

CIRCUMSTANCES AND CONSEQUENCES OF FALL AMONG PEOPLE WITH STROKE IN BANGLADESH



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March, 2015

*This thesis is submitted in total fulfillment of the requirements for the subject
RESEARCH 2 & 3 and partial fulfillment of the requirements for degree:*

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Acknowledgement

First of all, I would like to express my gratefulness to Almighty Allah to complete this dissertation in time. I would like to express my gratitude to my parents who constantly inspired me to carry out this study.

I would like to express my thanks to my honorable and praiseworthy supervisor Mir Hasan Shakil Mahmud, Lecturer in Occupational therapy, for his guidance, support and suggestion in every critical point of my study. I am also grateful to all my teacher of the Bangladesh Health Professions Institute (BHPI) for their support and guidance throughout the study. I am very much thankful to my classmates, Md. Shahriar Jahan, Md. Safayeter Rahman and Dipti Mondal for their inspiration and for helping me in different part of this study.

I also give special thanks to all of the participants to participate in this study and made this research successful. Thanks to all my friends for giving their direct and indirect inspiration. Finally, I want to dedicate my research to my honorable parents.

Abstract

Background: Stroke is a neurological condition that affects person's whole life. There have different types of consequences of stroke including fall.

Objectives: The study identifies prevalence of fall among people with stroke, circumstances of fall and consequences of fall among people with stroke in Bangladesh.

Methodology: The study conducted through quantitative study in cross-sectional design among 83 stroke survivor who were selected from occupational therapy outpatient and stroke rehabilitation unit of CRP (Savar and Mirpur). Participants were selected by using purposive sampling. Data were collected by conducting face to face interview and used a self-developed structured questionnaire.

Result and discussion: Among 83 participant 26.5% (n=22) were experienced fall. Older age person were more experience fall. From total faller patient, 36.4% were experienced fall at the time of stand up from bed, 22.7% were experienced fall at walking sleepy surface. 63.6% fall occurred at room and 18.2% fall occurred at road. Among faller patient, 40.9% (n=9) had an injury. Activity limitation occurred among 31.4% patient after fall. The rate of assistive device use is increasing among stroke survivor after fall. Before fall 59.1% faller patient used assistive device and after fall 81.8% faller patient used assistive device. After fall 31.8% faller patient seek medical attention.

Conclusion: The result of the study will be helpful to know about fall among stroke survivor in different circumstances. In Bangladesh, caregivers' are more supportive to stroke survivor and it leads to occur less fall among stroke survivors. Activity limitation occurs among faller patient. A faller patient with stroke get more support at functional performance and activity limitation cannot hamper their daily life.

Key word: *Stroke, fall, Circumstances of fall, Consequences of fall, Bangladesh.*

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List of Acronyms

CRP: Centre for the Rehabilitation of the paralysed

BHPI: Bangladesh Health Professions Institute

ADL: Activities of Daily Living

CVA: Cerebral Vascular Accident

WHO: World Health Organisation

SSC: Secondary School Certificate

HSC: Higher Secondary Certificate

NGO: Non-governmental Organisation

USA: United State of America

FMC: Faridpur Medical College

CHAPTER 1 INTRODUCTION

Bangladesh is a developing country situated in South Asia. The population of Bangladesh is nearly 160,000,000. In Bangladesh the prevalence of disability is 10% (Disability Information, 2011). Stroke is third common cause of death and major cause of disability among Bangladeshi people. In worldwide the position of Bangladesh is 84 for mortality due to stroke (Islam *et al.*, 2013). Stroke is a major concern and important issue in Bangladesh.

Stroke is a neurological condition which affects a normal well-being of a person. After stroke there have significant change in a patient's body. They have problem in different aspect such as trouble in walking, change in muscle tone, numbness, speech difficulty, poor balance, headache and visual problem (Ledbetter, 2010). Many patients have possibility of recurrent stroke, fall with serious injury, fall without injury, urinary tract infection, pressure sore, pain at different body part, confusion, anxiety and depression (Langhorne *et al.*, 2000). This type of change makes a patient physically and mentally weak. Fall is common event among patient with stroke due to this weakness. Fall have a great contribution to make change patient's body.

Fall is a usual and serious complication after stroke. The major cause of fall is poor muscle strength, balance, cognitive deficit and visual abnormality. Fall also occurs when patient are walking and transferring independently to regain their function (Harris *et al.*, 2005). Patient with stroke can experience fall in any time of their life, especially older aged patient. But most of the fall occurs at first two weeks of stroke. Among faller patient with stroke, first time fall can increase the probability to occur fall again. Depression is increasing day by day on patient's and caregiver's mind. The depression about fall on patient's mind is one of the major cause to occur fall. After the event of fall there is possibility to decrease social support of the patient (Czernuszenko and Czlonkowska, 2009). Patients feel more discomfort to perform any activities. Patient's behavior also has remarkable change to caregiver and family member.

In Bangladesh fall also occur among patient with stroke in any stage of their condition. Patient with stroke may also face different types of difficulties in their daily life. They are more anxious about stroke and fall. They have poor mental and

emotional control. The physical status may be a barrier to perform daily essential activity appropriately. Participation of all social activity may also decrease. Patient cannot fulfill their role as well as hampered their occupation. It is an important issue to conduct a study for providing better rehabilitation service among Bangladeshi people with stroke.

1.1. Background

Centre for the Rehabilitation of the Paralysed (CRP) is a non-profitable organisation in Bangladesh. At CRP, patients get occupational therapy, physiotherapy and speech and language therapy treatment for different neurological condition (CRP, 2010). Stroke is one of them. In the world, many people have experience to attack by stroke. According to World Health Organization (WHO) report (2013), every year 15,000,000 people are affected by stroke in world. In United State of America (USA), every year 795,000 people are affected by stroke. Those people have experienced of first time or recurrent affected by stroke (International Stroke Center, 2014). The rate of stroke in developing countries is higher than developed countries. In south Asian countries the rate of stroke among people is 47-417 per 100,000 (Kulshreshtha *et al.*, 2012). Every year the number of patients with stroke is increasing in the world. Bangladesh is no exception than other countries.

Stroke has major contribution for disability among Bangladeshi people. There have not adequate data about patient with stroke in Bangladesh but some hospital based study reported that prevalence of stroke is 0.3% (Islam *et al.*, 2013). After stroke, many patients can experience of fall. Stroke survivor experienced fall during different activity such as household activity, daily living activity, stair climbing, walking on road or sleepy surface etc. Fall has a great impact among stroke survivor (Schmid *et al.*, 2003).

Harris *et al.* (2005) described that balance is an important issue to occur fall. A patient with acute, sub-acute and chronic stroke faces problem in balance. A stroke survivor practice balance at treatment session and home. Stroke survivor with impaired balance also have deficit in gait. Patient with stroke can experience fall at walking time. Sensory deficiency in affected body parts also assist fall among patient with stroke.

Among the patients with stroke, many of them used different assistive devices such as cane, walker and wheelchair at the mobility time. Some person uses furniture, wall

and people as alternate of assistive device to prevent fall in moving time. Some are dependent on their caregiver for additional support to prevent fall. Sometimes it is seen that, person with stroke without any assistive device or any support, he/she may experience fall. The faller patients are worried about injury after fall and develop fear of falling in their mind. The fear has a great impact on function and independence of a patient (Schmid and Rittman, 2009). After fall a person with stroke may depend to caregiver in different way. They face difficulty to do their activity due to their poor body status. They are more nervous and afraid about fall. It may another cause for patient to decrease their participation and increase dependency. They may not communicate with other people because they are socially isolated.

Researcher observed and provided treatment to patient with stroke at outpatient unit of CRP during the 2nd year clinical placement. Among those, many patients had fear of fall at transferring and walking time. Some patient had experience of falling, some had poor balance and confidence. Visual problem might be another reason for fall. Fall may occur among patient with stroke at home because of poor transferring skills of caregiver. It is burden for caregiver to take care a patient full time. There is insufficiency of study about fall among patient with stroke in Bangladesh. It is very important issue to conduct the study about circumstances and consequences of fall.

1.2. Significance

Patients are stay at high risk of fall after stroke. After fall a small number of patients are injured (Czernuszenko and Czlonkowska, 2009). Fall and fall related injury are related with participation restriction in daily living activities and decreased to engage in social activity. It is determine that there have close relationship between fall and loss of function (Schmid *et al.*, 2013). The most common risk factors of fall for a patient with stroke is performing activities of daily living (ADL). A faller patient is more dependent rather than a non-faller patient in ADL (Weerdesteyn *et al.*, 2008). Patient may more dependent to their caregiver for performing self-care activity. It is very important issue for Bangladeshi people with stroke. The results of this study unfold about the major risk of daily living activities for patient with stroke that fall occurs.

The aim of occupational therapy is to facilitate activity performance by developing performance skills. Therapists educated patient with stroke about how to regain lost

performance and compensatory technique. The main focus of occupational therapy treatment is train of self-care, productivity and leisure activities. Occupational therapist also educates and shares information about patient's condition to family and caregivers (Steultjens *et al.*, 2003). There is no exception in Bangladeshi occupational therapists. The result of study will be helpful for occupational therapist to prepare appropriate treatment plan and provide better intervention. Therapist will be provided information and education to client and caregiver about fall and consequence of fall.

Caregiver is very important for a patient with stroke after fall. Many patients are depending on their caregiver to perform activity. Patients are reliance on caregiver like as additional strategy to minimize fall (Schmid and Rittman, 2009). Caregiver have important role to take care a patient with stroke at home. Bangladeshi caregivers are not well known about post stroke fall. They also not have clear idea about circumstances and consequences of fall. This study will be beneficial for client and caregiver. The result of study will be unfolded about prevalence, common period of fall, place of fall and complication after fall among Bangladeshi patient with stroke. This study will help to create more awareness among patients and caregivers about fall and consequences of fall.

Researcher felt very much interest in this area, as a student of occupational therapy. It will be hope that further resource will be develop in this area after completing this study. Other health care professionals will gather more knowledge about fall among patient with stroke. The results of study will help to ensure a successful rehabilitation program.

1.3. Aim

To identify the circumstances and consequences of fall of people with stroke in Bangladesh

1.4. Objectives

1. To find out prevalence of fall after stroke.
2. To identify the circumstances associated with fall of people with stroke.
3. To identify the consequence of falling of people with stroke

CHAPTER 2 LITERATURE REVIEW

2.1. Stroke

People can be affected by stroke in any age. Stroke may occur as a result of loss of blood circulation in brain. Stroke has a major contribution to increase disabilities in the world. Stroke occurs in every half second to a person in world. Every year approximately 5 million people achieve disability by stroke in the world (Rosamond *et al.*, 2008). Bangladesh is no exception of them. In Bangladesh, the number of stroke is increasing day by day.

World Health Organization (2014) defines stroke as- *“A stroke or Cerebral vascular accident (CVA) is caused by the interruption of the blood supply to the brain usually because a blood vessel bursts or is blocked by a clot. This cuts off the supply of oxygen and nutrients causing damage to the brain tissue. The most common symptom of a stroke is sudden weakness or numbness of the face, arm or leg, most often on side of the body. Other symptoms include: confusion, difficulty speaking or understanding speech, difficulty seeing with one or both eyes, difficulty walking, dizziness, loss of balance or coordination, severe headache with no known cause, fainting or unconsciousness”*.

Stroke causes damage to the brain. The total body function including motor function is maintained by brain. Body functions and motor function become impaired due to stroke. Patient's ability to perform ADL's also becomes impaired after stroke. Patient also experiences fall after stroke due to motor and balance deficit. This study will find the circumstances and consequences of fall among people with different types of stroke in Bangladesh.

