, S., ... &Zaccala, M. (2012). Reduced-intensity modified constraint-induced movement therapy versus conventional therapy for upper extremity rehabilitation after stroke: a multicenter trial. *Neurorehabilitation and neural repair*, 26(9), 1035-1045.

Smith Jr, S. C., Jackson, R., Pearson, T. A., Fuster, V., Yusuf, S., Faergeman, O., ... &Hunn, M. (2004). Principles for national and regional guidelines on cardiovascular disease prevention: a scientific statement from the World Heart and Stroke Forum. *Circulation*, 109(25), 3112-3121.

Soares Branco, P. (2010). Validação da Versão Portuguesa da " Activities-specific Balance Confidence Scale". *Revista Portuguesa de Medicina Física e de Reabilitação*, 20-25.

Srivastava, A., Taly, A. B., Gupta, A., Kumar, S., &Murali, T. (2009). Post Stroke Balance Training: Role of Force Platform with Visual Feedback Technique. *Journal of the Neurological science*, 287(1-2), 89-93.doi: 10.1016/j.jns.2009.08.051.

Straudi, S., Martinuzzi, C., Baroni, A., Benedetti, M. G., Foti, C., Charabati, A. S., ... &Basaglia, N. (2016). Monitoring step activity during task-oriented circuit training in high-functioning chronic stroke survivors: A proof-of-concept feasibility study. *Annals of rehabilitation medicine*, 40(6), 989.

Stroke association. (2017, November.). *Balance Problems after Stroke*. Retrieved on January 22, 2018, from https://www.stroke.org.uk/sites/default/files/balance_problems_after_stroke.pdf.

Stroke, 2006, Mayo Foundation for Medical Education and Research, available: <http://www.mayoclinic.com/health/stroke/DS00150/DSECTION=9>, [Retrieved December 02].

Timmermans, A. A., Spooren, A. I., Kingma, H., & Seelen, H. A. (2010). Influence of task-oriented training content on skilled arm-hand performance in stroke: a systematic review. *Neurorehabilitation and neural repair*, 24(9), 858-870.

Tsaih, P. L., Chiu, M. J., Luh, J. J., Yang, Y. R., Lin, J. J., & Hu, M. H. (2018). Practice Variability Combined with Task-Oriented Electro myographic Biofeedback Enhances Strength and Balance in People with Chronic Stroke. *Behavioural neurology*, 2018.

Tyson, S. F., & Connell, L. A. (2009). How to measure balance in clinical practice. A systematic review of the psychometrics and clinical utility of measures of balance activity for neurological conditions. *Clinical rehabilitation*, 23(9), 824-840.

Van de Port, I. G., Wevers, L., Roelse, H., van Kats, L., Lindeman, E., & Kwakkel, G. (2009). Cost-effectiveness of a structured progressive task-oriented circuit class training programme to enhance walking competency after stroke: the protocol of the FIT-Stroke trial. *BMC neurology*, 9(1), 43.

Van-Duijnhoven, H. Y., Heeren, A., Peters, M. A., Veerbeek, J. M., Geurts, A. C., Werdesteven, V. (2016). Effects of Exercise Therapy on Balance Capacity in Chronic stroke: Systematic Review and Meta-analysis. *Stroke*, 47 (10), 2603-2610.

Visintin, M., Barbeau, H., Korner-Bitensky, N., & Mayo, N. E. (1998). A new approach to retrain gait in stroke patients through body weight support and treadmill stimulation. *Stroke*, 29(6), 1122-1128.

Islam, Z. (2013). *Functional outcome of gait using a fim scale among stroke patient at CRP neurology unit* (Doctoral dissertation, Department of Physiotherapy, Bangladesh Health Professions Institute, CRP).

Wang, J. S., Lee, S. B., & Moon, S. H. (2016). The immediate effect of PNF pattern on muscle tone and muscle stiffness in chronic stroke patients. *Physical therapy science*, 28, 967-970. doi: 10.1589/jpts.28.967.

Wang, R. Y., Tseng, H. Y., Liao, K. K., Wang, C. J., Lai, K. L., & Yang, Y. R. (2012). TMS combined with task-oriented training to improve symmetry of interhemispheric corticomotor excitability and gait performance after stroke: a randomized trial. *Neurorehabilitation and neural repair*, 26(3), 222-230.

Ward, A., Carrico, C., Powell, E., Westgate, P. M., Nichols, L., Fleischer, A., & Sawaki, L. (2017). Safety and improvement of movement function after stroke with atomoxetine: A pilot randomized trial. *Restorative neurology and neuroscience*, 35(1), 1-10.

Whitall, J., Waller, S. M., Silver, K. H., & Macko, R. F. (2000). Repetitive bilateral arm training with rhythmic auditory cueing improves motor function in chronic hemiparetic stroke. *Stroke*, *31*(10), 2390-2395.

Winstein, C. J., Wolf, S. L., Dromerick, A. W., Lane, C. J., Nelsen, M. A., Lewthwaite, R., ... & Azen, S. P. (2016). Effect of a task-oriented rehabilitation program on upper extremity recovery following motor stroke: the ICARE randomized clinical trial. *Jama*, *315*(6), 571-581.

World Health Organization.(n.d). *Stroke, Cerebrovascular accident*. Retrieved on 22 thJanuary, 2018. http://www.who.int/topics/cerebrovascular_accident/en

Yang, C. H., Kim, J. H., & Lee, B. H. (2016). Effects of Real Time Auditory Stimulation Feedback on Balance and Gait after Stroke: A Randomized Control Trail. *Journal of Experimental Stroke & Translational Medicine*, *9*, 1-5.

Muir, S. W., Berg, K., Chesworth, B., & Speechley, M. (2008). Use of the Berg Balance Scale for predicting multiple falls in community-dwelling elderly people: a prospective study. *Physical therapy*, *88*(4), 449-459.

Yang, Y. R., Wang, R. Y., Lin, K. H., Chu, M. Y., & Chan, R. C. (2006). Task-oriented progressive resistance strength training improves muscle strength and functional performance in individuals with stroke. *Clinical rehabilitation*, *20*(10), 860-870.

Yavuzer, G., Eser, F., Karakus, D., Karaoglan, B., & Stam, H.J. (2006). The Effects of Balance Training on Gait Late after Stroke: A Randomized Controlled Trial. *Clinical Rehabilitation*, *20* (11), 960-969. doi:[10.1177/0269215506070315](https://doi.org/10.1177/0269215506070315).

Appendix- A

Application for thesis proposal

The Chairmen,
Institute Review Board (IRB)
Bangladesh Health Profession Institute (BHPI)
CRP, Chapain, Savar, Dhaka-1343, Bangladesh

Subject: application for review and ethical approval


Dear Sir,

With due respect, I am Shahinoor Bente Khan, student of Part II of M.Sc in Physiotherapy course at the Bangladesh Health profession institute BHPI, academic institute of Centre for the Rehabilitation of the Paralysed (CRP) under the faculty of medicine of university of Dhaka, as per the course curriculum, I have to conduct a theses entitled "Effectiveness of Task Oriented Physiotherapy along with Conventional Physiotherapy for Patients with Stroke", under the most honorable supervisor Associate Prof. Mohammad Habibur Rahman. The purpose of the study is to determine the effectiveness of task oriented physiotherapy for the stroke patients.

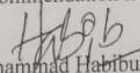
The study involves use of a BBS questionnaire to measure the Stroke patient's status of balance and FIM scale Questionnaire to measure the functional status and TUG test to measure mobility at CRP in Bangladesh that may take 20 to 30 minutes to fill in the questionnaire. There is no likelihood of any harm to the participants and / or participation in the study may benefit the participants or other stakeholders. Related information will be collected from the patient's guide books. Data collectors will receive informed consent from all participants; any data collected will be kept confidential.

Therefore, I look forward to having your kind approval for the thesis proposal and to start data collection. I can also assure you that I will maintain all the requirements for study.

Sincerely,


Shahinoor Bente Khan
Part-II, Roll no-05
Student of M.Sc in Physiotherapy (MPT)
BHPI, CRP, Savar, Dhaka-1343, Bangladesh.


Recommendation from the thesis supervisor


Mohammad Habibur Rahman
Associate Professor of Physiotherapy,
Bangladesh Health Professions Institute (BHPI).

Attachment: Thesis Proposal including measurement tools and process and procedure for maintaining confidentiality, Questionnaire (English and version), Information sheet & consent.

Appendix- B

Institutional Review Board (IRB) Letter



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

Ref. CRP-BHPI/IRB/11/18/1268 Date: 05/11/2018

To,
Shahinoor Bente Khan
M.Sc. in Physiotherapy (MPT)
Session: 2017-2018, Student ID 111170045
BHPI, CRP-Savar, Dhaka-1343, Bangladesh

Subject: Approval of thesis proposal "Task Oriented Physiotherapy along with Conventional Physiotherapy for patients with Stroke" by ethics committee.

Dear Shahinoor,

Congratulations,

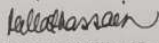
The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application to conduct the above mentioned thesis, with yourself, as the Principal Investigator" The Following documents have been reviewed and approved:

S.N.	Name of Documents
1.	Thesis Proposal
2.	Questionnaire (English version)
3.	Information sheet & consent form.

The study involves use of a Berg Balance Scale, FIM scale and TUG test questionnaire to explore the balance, functional status and mobility of stroke patients that may take 20 to 25 minutes to answer. Since there is no likelihood of any harm to the participants, the members of the Ethics committee have approved the study to be conducted in the presented form at the meeting (17th) held at 8.30 AM on 25th September, 2018 at BHPI.

