Title

Characteristics of pain among stroke patients and their caregivers

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We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for the acceptance of this dissertation entitled.

CARACTERISTICS OF PAIN AMONG STROKE PATIENTS AND THEIR CAREGIVERS

Submitted by **Mt. Farzana Akter** for partial fulfillment of the requirements for the degree of Bachelor of Science in Physiotherapy (B.Sc. in PT)

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DECLERATION

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

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CONTENTS

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Acronyms

ADL	Activities of Daily Living
BHPI	Bangladesh Heath Professions Institute
CPSP	Central Post Stroke Pain
CRP	Center for the Rehabilitation of the Paralyzed
CVA	Cardio Vascular Accident
HSP	Hemiplegic Shoulder Pain
PT	Physiotherapy
ROM	Range of Motion
SPSS	Statistical Package for the Social Science
NPRS	Numerical Pain Rating Scale
WHO	World Health Organization

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Abstract

Purpose: To identify the characteristics of pain among the stroke patients and their caregivers.

Objectives: To explore the demographic information of the participants of patients; to find out more affected age group among patient ; to clarify the onset and behavior of pain after stroke; to identify the pain intensity/severity level according to NPR scale; to focus the location of pain, to focus pain during movement and to illuminate.

To identify the demographic information of caregivers. To explore the pain among caregivers, to identity the pain severity of patients by NPR scale. And to identify Their training system .

Methodology: A quantitative cross-sectional study design was chosen to accomplish the objectives of the study. 110 subjects were selected through convenience non random sampling technique from the neurology physiotherapy department of CRP. A structural mixed questionnaire was developed through searching of literature. The participants were requested to answer according to the developed format of the question. The answers were entered into SPSS 20 software and analyzed as descriptive statistics.

Results: The study was conducted on 110 participants of pain among the stroke patients and their caregivers. Out of the participant the majority of the age group range between (51-60) The most of the participants had pain it's 70.9%.Majority of the participants suffered by shoulder pain and this percentage value35.5%. More than half of the participants came from rural area. The most of the participants had Ischemic stroke among 80.0% . Majority of the participants affected side were right side it's percentage value were 61.1%. 51.8% patient pain onset were (0-1) month. And the 70.9% patient were took physiotherapy treatment for pain management beside stroke streatment.

In this study the maximum caregiver were female it's 65.5%. 50.0% participants were in urban area. The most of the participants relation were wife 35.5%. 20.9% participants of caregivers were suffered by pain. Majority of the participants had back pain. 7.3% participants were took physiotherapy treatment. No no other participants get training for patient caring.

Key word: Stroke, Pain.

CHAPTER –I: INTRODUCTION

1.1Background:

The second leading cause of mortality is stroke and the major cause of long-term disabilities, such as hemiparesis, language problems and cognitive deficits. (Nesbitt et al.,2015)

Stroke occurs at an equal rate in men and women, but women are more likely to die. Stroke was an underlying cause in 63.6% of female deaths and 54.1% of male deaths from stroke in Australia. Among adults age 20 and older, the prevalence of stroke in 2005 was 6,500,000 (about 2,600,000 males and 3,900,000 females) (Mensah, et.al 2008). Stroke accounted for about one of every 17 deaths in the United States in 2005. Stroke mortality for 2005 was 143,579 (56,586 males, 86,993 females). Every seven minutes, a Canadian dies of heart diseases or stroke. Europe averages approximately 650,000 stroke deaths each year (Braunwald et al., 2003)

The common complication after stroke is pain and is associated with the presence of depression, cognitive dysfunction, and impaired quality

of life. Pain is a serious problem after stroke, and two major types of pain must be differentiated in patients with post-stroke pain: central post-stroke pain (CPSP) and pain primarily triggered by peripheral mechanisms (such as shoulder pain, painful spasticity, persistent headache, and musculoskeletal pain).(Stroke association, 2012).

After a stroke, around 30% of survivors experience pain. This is most likely to happen soon after a stroke, but can also develop some time later. Types of post-stroke pain include muscle and joint pain, headaches, and painful sensations like tingling. Some of the main types of pain are: spasticity and contractures, shoulder pain, central post-stroke pain , other conditions, including swollen hands and headaches. Depending on the cause of the pain, treatments like medication and physiotherapy are often helpful. Some causes of pain can be treated, but for some people, post-stroke pain can last a long time.(Kim, 2009)

The clinical manifestations of stroke are highly variable because of the complex anatomy of the brain and its vasculature. Stroke results in more disability than death. According to

the WHO, approximately 15 million people suffer a stroke worldwide each year, among them nearly six million die and another five million are left permanently disabled (Eijk et al., 2010).

Post stroke pain (PSP) is often considered to be identical to central post stroke pain (CPSP) also known as thalamic pain. However in patients who have stroke, compromise rehabilitation, interfere with sleep, lead to self-mutilation. The distribution of pain can range from a small area (eg, the hand) to large areas (eg, to one side of the body). Large areas are the most commonly affected, with or without involvement of the trunk and face. In patients with lateral medularly infarction, the pain can involve one side of the face and the contra lateral side of the body or limbs, and periorbital pain is frequently reported hemibody pain is common in patients with thalamic lesions. CPSP is a specific neuropathic pain condition in which pain is due to a lesion of the somatosensory pathways within the central nervous system.(Hansen *et al.*, 2012).

The most common types of post-stroke pain are headache, shoulder pain, and central post stroke pain & other joint pain. the incidence and severity of headache, shoulder pain, other joint pain and central post-stroke pain following stroke still remain unclear. The large majority of post-stroke pain studies are retrospective with different follow-up periods. Few studies have distinguished between the stroke-affected side and the unaffected side of the body and only few studies have tried to differentiate between pre-existing pain condition and post-stroke pain. Since most studies focus on only one type of pain.(Nesbitt *et al.*, 2015)

The biological process of health outcomes in caregivers of patients with stroke were studied as a perform and pain of caregiver and patient characteristics. ranked linear modeling analysis examined intra individual physical symptoms over the first year of the caregiving career and correlates of heterogeneousness within the biological process patterns among sixty two caregivers of persons with Stroke. Physical symptoms and anxiety were extremely dependent. Anxiety was a salient predictor of initial levels of and therefore the rate of amendmentin physical symptoms of caregivers. Physical symptoms and younger patient age were considerably prognostic of initial levels of hysteria. Pain additionally the another issue of caregivers during this study. (Recherd et al, 2006)

Although family caregivers could have issue adapting to the caregiving role,7,8 providing them with support could increase the probability that stroke survivors can stay within the community.9 for instance, caregiver depression will worsen the depression of stroke survivors10 and predict poor responses in rehabilitation10,11 and early ending of care in the home.12 In fact, several persons with disabilities enter nursing homes due to caregiver burnout instead of a worsening of their condition.6 There are few studies evaluating interventions for caregivers of stroke survivors at crucial points within the care giving period (jaon et al,.2002)

Pain could be a major public health challenge touching countless Americans and tributary to morbidity, mortality, disability, health care prices, and economic burdens . the bulk of acute and chronic pain sufferers have wanted medical attention for his or her pain and chronic pain is one among the foremost frequent reasons for patients seeking medical care . Despite the amount of patients WHO get care, chronic pain usually goes untreated or undertreated . Acute pain is commonly not recognized and left untreated [7, 8]. within the emergency department, acute pain is commonly undertreated or overmedicated, particularly among vulnerable patient teams like older adults. Untreated pain negatively impacts overall activity, mobility, relationships with others, ability to tolerate treatment, and pleasure of life [15]. Pain is additionally related to multiple comorbid symptoms like sleep disturbance, fatigue, depression, and anxiety . additionally to the matter of undertreated and untreated pain, overtreatment is additionally problematic. (Mollie et al., 2007)

In addition to understanding overall reciprocity and paired comparison accuracy in patient pain assessment, there ar variety of potential moderators of accuracy that will be clinically relevant. Determine patient populations or contexts during which patients are a lot of possible to own their pain below or overestimated or less accurately assessed, we are able to higher focus coaching and pain management interventions. A patient's characteristics, the assessment methodology, and also the observers are shown in previous analysis to doubtless moderate pain assessment accuracy. Patient characteristics like gender and age will impact accuracy

Hierarchical multivariate analysis analysis was accustomed take a look at the study hypothesis that inflated burden would be significantly associated with shrivelled HRQOL. within the first step, the caregiver characteristics mature, sex, and chronic unwellness were entered, within the next step, care-recipient physical functioning (MBI score) and average daily hours of care giving were entered, within the third and final step, the overall burden score was supplemental to the prognostic model. This model was run 10 times victimization every of the HRQOL dimensions, as well as the Physical part Score and Mental part Score, because the dependent variables.(Tomoko et al,2003)

1:2: Rational:

A common neurological condition is stroke, mostly seen in developing country. Day by day there is increasing the number of stroke patient, in different areas. In this condition, only medical management is not enough rather than the therapeutic management which is also essential for people stroke management. Stroke rehabilitation mainly completed by multi-disciplinary team. Physiotherapy is a significant part of this multi-disciplinary team. As the physiotherapy profession is newly introduced in Bangladesh, many people are not aware of its purpose. But it is an important part of health care to prevent diseases as well as to improve or maximize independence in people with disabilities. Therefore, physiotherapy can play an absolute role in the management of the people with stroke. Eventually, other professionals as well as general public will become aware about this service and this will be helpful to establish this profession at different institution, hospitals and clinics to fulfill the health care needs of the patient.