2.2. Types of stroke

There are mainly 2 types of stroke. Those are: Hemorrhagic and Ischemic stroke.

2.2.1. Hemorrhagic stroke

Atchison and Dirette (2012) described that hemorrhagic strokes occur by breaking or rupturing blood vessel and bleeding into or nearby brain tissue. The rate of hemorrhagic stroke is nearly 20% of total stroke. There are two types of hemorrhagic strokes. Those are: intra cerebral hemorrhage and subarachnoid hemorrhage. The directly bleeding in brain is intra cerebral hemorrhage. A subarachnoid hemorrhage

happens when blood pressure increase in artery and bleeding occurs at soft membrane of brain. Fatality rate of hemorrhagic stroke is severe than ischemic stroke but the recovery rate is better than ischemic stroke. Young people are more faces hemorrhagic stroke. Patient with hemorrhagic stroke are less experience to fall (Harris *et al.*, 2005).

2.2.2. Ischemic stroke

Atchison and Dirette (2012) mentioned that, ischemic stroke is most common types of stroke. Approximately 80% of strokes are ischemic stroke. This type of strokes occurs due to blood clotting at blood vessel. Inadequate blood supply in any part of the brain is responsible for occurring brain tissue death or ischemia. Three types of ischemic stroke are thrombotic, lacunar and embolic stroke. Cerebral thrombosis happens at one blood vessel of brain and blood flow hampered. Lacunar stroke occur when a small branch of great cerebral arteries is blocked. Prognosis is not so good in lacunar stroke. Patients with lacunar stroke have experienced abnormality in movement or sensation. Cerebral embolism refers to a clot has formed in a location of brain artery. The clot circulates through artery and blocks the artery. The prognosis is not so good in ischemic stroke. Patient also experiences weakness in body part, abnormalities in movement. Harris *et al.* (2005) found that gait difficulties and poor balance are lead to occur fall in a patient with stroke. Patients with ischemic stroke are experience more fall. On the other side older person are affected by ischemic stroke (Atchison and Dirette, 2012). A study said that older age person with stroke are more experienced fall (Ugur *et al.*, 2000). A hospital based study in Bangladesh found that 60% of patients are suffered from ischemic stroke. Most of the patients age range 50-70 years (Hossain *et al.*, 2011). Bangladeshi patient with stroke also have greater chance to fall.

All types of stroke may have some impact in survivor's body and some changes occur among patient's body for consequence of stroke.

2.3. Consequences of stroke

Stroke affects the person's whole life, the changes depends on location of obstruction and extend of brain tissue affected. Sensory, motor, perceptual, and cognitive deficit can occur among patient body. In sensory disorder include tactile, position sense or proprioception, object identification or stereognosis and auditory. In perceptual

disorder include inability to define right position of body or body scheme disorders, tactile perception, deficit in motor plan or apraxia, unilateral neglect, inability to attend visually element in environment or problem in visual attention, inability to recognize the relationship between one form and self in spatial area or problem in spatial relationships, figure ground perception, vertical visual perception and inability to recognize familiar object from environment or agnosia. Patient also has cognitive dysfunction. In cognitive dysfunction includes problem in memory, judgment, abstract thinking, maintain sequence and problem solving. A patient with stroke faces different physical complications such as weakness of body part, numbness, change in muscle strength and tone (Pedretti, 2103). Post-stroke movement disorder, impaired sensation and cognitive deficit are facilitated fall among people with stroke (Schmid and Rittman, 2009). From the practical experience of researcher at CRP, it had been founded that some of patient with stroke had faced fall and some had chance of fall due to fear of fall and fall risk in home environment.

2.4. Fall

Fall is a serious medical complication among patient with stroke. According to WHO “A *fall is an event which results in a person coming to rest inadvertently on the ground or floor or other lower level*” (World Health Organization, 2014). “*Suddenly go down onto the ground or towards the ground without intending to or by accident is called fall*” (Cambridge Dictionaries Online, 2014). Falls also defined as involuntary coming to rest on the ground surface, base or lower than knee level due to abnormality of balance. Fall may occur at any time after stroke (Simpson and Miller, 2011).

Two factors are responsible for occurring fall. Those are: intrinsic and extrinsic factor. In intrinsic factor including physiologic origin and extrinsic factor come from environmental threat. Physiologic origin of fall means poor health status, poor muscle strength etc. and environmental factor means uneven and sleepy surface, threshold at door. Patient who has a fall can contribute to the further fall and injury (Currie, 2009). Fall can occur in different time and different situation among patient with stroke.

2.5. Circumstances of fall

Fall can occur in many ways. Many patients with stroke experience fall at different circumstance. Schmid *et al.*, (2013) found that patient's self-care and productivity could reduce after stroke. They experienced fall while performing ADLs such as toileting, bathing, gardening, community mobility such as going to bank, general store, getting in and out from car due to poor body status. Some were experienced fall at the time of movement such as walking, going outside of home and going up and down stair, tripping or slipping on a surface due to abnormality of gait, poor body status and muscular weakness. Sleepy surface and road occur at rainy season and it is another responsible factor for occurring fall. That study also found that most of the falls (70%) occur at inside of home.

Fall mainly occurs during day time particularly in 38% of fall occurs at morning and 32% occurs at afternoon (Mackintosh *et al.*, 2005). Insufficiency of light is responsible reason to occur fall at room, bathroom, kitchen or toilet. Patient cannot understand about the location and the distance of object. A large number of falls occur when a patient walks and transfers from one place to another place. In transfer including bed to chair, wheelchair, rickshaw and other vehicle transfer. Patient and caregiver were not skillful about transferring. Sickness and poor attention of patient and caregiver at the time of transfer is another cause of fall. Sometime fall occur as a result of dizziness, taking alcohol, not use assistive device at the time of practices walking and exercise at home. Fall occurs among community people with stroke at the time of transfer. Patient cannot control themselves when a patient have cognitive deficit (Weerdesteyn *et al.*, 2008). In Bangladesh a hospital based study found that 46% of total patient with stroke were lived in village (Hossian *et al.*, 2011). The Bangladeshi rural people with stroke also have a chance to face fall at different time.

Karse *et al.* (2008) showed that Patient with stroke can experience fall one or more than one time. From total 407 faller patient with stroke, 196 had experience to fall one time and 43 were experienced fall more than 5 times. Most of the patients (77%) experiences fall at home. In Bangladesh there is no accurate data about circumstances of fall among individual with stroke. Therefore it is difficult to know and estimate the total number of person with stroke. There have many changes among patient's body for consequence of fall.

2.6. Consequences of fall

Schmid and Rittman (2009) found that fall is common in post stroke stage of a patient. Fall occurs in both hospital and home. Among 132 participant 42 participant explain their experience about post stroke fall during 6 month of fall at home. The result of study showed that fall were a common issue among patient with stroke. The subsequent consequences of post stroke falls categorized three main themes: limiting activity participation, increase dependency and developing a fear of falling. A patient faces fall and develops a fear in their mind about next time fall. Patient cannot participate to all activity even their essential activity due to fear of fall. They can perform activity with support of their caregiver. Ultimately the dependency to caregiver among patient with stroke is increase. Stroke survivor cannot go out without caregiver and they are easily isolated from society. In Bangladeshi perspective patient with stroke does not want to perform activity independently. Researcher observed a faller patient with stroke and found that patient had fear of fall when transferring from bed to wheelchair and had less interest to engage in activity. Patient had less interest in activity due experience of injury in her body part.

Many patients get injury in their body part after fall. After fall among 53 patients with stroke 38 are experienced to injury. They experience different types of injury such as fracture, sore, twist, bruise, strain, sprain, and cut their body part. Patients need emergency medical intervention due to injury of their head, hip, upper limb and other complications. Many patients could not take treatment after fall. It is help to develop another physical complication in patients body (Schmid *et al.*, 2013). In other study said that among 407 faller patients with stroke, one third of faller reported receiving medical treatment after fall and 31 survivors had a fracture (Karse *et al.*, 2008). Bangladeshi patients with stroke also chance to injury. After injury not all patient take medical treatment. Ultimately it reduced their physical capacity. It leads a patient to increase dependency and hampers their functional outcome (Weerdesteyn *et al.*, 2008).

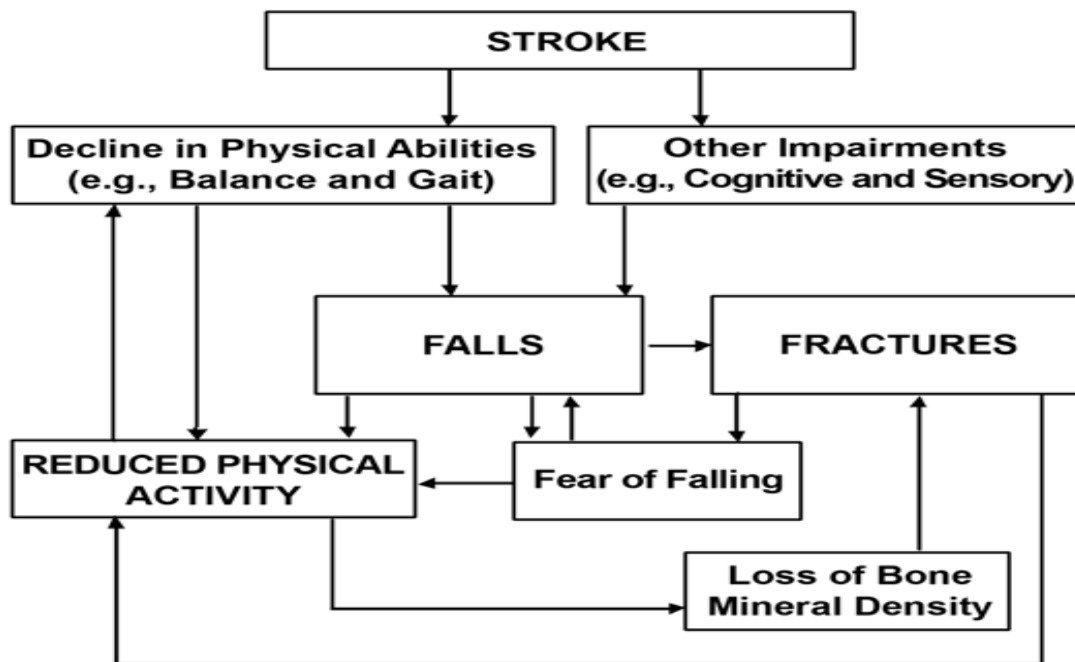


Figure 1: Circumstances and consequences of fall. (Weerdesteyn *et al.*, 2008).

2.7. Risk factors of fall

- Sex: Male patient with stroke are more experience fall than female (Czernuszenko and Czlonkowska, 2009).
- Age: Fall can occur in any age of a patient. Maximum fall occur among patient with older age. 38% fall occurs in 50-60 age range patient and 34% fall occur among patient with 61-70 years (Czernuszenko and Czlonkowska, 2009).
- Ischemic stroke: Patients with ischemic stroke are more vulnerable to occur fall. The body status of ischemic stroke less strong than hemorrhagic stroke. Patients with hemorrhagic stroke get more improvement than ischemic stroke after taking some treatment session (Weerdesteyn *et al.*, 2008).
- Visual impairment: Stroke survivors have visual field deficit, glaucoma and impaired depth perception. Stroke survivors with visual impairment have experienced fall at stair climbing and unfamiliar settings at outside of home due to poor depth perception, poor figure ground perception, visual attention and homonymous hemianopsia (Weerdesteyn *et al.*, 2008).
- Sensory deficit: Patients with stroke has a chance to sensory deficiency. In sensory deficiency include tactile, pressure, temperature, vibration and

proprioception disturbance in patient's body (Pedretti, 2103). A stroke survivor with sensory deficit has a risk of fall (Weerdesteyn *et al.*, 2008).