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

Best regards,


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

সিআরপি-চাপাইন, সাভার, ঢাকা-১৩৪৩, বাংলাদেশ, ফোন : ৭৭৪৫৪৬৪-৫, ৭৭৪১৪০৪ ফ্যাক্স : ৭৭৪৫০৬৯

CRP-Chapain, Savar, Dhaka-1343, Tel : 7745464-5, 7741404, Fax : 7745069, E-mail : contact@crp-bangladesh.org, www.crp-bangladesh.org

Appendix- C

Application for Data collection

Date: 11/10/2018

To

The Head of the Department

Department of physiotherapy

Centre for the Rehabilitation of the Paralysed

CRP, Chapain, Savar, Dhaka-1343.

Subject: Application for permission to data collection in clinical setting.

Sir,

With due respect I am Shahinoor Bente Khan working as a Clinical Physiotherapist of Neurology Unit, Physiotherapy Department at your organization. I am also a student of M.Sc. in Physiotherapy, Session 2017-2018 at Bangladesh Health Profession Institute (BHPI), CRP. In my study purpose I have to submit a thesis on Task oriented physiotherapy along with conventional therapy for stroke patients. For this purpose, I need to conduct dummy data collection at neurology unit, Department of physiotherapy, CRP, Savar, Dhaka.

Therefore pray and hope your permission and oblige thereby.

Thanking You Sir.

Yours faithfully,



Shahinoor Bente Khan

M.Sc. in Physiotherapy

Part II, Roll no-05

Physiotherapy Department

CRP, Savar-1343.

Approved

02/11/18

Appendix- D

সম্মতপিতর

আমি শাহিনুর বিনতে খাঁন, এম এসসি ইন ফিজিওথেরাপি সেশন 2017-2018, বাংলাদেশ স্বাস্থ্য পেশা ইনস্টিটিউট, মেডিসিন অনুষদ অধীনে, ঢাকা বিশ্ববিদ্যালয়। আমার এমএসসি ইন ফিজিওথেরাপি ডিগ্রী আমাকে একটি থিসিস সম্পন্ন করতে হবে।

আমার থিসিস শিরোনাম "স্ট্রোকের সাথে রোগীদের জন্য প্রচলিত পদার্থ চিকিৎসা সহ কার্য ওরিয়েন্টেড ফিজিওথেরাপি কার্যকারিতা"। স্ট্রোকের রোগীদের জন্য প্রচলিত ফিজিওথেরাপির পাশাপাশি টাঙ্ক ভিত্তিক ফিজিওথেরাপির ফলাফল আবিষ্কারের গবেষণার লক্ষ্য।

আমি আপনাকে থিসিস সংক্রান্ত কিছু প্রশ্ন জিজ্ঞাসা করতে চাই এবং আমি আপনাকে প্রাক-হস্তক্ষেপ এবং পোস্ট হস্তক্ষেপ অধিবেশন সহ দুইবার দেখা করব। আমি আপনাকে আশ্বাস দিচ্ছি যে আপনার দেওয়া পরিচালনার কোনো ক্ষতি হবে না। উপরন্তু, চিকিৎসা Physiotherapist দ্বারা প্রদান করা হবে। তথ্য গোপনীয় রাখা হবে এবং থিসিস উদ্দেশ্যে শুধুমাত্র ব্যবহার করা হবে।

আপনি যে কোন সময় আপনার অংশগ্রহণ প্রত্যাহার করার অধিকার আছে। এছাড়া যদি আপনি কোনও প্রশ্নের উত্তর দিতে অস্বস্তিকর হন তবে আপনি সেই প্রশ্নটি এড়িয়ে যেতে পারেন। প্রশ্নপত্র পূরণ করতে 20 থেকে 30 মিনিট সময় লাগবে। দয়া করে আমাকে প্রশ্নগুলির সঠিক উত্তর দিন এবং তথ্য সংগ্রাহককে আপনার স্বাস্থ্যের অবস্থা পরীক্ষা করার অনুমতি দিন।

যদি আপনার কোন প্রশ্ন থাকে তবে আমার সাথে যোগাযোগ করুন এবং আমার সুপারভাইজার মোহাম্মদ হাবিবুর রহমান, ফিজিওথেরাপি বিভাগের সহযোগী অধ্যাপক, বিএইচপিআই, সিআরপি।

যদি আপনি দয়া করে আপনার সম্মতি দিন, আমরা শুরু করতে পারেন।

হ্যাঁ না

আপনার অংশগ্রহণের পাশাপাশি তথ্যের জন্য আপনাকে ধন্যবাদ।

অংশগ্রহণকারীর স্বাক্ষর ও তারিখ

তথ্য সংগ্রাহক স্বাক্ষর ও তারিখ

সাক্ষী স্বাক্ষর ও তারিখ

গবেষক স্বাক্ষর ও তারিখ

Consent Form (English)

I am Shahinoor Bente Khan, student of M.Sc. in Physiotherapy, Session 2017-2018, at Bangladesh Health Profession Institute, under Faculty of Medicine, University of Dhaka. To obtain my M.Sc. in physiotherapy degree I have to complete a thesis.

My thesis title is “Effectiveness of Task Oriented Physiotherapy along with Conventional Physiotherapy for Patients with stroke”. The aim of the study is to explore the outcome of task oriented physiotherapy along with conventional physiotherapy for patients with stroke.

I would like to ask you some questions regarding thesis and I will meet you for two times including pre-intervention and post intervention session. I am assuring you that management provided to you would not cause any harm. Moreover, treatment would be provided by physiotherapist. The information will be kept confidential and will be used only for thesis purpose.

You have the right to withdraw your participation at any time. Besides If you feel uncomfortable to give answer to any question you can escape that question. Questionnaire will take 20 to 30 minutes to fill up. Please give me the correct answers of the questions and allow the data collector to examine your health condition.

If you have any queries please contact with me and my supervisor Mohammad Habibur Rahman, Former Associate Professor, department of Physiotherapy, BHPI, CRP.

If you kindly give your consent, we can start.

Yes

No

Thank you for your participation as well as information.

Participant’s signature & date.....

Data collector signature & date.....

Witness signature & date.....

Researcher signature & date.....

Appendix- E

প্রশ্নাবলী (বাংলা)

শিরোনাম: স্ট্রোকের রোগীদের জন্য প্রচলিত পদার্থ চিকিৎসার পাশাপাশি কার্য ওরিয়েন্টেড ফিজিওথেরাপি কার্যকারিতা

বার্ন ব্যালেঙ্গ স্কেল (বিবিএস), ফাংশনাল স্বাধীনতা পরিমাপ স্কেল (এফআইএম) দ্বারা কার্যকরী স্বাধীনতা পরিমাপ এবং টাইম আপ এবং গো টেস্ট (টিইজি) দ্বারা গতিশীলতা পরিমাপ করার জন্য প্রশ্নোত্তরগুলি উন্নয়নশীল ছিল। উত্তর পূরণ করতে একটি কালো কলম ব্যবহার করুন। প্রতিটি এবং প্রতিটি

প্রতিটি	প্রশ্নের	টিক	চিহ্ন	(√)
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দ্বারা উত্তর করা উচিত। আমি আপনাকে অনুরোধ করছি যে আপনি নির্দিষ্ট এক উত্তরটিতে টিক চিহ্ন প্রদান করুন যা আপনাকে সবচেয়ে ঘনিষ্ঠভাবে সম্পর্কিত করে।

দ্বারা উত্তর করা উচিত। আমি আপনাকে অনুরোধ করছি যে আপনি নির্দিষ্ট এক উত্তরটিতে টিক	(√)
----------------------------------------------------------------------------------	-----

প্রশ্নপত্র ফর্ম

রোগীর সনাক্তকরণ:
সাক্ষাৎকারের তারিখ:
কোড নম্বর:
অংশগ্রহণকারীর নাম:
আইডি নং:
ঠিকানা:
গ্রাম :
পি। ওঃ
পিএসঃ
জেলা:
মোবাইল নাম্বার:

অংশ- ১- সামাজিক জনসংখ্যা তথ্য		
QN	প্রশ্ন	প্রতিক্রিয়া
১	আপনার বয়স কত?	<input type="checkbox"/> বছর
২	লিঙ্গ	<input type="checkbox"/> পুরুষ <input type="checkbox"/> মহিলা
৩	শিক্ষাগত যোগ্যতা	<input type="checkbox"/> নিরক্ষর <input type="checkbox"/> প্রাথমিক <input type="checkbox"/> উচ্চ মাধ্যমিক সম্মাননা <input type="checkbox"/> মাস্টার্স
৪	ধর্ম	<input type="checkbox"/> ইসলাম <input type="checkbox"/> হিন্দু <input type="checkbox"/> খ্রিস্টান <input type="checkbox"/> বুদ্ধ
৫	রোগীর উচ্চতা	<input type="checkbox"/>। মি
৬	ওজন	<input type="checkbox"/> কেজি
৭	BMI	<input type="checkbox"/>kg / মি 2

