CHARACTERISTICS OF NECK PAIN AMONG CERVICAL SPONDYLOSIS PATIENTS ATTENDED AT CRP

Minanta Sharmin

Bachelor of Science in Physiotherapy (B.Sc. PT)

Session: 2006-07

BHPI, CRP, Savar, Dhaka-1343

Bangladesh Health Professions Institute (BHPI)

Department of Physiotherapy

CRP, Savar, Dhaka-1343

Bangladesh

August, 2012

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

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Submitted by **Minanta Sharmin**, for the partial fulfillment of the requirements for the degree of Bachelor of Science in Physiotherapy (B.Sc. PT).

……..
Md. Sohrab Hossain
B.Sc. PT (Hons.), Dip. Ortho. Med, MPH
Associate Professor of Physiotherapy, BHPI &
Head, Department of Physiotherapy
BHPI, CRP, Savar, Dhaka
Supervisor

…….
Mohammad Anwar Hossain
B.Sc. PT (Hons.), Dip. Ortho. Med, MPH
Associate Professor
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

…….
Nasirul Islam
B.Sc. PT (Hons.), MPH
Assistant Professor
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

……..
Md. Shofiqul Islam
B.Sc. PT (Hons.), MPH
Lecturer
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

…….
Md. Obaidul Haque
B.Sc. PT (Hons.), Dip. Ortho. Med, MPH
Associate Professor & Course Coordinator
Department of Physiotherapy
BHPI, CRP, Savar, Dhaka

Declaration

I declare that the work presented here is my own. All source used have been cited appropriately. Any mistakes or inaccuracies are my own. I also declare that for any publication, presentation or dissemination of the study. I would be bound to take written consent from my supervisor.

Signature: **Date:**

Minanta Sharmin
Bachelor of Science in Physiotherapy (B.Sc. PT)
Session: 2006-2007
BHPI, CRP, Savar, Dhaka-1343

Acknowledgement

I start with the name of Allah who is the most merciful and kind. I declared that to begin and complete this project successfully in time is only because of blessing of Allah. And leading all acknowledgements must be mine to my parents for their lot of encouragement to carry out this project.

I would like to express my gratitude to my honorable supervisor Md. Sohrab Hossain, for his tireless effort with excellent guidance and support without which I could not able to complete this project. I am also indebted to Mohammad Anwar Hossain, Md. Nasirul Islam and Md. Shofiqul Islam for sharing their precious knowledge that enables me to fine-tune various aspects concerning this study.

I would also like to thanks librarians of Bangladesh Health Professions Institute (BHPI) and their associates for their kind support to find out related books, journals and also access to internet. I thank all of my friends for their direct and indirect inspiration, suggestion as well as support.

Lastly I would like to thanks to those entire individual who are directly or indirectly involve with this study.

Abbreviations

ADL: Activity of Daily Living.

BHPI: Bangladesh Health Professions Institute.

CRP: Center for the Rehabilitation of the Paralyzed.

HSC: Higher Secondary School Certificate.

MRI: Magnetic Resonance Imaging.

NSAID: Non Steroidal Anti Inflammatory Drug.

SPSS: Statistical Package of Social Sciences.

SSC: Secondary School Certificate.

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Abstract

Purpose: To ascertain the characteristics of neck pain among cervical spondylosis patients. *Objective:* To determine the socio-demographic characteristics of cervical spondylosis, to explore the severity of pain, to identify nature of pain and to find out the aggravating factors among the patients. *Methodology:* A quantitative cross-sectional study design was chosen to accomplish the objectives of the study. Seventy subjects were selected through convenience sampling technique from the outpatient's musculoskeletal department of CRP. A structural questionnaire was used for collecting data from the participants. *Result:* The result of the study demonstrates that n=45 (64%) who were found in age range of ≥41 years and n=25 (36%) participants were in the age range ≤40 years. n=36(51%) male are affected by cervical spondylosis where as n=34(49%) were female. The frequent occupations affected by cervical spondylosis are included housewife 34% (n=24) and 23% (n=16) service holder. Among the subjects n=35 (50%) have right upper limb involvement with moderate types of pain in 76% (53) where as 23% (16) patients have severe pain and 1% (1) have mild pain. The finding also reflects that the highest number 49% (34) neck pain aggravated by neck bending activity and pain also aggravated by prolonged desk activity, over head activity, turning of the neck. Among the respondents who were taken previous intervention n=30 (43%) participant's response of treatment were not effective, n=14 (20%) were effective, n=19 (27%) were partially effective. Highest number participants those have severe type pain 9% (6) off their work for three days. *Conclusion:* The vulnerable age range to develop cervical spondylosis is over 40 and obviously occupation is one of the key issues to develop cervical spondylosis. The outcome also indicates that bending and household activities aggravate cervical spondylosis. So, life style and ergonomic modification can help a lot to minimize the symptoms of cervical spondylosis.

CHAPTER:I INTRODUCTION

1.1 Background

Cervical spondylosis is a common degenerative condition of the cervical spine. It is most likely caused by age-related changes in the intervertebral discs. Clinically, several syndromes, both overlapping and distinct, are seen. These include neck and shoulder pain, suboccipital pain and headache, radicular symptoms, and cervical spondylotic myelopathy (CSM). As disk degeneration occurs, mechanical stresses result in osteophytic bars, which form along the ventral aspect of the spinal canal (Rana, 2011).

The prevalence of the cervical spondylosis in 30 years old male is 13% and in 70 years old is 100% and in females at 40 years old is 5% and in 70 years old 96%(Bhasin, 2007).Incidence of cervical spondylosis varies with age. MRI studies which is population based show 1 cervical level (commonly C5/6). However, only a subset of patient presents with axial neck pain, and patients are usually asymptomatic even through cervical radiographs and MRI may show severe, spontaneous degenerative disease. The relatively high rate of obtaining cervical MRI studies for symptoms of axial neck pain in the US are likely to influence both the rate of aggressive interventions and the overall awareness of this common problem. For example, it is likely that disk degeneration (i.e., desiccation of a normally hydrated disk joint with subsequent joint narrowing) is ubiquitous after 30 years of age due to intrinsic loss of the disk cells, which maintain hydration. Facet joints follow the more usual pattern of synovial joint degeneration (Degenerative cervical spine disease, 2011).

Most patients with neck pain have “non-specific (simple) neck pain” and symptoms have a postural or mechanical basis. Factors that caused cervical spondylosis are poorly understood and usually multifactorial, including poor posture, anxiety, depression, neck strain, and sporting or occupational activities. Neck pain after whiplash injury also fits into this category, provided no bony injury or neurological deficit is present. When mechanical factors are prominent, the condition is often referred to as cervical spondylosis, although the term is often applied to all non-

specific neck pain (Binder, 2007). Symptoms caused by cervical spondylosis can be categorized broadly into three clinical syndromes: axial neck pain, cervical radiculopathy, and cervical myelopathy. Patients can have a combination of these syndromes. Axial posterior neck pain occasionally radiates to the shoulder or periscapular region in a non-dermatomal distribution (Rao et al, 2007).

In a study of diseases of the spine at South America 63.6% Ghanaians had spondylosis that carry regular heavy load on their head in contrast to 36% those who did not. The result indicates the cervical spondylosis is not exclusively a disease of ageing process, work related hazard as regular heavy load carrying on the head plays also an etiological role (Bista & Roka, 2008).

Treatment of cervical spondylosis is usually conservative in nature; treatments which are most commonly used are NSAIDs, Physical modalities, and lifestyle modifications. Surgery is occasionally performed (Rana, 2011).

1.2 Rationale

Now a day the rate of cervical spondylosis patient are increasing day by day. Life become threatens for them, who has pain on neck and cannot move and not perform any work properly. It is also the cause of activity limitation thus decrease the quality of life. For that researcher interested to conduct this research to find out new things.

If the characteristics of neck pain among cervical spondylosis are find out that means the vulnerable age of cervical spondylosis, the group of people is affected by cervical spondylosis, aggravating factors of cervical spondylosis, clinical representation of spondylosis, as a Physiotherapist it will help to diagnose cervical spondylosis easily and will help to give details information to the patient about cervical spondylosis. In our country there is no such research about characteristics of neck pain among cervical spondylosis. This study also will be helpful in making Physiotherapist to aware about cervical spondylosis. So that Physiotherapist can provide better treatment as well as essential advice to the patients. As a health professional it improves our knowledge. Research makes the profession strongest. So there is no alternative option to do research as a professional to develop the profession.

1.3 Research question

- What are the characteristics of neck pain among cervical spondylosis patients?

1.4 Study Objectives

1.4.1 General objective

- To ascertain the characteristics of neck pain among cervical spondylosis patients.

1.4.2 Specific objectives

- To determine the socio-demographic characteristics of cervical spondylosis.
- To explore the severity rate of pain.
- To identify nature of pain.
- To find out the aggravating factors for the patients with cervical spondylosis.

1.5 Conceptual Framework

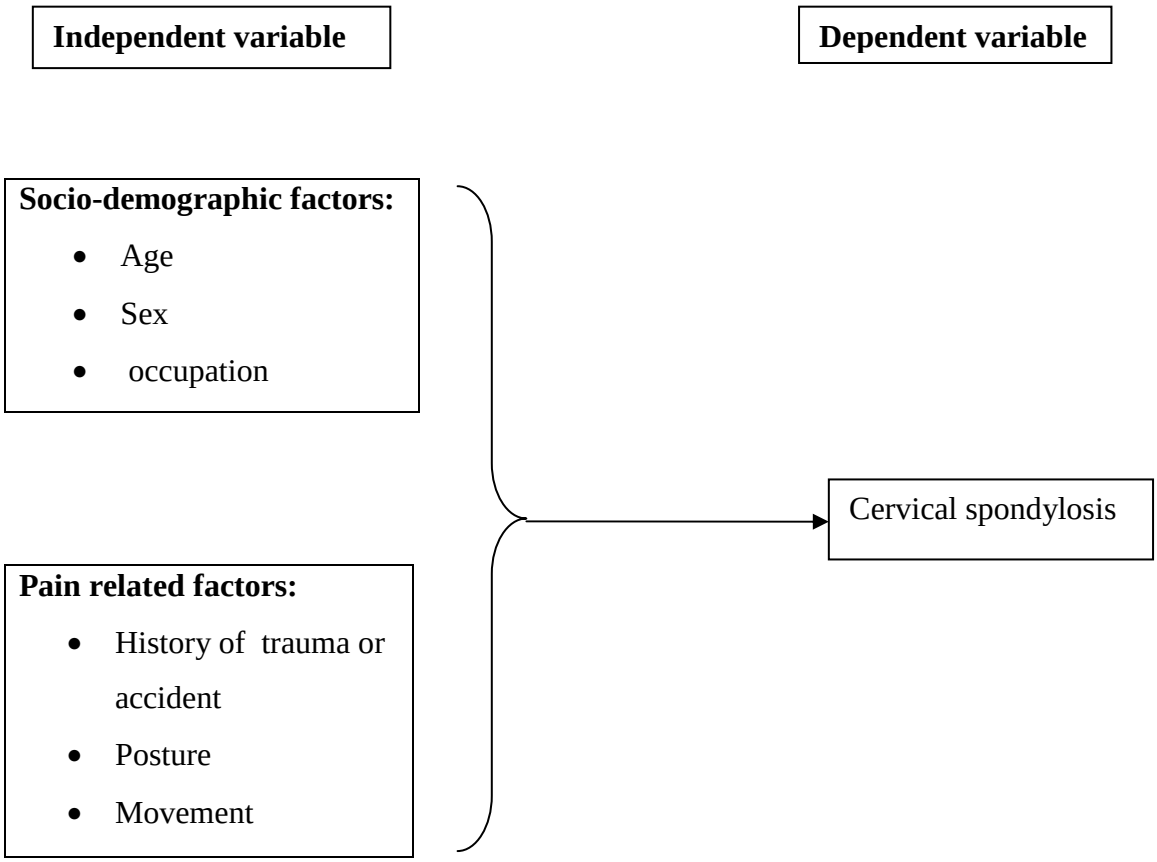

Table 1: Conceptual framework

1.6 Operational definition

Pain: An experience of unpleasant sensory, emotional and physiological response associated with actual or potential tissue damage, or described in terms of such damage.