There are so many complication may arise after stroke. Pain is the common complication of stroke. Patients are suffering different types of pain after stroke such as: headache, central post stroke pain, shoulder pain, other joint pain. A total of 10.9% of the patients reported having experienced persistent or recurrent headache 3 months prior to stroke. The probability of reporting headache at stroke onset if having experienced headache prior to stroke was 20.0%, and only 6.5% if not having experienced headache prior to stroke. The incidence of shoulder pain was 7.3% before stroke, 22.9% at 3 months and 26.9% at 6 months after stroke. Newly developed shoulder pain was present in 1.5% at stroke onset, 13.1% at 3 months and 16.4% at 6 months. Of those with shoulder pain at 3-month follow-up, the probability of still reporting this pain at 6-month follow-up was 48.9%. Other joint pain was reported by 9.8% of the patients prior to the stroke. None of the patients reported other joint pain at stroke onset, while 17.1% had other joint pain at 3

months and 26.6% at 6 months. A minority of the patients reported newly developed other joint pain: 7.4% at 3 months and 11.7% at 6 months. The newly developed other joint pain at 6 months was located on the hips (21.9%), knees (21.9%), finger joints (15.6%), elbows (12.5%), feet (9.4%), pelvis (6.3%), leg (6.3%), wrists (3.1%) and back (3.1%).(Nesbitt.et al 2015)

1:3: Research question:

What are the characteristics of pain among stroke patients?

1:4: Objectives:

1:4:1: General objective:

- To determined the characteristics of pain among stroke patients.

1:4:2: Specific objective:

- To explore the Socio-demographic information of the participants
- To find out more affected age group.
- To clarify the onset and behavior of pain after stroke.
- To identify the pain intensity/severity level according to VAS scale.
- To focus the pain during movement.

1:5: List of variable:

Independent variable:

- Socio-economic demography (Age, Gender, Marital Status, Religion, Residential Area, Education level.
- Types of stroke.
- Cause of pain.
- Side of pain.
- Onset of pain stroke.
- Behavior of pain.

Dependent variable:

- pain

1.6 Operational Definitions:

Stroke:

WHO defines stroke as rapidly developed clinical signs of focal disturbance of cerebral function lasting for more than 24 hours or leading to death without any apparent cause other than vascular origin.

Pain:

" An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage"

CHAPTER –II: LITERRATURE REVIEW

Stroke is a cardiovascular accident is a rapidly developed clinical sign of a focal disturbance of cerebral function of presumed vascular origin and o more than 24 hours duration (WHO, 1986 cited in Turner, Foster, and Johnson, 2006).

The _stroke‘ usually refers to the patients who have had Cardiovascular Accident (CVA) as the results in circulatory defects in which the symptoms have continued for more than 24 hours and it is due to a lesion affecting the opposite side of the cerebrum(Carr & Shepherd, 2006).

A Stroke is an acute medical emergency. Stroke (also called "Brain Attack") is disease of the circulatory system caused by the rupturing or the blockage of an artery. In middle aged and older women, approximately 70% of strokes are thromboembolic (caused by a blockage from a blood clot), 15% consist of intracerebral hemorrhage, and 10% of subarachnoid hemorrhage. Depending on where the rupture or blocked artery leads, this part of the brain does not get oxygen. This can result in permanent brain damage, disability and sometimes death (Harari et al., 2008).

Bangladesh is one of the most densely populated and developing country in the world. World widely Stroke is the second leading cause of death and the one of the leading causes of long term disability. Stroke occurs at an equal rate in men and women, but women are more likely to die. The occurrences of stroke amplify day by day and in many developing countries, the incidence is getting higher because of adaptation of unhealthy life style and lack of awareness (Siddiqui et al., 2012).

In 2007, the overall mortality rate from stroke was 273 000, which makes stroke the third-leading cause of death in the United States (Summers et al., 2009). Two-thirds of these deaths happened in people who live in developing countries and 40% of the subjects were aged less than 70 years. Moreover, cardiovascular disease is the largest part of leading disability in adults and each every year millions of stroke patients have to adapt their life with restrictions in activities of daily living as an end result of cardiovascular disease. Many surviving stroke patients often depend on other people’s nonstop support to survive (Thomas et al., 2006).

The major risk factor for stroke is hypertension. It is usually associated with other risk factors like smoking obesity, previous history of stroke or TIA, angina, arterial fibrillation, myocardial infarction and alcohol intake. History of contraceptive pills used by women is also a risk factor. Due to an ageing population strokes are increasing in number and are largely preventable (Amanullah et al., 2009). The preventable conditions that predispose to stroke are hypertension, cigarette smoking, obesity, physical inactivity, arterial fibrillation, diabetes mellitus, ischemic heart disease, hyper lipidemia, alcohol

abuse, asymptomatic carotid stenosis, transient ischemic attack and other cardiac disorders are (Almani et al., 2008).

Pain is a common phenomenon in stroke patients. There are multiple contributing mechanisms for post stroke pain and several well-characterized, post-stroke pain syndromes. Nonetheless, the identification of pain in the post-stroke population often proves challenging. Careful inquiry, use of rating scales, and physical examination may lead to improved identification and effective treatment of post-stroke pain. This may improve patient comfort, mood, rehabilitation, and quality of life.

Strokes are usually diagnosed by studying images of the brain (brain imaging) and carrying out physical tests. Doctor may check for the causes of stroke by taking blood tests to determine cholesterol and blood sugar levels, checking pulse for an irregular heart beat and taking a blood pressure measurement. Even if the physical symptoms of a stroke are obvious, brain imaging should also be carried out to determine: if the stroke has been caused by a blocked artery or burst blood vessel, which part of the brain has been affected, how severe the stroke is, the risk of a transient ischemic attack (TIA). Different treatment is required for each type of stroke so a rapid diagnosis will make treatment more straight forward (Jakson et al., 2006)

There are 2 main types of stroke- Ischemic & Hemorrhagic. Ischemic stroke or cerebral infarct (80% of strokes) results from a blockage or a reduction of blood flow in artery that supplies brain. They are caused either by a clot (thrombus) which blocks the blood vessel or by the buildup of plaque often due to cholesterol within the arteries which narrows vessel resulting in a loss of blood flow (Thomas et al., 2006). The most common type of stroke is ischemic. Usually it occurs as an artery to the brain is blocked. Most frequently middle cerebral artery is blocked. Posterior cerebral artery also block but the frequency is not like as middle cerebral artery. The anterior cerebral artery also block and cause ischemic stroke but the occurrence is comparatively less. Assume that usually 80% of all strokes are ischemic stroke. If the artery continuously blocked for more than a few minutes, the brain cells may expire (Islam et al., 2012).

The most common type of stroke and it is responsible for about 80% of all first ever in a life time stroke. This takes place when a clot blocks blood vessels or become too narrow for blood to flow within the brain due to reduction in blood supply, brain cells die from lack of oxygen (Nayan, 2009).

Stroke or cardiovascular accident (CVA) does not represent a single disorder but rather a variety of disorders characterized by the sudden onset of neurological deficits brought about by vascular injury to the brain. Many stroke survivors are left with permanent disabilities, including (partial) paralysis, somatosensory deficits, speech and language problems, cognitive deficits, fatigue and emotional or personality changes. The most typical manifestation of CVA is hemipheresis or hemiplegia on the side of the body

contra lateral to the site of CVA. One study on the people of Bangladesh shows that the 75.59% of all stroke patients are men and 24.1%are women where due to large artery atherosclerosis 21.25%, small artery occlusion17.32%, cardio embolism 18.1% other determined etiology 26.7% and undetermined causes 16.53% (Hayee et al.,2012).