অংশ- ২- মেডিকেল তথ্য		
QN	প্রশ্ন	প্রতিক্রিয়া
৮	এমআরআই / সিটি স্ক্যানের উপর ভিত্তি করে স্ট্রোকের ধরন	<input type="checkbox"/> ইস্কিমিক স্ট্রোক <input type="checkbox"/> Hemorrhagic স্ট্রোক
৯	স্ট্রোকের আগে আপনার কি হাইপারটেনশন আছে?	<input type="checkbox"/> হ্যাঁ <input type="checkbox"/> না
১০	স্ট্রোকের আগে ডায়াবেটিস মেলিটাস আছে কি?	<input type="checkbox"/> হ্যাঁ <input type="checkbox"/> না
১১	বর্তমান অবস্থার রক্তচাপ	<input type="checkbox"/>mm of Hg
১২	আপনি ambulation জন্য ব্যবহার করছেন যে কোন সহায়ক ডিভাইস	<input type="checkbox"/> হ্যাঁ <input type="checkbox"/> না
১৩	Ambulation সময় পতনের অভিজ্ঞতা কোন ইতিহাস	<input type="checkbox"/> হ্যাঁ <input type="checkbox"/> না

প্রাক টেস্ট স্কোর

অংশ- ওয়ালেন্স সম্পর্কিত তথ্যঃ

ওয়ালেন্স ব্যার ভারসাম্য স্কেল দ্বারা পরিমাপ করা হয়

সাধারণ নির্দেশনা

প্রতিটি টাস্ক দস্তাবেজ এবং / অথবা লিখিত হিসাবে নির্দেশ দিতে দয়া করে। স্কোরিং যখন প্রতিটি আইটেমের জন্য প্রযোজ্য সর্বনিম্ন প্রতিক্রিয়া বিভাগ রেকর্ড

QN	প্রশ্ন	প্রতিক্রিয়া
১৪	বসা থেকে দাঁড়ানো (দয়া করে দাঁড়াও। সহায়তার জন্য আপনার হাত ব্যবহার করার চেষ্টা করবেন না)	৪- হাতের সাহায্য ছাড়া দাঁড়াতে পারে এবং ভারসাম্য রক্ষা করতে পারে। ৩- হাতের সাহায্য নিয়ে নিজে নিজে দাঁড়াতে পারে। ২- হাতের সাহায্য নিয়ে কয়েকবার চেষ্টার পর দাঁড়াতে পারে। ১- দাঁড়াতে অথবা ভারসাম্য রক্ষা করতে ন্যূনতম সহযোগিতা লাগে। ০-দাঁড়াতে মোটামুটি অথবা সম্পূর্ণ সহযোগিতা লাগে।
১৫.	অবলম্বন ছাড়া দাঁড়ানো (অনুগ্রহপূর্বক কোন কিছু সাহায্য ছাড়া ২ মিনিট দাঁড়ান)	৪- নিরাপদভাবে ২ মিনিট দাঁড়াতে পারে। ৩- পর্যবেক্ষণসহ ২ মিনিট দাঁড়াতে পারে। ২- অবলম্বন ছাড়া ৩০ সেকেন্ড সে দাঁড়াতে পারে। ১- কয়েকবার চেষ্টার পর অবলম্বন ছাড়া ৩০ সেকেন্ড সে দাঁড়াতে পারে। ০- অবলম্বন ছাড়া ৩০ সেকেন্ড সে দাঁড়াতে পারে না।
১৬.	পিঠে অবলম্বন ছাড়া কিছু মেঝে অথবা টুল দিয়ে পায়	৪- নিরাপদভাবে ২ মিনিট বসতে পারে। ৩-পর্যবেক্ষণসহ ২ মিনিট বসতে পারে।

	<p>অবলম্বনের সাহায্যে বসা</p> <p>(<u>অনুগ্রহপূর্বক হাত ভাঁজ করে</u> <u>২ মিনিট বসুন</u>)</p>	<p>২- ৩০ সেকেন্ড সে বসতে পারে।</p> <p>১-১০ সেকেন্ড সে বসতে পারে।</p> <p>০- অবলম্বন ছাড়া ১০ সেকেন্ড সে বসতে পারে না।</p>
১৭.	<p>দাঁড়ানো থেকে বসা</p> <p>(<u>অনুগ্রহপূর্বক বসুন</u>)</p>	<p>৪- নুন্যতম হাতের সাহায্য দ্বারা নিরাপদে বসতে পারে।</p> <p>৩-হাতের সাহায্য দ্বারা বসতে পারে।</p> <p>২-ভারসাম্য রক্তার জন্য চেয়ারের বিরলক্ষে পা ব্যবহার করে।</p> <p>১-নিজে নিজে ভারসাম্যহীনভাবে বসতে পারে।</p> <p>০-বসতে সাহায্যকারীর প্রয়োজন হয়।</p>
১৮.	<p>স্থানান্তর</p> <p>(<u>অনুগ্রহপূর্বক হাতে ভর দিয়ে</u> <u>চেয়ারের একদিকে এবং ভর</u> <u>ছাড়া অন্যদিকে স্থানান্তর</u> <u>হতে চেষ্টা করমন)</u></p>	<p>৪-নুন্যতম হাতের সাহায্য দ্বারা নিরাপদে স্থানান্তর হতে পারে।</p> <p>৩- হাতের সাহায্য দ্বারা নিরাপদে স্থানান্তর হতে পারে।</p> <p>২-মৌখিক নির্দেশনা অথবা পর্যবেক্ষণ মাধ্যমে স্থানান্তর হতে পারে।</p> <p>১-একজন সাহায্যকারীর প্রয়োজন হয়।</p> <p>০- দুইজন সাহায্যকারীর প্রয়োজন হয়।</p>
১৯.	<p>অবলম্বন চাড়া চোখ বন্ধ</p> <p>অবস্থায় দাঁড়ানো</p> <p>(<u>অনুগ্রহপূর্বক চোখ বন্ধ</u> <u>করমন এবং ১০ সেকেন্ড</u> <u>দাঁড়ান।)</u></p>	<p>৪- ১০ সেকেন্ড নিরাপদে দাঁড়াতে পারে।</p> <p>৩-পর্যবেক্ষণের মাধ্যমে ১০ সে নিরাপদে দাঁড়াতে পারে।</p> <p>২-৩ সেকেন্ড দাঁড়াতে পারে।</p> <p>১-৩ সেকেন্ড চোখ বন্ধ রাখতে পারে না কিছু দাঁড়াতে পারে।</p> <p>০-পড়ে যাওয়া রোধ করতে সাহায্যের প্রয়োজন।</p>
২০.	<p>দুই পা একত্র করে</p> <p>অবলম্বনহীনভাবে দাঁড়ান</p> <p>(<u>অনুগ্রহপূর্বক দুই পা একত্র</u></p>	<p>৪-দুই পা একত্র করে স্বাধীনভাবে ১ মিনিট দাঁড়াতে পারে।</p> <p>৩-পর্যবেক্ষণসহ দুই পা একত্র করে স্বাধীনভাবে ১ মিনিট দাঁড়াতে পারে।</p>

	<p>করমন এবং কোন সাহায্য ছাড়া দাঁড়ান)</p>	<p>২-দুই পা একত্র করে দাঁড়াতে পারে তবে ৩০ সেকেন্ড এর কম।</p> <p>১-দাঁড়াতে সাহায্যের প্রয়োজন হয় কিন্তু ১৫ সেকেন্ড পা একত্র করে রাখতে পারে।</p> <p>০-দাঁড়াতে সাহায্যের প্রয়োজন হয় এবং ১৫ সেকেন্ড পা একত্র করে রাখতে পারে না।</p>
২১.	<p>দাঁড়ানো অবস্থায় দুইহাত উঁচু করে সামনের দিকে ঝুঁকা</p> <p>(দুই হাত ৯০ ডিগ্রি উঁচু করমন। আগুল টান টান করমন, যতটা সম্ভব সামনে ঝুঁকুন)</p>	<p>৪- সঠিকভাবে ২৫ সেমি সামনে যেতে পারে।</p> <p>৩- সঠিকভাবে ১২ সেমি সামনে যেতে পারে।</p> <p>২- সঠিকভাবে ৫ সেমি সামনে যেতে পারে।</p> <p>১-সামনে যেতে পারে কিন্তু পর্যবেক্ষণের প্রয়োজন হয়।</p> <p>০-ভারসাম্য হারিয়ে ফেলে অথবা অন্যের সহায়তা লাগে।</p>
২২.	<p>দাঁড়ানো অবস্থায় মেঝে থেকে কোন বস্তু তোলা</p> <p>(মেঝেতে আপনার পায়ের সামনে রাখা জুতাটি তুলুন)</p>	<p>৪-সহজে এবং নিরাপদে জুতাটি তুলতে পারে।</p> <p>৩-জুতা তুলতে পারে কিন্তু পর্যবেক্ষণ প্রয়োজন হয়।</p> <p>২-জুতার ২-৫ সেমি পর্যন্ত যেতে পারে কিন্তু তুলতে পারে না তবে ভারসাম্য রক্ষা করতে পারে।</p> <p>১-জুতা তুলতে পাও না এবং চেপ্টার সময় পর্যবেক্ষণ প্রয়োজন হয়।</p> <p>০-চেপ্টা করতে পারেনা অথবা ভারসাম্য রক্ষার জন্য সাহায্যকারী প্রয়োজন হয়।</p>
২৩.	<p>দাঁড়ানো অবস্থায় ডান এবং বাম কাঁধ দিয়ে পিছনে তাকানো।</p> <p>(আপনার বাম কাঁধ বরাবর পিছনে ঘুরমন। একইভাবে</p>	<p>৪-দুই দিকেই ঘুরতে পারে এবং সমানভাবে ভর দেয়।</p> <p>৩-শুধুমাত্র একদিকে ঘুরতে পারে এবং অন্যদিকে কম ভর দেয়।</p> <p>২-শুধুমাত্র পাশে তাকাতে পারে, তবে ভারসাম্য রক্ষা করতে</p>