Neck pain: Neck pain is the sensation of discomfort in the neck area. Neck pain can result from disorders of any of the structures in the neck, including the cervical vertebrae and intervertebral discs, nerves, muscles, blood vessels, esophagus, larynx, trachea, lymphatic organs, thyroid gland, or parathyroid glands. Neck pain arises from numerous different conditions and is sometimes referred to as cervical pain.

Cervical spondylosis: Cervical spondylosis is a generalized disease process affecting all levels of the cervical spine. Cervical spondylosis encompasses a sequence of degenerative changes in the intervertebral discs, osteophytosis of the vertebral bodies, hypertrophy of the facets and lamina1 arches, and ligamentous and segmental instability. The natural history of cervical spondylosis is associated with the aging process Cervical spondylosis is a disorder in which there is abnormal wear on the cartilage and bones of the neck (cervical vertebrae). It is a common cause of chronic neck pain.

CHAPTER:II LITERATURE REVIEW

In the 50-60 years age group cervical spondylosis is a common condition of cervical spine in the general population. The etiology of the cervical spondylosis is associated with the aging process, and is closely related to the intrinsic axial load imposed by the weight of the cranium lifelong. Repeated or prolong flexion, extension or extreme bending of the neck these occupational positions may demand cervical spondylosis. Disease register of occupational disease in Germany recently included that these may lead to degeneration change in the cervical spine (Mahbub et al, 2006).

Middle-aged or elderly patients are more vulnerable for cervical spondylosis. Characteristics of spondylosis explained through, neck pain syndromes. Neck pain associated with stiffness with radiation into the shoulders or occiput which may be chronic or episodic with prolonged periods of remission. Exertion injuries, mechanical blows to the head or neck injury while lifting heavy objects may precipitate an acute exacerbation. Radicular symptoms accompany upper extremity and often absent in patients with myelopathy in case of cervical spondylosis. Sometimes inherent unlikelihood find in examination which may associate with decreased mobility, muscle spasms, and tenderness (McCormack &Weinstein, 1996).

About two thirds of people will experience neck pain at some time in their lives. Middle age peoples are commonly affected by neck pain (Binder, 2005).The prevalence of neck pain has been higher in women (Honet & Ellenberg, 2003). About 15 percent of hospital-based physiotherapy in the United Kingdom, and 30 percent of chiropractic referrals in Canada are for neck pain. Neck pain contributes up to 2 percent of general practitioner consultations in the Netherlands (Binder, 2005).
30–50% adults affected in neck pain in the general population in any given year which is an important personal and societal burden. Approximately 50–85% of individuals with neck pain do not experience complete resolution of symptoms and some may experiences chronic, impairing pain. Depending on the activity, twelve-month prevalence estimates for activity-impairing neck pain range from 3.1– 4.5% in the general population (Goode et al, 2010). Scandinavian countries reported more neck pain for 1-year prevalence than the rest of Europe and Asia (Fejer et al, 2006).

The annual prevalence of neck pain varied from 27.1% in Norway to 47.8% in Québec, Canada. Because of neck pain 11% and 14.1% of workers were limited their activities in each year (Cote et al, 2008). In humans neck pain is ubiquitous. The epidemiology is not as well studied as that of low back pain, but studies indicate a point prevalence of 11% to 13%, a 1-year prevalence of 26% to 61%, and a lifetime prevalence of 67% to 71%. It has been estimated that 5% to 10% of adults will have disabling neck pain in the course of a year **(**Honet & Ellenberg, 2003**).**

Degenerative processes in the central intervertebral (body) joints are commonly known as cervical spondylosis or cervical spondylarthrosis. Posterior intervertebral (apophyseal) joints are subsequently affected by this degeneration (Joshi &Kotwal, 1999). On the other hand degenerative changes in the discs, vertebrae and apophyseal joint causes cervical spondylosis which lead to osteophytic outgrowth that reduce the size of the intervertebral foramen and the nerve roots may compromise by it. Cervical segment of the spine is mostly exposed to spondylosis (Corrigan &Maitland, 1983).
Universally in elderly people the degenerative changes associated with osteophytic formation and osteoarthritis of the spinal apophyseal joints (Haslett et al, 1999).This vague term is applied to a cluster of abnormalities that are arising from chronic intervertebral disc degeneration. Changes in the lower two segments of the cervical spine (C5-C7) are most common, the area which degenerate, flatten and become less elastic (Solomon et al, 2001).

Pathophysiological changes in cervical spondylosis patients begin as age increases. Shrinkage of the vertebral disks prompts the vertebrae to form osteophytes to stabilize the back bone. Due to the formation of osteophytes, the position and alignment of the disks and vertebrae may shift. Symptoms may arise from problems with one or more disks or vertebrae. Osteophyte formation and other changes do not necessarily lead to symptoms, but after age 50, half of the population experiences occasional neck pain and stiffness. As disks degeneration increases, the cervical spine becomes less stable, and the neck is more vulnerable to injuries, including muscle and ligament strains. Pain is also caused due to contact between the edges of the vertebrae (The free dictionary, 2011).The basic cause of cervical spondylosis is probably age-related wear and tear. On X-ray, many people at age 30 show signs of vertebral and disk degeneration, although symptoms usually don’t appear until later in life. With age

specific changes occurring include: Drying and loss of elasticity in the spinal disks, Bulging and sometimes herniation of disks so that disk material protrudes from between two vertebrae, Stiffness of the ligaments connecting neck bones and muscles (Mayo Clinic staff, 2010).Repeated occupational trauma like carrying axial loads, professional dancing and gymnastics may contribute. The role of occupational trauma is controversial, especially in terms of worker's compensation claims and other related medicolegal clauses. Familial cases have been reported; a genetic cause is possible. Smoking also may be a risk factor. Conditions that contribute to segmental instability and excessive segmental motion (e.g. congenitally fused spine, cerebral palsy, Down syndrome) may risk factors for spondylotic disease. Cervical spondylotic myelopathy may be responsible for functional declines in patients with athetiod cerebral palsy (Rana, 2010). Cervical spondylosis is the result of disk degeneration. As disks age, they fragment, lose water, and collapse. Initially, this starts in the nucleus pulpous. These results in the central annular lamellae buckling inward while the external concentric plates at the vertebral body lip. Bands of the annular fibrosis bulge outward. This causes increased mechanical stress at the cartilaginous end, subperiosteal bone formation occurs next, forming osteophytic bars that extend along the ventral aspect of the spinal canal and, in some cases, encroach on nervous tissue (McCormack &Weinstein, 1996). Nerve root irritation also may occur as intervertebral discal proteoglycans are degraded (Rosomoff et al, 1992).Ossification of the posterior longitudinal ligament, a condition often seen in certain Asian populations, can occur with cervical spondylosis. This condition can be an additional contributing source of severe anterior cord compression (Emery, 2001).

Cervical spondylotic myelopathy occurs as a result of several important pathophysiological factors. These are static-mechanical, dynamic-mechanical, spinal cord ischemia, and stretch-associated injury. As ventral osteophytes develop, the cervical cord space becomes narrowed; thus, patients with congenitally narrowed spinal canals (10-13 mm) are predisposed to developing cervical spondylotic myelopathy (Young, 2000).

Additionally, degenerative kyphosis and subluxation are fairly common findings that may further contribute to cord compression in patients with cervical spondylotic myelopathy (McCormick et al, 2003).Dynamic factor relate to the fact that normal flexion and extension of the cord may aggravate spinal cord damage initiated by static compression of the cord. During flexion, the spinal cord lengthens, resulting in it being stretched over ventral osteophytic bars. During extension, the ligamentum flavum may buckle into the cord, pinching the cord between the ligaments and the anterior osteophytes (Young et al, 1999).

Spinal cord ischemia also most likely plays a role in cervical spondylotic myelopathy. Histopathologic changes seen in persons with cervical spondylotic myelopathy frequently involve gray matter, with minimal white matter involvement-a pattern consistent with ischemic insult. Ischemia most likely occurs at the level of impaired microcirculation (Al-Mefty et al, 1993).Stretch-associated injury has recently been implicated as a pathophysiological factor in cervical spondylotic myelopathy. The narrowing of the spinal canal and abnormal motion seen with cervical spondylotic myelopathy may result in increased strain and shear forces, which can cause localized axonal injury to the cord (Henderson et al, 2005).

The symptoms of cervical spondylosis include neck pain aggravated by movement, and neck pain referred to the occiput - between the shoulder blades – upper limbs, also referred to the retro-orbital or temporal region from C1 to C2, neck stiffness, vague numbness, tingling or weakness in upper limbs, dizziness or vertigo, poor balance, and rarely syncope – migraine or “pseudo-angina”. Signs of cervical spondylosis include poorly localized tenderness, limited range of movement (forward flexion, backward extension, lateral flexion, and rotation to both sides), and minor neurological changes like inverted supinator jerks (unless complicated by myelopathy or radiculopathy) (Binder, 2007).