Stroke can be classified into two main types-Ischemic and Hemorrhagic. Ischemic stroke includes arthero thrombotic, lacunar and embolic infarction .Hemorrhagic stroke includes intracerebral and subarachnoid hemorrhage (warlow, 2010). In addition, pain is common complication after stroke. Post stroke pain can be a vast burden for the patient, increases hospital stay, reduces quality of life and interferes with functional recovery after stroke (Roosink, 2011).

Post stroke pain occurs through both neuropathic and nociceptive mechanisms. Efforts to standardize descriptive terms for pain led to a publication by the International Association for the Study of Pain of pain terms and their definitions. These are commonly used in studies of PSP to define pain subtypes. The commonest types of PSP are central post-stroke pain (CPSP), pain secondary to spasticity, shoulder pain, complex regional pain syndrome (CRPS), and headache [Rehabil Med 2007].

Pain is a common phenomenon in stroke patients. There are multiple contributing mechanisms for post stroke pain and several well-characterized, post-stroke pain syndromes. Nonetheless, the identification of pain in the post-stroke population often proves challenging. Careful inquiry, use of rating scales, and physical examination may lead to improved identification and effective treatment of post-stroke pain. This may improve patient comfort, mood, rehabilitation, and quality of life.(Harrison and Field, 2015).

Patients with severe strokes who received individualized care on a highly specialized stroke rehabilitation unit achieved impressive functional outcomes despite a lag of seven weeks post stroke before rehabilitation was initiated.Ischemic stroke is the third leading cause of death in the United States and a common reason for hospitalization. Imaging studies, including magnetic resonance angiography, carotid artery ultrasonography, and/or echocardiography, may be indicated to determine the cause of the stroke. Evaluation for aspiration risk, including a swallowing assessment, should be performed, and nutritional, physical, occupational, and speech therapy should be initiated. Significant causes of morbidity and mortality following ischemic stroke include venous thrombo embolism, pressure sores, infection, and delirium, and measures should be taken to prevent these complications. For secondary prevention of future strokes, antiplatelet therapy with aspirin should be initiated within 24 hours of ischemic stroke in all patients without contraindications, and one of several antiplatelet regimens should be continued longterm. Diabetes mellitus should be controlled and patients counseled about lifestyle modifications to reduce stroke risk. Rehabilitative therapy following hospitalization improves outcomes and should be considered.Spasticity following a stroke occurs in about 30% of patients. The lack of consensus is highlighted on the basis of spasticity and

the associated absence of guidelines for treatment, use of drugs and rehabilitation programs.

Many patients report more than one pain subtype with common combinations being CPSP and spasticity, or CPSP and shoulder pain. [Profess trial. Stroke 2013] .By definition, CRPS has features of neuropathic pain, and as such, these syndromes co-occur as well.(Kim, 2009)

Prevalence, Risk Factors, and Clinical Characteristics CPSP is a common pain syndrome after stroke, estimated to account for over one-third of cases of post stroke pain [Rehabil Med 2002]

Latency to onset is variable. Most commonly, it develops within 3 to 6 months of stroke [Cambridge University Press, 2007]. The commonest types of PSP are central post-stroke pain (CPSP), pain secondary to spasticity, shoulder pain, complex regional pain syndrome (CRPS), and headache, Many patients report more than one pain subtype , with common combinations being CPSP and spasticity, or CPSP and shoulder pain. By definition, CRPS has features of neuropathic pain, and as such, these syndromes co-occur as well.(Harrison and Field, 2015).

Up to twenty of individuals United Nations agency have a stroke mightdevelop central post-stroke pain (CPSP). This downside might occur if structures within the brain that interpret pain ar plagued by the stroke. it's usually diagnosed by excluding different a lot of common causes initial. this can be additionally referred to as neuropathic pain, or central pain syndrome. There ar differing types of pain you may expertise if you have got CPSP. many of us describe it as a burning or burning cold sensation, or a throbbing or shooting pain. Some individuals additionally expertise pins and needles or symptom within the areas plagued by the pain. for many stroke survivors with CPSP, the pain happens within the facet of their body that has been plagued by the stroke. The pain might begin directly once your stroke however a lot of usually it begins many months later. Some individuals notice this pain becomes worse thanks to different factors like movement or a amendment in temperature. (Lindgarden et al.,2007)

Many pain descriptors was common, some were discriminating as burning in central and cramping in nociceptive pain, and pressing and worrying in headache. More than half with central or nociceptive pain had continuous or almost continuous pain. Cold was the factor mostly increasing the pain in central, physical movements in nociceptive pain, and stress and anxiety in headache. More than one-third had no pain treatment and two-thirds of those with central pain had no or inadequate prescribed pain treatment. The clinical findings support the classification of pain and describe discriminating and common pain characteristics in pain conditions after a stroke. Pain within 3 months before the stroke was reported by 49.1%.

Total pain prevalence including all pain, both pain with onset before stroke and newly developed pain was 55.3% at 3 months and 65.8% at 6 months. The incidence of newly developed pain was 37.8% at stroke onset, 41.8% at the 3-month follow-up and 45.8% at the 6-month follow-up .

The impact of newly developed pain on daily life for the patients from phone interviews was moderate in 20.0% and severe in 16.4% of patients at 3 months, while moderate in 25.4% and severe in 8.2% at 6 months. A total of 53.2% of the patients reported usage of pain medication within the last week and 34.9% on the day of the phone call at the 3-month follow-up while 52.9% reported usage within the last week and 31.9% on the day of phone call at the 6-month follow-up. More than one type of pain was reported by 32.2% of patients with newly developed pain at 3 months and by 36.5% at 6 months.(Harrison and Field, 2015).

At the 6-month follow-up, newly developed pain was reported by 45.8% of the patients; headache by 13.1%, shoulder pain by 16.4%, other joint pain by 11.7%, other pain by 20.0% and evoked pain by light touch or thermal stimuli by 8.0%. More than one pain type was reported by 36.5% of the patients with newly developed pain. According to pre-defined criteria, 10.5% of the patients were classified as having possible central post-stroke pain. There was a moderate to severe impact on daily life in 33.6% of the patients with newly developed pain.(Hansen *et al.*, 2012)

caregivers' total burden score was largely driven by their feelings of being 'depended on as the only one who could provide the care' and their subsequent lack of personal time [20]. Similarly, other studies have found that psychological changes in stroke patients such as dependency, irritability, and immature behaviour are often cited as the major cause of stress among caregivers. Thus, similar to other stroke caregivers, Japanese caregivers would be likely to benefit from counselling regarding how to deal with patient moods and how to manage their own private time in order to improve their sense of vitality and mental health. Current research suggests that caregiver stress is amenable to interventions such as support groups and counselling. Future research is needed to further investigate stroke caregiver needs in Japan and to test interventions to improve their quality of life.

caregivers' total burden score was for the most part driven by their feelings of being 'depended on because the only WHO may give the care' and their consequent lack of private time [20]. Similarly, different studies have found that psychological changes in stroke patients like dependency, irritability, behaviour square measure typically cited because the major explanation for stress among caregivers. Thus, like different stroke caregivers, Japanese caregivers would be doubtless to benefit from message concerning the way to cope with patient moods and the way to manage their own personal time so as to enhance their sense of vitality and psychological state. Current analysis suggests that caregiver stress is amenable to interventions like support teams and message. Future analysis is required to more investigate stroke caregiver desires in Japan and to check interventions to enhance their quality of life. (Tomoko et.al 2003)

Studies show the negative effects caring will wear caregiver health. White, Mayo, Hanley, and Wood-Dauphinee (2003) examined quality of life in ninety seven stroke caregivers, and Teel, Duncan, and Lai (2001) assessed the health of eighty three stroke caregivers throughout the primary six months of caring. Results unconcealed that caregivers according little amendment in their physical health. Despite this stability, they according physical symptoms, as well as fatigue, headaches, joint pain, issues falling asleep, depressive symptomatology, repeated sorrow, programming and finance issues, and difficulties with family support (Teel et al.; White et al.). Sit, Wong, Clinton, Li, and Fong (2004) conducted a cross-sectional descriptive study examining the physical health of 102 caregivers. Results showed eighty three of participants according fatigue and stress, with about four-hundredth of those respondents reportage bodily symptoms that echoed the findings of White and colleagues. In general, despite exaggerated chronic conditions related toaging, the bulk of senior folks, which has several caregivers of stroke survivors, still rate their overall health nearly as good or excellent (Dening et al., 1998).