	ডান দিকে ঘুরমন)	পারে । ১-ঘুরার সময় পর্যবেক্ষণ প্রয়োজন । ০-ভারসাম্য রক্তার জন্য সাহায্যকারী প্রয়োজন হয় ।
২৪.	৩৬০ ডিগ্রি ঘুরমন (ঘুরে একটি বৃত্ত স্থাপন করমন । থামুন এবং অপরদিকে আবার একটি বৃত্ত সম্পন্ন করমন)	৪- ৪ সেকেন্ড অথবা তার কম সময়ে ৩৬০ নিরাপদে ঘুরতে পারে । ৩-৪ সেকেন্ড অথবা তার কম সময়ে একদিকে নিরাপদে ৩৬০ নিরাপদে ঘুরতে পারে । ২-৩৬০ ডিগ্রি ঘুরতে পারে তবে সময় বেশি লাগে । ১-পর্যবেক্ষণ অথবা মৌখিক নির্দেশনা প্রয়োজন । ০-ঘুরার সময় সাহায্যকারী প্রয়োজন ।
২৫.	অবলম্বন ছাড়া দাঁড়ানোর সময় এক পা সামনে দিন অথবা টুলের উপর রাখুন (বিপরীতভাবে এক পা টুলে এবং অন্য পা মেঝেতে রাখুন । এভাবে চারবার করমন)	৪-নিজে নিজে নিরাপদে দাঁড়াতে পারে এবং ২০ সেকেন্ড এ ৮ টি ধাপ দিতে পারে । ৩- নিজে নিজে নিরাপদে দাঁড়াতে পারে এবং ২০ সেকেন্ড এ ৮ টির কম ধাপ দিতে পারে । ২-৪ টি ধাপ দিতে পারে সাহায্য ছাড়া তবে পর্যবেক্ষণ প্রয়োজন । ১-২টির কম ধাপ দিতে পারে এবং ন্যূনতম সাহায্য লাগে । ০-ভারসাম্য রক্তার জন্য সাহায্যকারী প্রয়োজন হয় অথবা করতে পারে না ।
২৬.	অবলম্বন ছাড়া এক পা সামনে দিয়ে দাঁড়ান (এক পায়ের সামনে আর এক পা দিয়ে দাঁড়ান । যদি না পারেন তবে দুই পায়ের	৪-৩০ সেকেন্ড নিজে নিজে এক পা সামনে দিয়ে নিরাপদে দাঁড়াতে পারে । ৩-৩০ সেকেন্ড নিজে নিজে এক পা সামনে দিয়ে দাঁড়াতে পারে ।

	<u>দুরন্ত বাড়িয়ে দাঁড়ান</u>	<p>২-ছোট ধাপ দিয়ে নিজে নিজে ৩০ সেকেন্ড দাঁড়াতে পারে।</p> <p>১-ধাপ দিতে সাহায্য কিছু ১৫ সেকেন্ড থাকতে পারে।</p> <p>ধাপ দেয় অথবা দাঁড়ানোর সময় ভারসাম্য হারিয়ে ফেলে।</p>
২৭.	<p>এক পায়ে দাঁড়ানো</p> <p><u>(অবলম্বন ছাড়া যতদূর সম্ভব</u></p> <p><u>এক পায়ে দাঁড়ানো)</u></p>	<p>৪-নিজে নিজে পা তুলতে পারে এবং ১০ সেকেন্ড এর বেশি সময় থাকতে পারে।</p> <p>৩- নিজে নিজে পা তুলতে পারে এবং ৫-১০ সেকেন্ড থাকতে পারে।</p> <p>২-নিজে নিজে পা তুলতে পারে এবং ৩ সেকেন্ড বা কম থাকতে পারে।</p> <p>১-পা তুলতে চেষ্টা করে কিন্তু ৩ সেকেন্ড রাখতে পারে না তবে নিজে নিজে দাঁড়াতে পারে।</p> <p>০-চেষ্টা করতে পারেনা এবং পড়ে যাওয়া রোধে সাহায্যের প্রয়োজন।</p>

মোট নম্বর:..... তারিখ: পরীক্ষকের স্বাক্ষর:.....

শিরোনাম: দৈনন্দিনজীবনযাপনএরঅবস্থা।

প্রশ্নাবলী

অংশ ১: সাধারণতথ্য

নাম:

বয়স:

লিঙ্গ:

ইউনিট: আউটডোর / ইনডোর

রোগনির্ণয়:

তারিখ:

অংশ ২: FIM স্কোরশীট

ঋণগ মাত্রা

কোনসাহায্যকারী ছাড়াই

৭সম্পূর্ণস্বাধীনতা (সময়মত, নিরাপদে)

৬সংশোধিতস্বাধীনতা (ডিভাইস)

সাহায্যকারী - সংশোধিতনির্ভরতা

৫রক্ষণাবেক্ষণ

৪সংক্ষিপ্তসহায়তা (আনুষঙ্গিক = ৭৫% বাতারবেশি)

৩মধ্যমসহায়তা (আনুষঙ্গিক = ৫০% বাতারবেশি)

সাহায্যকারী -সম্পূর্ণনির্ভরতা

২সর্বধিকসহায়তা (আনুষঙ্গিক = ২৫% বাতারবেশি)

১মোটসহায়তা (আনুষঙ্গিক = ০% - ২৪%)

	নিজেরযত্ন	স্কোর
১	আহার	
২	সাজগোজ	
৩	গোসল	
৪	কাপড় পরিধান - শরীরেরউপরের	
৫	কাপড় পরিধান - নিম্নতরশরীর	
৬	পায়খানা ব্যবস্থাপনা	

৭	মূত্রাশয়ব্যবস্থাপনা	
৮	আন্ত্রিকব্যবস্থাপনা	
	নিজেরযত্নমোট	

	গতিশীলতা	স্কোর	
৯	স্থানান্তর: চেয়ার / হুইলচেয়ার		প্রকার: ড- হাঁটা; ঈ-হুইলচেয়ার; ই- উভয়
১০	স্থানান্তর: টয়লেট		
১১	স্থানান্তর: টব / শাওয়ার		
১২	গতিশক্তি: হাঁটা / হুইলচেয়ার / হামাগুড়ি		প্রকার:ড- হাঁটা; ঈহুইলচেয়ার;খ-হামাগুড়ি;ই- উভয়
১৩	গতিশক্তি: সিঁড়ি		
	গতিশীলতামোট		

	চেতনা	স্কোর	
১৪	বোধশক্তি		প্রকার:অ- শ্রাবণ; ঠদর্শন; ই- উভয়
১৫	অভিব্যক্তি		
১৬	সামাজিকযোগাযোগ		
১৭	সমস্যাসমাধান		
১৮	স্মৃতি		
	জ্ঞানীয়মোট		

FIM মোটরেটিং:

টাইম আপ এন্ড গো টেস্টঃ

উদ্দেশ্যঃ মোবিলিটি এসেস করা

নির্দেশনাঃ রোগী যথারীতি তাদের জুতা পরবে এবং প্রয়োজন হলে ওয়াকিং এইড ব্যবহার করতে পারবে। রোগিকে একটি চেয়ারে বসতে হবে এবং ৩ মিটার লাইন শনাক্ত করতে হবে।

রোগীর নির্দেশনাঃ

যখন যেতে বলা হবেঃ

- চেয়ার থেকে উঠে দাঁড়ান
- লাইন বরাবর সোজা হাঁটেন
- ঘুরে দারান
- সোজা হেঁটে পুনরায় চেয়ারের দিকে আসেন
- পুনরায় চেয়ারে বসে যান

যাও বলার সাথে সাথে সময় শুরু হবে এবং চেয়ারে বসা পর্যন্ত সময় ধারণ করতে হবে।

সময়ঃ সেকেন্ড

পোস্ট টেস্ট স্কোর

অংশ- ওব্যালেন্স সম্পর্কিত তথ্যঃ

ব্যালেন্স ব্যার ভারসাম্য স্কেল দ্বারা পরিমাপ করা হয়

সাধারণ নির্দেশনা

প্রতিটি টাস্ক দস্তাবেজ এবং / অথবা লিখিত হিসাবে নির্দেশ দিতে দয়া করে। স্কোরিং যখন প্রতিটি আইটেমের জন্য প্রযোজ্য সর্বনিম্ন প্রতিক্রিয়া বিভাগ রেকর্ড