Pain and stiffness at the neck are the primary symptoms. Symptoms may be also referred to the upper limb. Pain may refer on the posterior aspect of the neck over the trapezius due to repetitive movements or postural strain (Joshi and Kotwal, 1999).The pain may radiate widely: to the occiput, the back of the shoulders and down one or both arms; it is sometimes accompanied by paraesthesia (Solomon et al,

2001).Movements of the neck are decreased due to pain. Pain increases on hypertension. There is localized tenderness over the spinous process. Tingling and numbness develops if the nerve root is compressed, but it does not follow the dermatomal pattern (Ebnezar, 2003).

Bilateral symptoms are less common and may span several segments if more than one cervical level is involved. Neck and arm pain, along with weakness, are typical but one may exist without the other. Other features include sensory loss, paraesthesia and hyporeflexia. The symptoms stem from compression of the sensorimotor roots at the intervertebral foramina, and clinical analysis of their distribution and the neurological findings may allow the segmental level to be defined. Approximately 90% of cases occur at the C5/6 and C6/7 levels, where the mobile cervical spine joins the immobile thoracic segments. The most commonly involved nerve roots are the sixth and seventh nerve roots, which are caused by C5-C6 or C6-C7 spondylosis, respectively. Patients usually present with pain, paresthesias or weakness, or a combination of these symptoms (Ellenberg et al, 1994). In C5 root- Pain radiates to the shoulder and the anterior upper arm, weakness of the deltoid muscle occur, diminished biceps and pectoral reflex and sensory changes over the deltoid (the regimental badge area). InC6 root- Pain radiates to the lateral arm and the dorsal aspect of the forearm with weakness of the biceps muscle. Sensory changes occur in the thumb and the dorsal surface of the hand. The biceps and brachioradialis reflexes may be diminished or absent. In C7 root-pain radiates to the forearm and the middle and ring fingers. Weakness occurs in the triceps and the extensors of the wrist and fingers. Sensory deficit if present is in the index and middle fingers. The triceps reflex may be reduced. In C8 root- pain in the medial aspect of the arm and forearm, weakness in the intrinsic muscles of the hand. Paraesthesia may arise in the ring and little fingers. The arm reflexes are preserved (Ray & Cowie, 2005).

Diagnosis of cervical spondylosis is done by neck flexibility tests and X-Ray imaging techniques. Neck flexibility tests are used to identify any instability that may be present in the neck. The tests include: tilting head to both sides and rotating head to either side. Imaging diagnostics of the neck are performed to see bone spurs and other anatomical changes associated with the condition. The imaging methods used include x-rays, which are an inexpensive way to see the narrowing of the canal and disk

space, and the presence of arthritis in people who have the symptoms of cervical curve (Asher, 2010). As radiological evidence of spondylosis is usually found in most members of the population from around 35 years, x-ray findings have to be interpreted carefully and in relation to individual patient's symptoms. Plain x-rays can demonstrate loss of disc space height, anterior and posterior end-plate osteophytes, fusion or instability. A lateral view will also show the anteroposterior diameter of the spinal canal; and if this is less than 14 mm then cord compression is a real possibility (Ray &Cowie, 2005).Sometimes electrical activity of the nerves and/or spinal cord is measured (by means of somatosensory evoked potentials or motor evoked potentials) to diagnose radiculopathy or myelopathy. Such tests may help to determine the presence of myelopathy, as well as the length of time the cervical spondylosis has been present in the spine, and if it is the cause of any found nerve root problem (Kanbay et al, 2006). Most patients with cervical spondylosis do not need further investigation, and the diagnosis is made on clinical grounds alone. Plain radiographs of the cervical spine may show a loss of normal cervical lordosis, suggesting muscle spasm, but in most asymptomatic people, other features of degenerative disease are found and correlate poorly with clinical symptoms (Binder, 2007).

Differential diagnosis of cervical spondylosis with myelopathy or myeloradiculopathy should be considered with the following diseases: motor neuron disease, multiple sclerosis, spinal cord tumor, syringomyelia, and spinal cord tumor. Cervical spondylosis is ubiquitous in elderly persons and neurologic dysfunction may or may not be attributable to spondylotic cervical spine changes seen on imaging studies. Misdiagnosis is a well-recognized cause of a poor surgical outcome. Neurologic consultation is advised to interpret clinical findings and obtain radiologic and electrophysiological tests (McCormack &Weinstein, 1996).

Complications of cervical spondylosis are chronic neck pain, instability to hold feces (fecal incontinence) or urine (urinary incontinence), progressive loss of muscle function or feeling and permanent disability (occasional) (Linda &Vorvick, 2009).

Treatment approaches depend on the severity of the signs and symptoms of the cervical spondylosis. The goal of treatment is to relieve pain, maintain usual activities as much as possible, and prevent injury to the spinal cord and nerves. During the

acute phase, anti-inflammatory agents, analgesics and muscle relaxants may be prescribed for a short period of time (The free dictionary, 2011). Conservative treatment is the more accepted form of treatment in cervical spondylosis (Ebnezar, 2003).

NSAIDs-Despite the lack of any clinical trials in patients with cervical spondylotic symptoms, NSAIDs are widely used in the management of axial neck pain and radicular syndromes. Conceptually, NSAIDs are used because of their combined analgesic and anti-inflammatory properties (Koes et al, 1997).

Nonopioid and Opioid Analgesics-By providing effective pain control, analgesics may permit better compliance with active exercise programs used in nonoperative management of cervical spondylosis. Acetaminophen has been the preferred first choice for mild-to-moderate pain because of its apparent safety and efficacy comparable to NSAIDs (Rahme et al, 2002).

Muscle Relaxants-The rationale for the use of muscle relaxants in patients with cervical spondylosis and neck pain is based on the assumption of associated reactive paraspinal and trapezius muscle spasm that may augment symptoms. In addition, available centrally acting agents, including baclofen, cyclobenzaprine, carisoprodol, and tizanidine, produce some degree of sedation, potentially improving pain-disrupted sleep (Aker et al, 1996).

Physical therapy approaches to cervical spine disorders include active, exercise-oriented treatment and modalities, such as ultrasound, thermal therapy, and traction. Active exercise programs in cervical spondylosis patients have been studied primarily in patients with neck pain. A recent structured literature review found three randomized studies suggesting that supervised isometric exercises or proprioceptive reeducation (slow neck movements) produce clinically important improvement in pain and functional parameters (Panel, 2001).

Another recent study in 183 patients with neck pain of more than 2 weeks duration compared physical therapy exercises, manual therapy, and continued care by a general practitioner in a randomized, controlled trial (Hoving et al, 2002).Cervical traction is

used in cervical spondylosis to relieve pain and spasm and to prevent and break the adhesions in the joints of the neck (Ebnezar, 2003).

Exercises play a pivotal role in strengthening the neck muscles and mobilizing the neck when the pain subsided. Strong isometrics helps to achieve this when movement is contraindicated. The weak muscles of the neck could be strengthened by active assisted exercises to the neck and active self-resisted isometric exercises. The relaxed passive exercises for all the neck movements help achieve this goal. All exercises combine together in the PNF technique (Ebnezar, 2003). Patient has to wear collar during working and conventional soft collar at night to avoid excessive flexion attitudes (Joshi &Kotwal, 1999).

Manual therapy consisted of hands-on mobilization using low velocity passive movement of facet joints within the normal range of motion. At the 7-week follow-up visit, manual therapy scored significantly better on most outcome measures than the other interventions. On the basis of patient age (mean, approximately 45 yr) and duration of symptoms (50% had symptoms for less than 6 wk), this study probably included patients with primarily myofacial pain in addition to spondylosis. Another similar trial comparing intensive exercise training, physiotherapy, and chiropractic manipulation in 119 patients with neck pain for longer than 3 months found no differences in any outcome measures, including pain level, range of motion, and disability (Jordan et al, 1998).Thermotherapy may provide brief symptomatic relief, but has not been shown to affect eventual outcome. One small randomized controlled trial comparing therapeutic ultrasound with placebo in patients with myofacial neck pain found no difference in pain relief (Lee et al, 1997).

Surgical management is a very extreme solution in most of the time, and not always a successful one. From a surgeon’s perspective, there are numerous techniques that can be used, but as yet, medical research has not identified any one of them as the best choice. Generally, a laminectomy, which goes in through the back or an anterior cervical decompression from the front may be done. Studies show that a surgical approach from the back does not always yield the best results in terms of getting out all the bone spurs and pieces of disk that tend to be located further toward the front.

Sometimes a spinal fusion is performed in the same operation. Discussing the options with your doctor prior to surgery is imperative (Asher, 2010).

The prognosis for cervical spondylosis is good, if the condition is recognized early; the appropriate treatment is rendered, and the patient is told how to cope with his disability (Lees &Turner, 1963). Most patients with cervical spondylosis will have some long-term symptoms. However, they respond to non-surgical treatments and do not need surgery (Linda &Vorvick, 2009).

Many cases are not preventable. Preventing neck injury (such as by using proper equipment and techniques when playing sports) may reduce your risk (Feske & Cochrane, 2007)

CHAPTER:III METHODOLOGY

3.1 Study design

This study aimed to find out the Characteristics of neck pain among the cervical spondylosis patients. For this reason a quantitative research model in the form of a cross-sectional type survey design is used. Cross-sectional study is selected because in this way it is possible to identifying a defined population at a particular point in time (Survey-method).Through the cross-sectional study easily comparing results among those of different ages, gender, or ethnicity. In other hand Quantitative research method helps to use a large number of participants and therefore collect the data objectively through this way data was reduced to numbers for statistical analysis in order to draw conclusion (Hicks, 2000). People with cervical spondylosis were selected at a point in time without follow-up.

3.2 Sample selection

3.2.1 Study area

The study was conducted at outdoor Musculoskeletal Physiotherapy unit of Centre for the Rehabilitation of the Paralyzed (CRP).

3.2.2 Study population

The study population was patient with cervical spondylosis who attended in CRP for treatment.

3.2.3 Sample size

The equation of sample size calculation are given below-

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

Here,

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

P= 0.25 (Here P=Prevalence and P=25%)

q= 1-p

=1-0.25

=0.75

d= 0.05

According to this equation the sample should be more than 288 people but due to lack of opportunity and time the study was conducted with 70 patients attending at physiotherapy department selected randomly.

3.2.4 Sampling technique

Seventy participants with cervical spondylosis were selected through convenience-sampling technique from outdoor and indoor musculoskeletal Physiotherapy unit of CRP. Participants were selected from CRP because they were easily accessible for the researcher. Researcher took data from the patients (medically diagnosed as cervical spondylosis) conveniently who came at CRP to take Physiotherapy treatment or continuing their treatment. A convenience sample is a group of individual who (conveniently) are available for study (Fraenkel &Wallen, 2000). Convenience sampling or opportunistic sampling, involves the enrollment of available subjects as they enter the study until the desired sample size is reached (Depoy & Gitlin, 1998).The researcher was established inclusion criteria and selected those participants who fit these factors and volunteer to participate in this study. So the researcher chose convenience sampling for this study to maintain the standard of the study.