CHAPTER –III: METHODOLOGY

3.1 Study design:

Quantitative research approach was applied to determine the characteristics of the pain among the stroke patient in the form of a cross sectional designs were used for this study. This design involves identifying group of people and then collecting the information that might be requires when they use the particular service. Survey research is one of the most common forms of research that involves the asking a large group of people questions about a particular topic or issue and these are related to the interest of the participant. Survey is a method of collecting data which involves the measuring relevant sample variables (often using s questionnaire) without any form of manipulation or systemic intervention .The idea with the survey usually approaches a sample of target group of interest, interviews them or ask them questionnaire .

3.2 Study population: A population is the total group or set of events or totality of the observation on which a research is carried out. In this study, sample populations were selected from the participant of Centre for the Rehabilitation of the paralyzed (CRP), Savar, Dhaka.

3.3 Study site: Centre for the Rehabilitation of paralyzed (CRP).Savar, Dhaka.

3.4 Study area: Neurology unit of the Centre for the rehabilitation of the paralyzed.

3.5 Sampling: Nonrandom convenient sampling was applied to select sample.

3.6 Sample size: For this study it was determinate to focus his study by 322 samples following the calculation. But as the study was done as a part of fourth professional academic research project and there were some limitations, so in this study it was limited with 110 cutting and finishing operators as sample.

Sampling procedure for cross sectional study:

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

Here,

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

p= 0.7

q= 1-p

d= 0.05

Where

n = sample size

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

p = expected prevalence (as fraction of 1)

q = 1- p (expected non-prevalence)

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

3.7 Inclusion and Exclusion criteria

3.7.1 Inclusion criteria for patients:

- Both male and female selected who had stroke.
- Both ischemic and hemorrhagic types of stroke with any type of pain.
- All age group was selected who have suffering pain after stroke.

Inclusion criteria for caregivers :

- Both male and female selected who were caring the patients.
- All age group was selected who have suffering pain after stroke.

3.7.2 Exclusion criteria for patients:

- Patient who are not voluntarily agreed to participate in the study.
- Patient who has history of trauma like as fracture or others injury.
- Have other type of neurological disorder except stroke.

Exclusion criteria for caregivers:

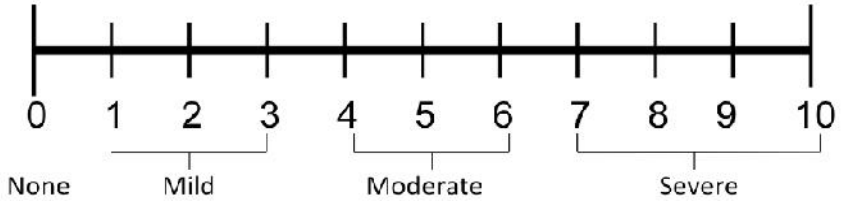
Caregiver who are not voluntarily agreed to participate in the study

3.8 Sampling technique:

For this study convenience sampling technique are used due to the time limitation and also for the small size of population and as it was the one of the easiest, cheapest and quicker method of sample selection. Samples were selected from Centre for the Rehabilitation of the paralyzed (CRP) at Savar, Dhaka by using inform consent. There are a lot of patients, from this population it was selected 110 samples, according to the inclusion and exclusion criteria.

3.9 Pain Rating Scale

The patient is asked to make three pain ratings, corresponding to current, best and worst pain experienced. The average of the 3 ratings was used to represent the patient's level of pain. "Please indicate the intensity of current, best, and worst pain levels over the past 24 hours on a scale of 0 (no pain) to 10 (worst pain imaginable)"



3.10 Data collection materials

This study provide structured questionnaire for data collection. Questions were set in a logical order. Bengali version of question was used because of participant easy understanding. Also papers, pen, pen drive, clip board and consent forms were used for data gathering.

3.11 Data analysis plan :

For this study descriptive analysis procedure are used to analyze collected data. Here researcher has been find out percentages, average for data. And Data were analyzed in using a SPSS 17 version software programmer.

3.12 Ethical consideration :

- It should be ensured by the investigator that it would maintain the ethical issue at all aspects of the study. Because it is the crucial part of the all form of research.
- For Conducting this research ethical committee have checked the proposal and allowed to carry out the research project. The formal permission was taken from the head of the physiotherapy department to collect the data.
- All the participants and authority were informed about the purpose of the study.
- The entire interviews were taken in a comfort feeling and confidential place.
- Researcher ensures the confidentiality of participants and shares the information only with research supervisor. The assessment files were strictly secured and it was not open in front others without researcher.

3.13 Informed consent:

For this study participants were selected conveniently for this study according to the inclusion and exclusion criteria and inform the study objective properly by using consent form. Participant for the interview were explained clearly about the study and verbally informed that their information would be published but their name and address would not be used in any means in the study project. The interview note and recording word would not be shared or discussed with other. The study would not harm or embarrasses her or him in order to participant in the study. Participants also ensure that their participation was voluntary and they can reject or withdraw from the study any time.

CHAPTER –IV: RESULTS

The aim of my research was to explore the characteristics of pain among stroke patient and their caregivers .The study is a cross sectional study. Convenience sampling was done to select samples. Total 110 data were collected from the Neurology department of CRP, Savar. Data were numerically coded and captured in Microsoft Excel, using an SPSS 20.0 version software program. This study collected the descriptive data and calculated as percentages and presented by tabulation.

4.1:Socio-demographic Information of patients:

Among the 110 Participants, majority of the participant were had male and the number were 69 & female were 41.In here the percentage were 62.7% & 37.3% between Male & female. The people of male are more vulnerable than the female.(Table-1).

Among all the participants, (7.3%) 8 participants were between 21-30 years, (10.9%)12 were between 31-40 years,(23.6)26 participants were between(42-50)years,(30.9%) 34 participants age group were between (51-60) years. The study show details in bellow the (Table-1) & we see that the (51-60) age group are more vulnerable.

In this study the majority of the participant were had married and the number were 107 ,this percentage were 97.3 & 3 person were unmarried where the percentage were 2.7(Table-1)

Among the 110 participants, 48 participants were urban and 62 participants were rural. In percentage, were 43. 6 % & 56.4% between urban and rural .(Table-1)

Among all the them 23 (20.9%) participants had No academic education,12 (10.9%) participants had some primary education, 23(20.9%) participants completed their Secondary education, 24 (21.8%) participants completed their higher secondary certificate education,28(25.5%) participants completed Bachelor program. (Table-1)

Among them 69 participants were 0-6 month of stroke, 32 participants were 7-12 month of stroke, 4 participants were 13-18 month of stroke, 2 participants were 19-24 month of stroke,2 3 participants were 25-30 month 0f stroke & see details in the table-1.

Among all of them 27 participants were employer before stroke, 19 participants were doing business, 1 participants were teacher, 28 participants were house wife, 31 participant were unemployed, 4 participants were others professional in before stroke .In percentage 24.5% participants were employer,17.3% were doing business,.9% were teacher,25.5% were housewife,28.2% were unemployed and 3.6% were others professional before stroke.(table-1)

4.1Socio demographic Information:

Variable		Number	Percentage
Gender	Male	69	62.7
	Female	41	37.3
Age of the patients	(21-30) years	8	7.3
	(31-40)years	12	10.9
	(41-50) years	26	23.6
	(51-60) years	34	30.9
	(61-70) years	19	17.3
	(71-80) years	11	10.0
Marital status	Married	107	97.3
	Unmarried	3	2.7

Residence	Urban	48	43.6
	Rural	62	56.4
Educational Status	No academic education	23	20.9
	Primary	12	10.9
	Secondary	23	20.9
	Higher secondary	24	21.8
	graduate or above	28	25.5

Variable		Number	Percentage
Duration of stroke	(0-6) month	69	62.7
	(6-12) month	32	29.1
	(13-18) month	4	3.6
	(19-24) month	2	1.8
	(25-30)month	3	2.7
Occupation before stroke	Employer	27	26.4
	Business	19	17.3
	Teacher	1	.9
	house wife	28	25.5
	Unemployed	31	28.2
	Others	4	3.6
Occupation after stroke	Business	1	.9
	Unemployed	109	99.1

Table no : 1

4.2 : Types of stroke:

Among the 110 participants 82 participants were ischemic type of stroke and 28 participants were hemorrhagic type of stroke. In percentage 74.5% participants were ischemic type of stroke and 25.5% participants were hemorrhagic type of stroke. (Table-2)

Variable		Number	Percentage
Types of stroke	Ischemic	82	74.5
	Hemorrhagic	28	25.5

Table no : 2

4.3: Affected site:

Among the 110 participant 68 participants were suffered right side pain after stroke and 42 participants were suffered left side pain after stroke. Here percentage were 61.8 % & 38.2 % (Table-3)

Variable		Number	Percentage
Affected site	Right	68	61.8
	Left	42	38.2

Table:3

4.4: Pain on patients:

Among 110 participants the 78 (70.9%) patient were had pain & the 29(29.1%) patients were had no pain. (Table-4)

Variable		Number	Percentage
Pain on patient	Yes	78	70.9
	No	32	29.1

Table :4

4.5:Location of pain:

Among 110 participants , 1 participants had finger pain, 21 participants had wrist pain,359 participants had shoulder, 1 participants had knee pain, 6 participants had hip pain, 4 participants had neck pain, 6 participants had back pain, 32 participants were no pain and their percentage value show details in Table-5.