QN	প্রশ্ন	প্রতিক্রিয়া
১৪	বসা থেকে দাঁড়ানো (দয়া করে দাঁড়াও। সহায়তার জন্য আপনার হাত ব্যবহার করার চেষ্টা করবেন না)	৪- হাতের সাহায্য ছাড়া দাঁড়াতে পারে এবং ভারসাম্য রক্ষা করতে পারে। ৩- হাতের সাহায্য নিয়ে নিজে নিজে দাঁড়াতে পারে। ২- হাতের সাহায্য নিয়ে কয়েকবার চেষ্টার পর দাঁড়াতে পারে। ১- দাঁড়াতে অথবা ভারসাম্য রক্ষা করতে ন্যূনতম সহযোগিতা লাগে। ০-দাঁড়াতে মোটামুটি অথবা সম্পূর্ণ সহযোগিতা লাগে।
১৫.	অবলম্বন ছাড়া দাঁড়ানো (অনুগ্রহপূর্বক কোন কিছু সাহায্য ছাড়া ২ মিনিট দাঁড়ান)	৪- নিরাপদভাবে ২ মিনিট দাঁড়াতে পারে। ৩- পর্যবেক্ষণসহ ২ মিনিট দাঁড়াতে পারে। ২- অবলম্বন ছাড়া ৩০ সেকেন্ড সে দাঁড়াতে পারে। ৪- কয়েকবার চেষ্টার পর অবলম্বন ছাড়া ৩০ সেকেন্ড সে দাঁড়াতে পারে। ১- অবলম্বন ছাড়া ৩০ সেকেন্ড সে দাঁড়াতে পারে না।
১৬.	পিঠে অবলম্বন ছাড়া কিছু মেঝে অথবা টুল দিয়ে পায়	৪- নিরাপদভাবে ২ মিনিট বসতে পারে। ৩-পর্যবেক্ষণসহ ২ মিনিট বসতে পারে।

	<p>অবলম্বনের সাহায্যে বসা</p> <p>(<u>অনুগ্রহপূর্বক হাত ভাঁজ করে</u> <u>২ মিনিট বসুন</u>)</p>	<p>২- ৩০ সেকেন্ড সে বসতে পারে।</p> <p>১-১০ সেকেন্ড সে বসতে পারে।</p> <p>১- অবলম্বন ছাড়া ১০ সেকেন্ড সে বসতে পারে না।</p>
১৭.	<p>দাঁড়ানো থেকে বসা</p> <p>(<u>অনুগ্রহপূর্বক বসুন</u>)</p>	<p>৪- ন্যূনতম হাতের সাহায্য দ্বারা নিরাপদে বসতে পারে।</p> <p>৩-হাতের সাহায্য দ্বারা বসতে পারে।</p> <p>২-ভারসাম্য রক্তার জন্য চেয়ারের বিরলদ্বৈ পা ব্যবহার করে।</p> <p>১-নিজে নিজে ভারসাম্যহীনভাবে বসতে পারে।</p> <p>০-বসতে সাহায্যকারীর প্রয়োজন হয়।</p>
১৮.	<p>স্থানান্তর</p> <p>(<u>অনুগ্রহপূর্বক হাতে ভর দিয়ে</u> <u>চেয়ারের একদিকে এবং ভর</u> <u>ছাড়া অন্যদিকে স্থানান্তর</u> <u>হতে চেষ্টা করমন)</u></p>	<p>৪-ন্যূনতম হাতের সাহায্য দ্বারা নিরাপদে স্থানান্তর হতে পারে।</p> <p>৩- হাতের সাহায্য দ্বারা নিরাপদে স্থানান্তর হতে পারে।</p> <p>২-মৌখিক নির্দেশনা অথবা পর্যবেক্ষণ মাধ্যমে স্থানান্তর হতে পারে।</p> <p>১-একজন সাহায্যকারীর প্রয়োজন হয়।</p> <p>০- দুইজন সাহায্যকারীর প্রয়োজন হয়।</p>
১৯.	<p>অবলম্বন চাড়া চোখ বন্ধ</p> <p>অবস্থায় দাঁড়ানো</p> <p>(<u>অনুগ্রহপূর্বক চোখ বন্ধ</u> <u>করমন এবং ১০ সেকেন্ড</u> <u>দাঁড়ান।)</u></p>	<p>৪- ১০ সেকেন্ড নিরাপদে দাঁড়াতে পারে।</p> <p>৩-পর্যবেক্ষণের মাধ্যমে ১০ সে নিরাপদে দাঁড়াতে পারে।</p> <p>২-৩ সেকেন্ড দাঁড়াতে পারে।</p> <p>১-৩ সেকেন্ড চোখ বন্ধ রাখতে পারে না কিছু দাঁড়াতে পারে।</p> <p>০-পড়ে যাওয়া রোধ করতে সাহায্যের প্রয়োজন।</p>
২০.	<p>দুই পা একত্র করে</p> <p>অবলম্বনহীনভাবে দাঁড়ান</p> <p>(<u>অনুগ্রহপূর্বক দুই পা একত্র</u></p>	<p>৪-দুই পা একত্র করে স্বাধীনভাবে ১ মিনিট দাঁড়াতে পারে।</p> <p>৩-পর্যবেক্ষণসহ দুই পা একত্র করে স্বাধীনভাবে ১ মিনিট দাঁড়াতে পারে।</p>

	<p>করমন এবং কোন সাহায্য ছাড়া দাঁড়ান)</p>	<p>২-দুই পা একত্র করে দাঁড়াতে পারে তবে ৩০ সেকেন্ড এর কম।</p> <p>১-দাঁড়াতে সাহায্যের প্রয়োজন হয় কিন্তু ১৫ সেকেন্ড পা একত্র করে রাখতে পারে।</p> <p>০-দাঁড়াতে সাহায্যের প্রয়োজন হয় এবং ১৫ সেকেন্ড পা একত্র করে রাখতে পারে না।</p>
২১.	<p>দাঁড়ানো অবস্থায় দুইহাত উঁচু করে সামনের দিকে ঝুঁকা (দুই হাত ৯০ ডিগ্রি উঁচু করমন। আগুল টান টান করমন, যতটা সম্ভব সামনে ঝুঁকুন)</p>	<p>৪- সঠিকভাবে ২৫ সেমি সামনে যেতে পারে।</p> <p>৩- সঠিকভাবে ১২ সেমি সামনে যেতে পারে।</p> <p>৫- সঠিকভাবে ৫ সেমি সামনে যেতে পারে।</p> <p>১-সামনে যেতে পারে কিন্তু পর্যবেক্ষণের প্রয়োজন হয়।</p> <p>০-ভারসাম্য হারিয়ে ফেলে অথবা অন্যের সহায়তা লাগে।</p>
২২.	<p>দাঁড়ানো অবস্থায় মেঝে থেকে কোন বস্তু তোলা (মেঝেতে আপনার পায়ের সামনে রাখা জুতাটি তুলুন)</p>	<p>৪-সহজে এবং নিরাপদে জুতাটি তুলতে পারে।</p> <p>৩-জুতা তুলতে পারে কিন্তু পর্যবেক্ষণ প্রয়োজন হয়।</p> <p>২-জুতার ২-৫ সেমি পর্যন্ত যেতে পারে কিন্তু তুলতে পারে না তবে ভারসাম্য রক্ষা করতে পারে।</p> <p>১-জুতা তুলতে পাও না এবং চেপ্টার সময় পর্যবেক্ষণ প্রয়োজন হয়।</p> <p>০-চেপ্টা করতে পারেনা অথবা ভারসাম্য রক্ষার জন্য সাহায্যকারী প্রয়োজন হয়।</p>
২৩.	<p>দাঁড়ানো অবস্থায় ডান এবং বাম কাঁধ দিয়ে পিছনে তাকানো। (আপনার বাম কাঁধ বরাবর পিছনে ঘুরমন। একইভাবে</p>	<p>৪-দুই দিকেই ঘুরতে পারে এবং সমানভাবে ভর দেয়।</p> <p>৩-শুধুমাত্র একদিকে ঘুরতে পারে এবং অন্যদিকে কম ভর দেয়।</p> <p>২-শুধুমাত্র পাশে তাকাতে পারে, তবে ভারসাম্য রক্ষা করতে</p>

	ডান দিকে ঘুরমন)	পারে । ১-ঘুরার সময় পর্যবেক্ষণ প্রয়োজন । ০-ভারসাম্য রক্তার জন্য সাহায্যকারী প্রয়োজন হয় ।
২৪.	৩৬০ ডিগ্রি ঘুরমন (ঘুরে একটি বৃত্ত স্থাপন করমন । থামুন এবং অপরদিকে আবার একটি বৃত্ত সম্পন্ন করমন)	৪- ৪ সেকেন্ড অথবা তার কম সময়ে ৩৬০ নিরাপদে ঘুরতে পারে । ৩-৪ সেকেন্ড অথবা তার কম সময়ে একদিকে নিরাপদে ৩৬০ নিরাপদে ঘুরতে পারে । ২-৩৬০ ডিগ্রি ঘুরতে পারে তবে সময় বেশি লাগে । ১-পর্যবেক্ষণ অথবা মৌখিক নির্দেশনা প্রয়োজন । ০-ঘুরার সময় সাহায্যকারী প্রয়োজন ।
২৫.	অবলম্বন ছাড়া দাঁড়ানোর সময় এক পা সামনে দিন অথবা টুলের উপর রাখুন (বিপরীতভাবে এক পা টুলে এবং অন্য পা মেঝেতে রাখুন । এভাবে চারবার করমন)	৪-নিজে নিজে নিরাপদে দাঁড়াতে পারে এবং ২০ সেকেন্ড এ ৮ টি ধাপ দিতে পারে । ৬- নিজে নিজে নিরাপদে দাঁড়াতে পারে এবং ২০ সেকেন্ড এ ৮ টির কম ধাপ দিতে পারে । ২-৪ টি ধাপ দিতে পারে সাহায্য ছাড়া তবে পর্যবেক্ষণ প্রয়োজন । ১-২টির কম ধাপ দিতে পারে এবং ন্যূনতম সাহায্য লাগে । ০-ভারসাম্য রক্তার জন্য সাহায্যকারী প্রয়োজন হয় অথবা করতে পারে না ।
২৬.	অবলম্বন ছাড়া এক পা সামনে দিয়ে দাঁড়ান (এক পায়ের সামনে আর এক পা দিয়ে দাঁড়ান । যদি না পারেন তবে দুই পায়ের	৪-৩০ সেকেন্ড নিজে নিজে এক পা সামনে দিয়ে নিরাপদে দাঁড়াতে পারে । ৩-৩০ সেকেন্ড নিজে নিজে এক পা সামনে দিয়ে দাঁড়াতে পারে ।