3.2.5 Inclusion criteria

- The patients who had neck pain.
- Medically diagnosed cervical spondylosis.
- Both male and female were included.
- Age group: no specific age group.

3.3 Data collection

3.3.1 Data collection procedure

All patients who diagnosed as cervical spondylosis by the Physician and came at CRP for first time or continuing their Physiotherapy treatment were asked to participate in the study. There was a developed structured questionnaire after reviewing literature for asking to the participants. In the questionnaire participant’s demographic information including age, sex, marital status, level of education, occupational history

including types of job, health history including other injury and cervical spondylosis related information was asked.

3.4 Data Analysis

Data was analyzed with software named Statistical Package for Social Science (SPSS) version 16. Descriptive statistics was used to analyze data because a descriptive statistics refers methods of describing a set of results in terms of their most interesting characteristics (Hicks, 2000). The variables were labeled in a list and a researcher was established a computer based data record file. After calculation, data was presented by using bar graph and pie chart by using Microsoft Office Excel 2007.

3.5 Informed consent

Written consent (appendix) was given to all participants prior to completion of the questionnaire. The researcher explained to the participants about his or her role in this study. The researcher received a written consent form every participants including signature. So the participant assured that they could understand about the consent form and their participation was on voluntary basis. The participants were informed clearly that their information would be kept confidential. The researcher assured the participants that the study would not be harmful to them. It was explained that there might not a direct benefit from the study for the participants but in the future cases like them might get benefit from it. The participants had the rights to withdraw consent and discontinue participation at any time without prejudice to present or future treatment at the musculoskeletal (MS) unit of CRP. Information from this study was anonymously coded to ensure confidentiality and was not personally identified in any publication containing the result of this study.

3.6 Ethical Consideration

For conducting this research ethics 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. Data collection was started and complete within the allocated time frame. All the data was reviewed in strict secure and maintained confidentiality. The assessment files were strictly secured and it was not open in front others without researcher.

3.7 Rigor

This study was conducted in systemic way. All the steps of research were followed by the researcher sequentially. During data collection and analysis the researcher avoided influencing the whole process by her own perspectives, values and biases. The researcher never influenced the participants by her own perceptions during the data collection. A trustful relationship with participants was always maintained and the documents were kept confidential. Biasness was avoided during data analysis and data was analyzed by following data analysis steps in a systematic scientific way.

3.8 Limitation of the study

Though the expected sample size was >288 for this study but due to resource constrain researcher could manage just 70 sample which is very small to generalize the result for the wider population of cervical spondylosis. There are a few literatures about cervical spondylosis in the perspective of Bangladesh so it is difficult to compare the study with the other research. In this study the researcher was able to collect data only from CRP for a short period of time which will affect the result of the study to generalize for wider population. The questionnaire was developed only through searching sufficient literature but considering the context of the demography of the population a pilot study would substantial before developing questionnaire.

CHAPTER:IV RESULTS

The purpose of the study is to find out the characteristics of neck pain among cervical spondylosis and to achieve this goal the result need to calculate and analysis in a systematic way and the result or analyzed data represent by bar graph and pie charts.

Age

The above bar graph shown, among 70 participants the highest number participants, 64% (45) were found in the age range of ≥40 years, 36% (25) participants were in the age range ≤ 41 years (Figure 1).

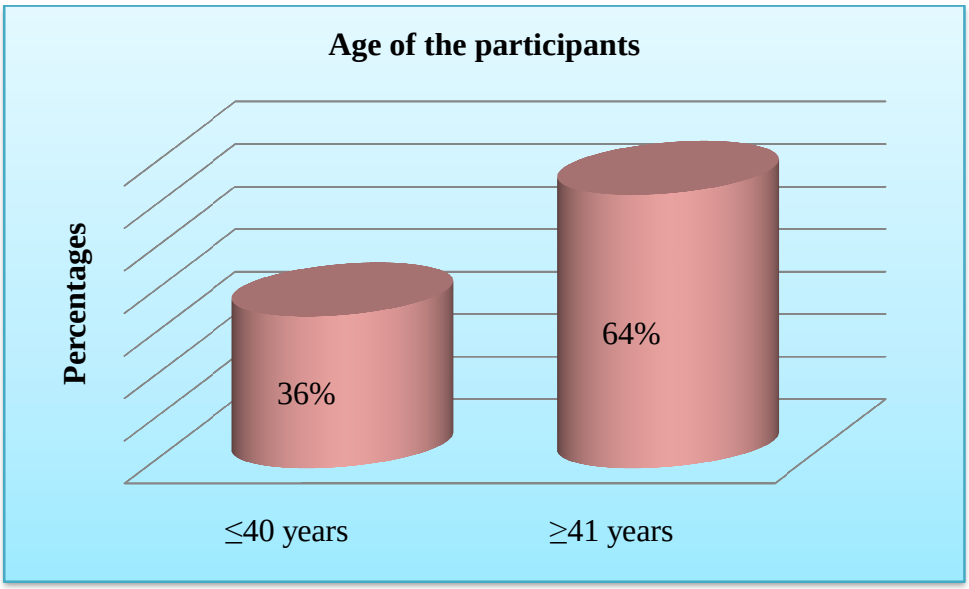

Figure-1: Age of the participants.

Sex

Among all the participants 51% (36) were male and 49% (34) were female. Result shows that male are more affected by cervical spondylosis than female (Figure 2).

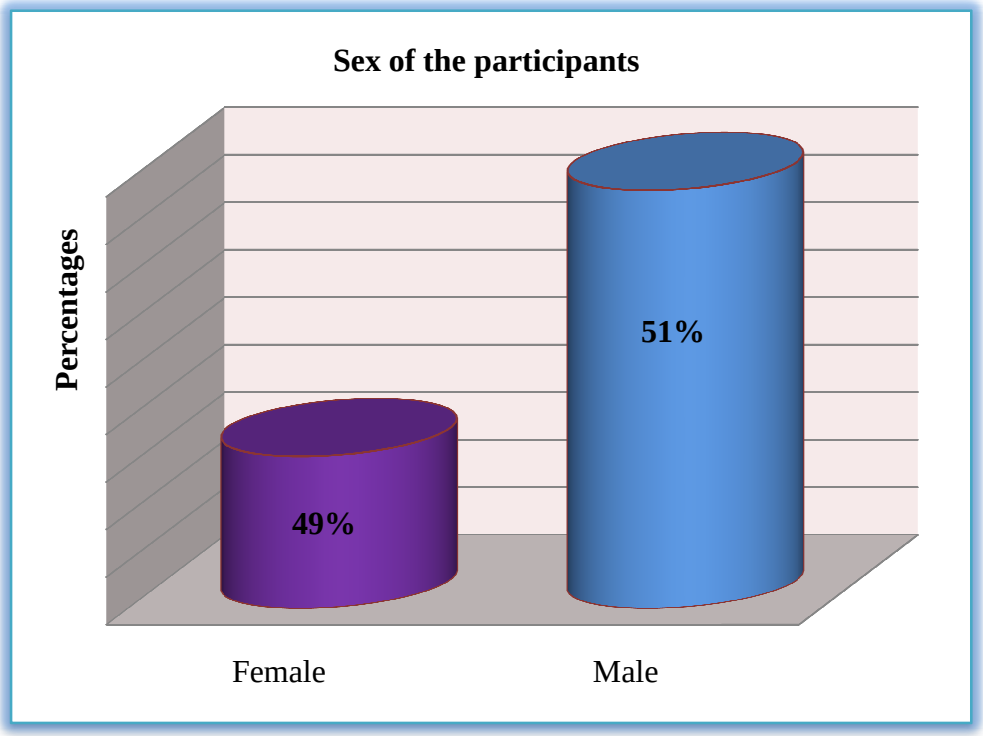

Figure-2: Sex of the Participants.

Educational level

The bar graph shows that the highest number of participants 40% (28) is in the secondary education level, 33% (23) is in the primary education level and 27% (19) of them were found those were not able to read and write (Figure 3).

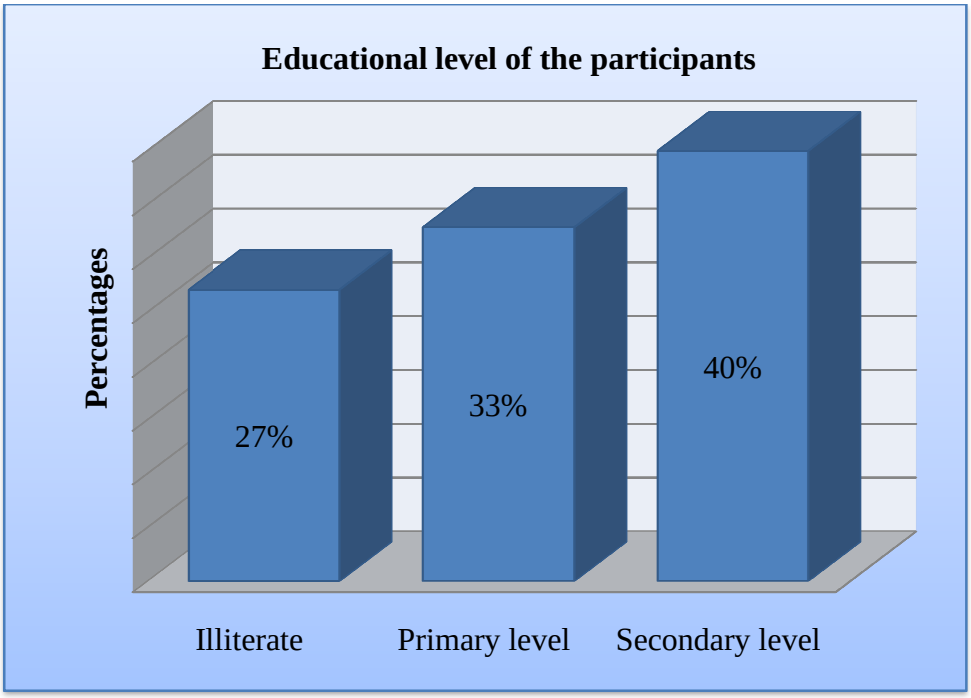

Figure-3: Educational level of the participants

Occupation

Among the participants who affected by cervical spondylosis, 34% (n=24) person was housewife, 23% (n=16) were service holder, 14% (n=10) were businessman, 7% (n=5) were daily labor, 6% (n=4) were farmer, tailor, student and electrician were same 4% (n=3), driver and job holder at abroad was also same result 1% (n=1). Result shows housewives are more commonly affected by cervical spondylosis (Figure 4).