- Hemiplegia: Unilateral stroke are more vulnerable to fall. The rate of fall left side and right side hemiplegia are more than bilateral stroke. In hemiplegia, left side hemiplegia is more vulnerable to occur fall among stroke survivors (Czernuszenko and Czlonkowska, 2009).
- Aphasia: A complication of stroke is aphasia. Aphasia interfere a person's ability to express and understand verbal and written language. A stroke survivor with aphasia has difficulty to express and understand language to others and in his environment. Patients with aphasia cannot express their problem and difficulties to other person and it lead to fall among patient (Czernuszenko and Czlonkowska, 2009).
- Poor balance: Poor balance among patients with stroke is a major risk of fall. Stroke survivors experience fall at the time of balance practice at home or hospital (Czernuszenko and Czlonkowska, 2009).
- Previous fall: Patients with stroke who experienced fall in previous time has a risk of fall (Czernuszenko and Czlonkowska, 2009).
- Recurrent stroke: A stroke leads a patient to occur again stroke (Tsur and Segal, 2010).
- Fear of fall: Fear of fall arise among stroke survivors mind. Patient stays at risk of fall due to fear of fall (Weerdesteyn *et al.*, 2008).
- Medication: Hypoglycemic, sedative, antihypertensive, antipsychotic medication user patients are more vulnerable to fall. Many stroke survivors use those types of medication. Those medication influence central nervous system. The nervous system controls our total body function. There have some side effect of this medication and fall rate increase among users (Tsur and Segal, 2010).
- Muscle tone: After stroke a change occur in muscle tone of affected side of patient's body. Patients with spastic or flaccid tone can experience fall. Most of the falls occur among stroke survivors with flaccid muscle tone and lesser amount of fall occur among stroke survivors with spastic tone (Tsur and Segal, 2010).

- Impaired cognition: Cognitive deficit is associated with increasing fall risk. In cognitive deficit include impaired in short term and long term memory. Patients with stroke who have cognitive deficit can faces difficulty to recall the object place in environment. Stroke survivors with cognitive deficit have risk to fall at home, new environment or other place (Tsur and Segal, 2010).

2.8. Bangladesh

Bangladesh is a developing country situated in South Asia. The population of Bangladesh is approximately 160,000,000. Most of the Bangladeshi people live in rural area (Islam *et al.*, 2013). Among them 10% people are living with disability. For this reason disability is an important issue in Bangladesh (Hossain *et al.*, 2011). There are different types of disability present in Bangladesh. People with disabilities are get opportunity to access in education and job. In Bangladesh, government job and educational sector have a quota system for people with disability. Female people with disability discriminate than male for any opportunity. Some non-government organisation works to rehabilitate people with disability. Awareness raising program also conduct by different organization in community level (Titumir and Hossain, 2005). People with disability face difficulty in marriage, daily life, educational settings and job sector. Disability exposes there individual, social and family life. Maximum society people are looked negatively to people with disabilities. Female with disabilities face more negative situation and as a result some psychological complication arise among their mind. There have some wrong ideas about the causes of disability. Many people belief that stroke is the result of curse (Hossain, Atkinson and Underwood, 2002).

Stroke is one of the important causes of disability in Bangladesh. Most of the patients with stroke were male. Most of them were older age and the age ranges between 51-70 years (Hossain *et al.*, 2011). It is great chance to occur fall among those stroke survivor.

Maximum patient with stroke are living in rural area (Hossain *et al.*, 2011). They have not clear idea about disability, stroke and circumstances of fall after stroke. The most of the specialized hospital and stroke rehabilitation center are situated in urban area. Maximum time rural people cannot reach acute care after stroke due to long distance of hospital. They also not get proper intervention after fall at all time. At the time of

community based rehabilitation placement, researcher explored that accessibility was not maintained in maximum rural house. Uneven surface, muddy and sleepy road are common in rainy season. It is a threat for increasing fall rate among Bangladeshi patient with stroke.

2.9. Occupational therapy role in fall

Rehabilitation is a most effective way to minimize functional limitation among people with stroke. Occupational therapists work with patient as a member of rehabilitation team. Occupational therapy is a client-centered profession and occupational therapists provide purposeful activity to patient for improving patient condition. Remediation is not possible for all patients that time occupational therapists use compensatory strategies to facilitate independence (Govender and Kalra, 2007).

Occupational therapist has played important role to a patient with stroke after fall. Safety is first priority to a patient with stroke. In home environment, fall can occur due to slippery floor, not adjusted bed height, intakes psychotropic drug, not use appropriate transferring technique among caregiver (Tsur and Segal, 2010). Carefully perform activity and accessibility in home environment is responsible to minimize fall.

Occupational therapists help to minimize fall among patient with stroke by ensuring accessible home environment for patient with stroke. They give advice about adjust to bed height, add a handrail beside bed, accessibility in home include remove threshold at door, remove uneven surface at house, make a ramp, add a handrail on both side of stair and accessible toilet for patient with stroke (Toto, 2012). Therapists prevent not only fall but also work with patients.

Occupational therapists provide treatment to a patient with stroke after fall in such way:

- *Daily living activity practice*: Occupational therapists engage a patient to perform self-care, productivity and leisure activity in treatment session. Patient's involvement in activity decrease due to fall. A patient practice daily living activity in treatment session and increase their participation in all activity (Verheyden *et al.*, 2013).

- *Functional practice*: Therapist engage patient to functional walking, up and down to stair, dynamic sitting and standing balance to improve balance and walking ability. Occupational therapist used Functional Electrical Stimulation to practice functional range of motion and engage in functional activity. This activity is helpful to minimize fall among stroke survivor (Verheyden *et al.*, 2013).
- *Exercise*: Therapist engage patient to endurance improving exercise, strengthening exercise, flexibility exercise such as yoga, resistive exercise, normalize muscle tone to improve body status. These exercise help to improve body status and minimize fall rate among people with stroke (Verheyden *et al.*, 2013).
- *Assistive device*: Occupational therapists prescribe different types of assistive device for faller patient to reduce fall rate. In assistive device include walking stick, walker, wheelchair etc. Occupational therapists also took measurement of assistive device and give training about the using procedure to patient (Verheyden *et al.*, 2013).
- *Social skills training*: A stroke survivor has problem in social skills. After fall stroke survivor also have problem in social skills. Occupational therapists work with patients with stroke who have problem in social skills (Verheyden *et al.*, 2013).
- *Cognitive therapy*: Patients with stroke experience fall at new environment and poor memory. Therapists provide memory training by engaging different activity. In memory training activity include patient's actual home environment, location of home, internal environment such as location of bed at room, location of toilet, kitchen. Therapist practice recalling about the location of his house. Therapists also work with patient to improve attention in activity. The fall will minimize among patient with stroke who have cognitive deficit by engaging cognitive therapy (Govender and Kalra, 2007).
- *Transferring practice*: Patients with stroke experience fall at the time of transferring. Caregivers of patient were not skillful about transfer a patient. Therapists ensure safe transferring for patient with stroke to minimize fall at transfer time. Patients with stroke and caregiver practice transferring by the supervision of and occupational therapist. Therapist explains about the safe transferring technique to patient and caregiver (Govender and Kalra, 2007).

- *Education:* Therapists educate patient about joint protection, energy conservation and work simplification technique. In joint protection technique include use large joint or both hand to perform activity. There also some way to perform activity easily and safely in energy conservation technique and work simplification technique (Govender and Kalra, 2007).
- *Advice to patient:* Patients must avoid psychiatric medicine and other medicine that stimulate central nervous system. That types of medicine lead to occur fall. Therapist advice patient to avoid psychiatric drug to minimize fall (Govender and Kalra, 2007).

Occupational therapists work to minimize fall rate among patient with stroke and ensure functional independence as much as possible.

METHODOLOGY

3.1. Study design

In this study, researcher used quantitative research design. In quantitative methods, researcher collected data by using a specific questionnaire and a particular way (Shaughnessy, Zechmeister and Zechmeister, 2003). The study is non-experimental cross-sectional survey research design. Researcher used this method to fulfill the aim and objectives of the study. The aim of this study is to identify the circumstances and consequences of fall of people with stroke in Bangladesh.

The researcher chose the design as the way of using large numbers of participant and then collecting data accurately. The cross-sectional method was best suited method for this study. The cross sectional study design allow to describe different characteristics of participant and compare among them (Shaughnessy, Zechmeister and Zechmeister, 2003). Cross-sectional studies are present a situation over a short period of time. This types study usually conducts to find out the prevalence of a case from sample. Prevalence means the number of case among total population in a time (Levin, 2006). In this study design researcher collected information about the status of fall among Bangladeshi stroke survivor.

The information collected through asking question and answer to these questions by participant. Data were collected one time from a participant by using a survey questionnaire. In this study, researcher investigated the relationship between demographic factor and fall among stroke survivor. Cross sectional studies are useful to recognize the association among variable of questionnaire (Mann, 2003). For this reason, researcher used cross-sectional methods for his study.

3.2. Sampling procedure

3.2.1. Sampling

Sampling is approached more systematically in relation to the specific aims, purposes or hypothesis of the research. Sampling design is part of the decision-making process in research (French, Reynolds and Swain, 2001). Sampling is important part of a survey research. The study population was Bangladeshi patient with stroke who was receiving treatment form CRP. Researcher was choosing purposive sampling as a tool of data collection in this study. The researcher was selecting 83 stroke survivors as

sample of study by using purposive sampling. Purposive sampling is a non-random sampling technique. The purposive sampling can use on survey based research. In this types of sampling, sample know about the purpose of study and provide information about question from their knowledge. Purposive sampling was more appropriate than random sampling. Researcher used purposive sampling to get more accurate data from participant. Researcher collected data from patient with stroke on the base of inclusion and exclusion criteria (Tongo, 2007). Researcher collected data from only stroke survivor and have no other condition as a result other condition was not interpret the result. Researcher selected purposive sampling for this reason.

After purposive sampling, researcher used quota sampling to take male and female ratio. Islam et al. 2013 found that, the ratio of male and female patient with stroke in Bangladesh was 1.003:1. Male or female stroke survivor have chance to fall. A study report that among 131 faller patient with stroke, 70 was male and 61 was female (Ugur *et al.*, 2000). According to in-charge of occupational therapy outpatient unit, the ratio of male and female stroke survivor in CRP savar was 2:1 in last year. Researcher selected approximately 65% male and 35% female sample for conducting the study. The researcher set a quota depending on population characteristics and used this sampling method.

3.2.2. Sample size selection

Sample size estimated according to following criteria: 50% prevalence of patient with stroke because researcher has not accurate data about the prevalence of stroke in Bangladesh. The confidence interval was 95% and 5% error level. The formulation of sample size determination: $(n) = z^2 \times p \times q / r^2$. Here,

$z = 1.96$ (confidence interval 95%)

$r = 0.05$ (error level 5%)

$p = 0.5$ (50% prevalence)

$q = (1 - 0.5) = 0.5$ (1-p)

The total sample required 383 to conduct study. But researcher selected 83 people to conduct the study due to limited time for this study. The participants selected based on inclusion and exclusion criteria.

3.3. Inclusion criteria

- Both acute and chronic patient with stroke were selected for the study. Patient with stroke in acute and chronic stage have possibility to fall (Schmid and Rittman, 2009).
- Unilateral and bilateral stroke survivors were participated in this study. In a patient with unilateral and bilateral stroke had possibility of falling due to problem in balance, movement, speech, memory, anxiety, depression, depth perception, identify size and position of object (Stroke Association, n.d.).
- Caregiver and patient could participate in this study. Patient could give all information about fall so patient's participation was important in this study. Caregiver who was well known about patient's condition. If the patient had speech difficulty and cognitive deficit than care giver could participate (Stroke Association, n.d.).