Variable		Number	Percentage
Location of pain	Finger	1	.9
	Wrist	21	19.1
	Shoulder	39	35.5
	Knee	1	.9
	Hip	6	5.5

	Neck	4	3.6
	Back	6	5.5
	No pain	32	29.1

Table no : 5

4.6: Onset of pain:

Among all the participants,57 participant are affected by stroke in the duration of (0-1) month and their percentage value were 51.8%. 14(12.7%) participants were in (1-2) months, 2 (1.8%) participants were in more then 3 month. See details in Table-6

Variable		Number	Percentage
Onset of pain After stroke	(0-1) month	57	51.8
	(1-2) month	14	12.7
	(2-3) month	2	1.8
	(>3) month	5	4.5
	No pain	32	29.1

Table no : 6

4.7: Pain before stroke:

Among all of them only 1 participant have pain before stroke and 109 participant have no pain in before stroke and .9% & 99.1 is their percentage value (Table-7).

Variable		Number	Percentage
	Yes	1	.9
	No	109	99.1

Table no : 7

4.8: Intensity of pain by NPR scale:

Among all the severity of pain by NPR scale the 5 participants pain intensity was between 1-3 in NPR scale .it's means the mild pain. 56 participants grade was between 4-6. It means moderate pain & 17 participants marks their grade between 7-10 . which means severe type of pain. & 32 participants had no pain. For see the full information show in Table-8.

Variable		Number	Percentage
Pain intensity by NPR scale for patient	Mild pain (1-3)	5	4.5
	Moderate pain (4-6)	56	50.9
	Severe pain(7-10)	17	15.5
	No pain	32	29.1

Table no : 8

4.9: Behavior of pain:

. Among all of the participants the pain behavior is the 20 participants had constant pain and it' percentage value is18.2% ,58 (52.7%) participants had intermittent pain show details in table no 9.

Variable		Number	Percentage
Behavior of pain	Constant	20	18.2
	Intermittent	58	52.7
	not applicable	32	29.1

Table no: 9

4.10: Cause of Pain:

Among 110 participants the all paint who suffered by pain ,their pain cause were non traumatic. No one had any traumatic cause for pain in my study .Table-10.

Variable		Number	Percentage
Cause of pain of patients	non traumatic	78	70.9
	not applicable	32	29.1

Table no: 10

4.11: Pain at rest:

Among 110 participants 1(.9%) had finger pain,5(4.6%) participants had wrist pain,9 (8.2%)
participants hadshoulder pain, 1 participants had hip pain, 1 had neck pain and 1 had back pain in the resing position. see the full information in Table-11.

Variable		Number	Percentage
Pain at rest of patients	Finger	1	.9
	Wrist	5	4.6
	Shoulder	9	8.2
	Hip	1	.9
	Neck	1	.9
	Back	3	2.7
	No pain	90	81.8

Table no -11

4.12: Pain during movement:

Among 110 participants the 1 (.9%) had finger pain during movement, 19 (17.3%) participants had wrist pain, 41 (37.3%) participants which is the biggest number of case for pain during movement , Knee, hip, back and others areas information is given bellow in the table no 12.

Variable		Number	Percentage
Pain during movement of patients	Finger	1	.9
	Wrist	19	17.3
	Shoulder	41	37.3
	Knee	1	.9
	Hip	6	5.5
	Neck	4	3.6
	Back	6	5.5
	No pain	32	29.1

Table no: 12

4.13: Management of pain:

Among all of the participants, 78 participants had pain. And they all took physiotherapy for their pain management . the physiotherapist deal this case beside stroke condition management. See details in table no 13.

Variable		Number	Percentage
Management of pain of patients	Physiotherapy	78	70.9
	No pain	32	29.1

Table no : 13

4.14: Socio demographic information of caregivers:

Among the 110 Participants, majority of the participant were female and the number were 72
(65.5%) and the male participants were 38 (34.5%) .The percentage of female are more vulnerable than the male. (Table-14).

Among the 110 participants,8 (7.3%) participants were between 11-20 years,41 (37.3%) were between 21-30 years,29 (26.4%) participants were in (31-40) age group. The full information is show in table no 14.

Among 110 participants majority of the participant were had married and the number were 78 & percentage value were 70.9 % . and other site the 32 (28.8%) participants were unmarried (Table-14)

Among the 110 participants, 56 participants were in urban area and 54 participants were in rural area. In percentage, urban participants were 50.9% and rural percentage were 49.1%. (Table-14)

Among the full participants 5 (4.5%) participants had No academic education, 7 (6.4%) participants had some primary education,37 (33.6%) participants completed their Secondary education, 31 (28.2%) participants completed their higher secondary certificate education, 30 (27.3%) participants completed Bachelor program. Show the information in table-14 which is given bellow.

Among 110 participants the majority number of relation between patient and caregivers were wife . 14 (12.7%) participants were husband, 39 (35.5%) were wife , 21 (19.1%) participants were their son, 18 (16.4%) participants were their daughter & 18 (16.4%) participants are their relatives including paid caregivers. (Table-14).

Variable		Number	Percentage
Gender of the care givers	Male	38	34.5
	Female	72	65.5
Age of the caregivers	(11-20) years	8	7.3
	(21- 30) years	41	37.3
	(31-40) years	29	26.4
	(41-50) years	17	15.5
	(51-60) years	15	13.6

Variable		Number	Percentage
Marital status of caregivers	Married	78	70.3
	Unmarried	32	28.8
Residence of caregivers	Urban	56	50.9
	Urban	54	49.1
Educational status of caregivers	no academic education	5	4.5
	Primary	7	6.4
	Secondary	37	33.6
	higher secondary	31	28.2
	graduate or above	30	27.3
Relation with patients	Husband	14	12.7
	Wife	39	35.5
	Sun	21	19.1
	daughter	18	16.4
	relatives	18	16.4

Table no :14

4.15: Pain on caregivers:

Among the 110 participant 40 (36.4%) participants were suffered by pain and 70 (63.6%) participants had no pain. (Table-15).

Variable		Number	Percentage
Pain on caregivers	Yes	40	36.4
	No	70	63.6

Table no :15

4.16: Location of pain:

Among 110 participants , 23 (20.9%) participants were back pain and it's the major cause.& 9(8.2%) participants were suffering neck pain, 7 number of participants had knee pain, 70 participants had no pain in this study. See details value in table-16.

Variable		Number	Percentage
Location of pain	Elbow	1	.9
	knee	7	6.4
	Neck	9	8.2
	Back	23	20.9
	No pain	70	63.3

Table no :16

4.17:Duration of pain:

Among 110 participants 9 (8.2%) participant were suffering pain in duration of (0-1) month. 6 (5.5%) participants were (1-2) months ,4 (3.6%) were (2-3) month, ,21 (19.1%) participants were suffering pain in more then 3 months. The details result is given bellow the table no-17.

Variable		Number	Percentage
Duration of pain of caregivers	(0-1) month	9	8.2
	(1-2) month	6	5.5
	(2-3) month	4	3.6
	>3 month	21	19.1
	No pain	70	63.6

Table no :17

4.18: Pain intensity by NPR scale:

Among 110 participants the severity of pain by NPR scale the 5 participants pain intensity was between 1-3 in NPR scale .it's means the mild pain. 31 participants grade was between 4-6. It means moderate pain & 4 participants marks their grade between 7-10 . which means severe type of pain. & 70 participants had no pain. see the table-18.