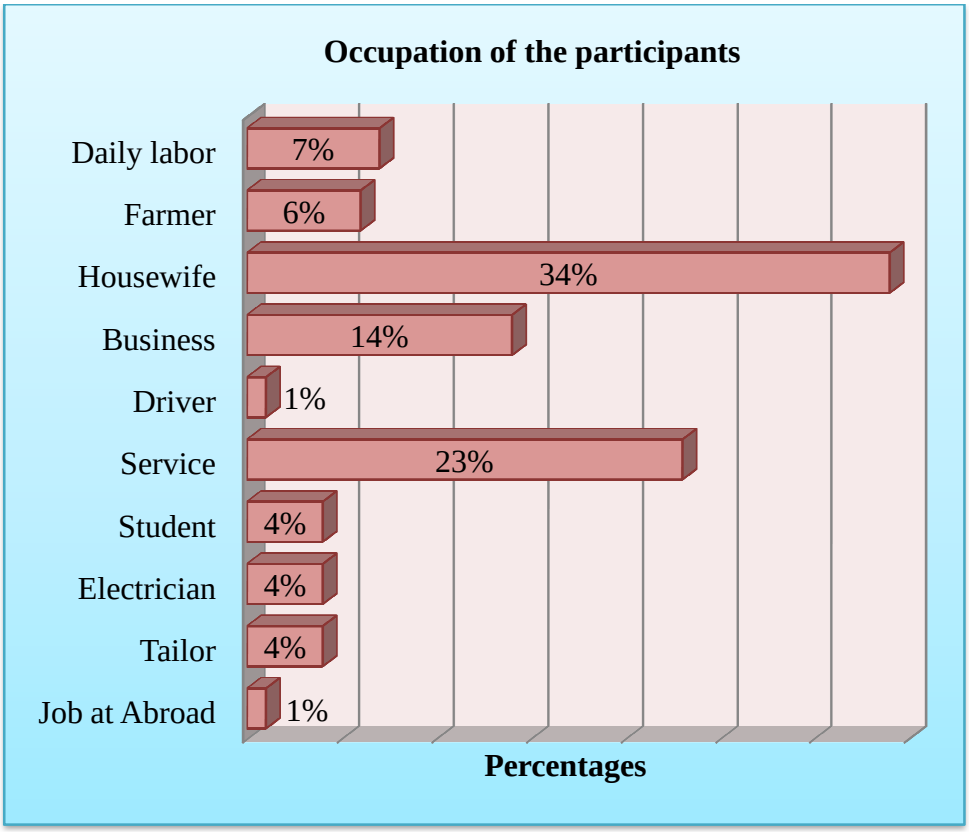

Figure-4: Occupation of the participants

Past history of trauma

The pie chart shows that among the 70 participants it was found that n=20 (29%) participants had past history of trauma in their cervical spine and n=50 (71%) had no past history of trauma (Figure 5).

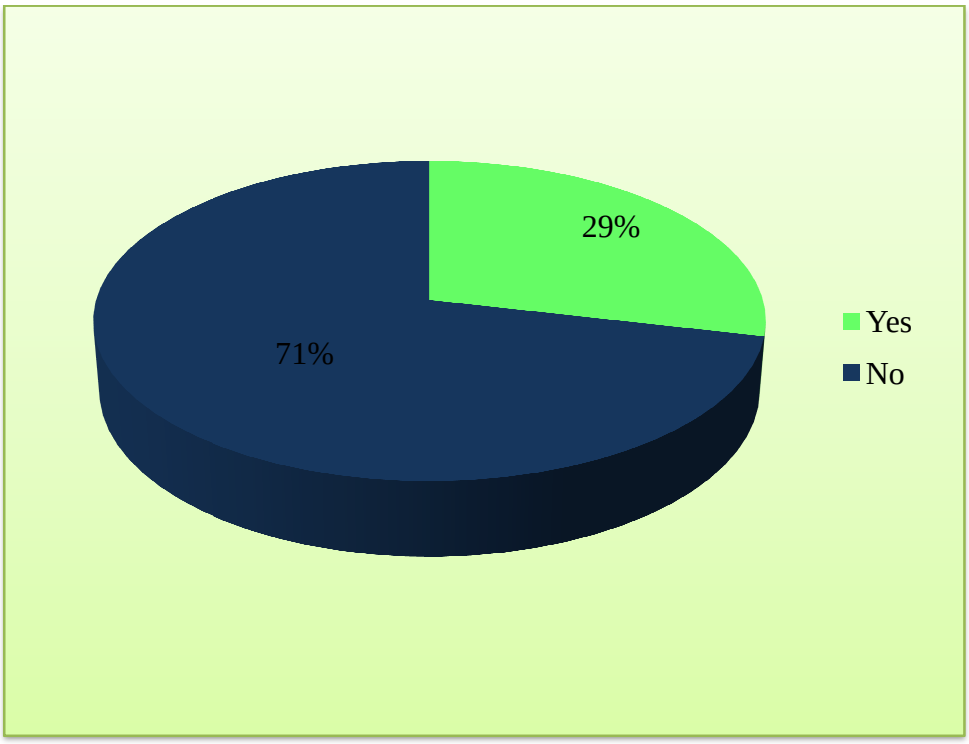

Figure-5: Past history of trauma of the participants

Sitting posture

The bar chart shows that 59% (41) participants sitting posture were poor, 40% (28) participants sitting posture were fair and 1.4% (n=1) participants were maintained good sitting posture (Figure 6).

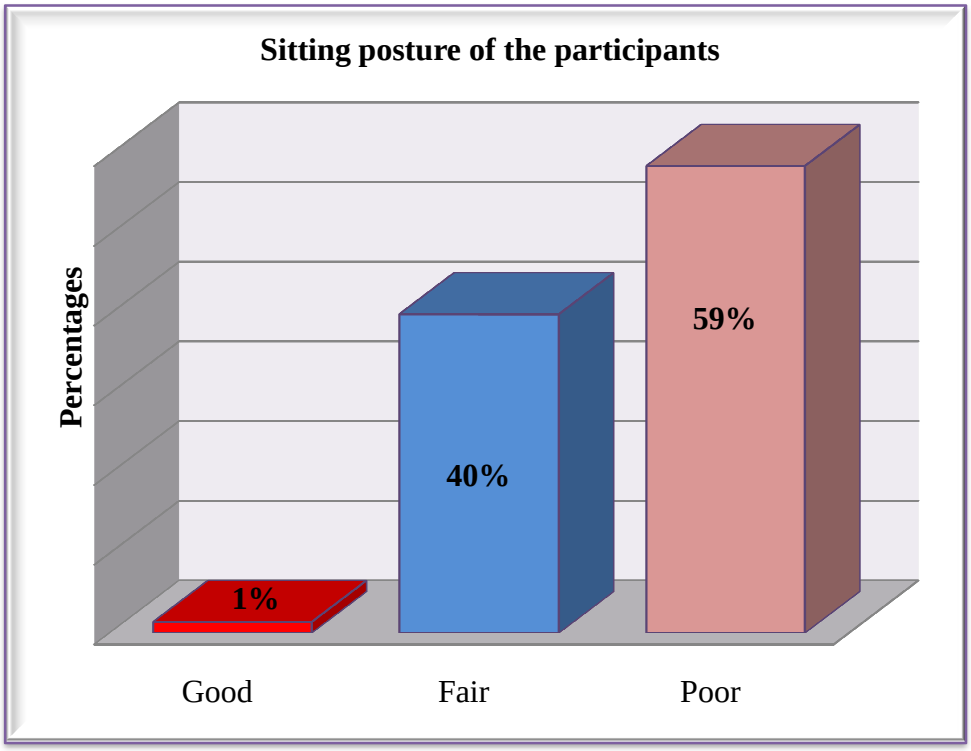

Figure-6: Sitting posture of the participants

Painful site

Analysis reveals that among 70 participants it was found that limited number 1% (n=1) has pain in the forearm, 3% (n=2) has pain in the shoulder, 17% (n=12) has pain in the cervicoscapular region. Among them the highest number of participants about 79% (55) has suffering with neck pain (Figure-7).

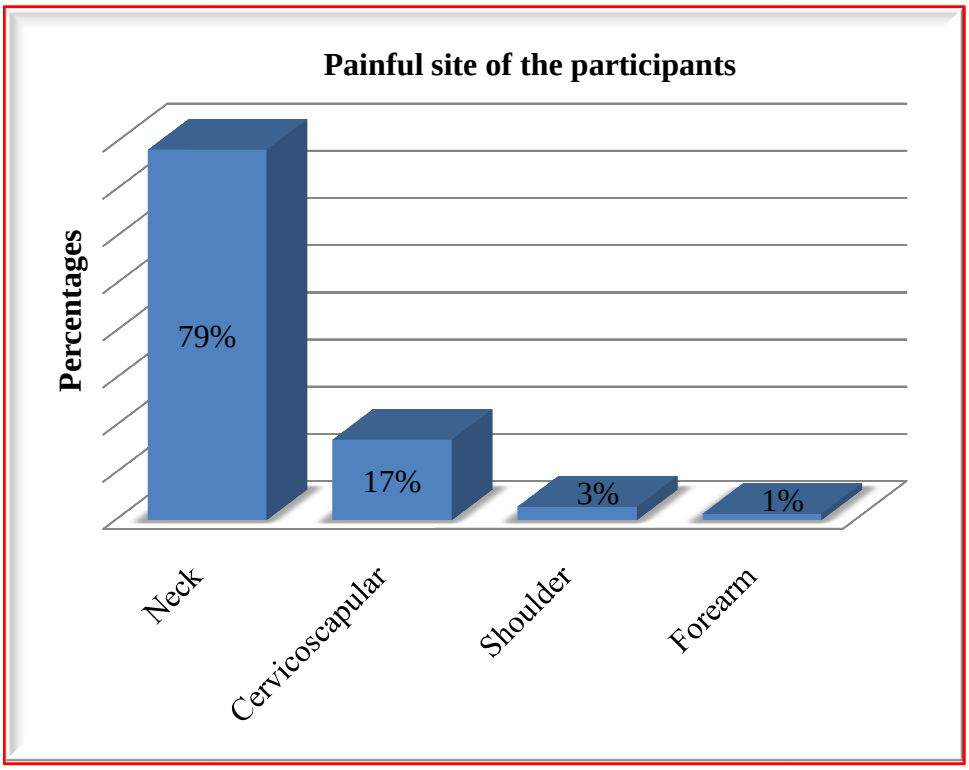

Figure-7: Painful site of the participants

Severity of pain

Among all 70 participants 76% (53) participants were suffered from moderate pain, 23% (16) participants were suffered from severe pain and limited number 1% (1) was also suffered from mild type of pain. Patient experienced moderate type of pain at cervical spine in case of cervical spondylosis (Figure 8).