3.4. Exclusion criteria

- Stroke survivor with parkinson's disease and other neurological condition were exclude from study. Stroke survivor with parkinson's disease had a possibility to experience fall (Gracia *et al.*, 2013). Parkinson's disease patient also experienced fall and researcher excluded those patient due to collect accurate data about fall only cause of stroke.

3.5. Variable identification

3.5.1. Dependent Variable

Circumstances and consequences of fall measured by self-developed questionnaire. In questionnaire have some dependent variable. The dependent variable in questionnaire was floor surface of the patient's house, number of fall, injury due to fall, types of injury, activity limitation due to fall, seek medical intervention after fall and use any assistive device.

3.5.2. Independent Variable

The independent variable in this questionnaire was: age, sex, occupation, marital status, education level, care giver, accessible road at entrance in the house, types of stroke, affected body part, place of occurring fall, time of fall, any injury after fall and use any assistive device.

3.6. Study settings

CRP is a Non-government Organisation (NGO) and work for rehabilitation in Bangladesh. Patient with stroke got proper treatment and rehabilitation service from CRP. In CRP-Savar and CRP-Mirpur there has an Occupational Therapy outpatient unit and stroke rehabilitation unit which deliver treatment for stroke survivors (CRP, 2014). The study conducted in occupational therapy outpatient unit and stroke rehabilitation unit of CRP-Savar and CRP-Mirpur.

3.7. Informed consent

The researcher used an information sheet and consent form both in English and Bengali to take the participant's consent {APPENDIX-3 English} and {APPENDIX-4 Bengali}. Researcher clarified about consent form to participant in the study. Researcher also ensured that it would not cause any harm to take treatment for participant and in future they would not benefited from this study. Researcher explained to the participants about the data collection process and make sure about maintain confidentiality about their identity in this study. Data not shared to other person except research supervisor who was coordinating this study. All participants were well-known about the aim and objectives of the study. Participant did not get any money due to participate in this study. Participants had rights to leave the study when he/she wants. Researcher informed to participant that all participants participated willingly after knowing about this study. Researcher took permission from every single participant with signature/thumb impression on a written consent form. The witness also gave signature or finger print in every information sheet and consent form.

3.8. Field test of questionnaire

Researcher accomplished the field test with the participants before starting the collection of data. Researcher developed a questionnaire for collecting data about circumstances and consequences of fall among stroke survivors. The questionnaire was developed by reviewing literature about circumstances and consequences of fall in other countries and Bangladeshi perspective. The researcher had informed the participants about the aim and objectives of the study. Field test was a preparation of starting final data collection. It helped to make a plan that how the data collection procedure can be carried out, difficulties during questioning, appropriate wording, easiness of understanding and need any change in questionnaire. Researcher collected

information about stroke and fall from two stroke survivor as field test of questionnaire. The questionnaire was easy to understand for patient with stroke.

3.9. Ethical consideration

Ethical considerations implemented to avoid ethical problem. The researcher granted permission from research supervisor and head of department of Occupational Therapy of Bangladesh Health Professions Institute (BHPI), an academic institute of CRP to conduct the study. Researcher got permission from head of Occupational Therapy department in both CRP-Savar and CRP-Mirpur for data collection. Information sheet and consent form provided to each participant. Study purpose, aim and objectives were clearly describe in information sheet and consent form. Researcher informed verbally about the topic and purpose of the study to participant. The researcher assured them that confidentiality of personal information must strictly maintain in future. The researcher ensured that the service of patient will not be hampered by participants in this study. Participant had full right to withdraw their participation from this study at any time. The researcher also committed not to share the information given with others except the research supervisor. A written information sheet and consent form signed by each participant who participated in the study. The information gathered from the participants anonymously. The researcher had available to answer any study related questions or inquiries from the participants. All sources cited and acknowledged appropriately. The field notes and answer sheet not shared or discussed with others.

3.10. Data collection instrument

Questionnaire: A self-developed questionnaire used for collecting data from participant. In questionnaire include demographic questionnaire such as age, sex, occupation, education, marital status, accessibilities and home environment. There have important question about stroke and fall include affected part of body, types of stroke, any experience of fall in last two years, time and place of fall, any activity limitation after fall, fear of fall present or not, assistive device use or not, any types of medical intervention needs after stroke.

- Paper
- Pen and pencil
- Consent form

- Information sheet

3.11. Data collection

3.11.1. Data collection technique

The researcher fixed a date and time with the participant, according to his available time. At first, the researcher informed the participants about the contents of the consent form. Data collector collected data from those participants who gave consent. A structured questionnaire developed by reviewing result of some literature that was related to stroke and fall in different countries. Then the questionnaire compared with perspective of Bangladeshi culture and situation. By using that questionnaire researcher got information about prevalence of fall among stroke patient, the details about occurring fall and the ultimate result of occurring fall. In a face to face interview, participant can give information accurately and get clarification about any unclear question (Shaughnessy, Zechmeister and Zechmeister, 2003). Researcher collected data through face to face interview process in this study.

3.11.2. Data collection procedure

At first the researcher will take permission from the head of the department of Occupational Therapy in CRP-Savar and CRP-Mirpur to collect data from outpatient unit and Stroke Rehab Unit. Researcher reviewed the schedule of patients with stroke from unit in-charge and then makes a daily potential participant list to check the inclusion criteria. Before collecting data, researcher provided information sheets and consent forms to participant. Participant got opportunity to ask questions and they signed the consent form after being satisfied. Then the researcher collected the data through a questionnaire from the participants by a face to face conversation. Through this process researcher asked question and filled up questionnaire or participant completed questionnaire. The interviewer helped the interviewee by changing some word of same meaning to understand the questionnaire and when participant confused in some answer (Shaughnessy, Zechmeister and Zechmeister, 2003).

3.12. Data analysis

Data was analysed through descriptive statistical analysis (percentage) and it presented by using table, figure, bar and pie chart. Data entry and analysis performed by using version 17 of Statistical Package for Social Science (SPSS). The presentation of data organised in SPSS and in Microsoft Office Word. All data were input within

the variable of SPSS and analysed data in SPSS. Microsoft word excel used to present data using column, bar, and pie chart.

3.13. Rigor

The researcher conducted in a rigor manner. All of the steps in the researcher process supervised by an experienced supervisor. During the interview and analysis of data, researcher not tried to influence the process by his biases, value or own perspectives. During the interview the researcher interrupted the participants during answering questions. Similarly during data analysis, researcher submitted according to own perspectives. Data were collected carefully and researcher accepted the answers of participant whether negative or positive without giving them any impression. The researcher checked all data for avoiding mistake any information. Notes were handled with confidentiality. In the result section, the researcher did not influence the outcome by showing any personal interpretation.

RESULT

This section provides statistical analysis in a systematic way and interpretation of analysed findings with the aim and objectives of the study. The aim of the study is to identify the circumstances and consequences of fall of people with stroke in Bangladesh. The objectives of the study is to find out prevalence of fall after stroke, to identify the circumstances associated with fall of people with stroke and to identify the consequence of falling of people with stroke.

4.1. Socio-demographic characteristics of the patient

The demographic data of stroke survivors listed in table-1. The table shows that among 83 patients with stroke, the maximum 42.2% (n=35) patient were 46-60 years old. Others participants, 3.6% (n=3) were 15-30 years old, 27.7% (n=23) were 31-45 years old, and 26.5% (n=22) were >60 years old. Among them the male participants were 67.5% (n=56) and female participants were 32.5% (n=27). The male and female ratio is approximately 2:1. From total participants 94% (n=78) were married and 6% (n=5) were unmarried.

In respect with stroke survivors occupation, 30.1% (n=25) were housewife, 25.3% (n=21) were businessmen, 15.7% (n=13) were service holder, 9.6% (n=8) were teacher, 1.2% (n=1) was student, 1.3% (n=1) was doctor, 6.1% (n=5), 2.4% (n=2) were farmer, 2.4% (n=2) were lawyer, 1.2% (n=1) was record writer, 2.4% (n=2) were shopkeeper, 2.4% (n=2) were overseas, 1.2% (n=1) was politician, and 1.2% (n=1) was property caretaker.

In case of educational status of participant, it is found that the highest number of participants 19.3% (n=16) were graduate. Among other participants educational level, 15.7% (n=13) were illiterate, 9.6% (n=8) were under primary, 9.6% (n=8) were primary, 15.7% (n=13) were under Secondary School Certificate (SSC), 15.7% (n=13) were Secondary School Certificate (SSC) pass, 2.4% (n=2) were under Higher Secondary Certificate (HSC), 4.8% (n=4) were Higher Secondary Certificate (HSC) pass, and 7.2% (n=6) were post-graduate.

It is evidence from table-1 that from total participants, 66.3% (n=55) were ischemic stroke and 33.7% (n=28) were hemorrhagic stroke. Right side affected patient were 53% (n=44), left side affected patient were 43.4% (n=36), and both side affected

patient were 3.6% (n=3). Participants experienced stroke one or more time. First time stroke experienced among 78.3% (n=65) participants, second time experienced stroke among 18.1% (n=15) participants and more than two time experienced stroke among 3.6% (n=3) participants.

In accessible road, most of the participants 42.2% (n=35) have pitch road in front of house, 28.9% (n=24) have brick road in front of house, and 28.9% (n=24) have mud road in front of house.

The table-1 shows that most of the participants 53% (n=44) were live in a house which floor surface was made by brick. In others, 32.5% (n=27) participant's floor surface of house was made by mud, 6% (n=5) participant's floor surface of house was made by tails, 6% (n=5) participant's floor surface of house was made by mosaic, and 2.4% (n=2) participant's floor of house was made by other elements. Maximum participant were lived with caregiver. The total participant of study, 37.3% (n=31) were live in family and 62.7% (n=52) of participants live with care giver.

Characteristics	Number (n=83)	Percentage (%)
<i>Patient's Age</i>		
15-30	3	3.6%
31-45	23	27.7%
46-60	35	42.2%
>60	22	26.5%
<i>Patient's sex</i>		
Male	56	67.5%
Female	27	32.5%
<i>Marital status</i>		
Married	78	94%
Unmarried	5	6%
<i>Previous occupation of patient</i>		
Service holder	13	15.7%
Business	21	25.3%
Student	1	1.2%
Housewife	25	30.1%
Doctor	1	1.2%

Teacher	8	9.6%
Farmer	5	6.1%
Lawyer	2	2.4%
Record writer	1	1.2%
Shopkeeper	2	2.4%
Overseas	2	2.4%
Politician	1	1.2%
Property caretaker	1	1.2%
<i>Educational status of patient</i>		
Illiterate	13	15.7%
Under primary	8	9.6%
Primary	8	9.6%
Under SSC	13	15.7%
SSC pass	13	15.7%
Under HSC	2	2.4%
HSC pass	4	4.8%
Graduate	16	19.3%
Post-graduate	6	7.2%
<i>Types of stroke</i>		
Ischemic	55	66.3%
Hemorrhagic	28	33.7%
<i>Affected body part</i>		
Left	36	43.4%
Right	44	53%
Both	3	3.6%
<i>Number of stroke</i>		
First time	65	78.3%
Second time	15	18.1%
Three and more time	3	3.6%
<i>Accessible road in front of house</i>		
Pitch road	35	42.2%
Brick road	24	28.9%
Mud road	24	28.9%

<i>Floor surface of house</i>		
Made by brick	44	53%
Made by mud	27	32.5%
Made by tails	5	6%
Made by mosaic	5	6%
Others	2	2.4%
<i>Patient live with whom</i>		
With family	31	37.3%
With caregiver	52	62.7%

Table 1: Demographic characteristics of participants

4.2. Fall

4.2.1. Prevalence of fall

Table 2 describes the prevalence of fall. The fall occur among 26.5% (n=22) population. One fall occur among 18.1% (n=15) population and more than one fall occur among 8.4% (n=7) population from 83 population.