Variable		Number	Percentage
Pain intensity by NPR scale for care givers	(1-3) mild pain	5	4.5
	(4-6) moderate pain	31	28.2
	(7-10) severe pain	4	3.6
	No pain	70	63.6

Table no:18

4.19: Behavior of pain for caregivers:

Among 110 participants the pain behavior is the 4 participants had constant pain and their percentage value is 3.6%. ON the others hand the 36 (32.7%) participants had intermittent pain and 70 participants had no pain in this study. See details in table no 19

Variable		Number	Percentage
Behavior of pain for caregivers	Constant	4	3.6
	Intermittent	36	32.7
	No pain	70	63.6

Table no :19

4.20: Cause of pain of caregivers:

Among 110 participants 2 (1.8%) participants had traumatic cause this pain and 38 (34.5%) participants had non traumatic cause. 70 participants were not no pain in my stydy. see others details information in table-20.

Variable		Number	Percentage
Cause of pain of caregivers	Traumatic	2	1.8
	non traumatic	38	34.5
	not applicable	70	63.6

Table no:20

4.21: Pain at rest in caregivers:

Among 110 participants, 1(.9%) participants had knee pain,2 (1.8%) participants had neck pain, 2 (1.8%) participants had back pain in resting position. see the full information in table-21.

Variable		Number	Percentage
Pain at rest of caregivers	Knee	1	.9
	Neck	2	1.8
	Back	2	1.8
	No pain	105	95.5

Table no : 21

4.22: Pain during movement in caregivers:

In other side among 110 participants 23 (20.9%) participants had back pain during movement and it's the major number.& 9(8.2%) participants were suffering neck pain,7 number of participants had knee pain, and only 1 participants had elbow pain during movement. 70 participants had no pain in this study. See details in table : 22

Variable		Number	Percentage
Pain during movement of caregivers	Elbow	1	.9
	Knee	7	6.4
	Neck	9	8.2
	Back	23	20.9
	No pain	70	63.3

Table no :22

4.23: Management of pain:

Among 110 participants, 70 caregivers had no pain and 40 caregivers suffered by pain in different area , and in this study we see that the 12 (10.9%) participants took different types of pain killer, Napa etc for their pain relief and only 8 participants were took physiotherapy for their pain management. And others were not concern about their pain.

Variable		Number	Percentage
Management of pain for caregivers	Drugs (pain killer, NSAID)	12	10.0
	Physiotherapy	8	7.3

Table no : 23

4.24 : Training for patient caring:

Among 110 participants no one participants get raining for patient caring . it's a major limitation in our country for care giving. (Table -24)

Variable		Number	Percentage
Training for patient care	No	110	100

Table no :24

4.25: Advice for patient caring:

Among 110 participants , all participant get advice from their therapist (Table-25)

Variable		Number	Percentage
Advice for patient care	Yes	110	100

Table no:25

CHAPTER –V: DISCUSSION

The aims of this study was to find out characteristics of pain among the stroke patients & their caregivers along with more affected age group, sex, pain onset and severity of pain and pain behavior and so on. pain is a well known and common complication after stroke. The findings from this study support that shoulder pain is most common problem (Lingdgren et al., 2007) that can occur early after stroke (Dromerick et al., 2008).

Age is one of variable in this study. Here the mean age is 46 years; other study in Washington (Dromerick et al., 2008) shows mean age 57.30 years.

In this study where male is 75% and female is 35%. Another study in India was shows (Joy et al., 2012) male is 61.5%% and female is 38.5%.

In this study, 21.8% were never no academic knowledge, 11.8% were primary education, 20.9% were completed secondary education20.9% were completed higher secondary education, 24.5% were completed graduation or more, Here (Salbach et al., 2006) shows in America 29% were none primary, secondary 37% and college university 34%.

This study shows 80% were ischemic and 20% were hemorrhagic stroke among participant. Other study on shoulder pain in hemiplegic patients in Turkey (Demirci et al., 2007) shows that 71.8% ischemic and 28.2%hemorrhagic stroke. And study show 28 right-sided hemispheric (38%) 39 left-sided hemispheric (53%) 2 bilateral hemispheric (3%) 5 unknown hemispheric (6%). (Grant et al.,2002)

IN our study we saw the 67.3% were female caregiver and 32.7 % were male caregivers. And in other study we the 91% caregivers were female and only 9% participants were male caregivers. Family caregiver's education, (4.5%) had no academic education,6.4% primary education , 34.5% had secondary education,31.8% had higher secondary education, 22.7 % had graduated or above, ang we see the another stydy of family caregivers education 13 less than high school (18%) 37 high school graduate (50%) 24 college graduate (32%).(Grant et al.,2002).

We the relation between patient and caregivers were 13 (11.8%) participants were husband, 40 (36.4%) were wife , 20 (18.2%) participants were their sun, 17 (15.5%) participants were their daughter & 4 (3.6%) participants are their relatives. On others stydy show the Family caregiver's relationship to stroke survivor 30 spouses (41%) 27 daughters (36%) 8 daughters-in-law (11%) 2 sons (3%) 7 other relatives (9%) (Grant.et al.,2002)

Among the 110 participant 41 (37.3%) participants were suffered by pain and 69 (62.7%) participants had no pain in my study.

Limitations:

There were a number of limitations and barriers in this research project which had affect the accuracy of the study, these are as follow:

- The main limitation of the study was its short duration that may have affected the result of the study. For better it would take more time.
- Sample selected from Neurology outdoor of C.R.P due to limitation of time and accessibility. But it needed to collect samples from different places and organizations in Bangladesh to make it generalized.
- Sample was drawn with convenient sampling technique which had possible chance to selection bias. For receiving physiotherapy treatment, we get only few stroke patient with shoulder pain came to the physiotherapy department at CRP. Most of the patients are not represented all over populated of Bangladesh, so most of the shoulder pain after stroke patients did not participate in this study.
- Total number of sample was 110 which were very small in number to generalize the result.
- The researcher was a 4th year B.Sc. in physiotherapy student and this was his first research project. He had limited experience with techniques and strategies in terms of the practical aspects of research. As it was the first survey of the researcher so might be there were some mistakes by the researcher.

CHAPTER –VI: CONCLUSION AND RECOMMENDATION

6.1 Conclusion :

In the world, stroke is considered as the 3rd leading cause of death and it is becoming a major threat of Neurological disability in population of Bangladesh. Bangladesh is a developing country with low socio-economic condition where people are not enough concerned about health. Health services are not sufficient in the Government and non-government sector. There are so many complications arise among the stroke patient like as pressure sore, bronchopneumonia, spasticity, shoulder pain, abnormal reaction etc. According to literature it was revealed that pain is more common among this complication after stroke. And most of case the shoulder and wrist joint are more affected by pain. Development of pain is more common complication in stroke patients. Evaluation of post-stroke pain should be part of stroke follow-up. This study shows the characteristics of the pain among the stroke patients. From this data results, it was focused that pain more male than the female, in rural patients s pain are more developed. The ischemic types of stroke are also more vulnerable for pain complication. The onset of pain after stoke are common in 0-1 month and had felt moderate pain on NPR scale and maximum participants compliant that the pain behavior is intermittent in nature. Majority of the participants produce pain during movement .Physiotherapy has been used in the treatment of pain . and the stroke patient caregivers also more vulnerable with pain. Most of the female caregiver suffering by pain. the were suffered by Neck pain, knee pain , back pain and others type of joint pain. But back pain is more common type of pain. Maximum caregiver does not take ant training for patient take care in our country. Nut they taken advice most of the time from their therapist In Bangladesh the physiotherapy started after liberation war. Most of the people are not enough familiar about physiotherapy. They consider it only as exercise. To make a bright future of physiotherapy it is essential to increase awareness about physiotherapy and effectiveness of early physiotherapy interventions for patient. In Bangladesh physiotherapy is a developing professions which is dominated by other health professionals due to lack of standard manpower. For this reason it is important to develop local evidence based practice. Evidence based practice is significant to find out the absolute reason of achieving the treatment goals and improvement. Last of all, this research has tried to represent the characteristics of the shoulder pain among the stroke patient.