	<u>দুরন্ত বাড়িয়ে দাঁড়ান)</u>	<p>২-ছোট ধাপ দিয়ে নিজে নিজে ৩০ সেকেন্ড দাঁড়াতে পারে।</p> <p>১-ধাপ দিতে সাহায্য কিছু ১৫ সেকেন্ড থাকতে পারে।</p> <p>ধাপ দেয় অথবা দাঁড়ানোর সময় ভারসাম্য হারিয়ে ফেলে।</p>
২৭.	<p>এক পায়ে দাঁড়ানো</p> <p><u>(অবলম্বন ছাড়া যতদূর সম্ভব</u></p> <p><u>এক পায়ে দাঁড়ানো)</u></p>	<p>৪-নিজে নিজে পা তুলতে পারে এবং ১০ সেকেন্ড এর বেশি সময় থাকতে পারে।</p> <p>৩- নিজে নিজে পা তুলতে পারে এবং ৫-১০ সেকেন্ড থাকতে পারে।</p> <p>২-নিজে নিজে পা তুলতে পারে এবং ৩ সেকেন্ড বা কম থাকতে পারে।</p> <p>১-পা তুলতে চেষ্টা করে কিছু ৩ সেকেন্ড রাখতে পারে না তবে নিজে নিজে দাঁড়াতে পারে।</p> <p>০-চেষ্টা করতে পারেনা এবং পড়ে যাওয়া রোধে সাহায্যের প্রয়োজন।</p>

মোট নম্বর:..... তারিখ: পরীক্ষাকের স্বাক্ষর:.....

শিরোনাম: দৈনন্দিনজীবনযাপনএরঅবস্থা।

প্রশ্নাবলী

অংশ ১: সাধারণতথ্য

নাম:

বয়স:

লিঙ্গ:

ইউনিট: আউটডোর / ইনডোর

রোগনির্ণয়:

তারিখ:

অংশ ২: FIM স্কোরশীট

ঋণগ মাত্রা

কোনসাহায্যকারী ছাড়াই

৭সম্পূর্ণস্বাধীনতা (সময়মত, নিরাপদে)

৬সংশোধিতস্বাধীনতা (ডিভাইস)

সাহায্যকারী - সংশোধিতনির্ভরতা

৫রক্ষণাবেক্ষণ

৪সংক্ষিপ্তসহায়তা (আনুষঙ্গিক = ৭৫% বাতারবেশি)

৩মধ্যমসহায়তা (আনুষঙ্গিক = ৫০% বাতারবেশি)

সাহায্যকারী -সম্পূর্ণনির্ভরতা

২সর্বধিকসহায়তা (আনুষঙ্গিক = ২৫% বাতারবেশি)

১মোটসহায়তা (আনুষঙ্গিক = ০% - ২৪%)

	নিজেরযত্ন	স্কোর
১	আহার	
২	সাজগোজ	
৩	গোসল	
৪	কাপড় পরিধান - শরীরেরউপরের	
৫	কাপড় পরিধান - নিম্নতরশরীর	
৬	পায়খানা ব্যবস্থাপনা	

৭	মূত্রাশয়ব্যবস্থাপনা	
৮	আন্ত্রিকব্যবস্থাপনা	
	নিজেরযত্নমোট	

	গতিশীলতা	স্কোর	
৯	স্থানান্তর: চেয়ার / হুইলচেয়ার		প্রকার: ড- হাঁটা; ঈ-হুইলচেয়ার; ই- উভয়
১০	স্থানান্তর: টয়লেট		
১১	স্থানান্তর: টব / শাওয়ার		
১২	গতিশক্তি: হাঁটা / হুইলচেয়ার / হামাগুড়ি		প্রকার:ড- হাঁটা; ঈহুইলচেয়ার;খ-হামাগুড়ি;ই- উভয়
১৩	গতিশক্তি: সিঁড়ি		
	গতিশীলতামোট		

	চেতনা	স্কোর	
১৪	বোধশক্তি		প্রকার:অ- শ্রাবণ; ঠদর্শন; ই- উভয়
১৫	অভিব্যক্তি		
১৬	সামাজিকযোগাযোগ		
১৭	সমস্যাসমাধান		
১৮	স্মৃতি		
	জ্ঞানীয়মোট		

FIM মোটরেটিং:

টাইম আপ এন্ড গো টেস্টঃ

উদ্দেশ্যঃ মোবিলিটি এসেস করা

নির্দেশনাঃ রোগী যথারীতি তাদের জুতা পরবে এবং প্রয়োজন হলে ওয়াকিং এইড ব্যবহার করতে পারবে। রোগিকে একটি চেয়ারে বসতে হবে এবং ৩ মিটার লাইন শনাক্ত করতে হবে।

রোগীর নির্দেশনাঃ

যখন যেতে বলা হবেঃ

- চেয়ার থেকে উঠে দাঁড়ান
- লাইন বরাবর সোজা হাঁটেন
- ঘুরে দারান
- সোজা হেঁটে পুনরায় চেয়ারের দিকে আসেন
- পুনরায় চেয়ারে বসে যান

যাও বলার সাথে সাথে সময় শুরু হবে এবং চেয়ারে বসা পর্যন্ত সময় ধারণ করতে হবে।

সময়ঃ সেকেন্ড

Questionnaire (English)

Title: Effectiveness of Task Oriented Physiotherapy along with Conventional Physiotherapy for patients with Stroke

Questionnaires were developing to measure Balance by Berg Balance Scale (BBS), Functional Independency measure by Functional Independence Measurement Scale (FIM), and to measure mobility by Time Up and Go Test (TUG). Please use a black pen to fill up the answer. Each question should be answer by tick (√) marking. I am also requesting you to provide tick (√) mark on the specific one answer that most closely relates to you.

Questionnaire Form

Patient's Identification
Date of interview:
Code number:
Name of participant:
ID no:
Address: Village: P.O: P.S: District:
Mobile no:

Part I - Socio demographic information		
QN	Question	Response
1.	How old are you?	<input type="checkbox"/> years
2.	Gender	<input type="checkbox"/> Male <input type="checkbox"/> Female
3.	Educational qualification	<input type="checkbox"/> Illiterate <input type="checkbox"/> Primary <input type="checkbox"/> Higher secondary <input type="checkbox"/> Honors <input type="checkbox"/> Masters
4.	Religion	<input type="checkbox"/> Islam, <input type="checkbox"/> Hindu <input type="checkbox"/> Christian <input type="checkbox"/> Buddha
5.	Height of the patient	<input type="checkbox"/>m
6.	Weight	<input type="checkbox"/>Kg
7.	BMI	<input type="checkbox"/>kg/m ²

Part II-Medical information		
QN	Question	Response
8.	Type of stroke based on MRI / CT Scan	<input type="checkbox"/> Ischemic stroke <input type="checkbox"/> Hemorrhagic stroke
9.	Do you have Hypertension before stroke?	<input type="checkbox"/> Yes <input type="checkbox"/> No
10.	Do you have Diabetes mellitus before stroke?	<input type="checkbox"/> Yes <input type="checkbox"/> No
11.	Blood pressure of current situation	<input type="checkbox"/>mm of Hg
12.	Any assistive device you are using for ambulation	<input type="checkbox"/> Yes <input type="checkbox"/> No
13.	Any history of fall experience during ambulation	<input type="checkbox"/> Yes <input type="checkbox"/> No

Pre-Test Score

Part- III Balance related information

Balance was measured by Berg balance scale

General instructions

Please document each task and/or give instruction as written. When scoring please record the lowest response category that applies for each item

QN	Question	Response
14.	Sitting to standing (Please stand up. Try not to use your hands for support)	<input type="checkbox"/> able to stand without using hand and stabilize independently=4 <input type="checkbox"/> able to stand independently using hands=3 <input type="checkbox"/> able to stand using hands after several tries=2 <input type="checkbox"/> need minimal aid to stand or stabilize=1 <input type="checkbox"/> needs moderate or maximal assist to stand=0
15.	Standing unsupported (Please stand for two minutes without holding)	<input type="checkbox"/> able to stand safely for 2 min=4 <input type="checkbox"/> able to stand 2 min with super vision=3 <input type="checkbox"/> able to stand 30 sec unsupported =2 <input type="checkbox"/> need several tries to stand 30 sec unsupported=1 <input type="checkbox"/> 0 unable to stand 30 sec=0 unsupported
16.	Sitting with back unsupported but feet supported on floor or on a tool (Please sit with arms folded for two minutes)	<input type="checkbox"/> able to sit safely and securely for 2 min=4 <input type="checkbox"/> able to sit 2 min under supervision=3 <input type="checkbox"/> able to sit 30 sec=2 <input type="checkbox"/> able to sit 10 sec=1 <input type="checkbox"/> unable to sit without support 10 sec=0