Characteristics	Number (n=83)	Percentage (%)
<i>Number of fall</i>		
None	61	73.5%
One	15	18.1%
More than one	7	8.4%
Total number of fall	22	26.5%

Table 2: Prevalence of fall

4.2.2. Patient's age and fall

Table 3 describes the number of fall in different age. Fall occur in maximum time among older people. The result find out that 54.5% (n=12) fall occur among 46-60 years old people, 27.3% (n=6) fall occur among >60 years old people, and minimum fall 18.2% (n=4) occur among 31-45 years old people.

Characteristics	Number of fall in last two year			Percentage (%)
	One	More than one	Total	
<i>Patient's age</i>				
31-45	3	1	4	18.2%
46-60	9	3	12	54.5%
>60	3	3	6	27.3%
Total	15	7	22	100%

Table 3: Patient's age and fall

4.2.3. Patient's sex and fall

Male patient were more experience fall rather than female patient. In this study, 68.2% (n=15) were male patient and 31.8% (n=7) were female patient with stroke experienced fall.

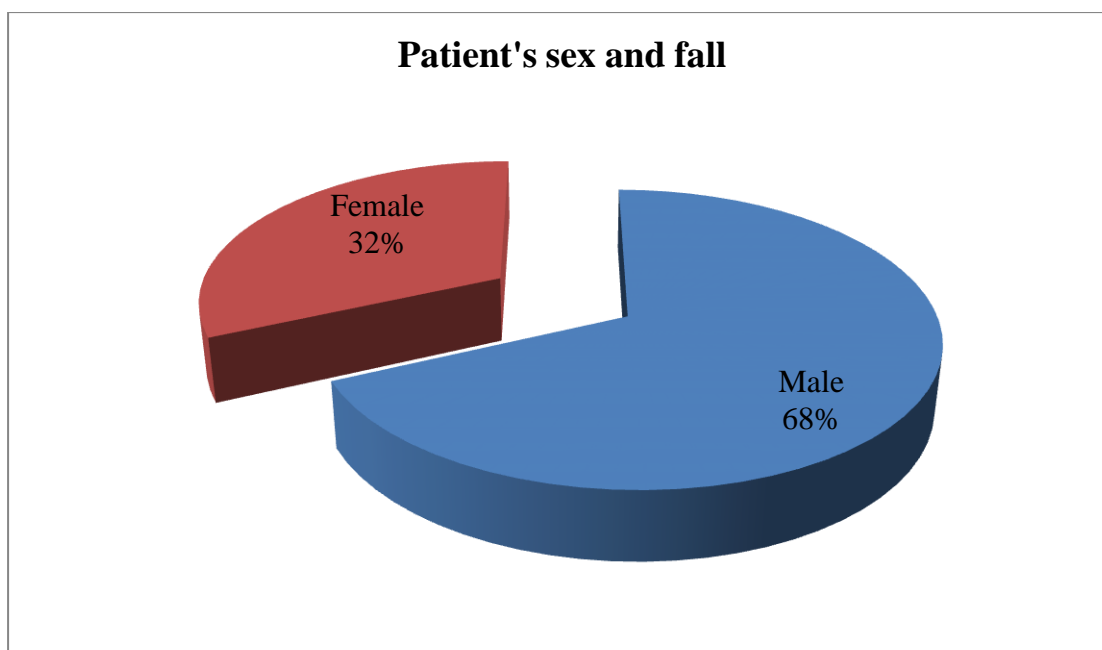


Figure 2: Patient's sex and fall

4.2.4. Patient fall and types of stroke

Ischemic and hemorrhagic, both types of patient with stroke were experience fall. In this study, 72.7% (n=16) fall occur among patient with ischemic stroke and 27.3% (n=6) fall occur among patient with hemorrhagic stroke. In total faller patient 2/3rd patient were ischemic stroke and 1/3rd patient were hemorrhagic stroke.

Characteristics	Number of fall in last two year			Percentage (%)
	One	More than one	Total	
<i>Types of stroke:</i>				
Ischemic	10	5	15	68.2%
hemorrhagic	5	2	7	31.8%

Table 4: Patient's fall and types of stroke

4.2.5. Patient's fall and affected part

In this study result found that most of the fall occurs among left side. Among total faller patient with stroke, left side hemiplegia were 27.3% (n=6) and right side hemiplegia were 72.7% (n=16).

Characteristics	Number of fall			Percentage (%)
	One	More than one	Total	
<i>Affected body part:</i>				
Left	5	1	6	27.3%
Right	10	6	16	72.7%

Table 5: Number of fall and affected part

4.3. Circumstances of fall

Table 6 describes the circumstances of fall among participant. The number of faller patient was 22. Among faller patient, 31.8% (n=7) were experienced fall at stand up from bed, 27.3% (n=6) experienced fall at walking time, 9.1% (n=2) experienced fall at toilet, 4.5% (n=1) experienced fall at performing ADL, 4.5% (n=1) experienced fall at up and down from bed, 4.5% (n=1) experienced fall at balance practice time and 18% (n=4) experienced fall in other circumstances.

Fall occur in different places. Most of the fall 59.1% (n=13) occurred at room. In others include 22.7% (n=5) fall occurred at road, 9.1% (n=2) fall occurred at toilet, 4.5% (n=1) occurred at hospital and 4.5% (n=1) fall occurred at outside of room.

Most of the fall occurred at day time specifically at morning 45.5% (n=10). In others fall, 27.3% (n=6) occurred at noon, 18.2% (n=4) occurred at after noon and 9.1% (n=2) fall occurred at mid night.

Characteristics	Number (n=22)	Percentage (%)
<i>Fall occur</i>		
Stand up from bed	8	36.4%
Up and down from bed	1	4.5%
Stand up from toilet pan	2	9.1%
At walking slippery surface	5	22.7%
Balance practice time	2	9.1%
Others	4	18.2%
<i>Place of fall</i>		
At room	14	63.6%
At toilet	2	9.1%
At hospital	1	4.5%
Road	4	18.2%
Outside of room	1	4.5%
<i>Time of fall</i>		
At morning	9	40.9%
At noon	6	27.3%
At after noon	5	22.7%
At mid night	2	9.1%

Table 6: Circumstances of fall

4.4. Consequences of fall

Table 7 explains about consequences of fall. After fall some patients experienced injury. Among them 40.9% (n=9) were had injury. In injured patient, 8 experienced bruises and 1 was experienced other types of injury.

Activity limitation occurs among participant due to fear of fall. From total faller patient (n=22) activity limitation occurred among 31.8% (n=7).

Patient with stroke use different types of assistive device. Before fall, 45.5% (n=10) faller patient were use wheel chair, 13.6% (n=3) faller patient were use walking stick

and 40.9% (n=9) were not used any assistive device. After fall, 68.2% (n=15) were use wheel chair, 13.6% (n=3) were use walking stick and 18.2% (n=4) were not use any assistive device.

Fear of fall develops among a faller patient's mind due to experience fall. From total faller patient, 50% (n=11) report that fear of fall developed in their mind.

Maximum faller participant did not take medical intervention after fall. 13.6% (n=3) participant took doctor consultancy, 9.1% (n=2) participant admitted at hospital, 9.1% (n=2) participant needed first aid, and 68.2% (n=15) participant were not need treatment.

Characteristics	Number (n=22)	Percentage (%)
<i>Injury after fall</i>		
Yes	9	40.9%
No	13	59.1%
<i>Types of injury</i>		
Bruises	8	36.4%
Others	1	4.5%
<i>Activity limitation after fall</i>		
Yes	7	31.8%
No	15	68.2%
<i>Assistive device use before fall</i>		
Not use	9	40.9%
Wheel chair	10	45.5%
Walking stick	3	13.6%
<i>Assistive device use at present</i>		
Not use	4	18.2%
Wheel chair	15	68.2%
Walking stick	3	13.6%
<i>Again fear of fall</i>		
Yes	11	50%
No	11	50%
<i>Medical intervention after fall</i>		

Not took treatment	15	68.2%
First aid	2	9.1%
Doctor consultancy	3	13.6%
Hospital admission	2	9.1%

Table 7: Consequences of fall

5.1. Socio-demographic characteristics of patient

The study found that among 83 patient with stroke, the maximum 42.2 percent (n=35) participant were 46-60 years old. Others participant, 27.7 percent (n=23) were 31-45 years old, 26.5 percent (n=22) were >60 years old and minimum participant 3.8 percent (n=3) are 15-30 years old. Several studies have been done on stroke survivor and they found similar findings as a study in Pakistan found that 30 percent of stroke occur among the patient with less than 45 years old (Kulshreshtha *et al.*, 2012). Czernuszenko and Czlonkowska, (2009) revealed that the mean age of patient with stroke was 61.5 years. Other study said that mean age of patient with stroke were 65 years (Watanabe, 2005). Ugur *et al.* (2000) reported that maximum patient with stroke were between 55-69 years old. The age is an important factor for stroke. Older age people are more vulnerable to affect by stroke.

The participant were 67.5% (n=56) male and 32.5% (n=27) were female. The male and female ratio was approximately 2:1. In our society, there have strong imbalance in male in female to get opportunity including health opportunity. In a study Watanabe (2005) found that 43% participant were male patient with stroke and 57% participant were female. Teasell (2002) found that, male participant with stroke were 49.8% and female participant were 50.2%. Belgen *et al.* (2006) reported on their study that 62% participants were male and 38% were female. This conducted at CRP outpatient and stroke rehabilitation unit. According to in-charge of outpatient unit of CRP savar, the male and female ratio of patient was 2:1.

In total study population, 30.1% (n=25) were housewife, 25.3% (n=21) were businessman, 15.7% (n=13) were service holder, 9.6% (n=8) were teacher, 1.2% (n=1) were student, 1.3% (n=1) were doctor and 16.9% (n=14) were others professions including farmer, record writer, lawyer, property caretaker, overseas, politician, and shopkeeper. A study conducted in Faridpur Medical College (FMC) and found that among total stroke survivor, 28% were service holder, 17% were businessman, 16% were housewife, 9% were farmer, 21% were retired person, and 9% were from others profession (Hossain *et al.*, 2011). There have some difference

occupation among Bangladeshi stroke survivor. Moreover housewife, businessman, and service holder are mainly affected by stroke.

Marital status is an important component of demographic factor. The result showed that among total participant, 94% (n=78) were married and 6% (n=6) were unmarried. A study on stroke survivor revealed in different findings as Schimed *et al.* (2013) reported 50% participant were married and 50% were unmarried. In cultural perspective, marriage is common among Bangladeshi people rather than European and American country. In Bangladeshi culture, early marriage is common in rural area. Hoq (2013) found that in different division in Bangladesh most of the women got married under 15 years old. Among them, maximum were Muslim. The rate of marriage is high among village and illiterate people.

The result found that highest number of participant 19.3% (n=16) were graduate. Among other participants educational level, 15.7% (n=13) were illiterate, 9.6% (n=8) were under primary, 9.6% (n=8) were primary, 15.7% (n=13) were under SSC, 15.7% (n=13) were SSC passed, 2.4% (n=2) were under HSC, 4.8% (n=4) were HSC passed, and 7.2% (n=6) were post-graduate. There have some difference findings among Chinese patient with stroke and that study found 37.8% participant were illiterate, 47.3% were complete their primary education and 14.9% had higher than primary education (Sze *et al.*, 2001). Poverty is a major problem in Bangladesh. About 25% (40,000,000) people live in hand to mouth. It is a barrier to take higher education among people (Challenges and Opportunities in Bangladesh, n.d.).