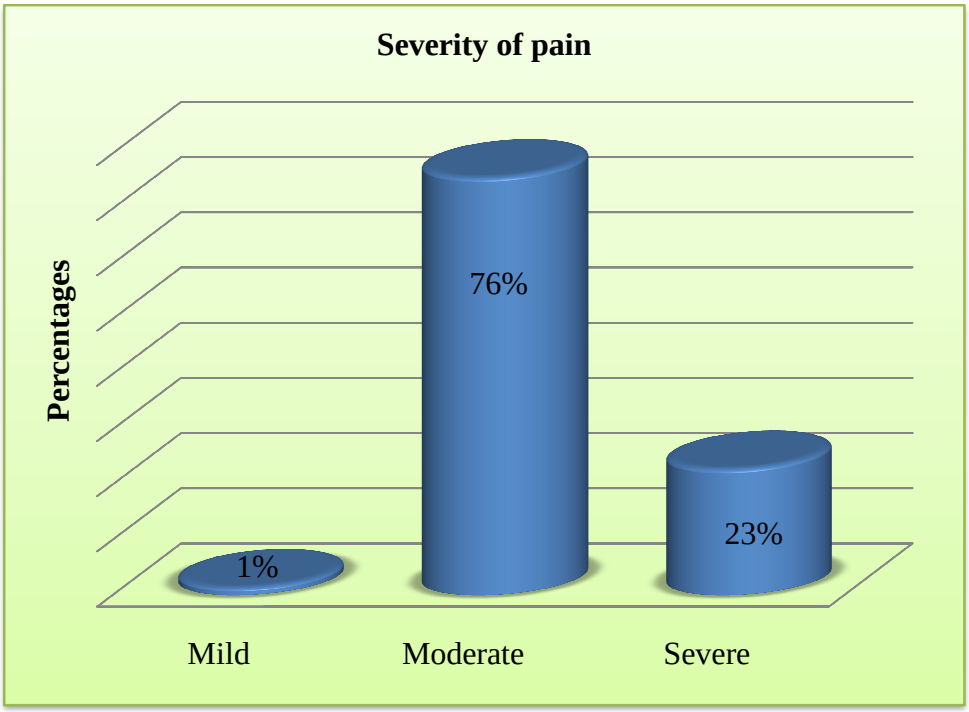

Figure-8: Severity rate of pain among the participants

Involvement of upper limb

Analysis demonstrated that half of them n=35 (50%) feel pain at right upper limb and n=29 (41%) has pain at left upper limb. It shows that limited number n=3 (4%) has pain at both side and n=3 (4%) has no limb involvement (Figure-9).

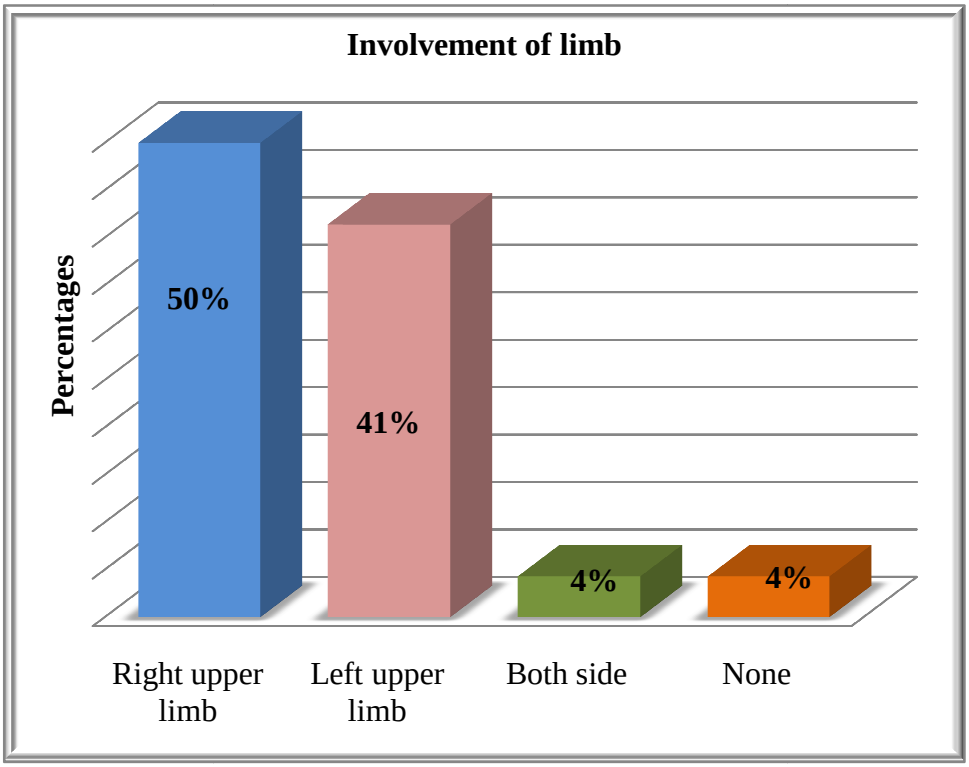

Figure-9: Involvement of limb among the participants

Nature of pain:

Analysis showed that highest number of participants n=55 (79%) has intermittent symptom and n=15 (21%) has feel constant symptoms of pain (Figure-10).

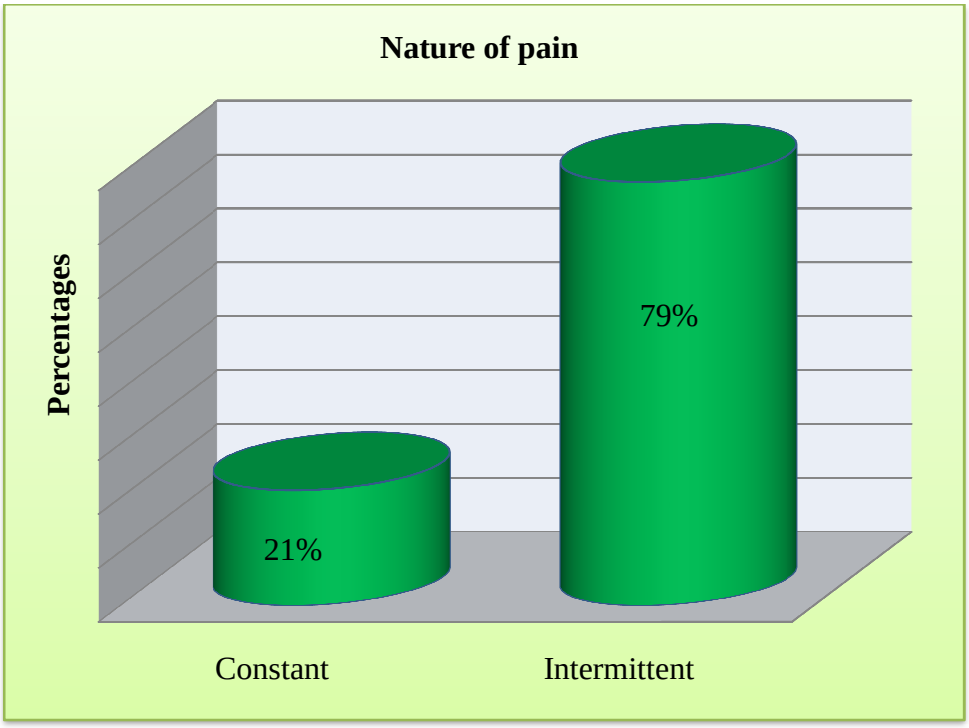

Figure-10: Nature of pain of the participants

Radiation of pain:

The bar chart shows that among 70 participants 36% (n=25) has radiate pain in forearm, 26% (n=18) has pain in hand, 17% (n=12) has radiate pain in shoulder, 7% (n=5) has radiate pain in cervicoscapular region, 3% (n=2) has pain only present in neck. It also shows that 11% (n=8) has no radiation of pain (Figure-11).

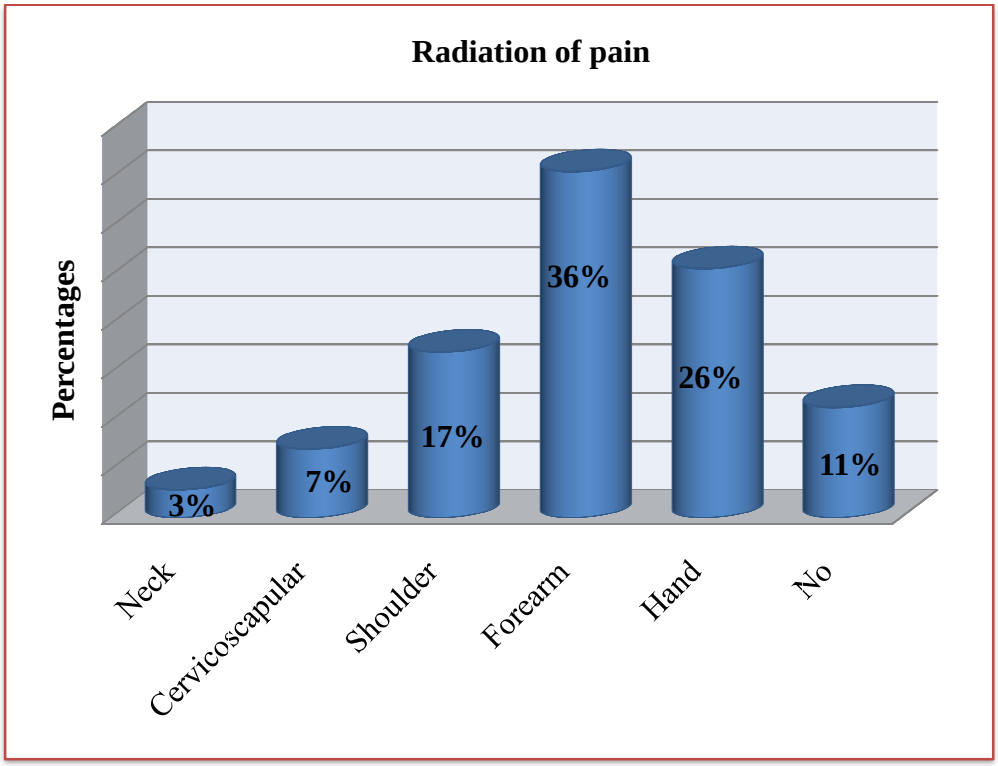

Figure-11: Radiation of pain of the participants

Aggravating movement:

Analysis demonstrate that among 70 participants flexion movement is the aggravating movement in case of 6% (n=4) participants, extension in case of 36% (n=25), right side bending and left side bending has same result 20% (14) and rotation is the aggravating movement in 19% (13) cases (Figure-12).