17.	<p>Standing to sitting (Please sit down)</p>	<input type="checkbox"/> sits safely with minimal use of hands=4 <input type="checkbox"/> control decent by using hand=3 <input type="checkbox"/> uses back of legs against chair to control decent=2 <input type="checkbox"/> sits independently but has=1 uncontrolled decent <input type="checkbox"/> needs assist to sit=0
18.	<p>Transfer (Arrange chairs for a pivot transfer. Ask subject to transfer one way toward a seat with armrests and one way toward a seat without armrests. You may use two chairs one with and one without armrests or bed and a chair)</p>	<input type="checkbox"/> able to transfer safely with minor use of hands=4 <input type="checkbox"/> able to transfer safely definite need of hands=3 <input type="checkbox"/> able to transfer with verbal cuing=2 <input type="checkbox"/> needs one person to assist=1 <input type="checkbox"/> needs two people to assist or supervised to be safe=0
19.	<p>Standing unsupported with eye closed (Please close your eyes and stand still for 10 seconds)</p>	<input type="checkbox"/> able to stand 10 sec safely=4 <input type="checkbox"/> able to stand 10 sec with supervision=3 <input type="checkbox"/> able to stand 3 sec=2 <input type="checkbox"/> unable to keep eyes closed 3 seconds but stays safely=1 <input type="checkbox"/> needs help to keep from falling=0
20.	<p>Standing unsupported with feet together (Place your feet together and stand without holding)</p>	<input type="checkbox"/> able to place feet together independently and stand 1 min safely=4 <input type="checkbox"/> able to place feet together independently and stand 1 min with supervision=3 <input type="checkbox"/> able to place feet together independently but unable to hold for 30 sec=2

		<input type="checkbox"/> needs help to attain position but able to stand 15 sec feet together=1 <input type="checkbox"/> 0needs help to attain position and unable to hold for 15 sec=0
21.	<p>Reaching forward with outstretched arm while standing</p> <p>(Lift arm to 90 degrees. Stretch on your fingers and reach forward as far as you can.</p> <p>Examiner places a ruler at end of fingers when arm is at 90 degrees. Fingers should not touch the ruler while reaching forward. The recorded measure is the distance forward that the finger reaches while the subject is in the most forward lean position. When possible ask subject to use both arms when reaching to avoid rotation of the trunk)</p>	<input type="checkbox"/> can reach forward confidently 25 cm=4 <input type="checkbox"/> can reach forward 12 cm=3 <input type="checkbox"/> can reach forward 5 cm =2 <input type="checkbox"/> reaches forward but needs supervision=1 <input type="checkbox"/> loses balance while trying external support=0
22.	<p>Pick up object from the floor from a standing position</p> <p>(Pick up the shoes/slipper which is placed in front of your feet)</p>	<input type="checkbox"/> able to pick up slipper safely and easily=4 <input type="checkbox"/> able to pick up slipper but needs supervision=3 <input type="checkbox"/> unable to pick up but reaches 2-5 cm=2 <input type="checkbox"/> unable to pick up and needs supervision while trying=1 <input type="checkbox"/> unable to try assist to keep from losing balance or falling=0
23.	<p>Turning to look behind over left and right</p> <p>shoulder while standing</p> <p>(Turn to look directly behind you over toward left shoulder. Repeat to the right. Examiner may pick</p>	<input type="checkbox"/> looks behind from both sides both sides and weight shifts well=4 <input type="checkbox"/> looks behind one side shows less weight shift=3 <input type="checkbox"/> turns sideways only but maintains

	up an object to look at directly behind the subject to encourage a better twist turn)	balance=2 <input type="checkbox"/> needs supervision when turning=1 <input type="checkbox"/> needs assist to keep from losing balance or falling=0
24.	Turn 360 degrees (Turn completely around a full circle in the other direction)	<input type="checkbox"/> able to turn 360 degrees in 4 sec or less=4 <input type="checkbox"/> able to turn 360 degrees safely on side only 4 sec=3 <input type="checkbox"/> able to turn 360 degrees safely but slowly=2 <input type="checkbox"/> needs close supervision or verbal cuing=1 <input type="checkbox"/> needs assistance while turning=0
25.	Place alternate foot on step or tool while standing unsupported (Place each foot alternately on the step/stool. Continue until each foot has touched the step/stool four times)	<input type="checkbox"/> able to stand independently And safely and complete 8 steps in 20 sec=4 <input type="checkbox"/> able to stand independently and complete 8 steps >20 sec=3 <input type="checkbox"/> able to complete 4 steps without aid with supervision=2 <input type="checkbox"/> able to complete > 2 steps needs minimal assist=1 <input type="checkbox"/> need assistance to keep from falling=0
26.	Standing unsupported one foot in front (Place one foot directly in front of the other. If you feel that you cannot place your foot directly in front, try to step far enough ahead that the heel of your forward foot is ahead of the toes of the other foot. To score 3	<input type="checkbox"/> able to place foot tandem independently and hold 30 sec=4 <input type="checkbox"/> able to place foot ahead independently and hold 30 sec=3 <input type="checkbox"/> able to take small step independently and hold 30 sec=2 <input type="checkbox"/> need help to step but can hold 15 sec=1

	points the length of the step should exceed the length of the other foot and the width of the stance should approximate the subjects normal stride width)	<input type="checkbox"/> loses balance while stepping or standing=0
27.	Standing on one leg (stand on one leg as long as you can without holding)	<input type="checkbox"/> able to lift independently and hold > 10 sec=4 <input type="checkbox"/> able to lift leg independently an hold 5-10 sec =3 <input type="checkbox"/> able to lift le independently and hold =or >3 sec=2 <input type="checkbox"/> tries to lift leg unable to hold 3 sec but remains standing independently=1 <input type="checkbox"/> unable to try or needs to prevent fall=0

Total score (maximum= 56 :.....)

Part IV Function related information.

Functional Independence was measured by Functional independent measurement scale by FIM scale.

Note: Leave no blanks. Enter 1 if patient is not testable due to risk.

No	Self-care	Score
28.	Eating	
29.	Grooming	
30.	Bathing	
31.	Dressing-upper body	
32.	Dressing-lower body	
33.	Toileting	
	Sphincter control	
34.	Bladder Management	
35.	Bowel Management	

	Transfer	
36.	Bed, Chair, Wheelchair	
37.	Toilet	
38.	Tub, Shower	
	Locomotion	
39.	Walk/wheelchair	
40.	Stairs	
	Motor subtotal score	
	Communication	
41.	Comprehension	
42.	Expression	
	Social cognition	
43.	Social interaction	
44.	Problem solving	
45.	Memory	
	Cognitive sub total score	
	Total FIM Score	

Interpretation

7 complete Independence	Timely, safely
6 modified Independence	Extra time, device
5 Supervision	100%
4 Minimal assist	75%
3 Moderate assist	50%
2 Maximal assist	25%
1 Total assist	Less than 25%

Part V Mobility related information.

Mobility was measured by Time Up and Go test (TUG)

General instruction:

Purpose - To assess mobility.

Equipment- Stopwatch

Direction- Patient wears their regular footwear and can use a walking aid. If needed. Begin by having the patient sit back in a standard and identify a line meters, or 10 feet away on the floor.

An adult who takes >12 seconds to complete the TUG is at risk for falling.

1. Instruct the patient

When I say “Go,” I want you to:

- Stand up from the chair.
- Walk to the line on the floor at your normal pace.
- Turn.
- Walk back to the chair at your normal pace.
- Sit down again.

2. On the word “Go,” begin timing.

3. Stop timing after patient sits back down.

4. Record Time

46. Time	<input type="checkbox"/>seconds
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Post test score

Part- III Balance related information

Balance was measured by Berg balance scale

General instructions

Please document each task and/or give instruction as written. When scoring please record the lowest response category that applies for each item

QN	Question	Response
14.	Sitting to standing (Please stand up. Try not to use your hands for support)	<input type="checkbox"/> able to stand without using hand and stabilize independently=4 <input type="checkbox"/> able to stand independently using hands=3 <input type="checkbox"/> able to stand using hands after several tries=2 <input type="checkbox"/> need minimal aid to stand or stabilize=1 <input type="checkbox"/> needs moderate or maximal assist to stand=0
15.	Standing unsupported (Please stand for two minutes without holding)	<input type="checkbox"/> able to stand safely for 2 min=4 <input type="checkbox"/> able to stand 2 min with super vision=3 <input type="checkbox"/> able to stand 30 sec unsupported =2 <input type="checkbox"/> need several tries to stand 30 sec unsupported=1 <input type="checkbox"/> 0 unable to stand 30 sec=0 unsupported
16.	Sitting with back unsupported but feet supported on floor or on a tool (Please sit with arms folded for two minutes)	<input type="checkbox"/> able to sit sfely and securely for 2 min=4 <input type="checkbox"/> able to sit 2 min under supervision=3 <input type="checkbox"/> able to sit 30 sec=2 <input type="checkbox"/> able to sit 10 sec=1 <input type="checkbox"/> unable to sit without support 10 sec=0