The study found that most of the participant 53% (n=44) were live in a house which made by brick. In others, 32.5% (n=27) participant's floor of house was made by mud, 6% (n=5) participant's floor of house was made by tiles, 6% (n=5) participant's floor of house was made by mosaic, and 2.4% (n=2) participant's floor of house was made by other elements.

The total participant of study, 37.3% (n=31) were live in family and 62.7% (n=52) of participant live with care giver. In Bangladeshi culture, maximum people were live with family. Uddin (2009) found that Bangladeshi families are mainly nuclear and joint. Family consists of father, mother, son, daughter, husband, wife, brother, and sister. Patient with stroke when come rehabilitation centre, maximum time they stay

with regular caregiver who is their family member and minimum time they stay with paying caregiver. Patient with stroke can get excellent care from family and regular caregiver.

Accessibility is an important issue among stroke survivor. Patient with stroke face difficulty in their daily living activity such as mobility. In accessible road, most of the participant 42.2% (n=35) had pitch road in front of house, 28.9% (n=24) had brick road in front of house, and 28.9% (n=24) had mud road in front of house. There have a relation between fall among stroke survivor and accessibility or accessible environment.

From total participant, 66.3% (n=55) were ischemic stroke and 33.7% (n=28) were hemorrhagic stroke. A study conducted in Faridpur Medical College also found that 61% of participants were ischemic stroke and 39% were hemorrhagic stroke (Hossain *et al.*, 2011). In south Asian country, ischemic stroke occur among patient with stroke due to hypertension, diabetic, and embolism. Patient with ischemic stroke were get poor improvement in 23%, good improvement in 50%, and excellent improvement in 27% time (Razzaq, Khan and Baig, 2002). Ultimately ischemic patient with stroke were gain less improvement among Bangladeshi patient. There have different result in some study. Czernuszenko and Czlonkowska (2009) reported on their study that 82% of participants were diagnosed with ischemic stroke and 13% were diagnosed by hemorrhagic stroke.

The result found that right side affected patient were 53% (n=44), left side affected patient were 43.4% (n=36), and both side affected patient were 3.6% (n=3). The result is similar in a study of Belgen *et al.* (2006) on fall of patient with stroke revealed that left side hemiplegic patient were 36% and right side hemiplegic patient were 64% among total participant.

First time stroke experienced among 78.3% (n=65) participant, second time experienced stroke among 18.1% (n=15) participant and more than two time experienced stroke among 3.6% (n=3) participant. Stroke survivors experience stroke in first time and a few number of patient experience stroke again. First stroke lead to occur again stroke and fall among patient. Basically patient with stroke in first time experience is more common. There also have similar findings in a study about fall

among patient with stroke in Poland. The study reported that in their study 80% patient experienced stroke for first time (Czernuszenko and Czlonkowska, 2009).

6.2. Prevalence of fall

It is very important to know the prevalence of fall among people with stroke. In this study the prevalence of fall was 26.5% (n=22). One fall occur among 18.1% (n=15) population and more than one fall occur among 8.4% (n=7) population from 83 population. Fall is very significant among stroke survivor. After fall, there have many changes occur among patient with stroke. The prevalence of fall found in different number from different study. Schimed *et al.* (2013) conducted a study about fall for one year long and found that the prevalence of fall was 33%. Form all faller patient, 36% reported more than one fall. Teasell *et al.* (2002) revealed that prevalence of fall was 37% (n=88). Among faller patient 45 had experienced 1 fall, 25 had experienced 2 falls, 9 had experienced 3 falls, and 9 had experienced 4 or more falls. Belgen *et al.* (2006) found that the prevalence of fall among stroke survivors were 40%. Among total stroke survivors, 18% experienced one fall and 22% experienced more than one fall. The result of other study is not match with this study. In Bangladesh, maximum patient live with family and regular caregiver and a few numbers of patients live with paying caregiver. Bangladeshi stroke survivors monitor full time from caregiver and family. It is a responsible factor to less occur falls among Bangladeshi stroke survivor.

6.3. Patient's age and fall

Fall occurred in maximum time among older people. The result find out that 54.5% (n=12) fall occur among 46-60 years old people, 27.3% (n=6) fall occurred among >60 years old people, and minimum fall 18.2% (n=4) occurred among 31-45 years old people. Older people face many physical and psychological problems. They also had cognitive deficit and visual problem. That problem is lead to occur fall among older person in different time. A study said the prevalence of fall among older adult was 25% (Vassallo *et al.*, 2008). It is also lead to occur fall among stroke survivor with older age. Schimed *et al.* (2013) found the mean age of fall among stroke survivor was 71.5 years. It is clear that older adult stroke survivors are more vulnerable to experience fall.

6.4. Patient's sex and fall

Ratio of male and female is also important part to relate with fall among stroke survivors. This study found that male patient face more fall rather than female patient. Among faller patient, 68.2% were male and 31.8% were female. Participation was an important issue that influences the result. In this study participation of male and female was 2:1. Hossain *et al.* (2011) found that participant were 74% male and 26% female. Female person are deprive form equal opportunity include treatment opportunity in our country (Challenges and Opportunities in Bangladesh, n.d.). It is a cause of poor female participation. Czernuszenko and Czlonkowska, (2009) found slightly different result that 60.3% were male and 39.7% were female patient with stroke were experience fall.

6.5. Patient fall and types of stroke

Stroke types are responsible factor for occurring fall. Patient with ischemic stroke were more vulnerable to occur fall rather than hemorrhagic stroke. This study found that patient with ischemic stroke experience fall in 2/3rd time and patient with hemorrhagic stroke experienced fall 1/3rd time. Stroke survivors with ischemic stroke were achieving less physical improvement rather than hemorrhagic stroke. It is common that patient with ischemic stroke are experience more fall rather than hemorrhagic stroke. Czernuszenko and Czlonkowska (2009) found that 82.9% fall occurred among patient with ischemic stroke and 14.3% fall occurred among patient with hemorrhagic stroke.

6.6. Patient's fall and affected part

In this study result found that most of the fall occurs among patient with right side hemiplegia. From total faller patient with stroke, left side hemiplegia was 27.3% and right side hemiplegia was 72.7%. A stroke survivor experience poor balance, lack of coordination, loss of sensation, and weakness of one or both side of body. The poor balance and others lead patient to occur fall (Stroke Association, 2002).

6.7. Circumstances of fall

The circumstances of fall describe how to occur fall among participant. It is very important part to description. The study result revealed the number of faller patient was 22. Fall occur in different circumstances among this study participant. The study

reported that 31.8% (n=7) participant experienced fall at stand up from bed, 27.3% (n=6) fall occurred at walking time, 9.1% (n=2) fall occurred at up and down from toilet, 4.5% (n=1) fall occurred at performing activities of daily living, 4.5% (n=1) occurred at up and down from bed, 4.5% (n=1) occurred at balance practice time and 18% (n=4) fall in other circumstances. Maximum patient were perform their daily living activity actively. In daily activity include dressing, washing, bathing, and toileting, go outside of room for refreshment, and practice different exercise and transferring at home. Patient perform this activity with caregiver and sometime independently.

Fall occur in different places. Most of the fall 59.1% (n=13) occurred at room. In others include 22.7% (n=5) fall occurred at road, 9.1% (n=2) fall occurred at toilet, 4.5% (n=1) occurred at hospital and 4.5% (n=1) fall occurred at outside of room. The findings suggest that Czernuszenko and Czlonkowska (2009) found similar result. In that study 58.7% fall occurred at room, 18.3% occurred at toilet, and 3% fall occurred at outside of room. Another study showed that 51% fall occurred at inside of home, and 32% fall occurred at outside of home (Schimed *et al.*, 2013). The findings suggest that most common place of fall is room among Bangladeshi people with stroke. Poor physical status, patient's cognitive deficiency and inadequate lighting of room during fall time is responsible factor to occur fall. Inadequate lighting and sleepy surface lead a patient to experience fall at toilet.

Time of occurring fall is also an important part in circumstances of fall. The result unfold that maximum fall occurred at day time specifically at morning 45.5% (n=10). In others time of fall, 27.3% (n=6) participant experienced fall at noon, 18.2% (n=4) participant experienced fall at after noon and 9.1% (n=2) experienced fall at mid night. In Bangladeshi perspective, people work mainly whole day long. Form morning to night, people engage with different activity. Morning and noon time is more productive time and stroke survivor also engage in activity at this time. Maximum fall occur in this time due to more activity engagement.

6.8. Consequences of fall

Consequences of fall describe the result of fall. From total 22 faller patient with stroke, 40.9% (n=9) patients were experienced different types of injury. Among injured patient, 8 experienced bruises and 1 was experienced other types of injury.

Schimed *et al.* (2013) found that patient can experience some degree of injury after fall. There were different types of injury occur among faller patient. The common injuries were strain, cut, bruise, fracture, and twist. Patients also complained pain and redness at the site of fall.

Activity limitation occurred among participant who experienced fall. Limited activity participation occur due fear of fall and caregiver support. From total faller patient (n=22) activity limitation occurred among 31.8% (n=7). In Bangladesh, stroke survivors can easily get caregiver support in their daily activity. Faller patients also depend on their caregiver to perform their daily activity. They also afraid about fall and avoid activity participation. Schimed and Rittman (2009) stated that fear of falling develop among patient who have experience fall, dizziness, poor balance, and stability. Patients also decreased their participation in activity and increase dependency to caregiver that ultimately led a patient with stroke to restrict their participation.

Patient with stroke use different types of assistive device. Before experiencing fall, 45.5% (n=10) faller patient were use wheel chair, 13.6% (n=3) were use walking stick and 40.9% (n=9) were not used any assistive device. After fall, 68.2% (n=15) were used wheel chair, 13.6% (n=3) were use walking stick and 18.2% (n=4) were not use any assistive device. This study found that patients with stroke were more dependent on assistive device after fall. Faller patient were common to depend on wheelchair after fall. Schimed and Rittman (2009) stated that patient with stroke depend on different assistive device after fall. The Belgen *et al.* (2006) also reported that faller patient were used different assistive device such as straight cane, quad cane, and walker.

Faller patient had a chance to get pain or injury. Medical consultancy was important for some patient. Patient needed different types of medical intervention. In this study, 13.6% (n=3) participant took doctor consultancy, 9.1% (n=2) participant admitted at hospital, 9.1% (n=2) participant needed first aid, and 68.2% (n=15) participant were not need treatment. Schimed *et al.* (2013) found that faller patient experience different types of injury. Patients seek medical intervention, doctor consultancy, hospital admission and emergency care after injury.

CHAPTER 6 LIMITATIONS

Some issues regarding the study which impacted negatively on the validity, reliability and usefulness of findings were identified. These include:

- There have not enough literature about fall among patients with stroke in Bangladeshi context or south Asian context.
- This study is a quantitative study. Researcher selected purposive sampling in this study. The study was conducted by small sample size. Small sample size is not representing all population of a country. So the data is not generalised to all people with stroke.
- There have not any standard questionnaire about circumstances and consequences of fall. Researcher developed a questionnaire for this study. The questionnaire was developed only through relevant literature and Bangladeshi context.

CHAPTER 7 RECOMMENDATIONS

Recommendations for patient: Stroke survivors play vital role to reduce fall. Patient can perform activity with full concentration. At home, stroke survivor must give full concentration to practice different therapeutic activity. Stroke survivors also aware about injury and take medical intervention.