6.2 Recommendations:

The aim of this study was to explore the characteristic of pain among the stroke patient and their caregivers the result that the researcher found from the study has fulfilled the aim of this research project. The researcher recommended the following things-

- Should take more samples for generating the result and make more valid and reliable.
- Should take more samples for pilot study to establish the accuracy of the questionnaire.
- Sample should collect from different hospital, clinic, institute and organization in different district of Bangladesh to generalize the result.
- This study can also accomplish with other individual functional problems.
- To find out an effective and efficient result in generalized form, other measurement scale should be used in consideration.
- To achieve more improvement more time with greater concentration of physiotherapy was needed. This is an undergraduate study and doing the same study at graduate level will give more precise output. There were some limitation of this study mentioned at the relevant section; it is recommended to overcome those limitations during further study

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APPENDIX

1. Permission letter
2. Informed Consent (Bangla)
3. Informed Consent (English)
4. Questionnaire (Bangla)
5. Questionnaire (English)

Date: 19-07-2018
To,
Head of the Physiotherapy Department,
Centre for the Rehabilitation of the Paralysed
Through: Head of the Physiotherapy Department,
Bangladesh Health Professions Institute
CRP-Chapain, Savar, Dhaka-1343

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

Sir,
With due respect and humble submission, I am Mt Farzana Akter, student of 4th year B.Sc. in Physiotherapy at Bangladesh Health Professions Institute (BHPI). In 4th year we have to do a research project for the partial fulfillment of the requirement for the degree of B.Sc in Physiotherapy. My research project title is, **"Characteristics of pain among stroke patients and their caregivers"** under the supervision of Firoz Ahmed Mamin, Associate Professor, Department of rehabilitation science, BHPI. I want to collect data for my research project from Stroke patient & their caregivers in the Neurology unit of CRP. I would like to assure that anything of my research project will not be harmful for the participants and department as well.

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

Yours faithfully,

Farzana Akter
Mt. Farzana Akter
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সম্মতপিত্র

আসসালামু আলাইকুম,

আমি ফারজানা আক্তার বাংলাদেশ হলেথ প্রফসেন্স ইন্সটটিটিউট (বি এইচ পি আই), ঢাকা বশ্বিবদ্যালয় এর স্নাতক ফজিওথরোপি বভিাগরে একজন ছাত্রী।স্নাতক ডগ্রিী প্রাপ্তরি জন্য আমার একটি গবষেনামূলক প্রকল্প পরচিালনা করা প্রয়োজন এবং আমার প্রকল্পটি হচ্ছে স্ট্রোক রোগীদরে ব্যথার ধরন এবং রোগীদরে সাহায্যকারীর ব্যথার ধরন। এজন্য আমি একটি জরপি পরচিালনা করবো এবং এজন্য আপনার থকেে আমার কছিু তথ্য নয়ো প্রয়োজন।আপনার দয়ো যাবতীয় তথ্য গোপন রাখা হব। এ তথ্য প্রদানরে কারনে আপনার চকিি□সায় প্রভাব পড়বনো।আপনার সাহায্য যথাযথ ভাবে আশা করছি, আপনাকে সত্য তথ্য দতিে অনুরোধ করবো। এই গবষেনায় আপনার অংশগ্রহন স্বচ্ছোকৃত এবং যকোন সময় আপনি এই গবষেনা থকেে নজিকেে প্রত্যাহার করে নতিে পারনে। আপনার যদি কোন জজ্ঞিাসা থাকে তাহলে কোন সংকোচ ছাড়াই জজ্ঞিাসা করতে পারনে।

পরবর্তীতে আরো তথ্যরে জন্য আপনি আমার সাথে অথবা/এবং ফরিোজ আহমদে মমনি, অধ্যাপক, ডপিার্টমন্টে অফ রহিবে সাইন্স, বি এইচ পই আই, সি আর পি, সাভার, ঢাকা-১৩৪৩ এর সাথে যোগাযোগ করতে পারনে।

আমি শুরু করার আগে আপনার কোন প্রশ্ন আছে?
আমি কি শুরু করতে পারি?

□ হ্যাঁ □
না

অংশগ্রহনকারীর সাক্ষর ও তারখিঃ
রোগীঃ .....
মোবাইল নম্বরঃ

রো·গীর
সাহায্যকারীঃ.....
মো·বাইল নম্বরঃ

তথ্য সংগ্রহকারীর সাক্ষর ও তারখি.....

প্রশ্নাবলী (বাংলা)

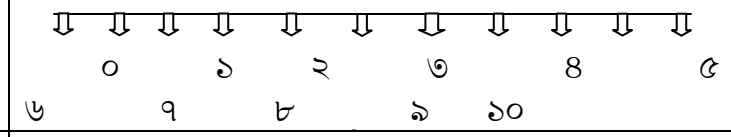
"স্ট্রো·ক রো·গীদরে ব্যথার ধরন এবং রো·গীর সাহায্যকারীদরে ব্যথার ধরন "

তথ্যসংগ্রহরেতারখি	

রো·গীর তথ্যঃ

প্রশ্ননঃ	প্রশ্ন	উত্তর
১	লিঙ্গ	১=পুরুষ ২=মহলিা
২	বয়স	.....বছর
৩	বৈবাহকি অবস্থা?	১= ববিাহতি ২=অববিাহতি ৩=ববিাহ বচ্ছিদে ৪= আলাদা ৫= অন্যান্য
৪	আপনার আবাসকি অবস্থান?	১= শহর ২=উপশহর ৩= গ্রাম

৫	আপনার শিক্ষাগত যোগ্যতা কি?	১= কোন প্রাতষ্ঠিানকি শিক্ষা নইে ২= প্রাথমকি শিক্ষা ৩= মাধ্যমকি শিক্ষা ৪= উচ্চ মাধ্যমকি শিক্ষা ৫=সম্মান অথবা এর বশেি
৬	স্ট্রোকরে তারখি?	.....
৭	স্ট্রোকরে পূর্বে আপনার পশো কছিলি?	১= চাকুরীজীবী ২= ব্যবসায়কি ৩= শিক্ষকতা ৪= রকি্সাচালক ৫= গাড়চিালক ৬= গার্মন্টেসকর্মী ৭= গৃহনিী ৮= বকোর ৯= অন্যান্য
৮	স্ট্রোকরে পরে আপনর পশো কি?	১= চাকুরীজীবী ২= ব্যবসায়কি ৩= শিক্ষকতা ৪= রকি্সাচালক ৫= গাড়চিালক ৬= গার্মন্টেসকর্মী ৭= গৃহনিী ৮= বকোর ৯= অন্যান্য
৯	স্ট্রোকরে ধরন?	১= ইস্কমেকি ২= হমেোরজেকি
১০	শরীররেআক্রান্ত পাশ?	১= ডান ২= বাম
১১	আপনার কি কোন ব্যথা আছে?	১= হ্যাঁ ২= না
১২	যদহি্যাঁহয়, আপনার ব্যথার স্থান কোথায়?	১= আজ্ঞুল ২= কব্জি ৩= কনুই ৪= কাধ ৫= গোড়ালি ৬= হাঁটু ৭= নতিম্ব ৮= ঘাড়

		৯= কোমড় ১০= বুক ১১= প্রযোজ্য নয়
১৩	স্ট্রোকের কতদিন পর ব্যথা শুরু হয়েছিল?	১= (০-১) মাস ২= (১-২) মাস ৩= (২-৩) মাস ৪= >৩মাস ৫= প্রযোজ্য নয়
১৪	স্ট্রোকের পূর্বে কি আপনার কোনো ব্যথা ছিল?	১= হ্যাঁ ২= না
১৫	এন পি আর স্কেল অনুযায়ি আপনার ব্যথার তিব্রতা?	 ০ ১ ২ ৩ ৪ ৫ ৬ ৭ ৮ ৯ ১০
১৬	আপনার ব্যথার ধরন?	১= সবসময় ২= কিছুক্ষন পর,পর ৩= প্রযোয্য নয়
১৭	আপনার ব্যথার কারন কি?	১= আঘাতজনিত ২= আঘাতজনিত নয় ৩= প্রযোয্য নয়
১৮	বিশ্রামে থাকা অবস্থায় আপনি কোথায় ব্যথা অনুভব করেন?	১= আঙ্গুল ২= কব্জি ৩= কনুই ৪= কাধ ৫= গোড়ালি ৬= হাঁটু ৭= নিতম্ব ৮= ঘাড় ৯= কোমড় ১০= বুক ১১= প্রযোয্য নয়
১৯	নড়াচড়া করা থাকা অবস্থায় আপনি কোথায় ব্যথা অনুভব করেন?	১= আঙ্গুল ২= কব্জি ৩= কনুই ৪= কাধ ৫= গোড়ালি ৬= হাঁটু ৭= নিতম্ব