17.	<p>Standing to sitting (Please sit down)</p>	<input type="checkbox"/> sits safely with minimal use of hands=4 <input type="checkbox"/> control decent by using hand=3 <input type="checkbox"/> uses back of legs against chair to control decent=2 <input type="checkbox"/> sits independently but has=1 uncontrolled decent <input type="checkbox"/> needs assist to sit=0
18.	<p>Transfer (Arrange chairs for a pivot transfer. Ask subject to transfer one way toward a seat with armrests and one way toward a seat without armrests. You may use two chairs one with and one without armrests or bed and a chair)</p>	<input type="checkbox"/> able to transfer safely with minor use of hands=4 <input type="checkbox"/> able to transfer safely definite need of hands=3 <input type="checkbox"/> able to transfer with verbal cuing=2 <input type="checkbox"/> needs one person to assist=1 <input type="checkbox"/> needs two people to assist or supervised to be safe=0
19.	<p>Standing unsupported with eye closed (Please close your eyes and stand still for 10 seconds)</p>	<input type="checkbox"/> able to stand 10 sec safely=4 <input type="checkbox"/> able to stand 10 sec with supervision=3 <input type="checkbox"/> able to stand 3 sec=2 <input type="checkbox"/> unable to keep eyes closed 3 seconds but stays safely=1 <input type="checkbox"/> needs help to keep from falling=0
20.	<p>Standing unsupported with feet together (Place your feet together and stand without holding)</p>	<input type="checkbox"/> able to place feet together independently and stand 1 min safely=4 <input type="checkbox"/> able to place feet together independently and stand 1 min with supervision=3 <input type="checkbox"/> able to place feet together independently but unable to hold for 30 sec=2 <input type="checkbox"/> needs help to attain position but able to stand 15 sec feet together=1 <input type="checkbox"/> Oneeds help to attain position and unable to hold for 15 sec=0

21.	<p>Reaching forward with outstretched arm while standing</p> <p>(Lift arm to 90 degrees. Stretch on your fingers and reach forward as far as you can.</p> <p>Examiner places a ruler at end of fingers when arm is at 90 degrees. Fingers should not touch the ruler while reaching forward. The recorded measure is the distance forward that the finger reaches while the subject is in the most forward lean position. When possible ask subject to use both arms when reaching to avoid rotation of the trunk)</p>	<input type="checkbox"/> can reach forward confidently 25 cm=4 <input type="checkbox"/> can reach forward 12 cm=3 <input type="checkbox"/> can reach forward 5 cm =2 <input type="checkbox"/> reaches forward but needs supervision=1 <input type="checkbox"/> loses balance while trying external support=0
22.	<p>Pick up object from the floor from a standing position</p> <p>(Pick up the shoes/slipper which is placed in front of your feet)</p>	<input type="checkbox"/> able to pick up slipper safely and easily=4 <input type="checkbox"/> able to pick up slipper but needs supervision=3 <input type="checkbox"/> unable to pick up but reaches 2-5 cm=2 <input type="checkbox"/> unable to pick up and needs supervision while trying=1 <input type="checkbox"/> unable to try assist to keep from losing balance or falling=0
23.	<p>Turning to look behind over left and right shoulder while standing</p> <p>(Turn to look directly behind you over toward left shoulder. Repeat to the right. Examiner may pick up an object to look at directly behind the subject to encourage a better twist turn)</p>	<input type="checkbox"/> looks behind from both sides both sides and weight shifts well=4 <input type="checkbox"/> looks behind one side shows less weight shift=3 <input type="checkbox"/> turns sideways only but maintains balance=2 <input type="checkbox"/> needs supervision when turning=1 <input type="checkbox"/> needs assist to keep from losing balance

		or falling=0
24.	<p>Turn 360 degrees (Turn completely around a full circle in the other direction)</p>	<input type="checkbox"/> able to turn 360 degrees in 4 sec or less=4 <input type="checkbox"/> able to turn 360 degrees safely on side only 4 sec=3 <input type="checkbox"/> able to turn 360 degrees safely but slowly=2 <input type="checkbox"/> needs close supervision or verbal cuing=1 <input type="checkbox"/> needs assistance while turning=0
25.	<p>Place alternate foot on step or tool while standing unsupported (Place each foot alternately on the step/stool. Continue until each foot has touched the step/stool four times)</p>	<input type="checkbox"/> able to stand independently And safely and complete 8 steps in 20 sec=4 <input type="checkbox"/> able to stand independently and complete 8 steps >20 sec=3 <input type="checkbox"/> able to complete 4 steps without aid with supervision=2 <input type="checkbox"/> able to complete > 2 steps needs minimal assist=1 <input type="checkbox"/> need assistance to keep from falling=0
26.	<p>Standing unsupported one foot in front (Place one foot directly in front of the other. If you feel that you cannot place your foot directly in front, try to step far enough ahead that the heel of your forward foot is ahead of the toes of the other foot. To score 3 points the length of the step should exceed the length of the other foot and the width of the stance should approximate the subjects normal stride width)</p>	<input type="checkbox"/> able to place foot tandem independently and hold 30 sec=4 <input type="checkbox"/> able to place foot ahead independently and hold 30 sec=3 <input type="checkbox"/> able to take small step independently and hold 30 sec=2 <input type="checkbox"/> need help to step but can hold 15 sec=1 <input type="checkbox"/> loses balance while stepping or standing=0
27.	Standing on one leg	<input type="checkbox"/> able to lift independently and hold > 10

	(stand on one leg as long as you can without holding)	sec=4 <input type="checkbox"/> able to lift leg independently an hold 5-10 sec =3 <input type="checkbox"/> able to lift le independently and hold =or >3 sec=2 <input type="checkbox"/> tries to lift leg unable to hold 3 sec but remains standing independently=1 <input type="checkbox"/> unable to try or needs to prevent fall=0
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Total score (maximum= 56 :.....)

Part IV

Independence related information. Functional Independence was measured by Functional independent measurement scale by FIM scale.

Note: Leave no blanks. Enter 1 if patient is not testable due to risk.

No	Self-care	Score
28.	Eating	
29.	Grooming	
30.	Bathing	
31.	Dressing-upper body	
32.	Dressing-lower body	
33.	Toileting	
	Sphincter control	
34.	Bladder Management	
35.	Bowel Management	
	Transfer	

36.	Bed, Chair, Wheelchair	
37.	Toilet	
38.	Tub, Shower	
	Locomotion	
39.	Walk/wheelchair	
40.	Stairs	
	Motor subtotal score	
	Communication	
41.	Comprehension	
42.	Expression	
	Social cognition	
43.	Social interaction	
44.	Problem solving	
45.	Memory	
	Cognitive sub total score	
	Total FIM Score	

Interpretation

7 complete Independence	Timely, safely
6 modified Independence	Extra time, device
5 Supervision	100%
4 Minimal assist	75%
3 Moderate assist	50%
2 Maximal assist	25%
1 Total assist	Less than 25%

Part V-Mobility related information.

Mobility was measured by Time UP and Go Test (TUG)

General instruction:

Purpose - To assess mobility.

Equipment- Stopwatch

Direction-Patient wears their regular footwear and can use a walking aid. If needed. Begin by having the patient sit back in a standard and identify a line meters, or 10 feet away on the floor.

An adult who takes >12 seconds to complete the TUG is at risk for falling.

1. Instruct the patient

When I say “Go,” I want you to:

- Stand up from the chair.
- Walk to the line on the floor at your normal pace.
- Turn.
- Walk back to the chair at your normal pace.
- Sit down again.

2. On the word “Go,” begin timing.

3. Stop timing after patient sits back down.

4. Record Time.

46. Timeseconds
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Thanking you

Signature

Appendix- F

Treatment Protocol of Control Group



Centre for the Rehabilitation of the Paralyzed (CRP)

Department of Physiotherapy

CRP, P.O: CRP-Chapain, Savar, Dhaka-1343, Bangladesh
Tel: 880-2-7745464-5, Fax: 880-2-7745069, E-mail: contact@crp-bangladesh.org, Website: www.crp-bangladesh.org

Ref :

Date :

Protocol for stroke patients in Neurology unit, CRP, Savar

- Positioning.....mins
- Stabilization of the pelvic girdle, knees and shoulder girdle.....mins
- Sensory stimulation of U/L.....mins and L/L.....mins
- Proprioceptive exercise of U/L.....mins and L/L.....mins
- Transitional mvt practice.....mins
- CHOR practice.....mins
- Body schema exercise.....mins
- Scapular setting exercise.....mins
- Proximal stability exercise.....mins
- Selective mvt practice of U/L.....mins, L/L.....mins
- Midline orientation exercise.....mins
- Bobath trunk mob.....mins, pelvic girdle mob.....mins and shoulder girdle mob.....mins
- Bobath hand mob.....mins and foot mob.....mins
- Selective mvt practice/ Functional strn of U/L.....reps and L/L.....reps
- Functional activity training.....mins
- Core strn exercise.....reps.....
- STS practice.....reps
- Dynamic sitting / standing balance.....mins
- Stepping practice.....mins
- SPG / CPG practice.....mins
- Gait reeducation.....mins.....
- Stair up and stair down practice.....mins
- Gym activity: ET..... mins, SR..... mins, Cycling.....mins.
- others.....

Treatment session 45 minutes

Mohammad Anwar Hossain

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Physiotherapy, CRP

Farjana Sharmin Rumana

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As a donor to CRP you qualify for a tax rebate as the Government of Bangladesh have approved CRP as a Philanthropic Institution from February 2008*

Appendix- G

Treatment Protocol of Experimental Group

No	Exercise	Frequency dose	Duration
1.	Step ups	10 rep x 1set	3 days/week
2.	Balance beam	10 rep x 1set	3 days/week
3.	Kicking a ball	10 rep x 1set	3 days/week
4.	Stand up and walk	10 rep x 1set	3 days/week
5.	Obstacle course	10 rep x 1set	3 days/week
6.	Treadmill	5 minutes	3 days/week
7.	Walk and carry	10 rep x 1set	3 days/week
8.	Speed walk	10 rep x 1set	3 days/week
9.	Walk backwards	10 rep x 1set	3 days/week
10.	stairs	10 rep x 1set	3 days/week

Note: 1 minute rest between each item