Recommendations for caregiver: Caregivers have significant role to prevent fall. Fall is less common in Bangladesh than western country due to strong family bonding and full caregiver support. Caregivers' awareness is very important when patient perform daily living activity or therapeutic activity. Caregiver can give physical support at the time of transferring and other important time.

Recommendations for therapist: Occupational therapist also have important role to reduce fall among stroke survivor. Occupational therapists explain to patient and caregiver about different aspect fall. Explanation of different safe transferring technique is helpful to reduce fall. Arrange a therapeutic session about fall preventive activity with stroke survivors and caregiver.

Recommendations for future research: Researcher's recommendation is that there have good scopes to conduct study about fall among stroke survivors in future time. Some important topics are:

- Activity limitation and level of independency in their ADLs among faller stroke survivor.
- Patient's perception about fall occurrence or circumstance.
- Similar research will conduct in the broader area and large scale of sample size.

CHAPTER 8 CONCLUSION

In this study extends knowledge about fall in different circumstances and consequences among people with stroke in Bangladesh. People with stroke experience fall during activity time, day time, at different place. Patients experience a significant change after fall. Some patient experience injury, fear of fall, limited activity participation, and decrease level of independency. From analysed the data, researcher found 27.6% fall among stroke survivors in this study. Patient experience fewer falls than western country. The fall is less common in our country due to active supervision of caregiver. There have a strong family bonding in Bangladesh and nuclear family is common. Patient get full physical support from family member and it is a major cause to fewer falls. Older age patients are experience fall in more time. Patients with ischemic stroke are experience fall more time rather than hemorrhagic stroke. The study also found that 31.8% of faller experience fall during stand up from bed, 27.3% faller experience fall at walking time, and 9.1% faller experienced fall at up and down from toilet. Most of the faller patient experienced fall at room. Day time is very common to occur fall. People pass more busy time at day. In day time especially, morning time occur maximum fall. From total faller patient, 40.9% experienced injury. Now a day this is a big issue and major concern for stroke survivor. Activity limitations also occur among stroke survivor. In Bangladeshi context, patient can get financial support and direct care from family. It helps a patient to reduce active participation in activity. Stroke survivor also depends on different assistive device and after fall they are more dependent on assistive device. Faller patient are more anxious about further experience of falling.

Occupational therapist can take a role to minimise fall. Occupational therapist works with patient to improve patient's functional independency. Therapists also improve patient's physical status through different therapeutic activities. The activity help a stroke survivor to avoid fall and a faller patient can overcome from different types of difficulties.

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APPENDIX 1

Approval letter for conducting research

Approval Letter

August 11, 2014
The Head of the Department
Department of Occupational Therapy
Bangladesh Health Professions Institute (BHPI)
CRP, Chapain, Savar, Dhaka-1343

Subject: Application for seeking approval to conduct the study for fulfillment of 4th year of B.Sc. in Occupational Therapy course

Madam,

With due respect, I want to state that, I am sincerely seeking permission to conduct my research project as the part of my 4th year course curriculum. The title of my research is "Circumstances and consequences of fall among people with stroke in Bangladesh". The aim of the study is "To identify the circumstances and consequences of fall of people with stroke in Bangladesh". Now I am looking for your kind approval to start my research project and I would like to assure that anything of my project will not harmful for the participants.

So, I therefore hope that you would be kind enough to grant me the permission of conducting the research and help me to complete a successful study as a part of my course.

Sincerely yours,

Abul Hayat

Md. Abul Hayat
4th year, B.Sc. in Occupational Therapy
Department of Occupational Therapy
BHPI, CRP, Savar, Dhaka-1343

Approved by	Signature and comment
Research supervisor Mir Hasan Shakil Mahmud Lecturer in occupational Therapy Department of Occupational Therapy BHPI, CRP, Savar, Dhaka-1343	It may allow him to conduct this study as a part of completion of his B.Sc. course in occupational therapy. - <i>Shakil</i> 08.09.14
Head of the Department Nazmun Nahar Assistant Professor & Head of the Department Department of Occupational Therapy BHPI, CRP, Savar, Dhaka-1343	It may allow him to conduct this study as per supervisor's comment. <i>Nazmun Nahar</i> 08.09.14

APPENDIX 2

Permission letter for data collection



বাংলাদেশ হেল্‌থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)
BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI)
(The Academic Institute of CRP)

CRP-Chapain, Savar, Dhaka, Tel: 7745464-5, 7741404, Fax: 7745069
BHPI-Mirpur Campus, Plot-A/5, Block-A, Section-14, Mirpur, Dhaka-1206. Tel: 8020178, 8053662-3, Fax: 8053661

তারিখ : ০৮.০১.২০১৫

প্রতি
বিভাগীয় প্রধান
অকুপেশনাল থেরাপি বিভাগ
সিআরপি, সাভার, ঢাকা।

বিষয় : রিসার্চ প্রজেক্ট (dissertation) প্রসঙ্গে।

জনাব,

বিএইচপিআই'র ৪র্থ বর্ষ বিএসসি ইন অকুপেশনাল থেরাপি কোর্সের ছাত্র মোঃ আবুল হায়াৎকে তার রিসার্চ সংক্রান্ত কাজের জন্য আগামী ১২.০১.২০১৫ তারিখ থেকে ১২.০২.২০১৫ তারিখ পর্যন্ত সময়ে আপনার নিকট প্রেরণ করা হলো।

তাই তাকে সার্বিক সহযোগীতা প্রদানের জন্য অনুরোধ করছি।

ধন্যবাদান্তে

Su. M. H.

শেখ মনিরুজ্জামান
সহকারী অধ্যাপক ও বিভাগীয় প্রধান (ভারপ্রাপ্ত)
অকুপেশনাল থেরাপি বিভাগ
বিএইচপিআই।



Received and allowed to
collect data.
M. J. Nayan
10-1-15

Md. Julker Nayan
ASST. Professor & Head of OT
Occupational Therapy Department
CRP, Savar, Dhaka-1343

Forward to
SFU
A. M. H.
20/01/15

A. M. H. Nayan
Occupational Therapy Department
CRP, Mirpur

APPENDIX 3

Information sheet (English)

The name of the researcher is Md. Abul Hayat. He is a student of 4th year, Department of Occupational Therapy, Bangladesh Health Professions Institute (BHPI). As a part of his academic issues he has to conduct a dissertation in this academic year. So researcher would like to invite you to participate in this study. The title of the study is “Circumstances and Consequences of fall among people in Bangladesh”.

Your participation is voluntary in the study. You can withdraw your participation in anytime. There is not the facility to get any pay by this participation. The study will never be any harm to you but it will help the service user to know your experience, which is very important for the service provider to plan for the future activities.

Confidentiality of all records will be highly maintained. The gathered information from you will not be disclose anywhere except this study and supervisor. The study will certainly never reveal the name of participant.

If you have any query regarding the study, please feel free to ask to the contact information stated below:

Md. Abul Hayat

Student of 4th year

B. Sc. in Occupational Therapy

Department of Occupational Therapy

Bangladesh Health Professions Institute

Centre for the Rehabilitation of the Paralysed (CRP)

Chaplain, Savar, Dhaka-1343.

APPENDIX 4²

তথ্যপত্র

গবেষকের নাম মোঃ আবুল হায়াত। তিনি বাংলাদেশ হেল্থ প্রফেশনস ইনস্টিটিউটের বি. এস. সি. ইন অকুপেশনাল থেরাপি চতুর্থ বর্ষের ছাত্র। প্রাতিষ্ঠানিক কাজের অংশ হিসেবে চলতি শিক্ষাবর্ষে তাকে একটি গবেষনামূলক কাজ করতে হবে। তাই গবেষক আপনাকে এই গবেষণায় অংশগ্রহণ করার জন্য আমন্ত্রণ জানাচ্ছে। গবেষণার বিষয় “বাংলাদেশে স্ট্রোক রোগীদের পড়ে যাওয়ার ঘটনা ও তার পরবর্তী অবস্থা”।

এই গবেষণায় আপনার অংশগ্রহণ সম্পূর্ণরূপে স্বেচ্ছায়। আপনি এই গবেষণা থেকে যেকোনো সময় আপনার অংশগ্রহণ প্রত্যাহার করতে পারবেন। এই গবেষণায় অংশগ্রহণের মাধ্যমে আপনি আর্থিক ভাবে লাভবান হবেন না। এই অংশগ্রহণ কখনোই আপনার জন্য ক্ষতির কারন হয়ে দাঁড়াবে না কিন্তু এই গবেষণার মাধ্যমে সেবা প্রদানকারী সদস্যগণ, আপনার অভিজ্ঞতার কথা জানতে পারবেন এবং প্রাপ্ত তথ্য সমূহ সেবার মানোন্নয়নে সাহায্য করবে।

আপনার থেকে প্রাপ্ত তথ্যসমূহের সর্বোচ্চ গোপনীয়তা রক্ষা করা হবে। গবেষণা ও গবেষণার তত্ত্বাবধায়ক ব্যতীত এই তথ্যগুলো অন্য কোথাও প্রকাশিত হবেনা এবং গবেষণার কোথাও অংশগ্রহণকারীর নাম প্রকাশ করা হবেনা।

গবেষণা সম্পর্কিত যেকোনো ধরনের প্রশ্নের জন্য নিম্নলিখিত ব্যক্তির সাথে যোগাযোগ করার জন্য অনুরোধ করা যাচ্ছে:

মোঃ আবুল হায়াত

৪র্থ বর্ষ

বি. এস. সি. ইন অকুপেশনাল থেরাপি

বাংলাদেশ হেল্থ প্রফেশনস ইনস্টিটিউট

পক্ষাঘাতগ্রস্তদের পুনর্বাসন কেন্দ্র

চাপাইন, সাভার, ঢাকা-১৩৪৩।

² Translated Copy

APPENDIX 5

Consent form:

This research is the part of Occupational Therapy course and name of the researcher is Md. Abul Hayat. He is a student of Bangladesh Health Professions Institute in B. Sc. in occupational therapy in 4th year. The study was entitled as “Circumstances and consequences of fall among people with stroke in Bangladesh”.

In this study I am a participant and I have been clearly informed about the purpose of the study. I have the right to refuse participation any time and any stage of the study. I will not be bound to answer to anybody. I understand that at present or future there will be no impact of treatment receiving for participate the study.

I am also informed that all the information collects from me that is used in this study would be kept safe and maintain confidentiality. The researcher and the supervisor will be eligible to access in the information for his publication of the research result. My name and address will not published anywhere in this study.

I can consult with the researcher and the research supervisor about the research process or get answer to any question related to research project. I have been informed about above-mentioned information and I am willing to participate in the study with consent.