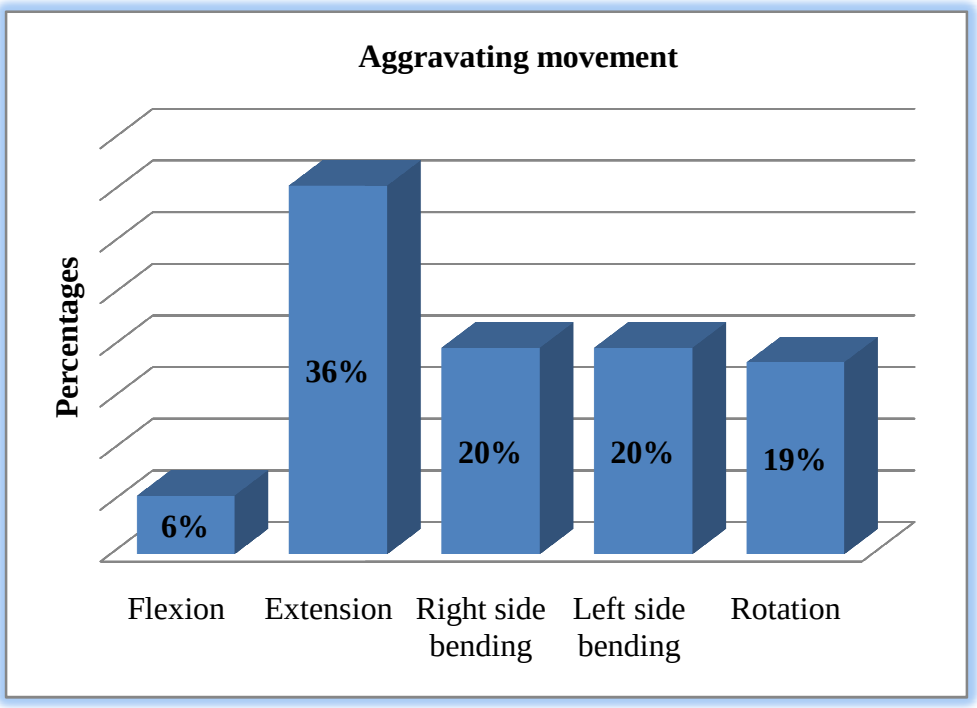

Figure-12: Aggravating movement of the participants

Aggravating factor:

The bar graph shows that highest number 49% (34) neck pain aggravated by prolonged neck bending activity, 26% (18) aggravated by prolonged desk activity, 16% (11) by prolonged over head activity and limited number 10% (7) participants neck pain aggravated by turning activity (Figure-13).

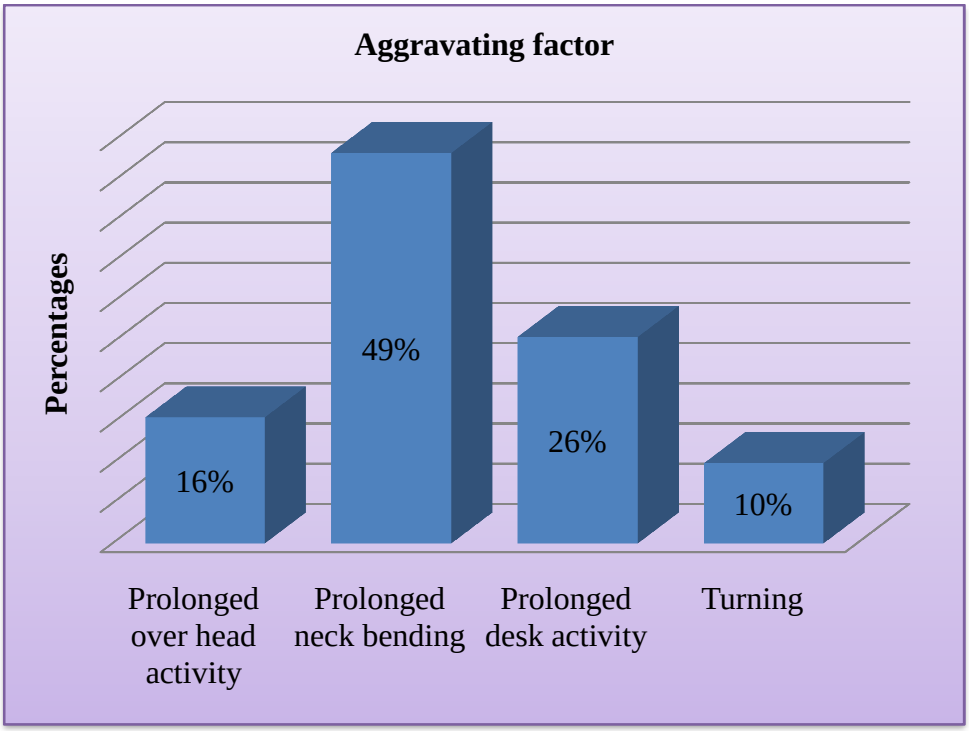

Figure-13: Aggravating factor of the participants

Previous intervention & Effectiveness of previous intervention:

Analysis reveals that 63 participants out of seventy were taken previous intervention from Traditional holder, General practitioner, Orthopedisians, Physiotherapist, Surgeons and others. All of them it was found that n=30 (43%) participant's response of treatment were not effective, n=14 (20%) were effective, n=19 (27%) were partially effective (Figure-14).

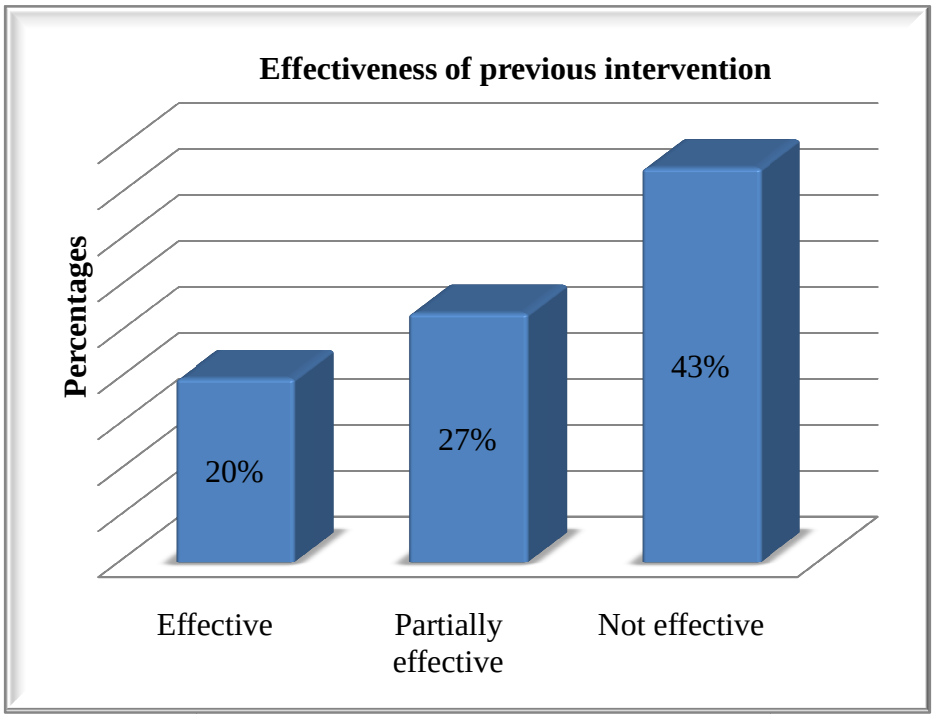

Figure-14: Effectiveness of previous intervention

Severity of pain and Work interruption:

Among all participants the highest number 9% (6) was interrupted their work for 3 days who were severely affected, 1% (1) for 7 days, 4%(3) for more than 15 days. And 7% (5) interrupted their work for 3 days who were moderately affected, 3% (2) for 7 days, and 3% (2) for more than 15 days (Figure-15).

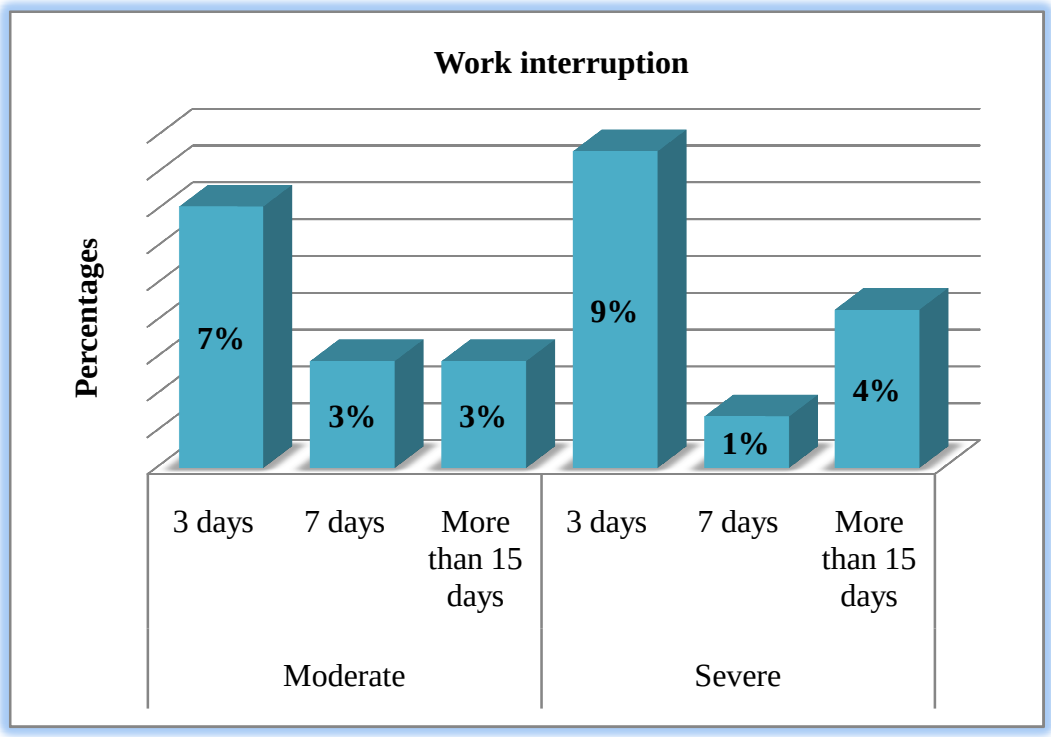

Figure-15: Work interruption of the participants

CHAPTER:V DISCUSSION

The researcher aim was to ascertain the characteristics of neck pain among cervical spondylosis patients attended at CRP. A variety of characteristics had been found from the selected samples whether it is acute, sub acute or chronic type cervical spondylosis by a categorized variable outcome that are socio-demographic, pattern of physical activity, posture and pain related information.