		৮= ঘাড় ৯= কে·মড় ১০= বুক ১১= প্রযে·য্য নয়
২০	ব্যথার জন্য আপনি কি ব্যবস্থা গ্রহন করছনে?	১= ওষুধ ২= ফজিওথরোপি ৩= অন্যান্য ৪= প্রযে·য্যনয়

রে·াগীরসাহায্যকারীরতথ্যঃ

প্রশ্ন নঃ	প্রশ্ন	উত্তর
২১	লিঙ্গ	১= পুরুষ ২= মহিলা
২২	বয়স	..... বছর
২৩	বৈবাহিক অবস্থা?	১= বিবাহিত ২= অবিবাহিত ৩= বিবাহ বন্ধন বিচ্ছেদে ৪= আলাদা ৫= অন্যান্য
২৪	আপনার আবাসিক অবস্থা?	১= শহর ২= গ্রাম
২৫	আপনার শিক্ষাগত যে·াগ্যতা কি?	১= কে·ান প্রাতিষ্ঠানিক শিক্ষা নেই ২= প্রাথমিক শিক্ষা ৩= মাধ্যমিক শিক্ষা ৪= উচ্চ মাধ্যমিক শিক্ষা ৫=সম্মান অথবা এর বেশি
২৬	রে·াগীর সাথে আপনার সম্পর্ক?	১= স্বামী ২= স্ত্রী ৩= ছেলে ৪= মেয়ে ৫= আত্নীয় ৬= বেতনভুক্ত

২৭	আপনার কি কোন ব্যথা আছে?	১= হ্যাঁ ২= না
২৮	যদি হ্যাঁ হয়,আপনার ব্যথার স্থান কোথায়?	১= আঙ্গুল ২= কব্জি ৩= কনুই ৪= কাধ ৫= গোড়ালি ৬= হাঁটু ৭= নিতম্ব ৮= ঘাড় ৯= কোমড় ১০= বুক ১১= প্রযোজ্য নয়
২৯	আপনার ব্যথা কতদিন ধরে হচ্ছে?	১= (০-১) মাস ২= (১-২) মাস ৩= (২-৩) মাস ৪= >৩মাস ৫= প্রযোজ্য নয়
৩০	এন পি আর স্কলে অনুযায়ি আপনার ব্যথার তিব্রতা?	০ ১ ২ ৩ ৪ ৫ ৬ ৭ ৮ ৯ ১০
৩১	আপনার ব্যথার ধরন?	১= সবসময় ২= কিছুক্ষন পর,পর ৩= প্রযোজ্য নয়
৩২	আপনার ব্যথার কারন কি?	১= আঘাতজনিত ২= আঘাতজনিতনয় ৩= প্রযোজ্য নয়
৩৩	বিশ্রামে থাকা অবস্থায় আপনি কোথায় ব্যথা অনুভব করনে?	১= আঙ্গুল ২= কব্জি ৩= কনুই ৪= কাধ ৫= গোড়ালি ৬= হাঁটু ৭= নিতম্ব ৮= ঘাড় ৯= কোমড় ১০= বুক ১১= প্রযোজ্য নয়

৩৪	নড়াচড়া করা থাকা অবস্থায় আপনি কোথায় ব্যথা অনুভব করনে?	১= আঙ্গুল ২= কব্জি ৩= কনুই ৪= কাধ ৫= গোড়ালি ৬= হাঁটু ৭= নতিম্ব ৮= ঘাড় ৯= কোমড় ১০= বুক ১১= প্রযোয্য নয়
৩৫	ব্যথার জন্য আপনি কি ব্যবস্থা গ্রহন করছনে?	১= ওষুধ ২= ফজিওথরোপি ৩= অন্যান্য ৪= প্রযোয্য নয়
৩৬	রোগি দখোশুনা করার জন্য আপনি কি কোন প্রশক্ষিন গ্রহন করছেনে?	১= হ্যাঁ ২= না
৩৭	রোগি দখোশুনা করার জন্য আপনি কি কোন পরামর্শ গ্রহন করছেনে?	১= হ্যাঁ ২= না

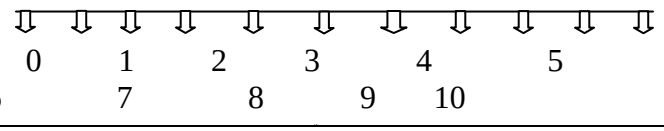
Questioner (English)

Characteristics of pain among stroke patients and their caregivers

Date of information	

Patients information:

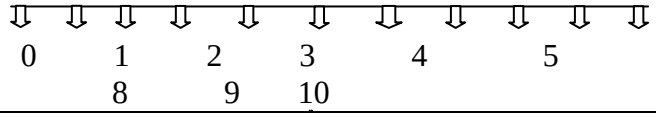
Question number	Question	Option
1	Sex	1= Male 2=Female
2	Age	…… years
3	Marital stetus?	1= Married 2= Unmarried 3=Divorced
4	Residence?	1= Urban 2=Rural
5	Your educational status?	1= No academic education 2=Primary 3=Secondary 4= Higher secondary 5=Graduate or more
6	Date of stroke	……
7	What is your occupation before stroke?	1= Employer 2=Business 3=Teacher 4=Rickshaw puller 5=Driver 6=Garments worker 7=Housewife 8=Unemployed

		9=Others
8	What is your occupation after stroke?	1= Employer 2=Business 3=Teacher 4=Rickshaw puller 5=Driver 6=Garments worker 7=Housewife 8=Unemployed 9=Others
9	Types of stroke	1=Ischemic 2=Hemorrhagic
10	Affected side in your body?	1=Right 2=Left
11	Do you have any pain?	1=Yes 2=No
12	If yes, then what is your location?	1=Finger 2=Wrist 3=Elbow 4=Shoulder 5=Ankle 6=Knee 7=Hip 8=Neck 9=Back 10=Chest 11= Not applicable
13	Onset of pain after stroke?	1=(0-1)Month 2=(1-2)Month 3=(2-3)Month 4= >3Month 5= Not applicable
14	Do you have any pain before stroke?	1=Yes 2=No
15	Pain Intensity by NPR scale	 0 1 2 3 4 5 6 7 8 9 10
16	Pain behavior?	1=Constant 2=Intermittent 3=Not applicable
17	What is the cause of your pain?	1= Traumatic 2=Non traumatic 3=Not applicable

18	What is the location of your pain in resting position?	1=Finger 2=Wrist 3=Elbow 4=Shoulder 5=Ankle 6=Knee 7=Hip 8=Neck 9=Back 10=Chest 11= Not applicable
19	What is the location of your pain during movement?	1=Finger 2=Wrist 3=Elbow 4=Shoulder 5=Ankle 6=Knee 7=Hip 8=Neck 9=Back 10=Chest 11= Not applicable
20	Management for pain ?	1=Medication 2=Physiotherapy 3=Others 4=Not applicable

Caregivers Information:

Question number	Question	Option
21	Sex	1= Male 2=Female
22	Age	…… years
23	Marital status?	1= Married 2= Unmarried 3=Divorced
24	Residence?	1= Urban 2=Rural
25	Your educational status?	1= No academic education 2=Primary 3=Secondary

		4= Higher secondary 5=Graduate or more
26	Relation with patients?	1=Husband 2=Wife 3=Son 4=Daughter 5=Relatives
27	Do you have any pain?	1=Yes 2=No
28	If yes, then what is your location?	1=Finger 2=Wrist 3=Elbow 4=Shoulder 5=Ankle 6=Knee 7=Hip 8=Neck 9=Back 10=Chest 11= Not applicable
29	Onset of pain	1=(0-1)Month 2=(1-2)Month 3=(2-3)Month 4= >3Month 5= Not applicable
30	Pain Intensity by NPR scale	 0 1 2 3 4 5 6 7 8 9 10
31	Pain behavior?	1=Constant 2=Intermittent 3=Not applicable
32	What is the cause of your pain?	1= Traumatic 2=Non traumatic 3=Not applicable
33	What is the location of your pain in resting position?	1=Finger 2=Wrist 3=Elbow 4=Shoulder 5=Ankle 6=Knee 7=Hip 8=Neck 9=Back 10=Chest

		11= Not applicable
34	What is the location of your pain during movement?	1=Finger 2=Wrist 3=Elbow 4=Shoulder 5=Ankle 6=Knee 7=Hip 8=Neck 9=Back 10=Chest 11= Not applicable
35	Management for pain ?	1=Medication 2=Physiotherapy 3=Others 4=Not applicable
36	Do you take any training for patient caring?	1=Yes 2=No
37	Do you take any avoid for patient caring	1=Yes 2=No