Signature/Finger print of the Participant:	Date:
Signature of the Researcher:	Date:
Signature/Finger print of the witness:	Date:

APPENDIX 6*

সম্মতিপত্র

এই গবেষণা অকুপেশনাল থেরাপি বিভাগে অধ্যয়নের একটি অংশ এবং গবেষকের নাম মোঃ আবুল হায়াত। তিনি বাংলাদেশ হেল্থ প্রফেশনস ইনস্টিটিউটের বি. এস. সি. ইন অকুপেশনাল থেরাপি চতুর্থ বর্ষের ছাত্র এবং তার গবেষণার বিষয় “বাংলাদেশে স্ট্রোক রোগীদের পড়ে যাওয়ার ঘটনা ও তার পরবর্তী অবস্থা”।

এই গবেষণার আমি..... একজন অংশগ্রহণকারী এবং আমি এই গবেষণার উদ্দেশ্য পরিষ্কারভাবে জানতে পেরেছি। আমি যেকোনো সময় এবং গবেষণার যেকোনো পর্যায়ে আমার অংশগ্রহণ প্রত্যাহার করতে পারব। এ জন্য আমি কারো কাছে জবাব দিতে বাধ্য থাকব না। আমি অবগত হয়েছি যে, এই গবেষণায় অংশগ্রহণ করার ফলে বর্তমানে কিংবা ভবিষ্যতে আমার চিকিৎসা গ্রহণের উপর কোন প্রভাব পড়বে না।

এই গবেষণার জন্য আমার দেয়া তথ্যসমূহ সম্পূর্ণভাবে গোপন ও নিরাপদ থাকবে। শুধুমাত্র গবেষক এই তথ্যগুলো গবেষণার ফলাফল প্রকাশের কাজে ব্যবহার করতে পারবে। এই গবেষণায় আমার নাম ও ঠিকানা প্রকাশ করা হবেনা।

আমি এই গবেষণার পদ্ধতি কিংবা গবেষণা সম্পর্কিত যেকোনো প্রশ্নের উত্তর গবেষক ও গবেষণা তত্ত্বাবধায়কের কাছ থেকে জানতে পারব। আমি উপরোক্ত সকল তথ্য সম্পর্কে জানি এবং আমি এই গবেষণায় অংশগ্রহণে সম্মতি জ্ঞাপন করছি।

অংশগ্রহণকারীর স্বাক্ষর/টিপসইঃ	তারিখঃ
গবেষকের স্বাক্ষর/টিপসইঃ	তারিখঃ
স্বাক্ষীর স্বাক্ষর/টিপসইঃ	তারিখঃ

* Translated copy

APPENDIX 7

Questionnaire:

A survey questionnaire for circumstance and consequence of fall among stroke patient

Patient's name:		ID no.
1.	Age: 15-30 = 1 31-45 = 2 46-60 = 3 >60 = 4	
2.	Sex: Male = 1 Female = 2 Hermaphrodite = 3	
3.	What was your previous occupation? Job = 1 Business = 2 Student = 3 House wife = 4 Doctor = 5 Engineer = 6 Teacher = 7 Others = 8	
4.	What is your marital status? Married = 1 Unmarried = 2 Widow = 3 Divorced = 4 Separated = 5 Others = 6	
5.	What is your educational level? Illiterate = 1	

	<p><Primary = 2</p> <p>Primary = 3</p> <p>< S. S. C. = 4</p> <p>S. S. C. = 5</p> <p><H. S. C. = 6</p> <p>H. S. C. = 7</p> <p>Graduation = 8</p> <p>Masters = 9</p> <p>M. Phil = 10</p> <p>PhD = 11</p>
6.	<p>What types of floor at your home that you live in?</p> <p>Made by brick = 1</p> <p>Mud = 2</p> <p>Tiles = 3</p> <p>Mosaic = 4</p> <p>Others = 5</p>
7.	<p>Who live with you?</p> <p>Family = 1</p> <p>Caregiver = 2</p>
8.	<p>What types of road accessible in your home?</p> <p>Pitch = 1</p> <p>Brick = 2</p> <p>Mud = 3</p> <p>Others = 4</p>
9.	<p>What type of stroke occurred?</p> <p>Ischemic = 1</p> <p>Hemorrhagic = 2</p>
10.	<p>Which side of your body had been affected?</p> <p>Left = 1</p> <p>Right = 2</p> <p>Both = 3</p>
11.	<p>How many times patient affect by stroke?</p> <p>First = 1</p>

	<p>Second = 2</p> <p>More than two = 3</p>
12.	<p>Any fall experience in last 2 years?</p> <p>Never = 1</p> <p>One fall = 2</p> <p>More than one = 3</p>
13.	<p>How do fall occur?</p> <p>At performing Activities of Daily Living = 1</p> <p>Transferring from bed to chair = 2</p> <p>Getting out of bed = 3</p> <p>Walking up or down stair = 4</p> <p>Up and down from toilet = 5</p> <p>Walk at a slippery surface = 6</p> <p>At practicing balance = 7</p> <p>Others = 8</p>
14.	<p>In which place you fell down?</p> <p>Room = 1</p> <p>Kitchen = 2</p> <p>Toilet = 3</p> <p>Hospital = 4</p> <p>Road = 5</p> <p>Outside of the room = 6</p> <p>Market = 7</p> <p>At bus = 8</p> <p>Others = 9</p>
15.	<p>When the fall has occurred?</p> <p>At morning = 1</p> <p>At noon = 2</p> <p>At after noon = 3</p> <p>At evening = 4</p> <p>At early night = 5</p> <p>At mid night = 6</p> <p>At let night = 7</p>

16.	<p>After fall do you have any injury?</p> <p>Yes = 1</p> <p>No = 2</p>
17.	<p>What types of injury reported?</p> <p>Bruises = 1</p> <p>Cut = 2</p> <p>Broken wrist = 3</p> <p>Broken hip = 4</p> <p>Broken ribs = 5</p> <p>Others = 6</p>
18.	<p>What types of assistive device you used before your fall?</p> <p>Not use = 1</p> <p>Wheel chair = 2</p> <p>Power wheel chair = 3</p> <p>Crutch = 4</p> <p>Walker = 5</p> <p>Walking frame = 6</p> <p>Walking stick = 7</p>
19.	<p>Do you have fear about fall again?</p> <p>Yes = 1</p> <p>No = 2</p>
20.	<p>Do you have any activity limitation due to fear of fall?</p> <p>Yes = 1</p> <p>No = 2</p>
21.	<p>After fall do you have taken any medical intervention?</p> <p>No treatment taken = 1</p> <p>First aid = 2</p> <p>Medical consultancy = 3</p> <p>Hospital admission = 4</p>
22.	<p>What types of assistive device you are using now?</p> <p>Not use = 1</p> <p>Wheel chair = 2</p> <p>Power wheel chair = 3</p>

	Crutch	= 4
	Walker	= 5
	Walking frame	= 6
	Walking stick	= 7

APPENDIX 8*

প্রশ্নাবলী

স্ট্রোক রোগীদের পড়ে যাওয়া এবং তার পরবর্তী অবস্থা সম্পর্কিত সার্ভে প্রশ্নাবলী

রোগীর নামঃ	রোগীর পরিচিতি নং
১।	বয়সঃ ১৫-৩০ = ১ ৩১-৪৫ = ২ ৪৬-৬০ = ৩ >৬০ = ৪
২।	লিঙ্গ পুরুষ = ১ মহিলা = ২ হিজড়া = ৩
৪।	আপনার পূর্বের পেশা কি ছিল? চাকরি = ১ ব্যবসা = ২ ছাত্র = ৩ গৃহিনী = ৪ ডাক্তার = ৫ প্রকৌশলী = ৬ শিক্ষক = ৭ অন্যান্য = ৮
৪।	আপনার বৈবাহিক অবস্থা সম্পর্কে বলুন? বিবাহিত = ১ অবিবাহিত = ২ বিধবা = ৩ তালাকপ্রাপ্ত = ৪ আলাদা = ৫ অন্যান্য = ৬
৫।	আপনি কতদূর পর্যন্ত পড়াশুনা করেছেন? নিরক্ষর = ১

* Translated copy

	নিরক্ষর = ২ প্রাথমিক = এস এস সি = এইচ এস সি = স্নাতক = ৮ স্নাতকোত্তর = ৯ এম ফিল = ১০ পি এইচ ডি = ১১
৬।	যে বাড়িতে আপনি বাস করতে সেটির মেঝে কেমন? ইটের তৈরি = ১ মাটির = ২ টাইলস = ৩ মোজাইক = ৪ অন্যান্য = ৫
৭।	আপনি কার সাথে বসবাস করেন? পরিবার = ১ শুশ্রূষাকারী = ২
৯।	আপনার বাড়ির সামনের রাস্তাটা কেমন? পিচঢালা = ১ ইটের = ২ মাটির = ৩ অন্যান্য = ৪
৯।	আপনি কোন ধরনের স্ট্রোকে আক্রান্ত হয়েছেন? ইস্কেমিক = ১ হেমোরাজিক = ২
১০।	স্ট্রোকের ফলে শরীরের কোন পাশ আক্রান্ত হয়েছে? বাম পাশ = ১ ডান পাশ = ২ উভয় পাশ = ৩
১১।	আপনি কত বার স্ট্রোক করেছেন? এক বার = ১ দুই বার = ২

	দুই এর বেশি = ৩
১৩।	শেষ ২ বছরে আপনি কত বার পড়ে গিয়েছিলেন? একবার ও না = ১ একবার = ২ একাধিক বার = ৩
১৩।	কিভাবে পড়ে গিয়েছিলেন? দৈনন্দিন কাজ করার সময় = ১ বিছানা থেকে চেয়ারে স্থানান্তরের সময় = ২ বিছানা থেকে উঠার সময় = ৩ সিড়ি দিয়ে উঠা বা নামার সময় = ৪ পায়খানায় উঠা বা বসার সময় = ৫ পিচ্ছিল রাস্তা দিয়ে হাটার সময় = ৬ ভারসাম্য অনুশীলনের সময় = ৭ অন্যান্য = ৮
১৪।	কোন স্থানে পড়ে গিয়েছিলেন? ঘরের ভিতর = ১ রান্নাঘরে = ২ পায়খানায় = ৩ হাসপাতালে = ৪ রাস্তায় = ৫ ঘরের বাইরে = ৬ বাজারে = ৭ বাসে = ৮ অন্যান্য = ৯
১৫।	কখন পড়ে গিয়েছিলেন? সকালে = ১ দুপুরে = ২ বিকেলে = ৩ সন্ধ্যায় = ৪ সন্ধ্যা রাতে = ৫ মধ্য রাতে = ৬ শেষ রাতে = ৭

১৬।	পড়ে যাওয়ার পরে আপনার শরীরের কি কোন ক্ষতি হয়েছে? হ্যা = ১ না = ২
১৭।	আপনার শরীরে কি ধরনের ক্ষতি হয়েছিল? আঘাতের চিহ্ন = ১ কেটে যাওয়া = ২ কজি ভাঙ্গা = ৩ কোমর ভাঙ্গা = ৪ পাঁজর ভাঙ্গা = ৫ অন্যান্য = ৬
১৮।	পড়ে যাওয়ার ভয় হওয়ার কারণে আপনার কি কোন কাজে অসম্পূর্ণতা দেখা দিয়েছে? হ্যা = ১ না = ২
১৯।	পড়ে যাওয়ার আগে আপনি কি ধরনের সহায়ক যন্ত্র ব্যবহার করতেন? ব্যবহার করতাম না = ১ হুইল চেয়ার = ২ পাওয়ার হুইল চেয়ার = ৩ ক্রাচ = ৪ ওয়াকার = ৫ ওয়াকিং ফ্রেম = ৬ ওয়াকিং স্টিক = ৭
২০।	আপনার কি আবার পড়ে যাওয়ার ভয় হয়? হ্যা = ১ না = ২
২১।	পড়ে যাওয়ার পথে আপনার কোন ধরনের চিকিৎসা প্রয়োজন হয়েছিল? চিকিৎসা নেই নাই = ১ প্রাথমিক চিকিৎসা = ২ বিশেষজ্ঞ ডাক্তারের পরামর্শ = ৩ হাসপাতালে ভর্তি = ৪
২২।	বর্তমানে আপনি কোন ধরনের সহায়ক যন্ত্র ব্যবহার করেন? ব্যবহার করি না = ১ হুইল চেয়ার = ২

	<p>পাওয়ার হুইল চেয়ার = ৩</p> <p>ক্রাচ = ৪</p> <p>ওয়াকার = ৫</p> <p>ওয়াকিং ফ্রেম = ৬</p> <p>ওয়াকিং স্টিক = ৭</p>
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