A study was done by The American Academy of Orthopaedic Surgeons state that approximately 25% of individuals younger than forty years of age and 50% of individuals over forty years of age have disc degeneration in the cervical spine (Rao et al, 2007). In this study age of participants was higher 64% who were found in age range of more than or equal 41 years and 36% participants were in the age range less than or equal 40 years, which indicates that adult with these age range are the most vulnerable for incidence of cervical spondylosis.

Seventy patients of cervical spondylosis were studied. Out of them, 51% were male and 49% were female. In a study in Nepal, among 119 participants were 98 (82.4%) male and 21 (17.6%) female (Bista & Roka, 2008). In this study the researcher found approximately similar result was male were more affected then female in cervical spondylosis.

Among the seventy participants a highest number of respondents 34% found those are housewife. 23% were service holder, 14% were businessman, 7% were daily labor, 6% were farmer, tailor, student and electrician were equal number 4%, driver and job holder at abroad was 1%. Result shows that housewives are most commonly affected by cervical spondylosis and than service holder; they had to stay in flexion and neck bending position for long time of the day. A study that was done in Narayangonj city of Bangladesh on 98 male coolies and result shows that a considerable higher prevalence of cervical spondylosis among coolies (39.8%). Occupation related degenerative change in the cervical spine had recently been included in the register of occupational disease in Germany (Mahbub et al, 2006).

In this study it was found that 71% participants had no past history of trauma and 29% participants had past history of trauma in their cervical spine. Hoffman et al (1992) observed that all 27 patients with fracture had at least one of the following characteristics: midline neck tenderness, evidence of intoxication, altered level of alertness, or a severely painful injury, degenerative changes elsewhere. Three hundred fifty-three of 947 (37.3%) patients without cervical-spine fracture had none of these findings.

The finding in this study was highest number of participants about 79% has suffering with neck pain and then 17% participant's pain occur in the cervicoscapular region. Among them the limited number 1% has pain in the forearm. Mahbub et al (2006) found that neck pain develops in 26.5% participants. Another study shows that one third of patients with cervicalgia due to cervical spondylosis present with headache. A significant amount of these patients also present with arm, forearm and/or hand pain (Heller, 1992). In seventy participants it was found that who suffers from moderate pain were the highest number 76%, 23% participants were suffered from severe pain and limited number 1% was also suffered from mild type of pain. The researcher found that patient experienced moderate to severe type of pain in case of cervical spondylosis. Gore studied 205 patients for a minimum of 10 years and found that over one third of the patients studied had moderate to severe neck pain at final evaluation (Gore, 1987). The investigator found that highest number of participants 79% has intermittent symptom and 21% has feel constant symptoms of pain. McCormack and Weinstein (1996) published a study in California points out that intermittent neck pain is the most common syndrome seen in clinical practice.

The result shows in this study that highest number 49% neck pain aggravated by prolonged neck bending activity, 26% aggravated by prolonged desk activity, 16% by prolonged over head activity and limited number 10% participants neck pain aggravated by turning activity of the neck and in 36% participants extension is the aggravating movement. So from this study it can be found out that neck bending activity is more prone to develop cervical spondylosis. Some occupational positions may demand repeated or prolonged flexion, extension or extreme bending of neck. These may lead to degenerative changes in the cervical spine (Mahbub et al, 2006).

CHAPTER:VI CONCLUSION

Cervical spondylosis is one of the most common conditions related to the cervical spine in the developing country where Bangladesh is not out of range. Cervical spondylosis is a common and occasionally disabling condition, occurring as a natural consequence of aging in the vast majority of the adult population. The result of the current study indicated that many factors are comparatively significant which are closely coordinated with individuals' lifestyles, abnormal position or posture, working environment and overall leading of poor sociodemographic condition. This study greatly emphasized on these factors to mark out the most prevalent characteristics of neck pain among cervical spondylosis patients. For instances, most affecting age group is more than or equal 41 years, males are mostly affected, lack of physical exercise, poor sitting posture and prolonged neck bending activity in their workplace or home are more vulnerable groups for cervical spondylosis. Some occupation like housewives, service holder is frequently affected. Neck and cervicoscapular region and right upper limb are commonly involved. Nature of pain is mostly intermittent in cervical spondylosis. Patient experiences moderate to severe pain in this disease.

So management of cervical spondylosis would be effective when physiotherapists could relieve this neck pain symptoms by proper awareness and modifications of the postures, lifestyles, occupations and associated others factors that was found on this study. The researcher gratefully acknowledges the participation in this survey study of all the staff and patients who took part. Finally praise to my merciful Allah, as I completed my research project successfully in time.

The research has some limitation but researcher identified some further step that might be taken for the better accomplishment of further research. For the ensuring of the generalization of the research it is recommended to investigate large sample. In this study researcher only took the participants from CRP, Savar due to time limitation. For this reason result cannot be generalized in all over the Bangladesh. So for further study it is strongly recommended to increase sample size with adequate time to generalize the result in all of the cervical spondylosis patients in Bangladesh for better results and perspectives.

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APPENDIX

Appendix-1(A)

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cÖkœ-DËi c‡e©i †h‡Kvb gyn~‡Z© Avcwb m¤§wZ cÖZ¨vnvi Ges †Kvb cÖ‡kœi DËi cÖ`v‡bi AcviMZv cÖKv‡ki e¨vcv‡i Avcbvi m¤ú~b© AwaKvi i‡q‡Q| GB M‡elbvq cÖvß Z_¨ m¤ú~b©fv‡e †Mvcbxq _vK‡e Ges AskMÖnbKvwi‡K e¨w³MZfv‡e M‡elbvi dj cÖKv‡ki mgq wPwýZ Kiv n‡e bv|

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Appendix-1(B)

Inform consent

(Please read out to the participant)

Assalamualaikum/Namasker, my name is *Minanta Sharmin*, I am conducting this study for a Bachelor project study titled "Characteristics of neck pain among cervical spondylosis." from Bangladesh Health Professions Institute (BHPI), University of Dhaka. I would like to know about some personal and other related questions about neck pain & cervical spondylosis. This will take approximately 20 - 30 minutes.

I would like to inform you that this is a purely academic study and will not be used for any other purpose. The researcher is not directly related with this area (Musculoskeletal), so your participation in the research will have no impact on your present or future treatment in this area (Musculoskeletal). All information provided by you will be treated as confidential and in the event of any report or publication it will be ensured that the source of information remains anonymous. Your participation in this study is voluntary and you may withdraw yourself at any time during this study without any negative consequences. You also have the right not to answer a particular question that you don't like or do not want to answer during interview.

If you have any query about the study or your right as a participant, you may contact with Minanta Sharmin, researcher and/ or Md. Sohrab Hossain, Assistant professor, BHPI & Head, Department of Physiotherapy CRP, Savar, Dhaka-1343.

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

YES ☐ NO ☐

Signature of the Patient/Attendance……

Signature of the Interviewer……

Appendix-2

(Questionnaire)

Part 1: Patient's Socio-demographic Information

1	Age (in year)	|__|__| yrs
2	Sex / Gender	Female =1 Male =2
3	Marital status	Married/living with partner =1 Unmarried/single =2 Divorced =3 Separated =4 Widow =5
4	Living area	Rural =1 Urban =2
5	Educational status	Illiterate =1 Primary level =2 Secondary level =3
6	Occupation	Daily Labor =1 Farmer =2 Housewife =3 Business =4 Driver =5 Van/ Rickshaw Puller =6 Service =7 Student =8 Electrician =9 Unemployed =10 Helper of Motor Vehicle =11 Tailor =12 Job at Abroad =13 Carpenter =14 Other (Specify): _____=15

Part 2: Pattern of physical activities:

7	Any trauma in the cervical spine	Yes=1 No=2
8	Any cervical spine surgery	Yes=1 No=2
9	Current job pattern	Physically & mentally stressful job=1 Healthy environment=2
10	Physical exercise	Yes=1 No=2
11	Sports activity	Yes=1 No=2

Part 3: Posture

12	Sitting posture	Good=1 Fair=2 Poor=3
13	Maintain correct posture during ADL	Yes=1 No=2
14	Number of pillow during sleep	No pillow=1 One pillow=2 Two pillow=3
15	Types of mattress	Hard=1 Firm=2 Soft=3

Part 4: Pain related Information

16	Location of pain	Neck=1 Cervicoscapular=2 Shoulder=3 Forearm=4 Hand=5
17	Duration of pain	DD / MM / YY
18	Severity of pain	Mild =1 Moderate =2 Severe =3
19	Affected limb	Right UL=1 Left UL=2 Both side=3 None=4
20	Nature of pain	Constant =1 Intermittent =2
21	Radiation	No=1 Neck=2 Cervicoscapular=3 Shoulder=4 Forearm=5 Hand=6
22	Types of pain	Pins and needles =1 Tingling =2 Shooting=3 Dull ache=4
23	Relevant symptom	Paraesthesia=1 Numbness =2 Burning sensation=3 No relevant symptom=4
24	Sensory loss	Yes =1 No =2
25	If yes	level

26	Motor loss	Yes =1 No =2
27	If yes	level
28	Aggravating movement	Flexion=1 Extension=2 Right side bending =3 Left side bending=4 Rotation=5
29	Relives	Movement=1 Rest=2
30	Aggravating factor	Prolonged over head activity=1 Prolonged neck bending=2 Prolonged desk activity=3 Turning=4
31	Affect activity of daily living	Yes =1 No =2
32	Off work due to pain (duration)	3 days=1 7 days=2 More than 15 days =3 No off work=4
33	Response of medication	Yes =1 No =2
34	Previous intervention	Yes =1 No =2
35	If yes	Traditional holder=1 GP=2 Orthopedic=3 Physiotherapy=4 Surgery=5 Other=6
36	Response of previous intervention	Effective=1 Strongly effective=2 Partially effective=3 Not effective=4

Appendix-3

PERMISSION LETTER

To
The Head of the Physiotherapy department,
Center for the rehabilitation of the paralyzed (CRP)
Savar, Dhaka-1343

Subject: Permission to collect data to conduct a research study.

Sir,

I respectfully to state that I am a student of 4th year B.Sc in Physiotherapy at Bangladesh Health Profession Institute (BHPI). As a part of my study I have to conduct a research project. So that I need your kind permission to conduct this research and I have chosen a title that is "Characteristics of neck pain among cervical spondylosis patients". I have selected the outdoor & indoor Physiotherapy department of CRP for data collection.

May I therefore pray and hope that you would be kind enough to give me the permission to do this study successfully in your department and oblige thereby.

Yours faithfully

Minanta Sharmin

Minanta Sharmin
4th year B.Sc in Physiotherapy
Session: 2006-2007
BHPI, Savar, Dhaka.
Date: